Darwin Initiative Main: Annual Report

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

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

Submission Deadline: 30th April 2024

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Darwin Initiative Project Information

Project reference	29-030
Project title	Using invasive alien trees to support conservation and improve livelihoods
Country/ies	Madagascar
Lead Partner	Missouri Botanical Garden, Madagascar Research and Conservation Program
Project partner(s)	-Regional Directorate of Environment, and Sustainable Development (DREDD) -Regional Directorate of Industrialization, Trade and Consumer Affairs (DRICC) -Federation LOVASOA (LOVASOA)
Darwin Initiative grant value	£197 406
Start/end dates of project	01 July 2022 - 31 March 2025
Reporting period (e.g. Apr 2023 – Mar 2024) and number (e.g. Annual Report 1, 2, 3)	1 April 2023 to 31 March 2024 Annual Report number 2
Project Leader name	Adolphe Lehavana
Project website/blog/social media	http://mobot.mg/conservation/pointe-a-larree/
Report author(s) and date	Adolphe Lehavana and Ianosca Descombes, 30 April 2024

1. Project summary

The Pointe à Larrée PA on Madagascar's central-eastern coast is an old dune complex including very rare littoral forest and swamp forest, marshes and lakes supporting rich fauna and flora including scores of threatened and locally endemic species. Most local people living in this landscape have precarious lives depending on the exploitation of natural resources, maritime fishing and subsistence farming, frequently impacted by environmental events (floods, droughts, catastrophic winds, fires). At such times they resort to plundering the remaining forest for timber or charcoal for sale. This landscape hosts several consequential Invasive Alien Species (IAS), perhaps the most significant is the marsh-loving pyrophile tree *Melaleuca quinquenervia* because it outcompetes native plant species and desiccates marshy ecosystems. Indeed, several locally endemic species are at high risk of extinction. This project aims to control the invasion of the species and transform its wood into green charcoal as a new source of income for local communities. At the end of the project, we intend to eliminate the populations of the species over

an area of 10 ha that the plant has infested within the protected area and to increase by 25% the income of 100 charcoal producers grouped in a formal cooperative. Within the peninsula, more than 1000 ha are currently invaded by the species, providing ample raw material for this activity while reducing their threat to the protected area.

2. Project stakeholders/ partners

At the start of the project, four partner entities have been involved to implement the project. The terms of collaboration were formalized through a "Memorundum of Understanding" signed by all the partners dated 11 August 2022 during YR1. Partners signatories of the MoU are:

- Missouri Botanical Garden (MBG) as Lead partner, project coordination and interface with Darwin Initiative
- Regional Direction of Environment and Sustainable Development (RDESD), Reresponsible for environmental monitoring, delivery and control of operating and sales permits
- Regional Direction of Industrialization, Trade and Consumption (RDITC), responsible for implementing commercial regulations,
- Federation Lovasoa (FL) which is a grouping of all the Based community (COBA), forest managers who have management transfer contracts with the forest administration, coordination of grassroots community activities.

Charcoal producers at Pointe à Larrée peninsula are the main beneficiaries of the project, grouped within a farmer Cooperative called Green Charcoal Cooperative (GCC) SAMY ANTSIKA. Currently, this Cooperative has been constituted by 114 members, including 44 members charcoal producers through them all operations on Malaleuca green charcoal have been implemented.

In addition to these formal partners, during the official regional launch of the project, it was agreed that regional authorities, led by Governor, will perform monitoring sessions to evaluate success of the project and to address issues. This program was planned and implemented at the end of each fiscal year (example of field visits carried out by steering committee in june 2023 and march 2024).

3. Project progress

3.1 Progress in carrying out project Activities

1.1 Regional and local launch of the project

Completed in YR1

1.2 Developing Memorandum of Understanding (MoU) with technical service partners

Completed in YR1

1.3 Conducting research to develop annual exploitation plans, map priority zones

A research plan was developed by a participative team including technicians from Regional Direction of Environment and Sustainable Development (RDESD), MBG and local stakeholders (Lovasoa) to quantify potential volume of exploitable and non-exploitable stems of Melaleuca (Evidence Activity 1.3 table1):

-YR1: a total area of 61Ha delimited and data suggests that 89,823 exploitable stems of Melaleuca (more than 5cm of diameter) including 9.10 hectares inside of PA and 51.9 Ha located in the peripherical zones (details Evidence Activity 1.3, figure1)

YR2: A total of 425 hectare containing an estimated 1,007,536 exploitable stems of which 0.82 hectares are inside the PA and 424.88 hectares in the peripherical zones. Only just one area around Ambodimanga zone has yet to be inventoried with a total approximative area of 72Ha (Evidence Activity 1.3 figure1)

A total of 40 plots were inventoried within a total area of 486.73Ha covered by Melaleuca including 10.44Ha within the Protected area and 476.29 in the buffer zone managed by local communities (Evidence 1.3, Figure 1). This area represents around 80% of invaded zones within the Pointe à Larrée peninsula and the remaining (20%) area is currently managed by a community that is not involved in the charcoal production. Extrapolation of the data suggests that 1,097,358 exploitable stems and (more than 5cm of diameter) and 32,565,232 of non-exploitable

stems (less than 5cm of diameter) are available in this zone. Thus here we have a very significant and currently un-exploited resource.

1.4 Directing monthly members of the "green charcoal cooperative" for producing charcoal:

This activity is in progress. Supervision of charcoal burners began from July 2023. To do this, the work first consists of demarcating the charcoal burning areas in order to avoid possible fire risks and to facilitate monitoring of the production process. Currently, one carbonization zone has been identified per production zone (Andrangazaha, Antsiraka and Manjato). During rainy seasons, these areas are frequently flooded, so for each production site, a second carbonization zone at a slightly higher location has been identified.

To comply with the operating rules for the exploitation of Melaleuca, a training session was provided from 18 to 24 September 2023 by forest administration team for stakeholders. The results were:

- Legislative and regulatory frameworks for logging are understood by stakeholders;
- Technical and administrative clauses prescribed in the charcoal cutting and manufacturing authorizations issued by RDESD are respected by stakeholders;
- All stakeholders understand correctly their roles and attribution controlling activities;
- Monitoring the progress of the exploitation of Melaleuca at the level of the target beneficiaries level is ensured.

A total of 18 people were trained including 1 MBG Agent (Assistant Project Manager), 10 Based community (COBA) representatives, 2 cooperative representatives, 5 representatives of the Rangers (Evidence Activity 1.4, Figure2). Following this training, Assistant Project Manager of MBG carried out monthly monitoring. In addition, compliance monitoring was carried out by the forestry administration in March 2024 during five days.

1.5 Daily patrols within Protected Area: Activity in progress.

Three types of patrols were conducted:

-Patrol by Rangers. During YR2, 11 professional rangers performed daily patrols especially in the PA. From July 2023 onwards, the patrol method has been improved by the use of smart mobile application and smartphones.

A total of 813 patrols were carried out during YR2. No charcoal kilns using native trees were observed (Evidence Activity 1.5 table2).

-Community patrol. This type of patrol was carried out by grassroots communities especially in buffer zone, outside the AP – this activity is very successful in increasing the engagement of the wider community in the conservation of the PA. In total, 349 patrols were carried out with the participation of 200 members of the community including 106 men and 94women (1343 pers.-days). During YR2, 10 charcoal kilns were observed, equivalent to approximately 70 trees (estimation 7 trees/kiln) (Theresice, pers. comm.).

-Joint patrol. Two join patrols were carried out in collaboration with the forestry administration. During the patrols, one kiln for charcoal production was observed which used approximately 7 trees.

1.6 Verbalisation of infractions:

The dina (internal community rules) is now effectively applied to treat offenses in the buffer zone managed by local communities. For the 10 offenses observed in YR2, six perpetrators were apprehended paid their fines with a total sum of £36.

1.7 Mobilisation of local community for tree planting and removing Melaleuca

During YR2, 32.47 hectares invaded by Melaleuca were cleared of which 4.74Ha was within the PA and 27.73Ha within the peripherical zone. A total of 11,319 seedlings of 31 native species were planted covering an approximate area of 3,5Ha (Evidence Activity 1.7 Figure2).

1.8 Quarterly transects for participatory monitoring of native tree cutting

Four quarterly participatory monitoring sessions were conducted by four groups of local people with MBG oversight. 36 transects were laid out with the participation of 89 people including 28 women and 61 men. This monitoring aims to assess threat trends both in the PA and in the buffer zone. Several parameters were observed during monitoring: number of trees cut, number of charcoal kilns, undergrowth cultivation and slash and burn cultivation. For the four monitoring events carried out to date, a total of nine trees and shrubs of which 8 stems were located in the

PA and one in the buffer zone. This compares with 23 trees that were cut in YR1. No other types of infraction were observed. Hence there was a significant reduction in the exploitation of native trees in YR2.

1.9 Mobilisation of female members for removing Melaleuca

During YR2, 80 women and 107 men participated in removal of Melaleuca (Evidence Activity 1.9 Figure3). It was planned that this activity would involve exclusively women but the removal of the larger trees was too physically demanding.

1.10 Three-monthly monitoring for compliance with Melaleuca exploitation contracts.

Two technical and administrative missions were conducted by the forest administration: one in in April 2023 and the other in March 2024. Their main observations were:

- Cooperative members are motivated to invest on charcoal production. Hence, green charcoal production has gradually increased.
- Cooperative members respect law and regulations related to timber exploitation (no native species cut, diameter of exploited stems)
- Partners (MBG, COBA, Rangers) had established a viable exploitation management plan
- Regular verification of products was done by partners at production sites as well as at warehouses with registration books.
- Reforestation effort implemented by using native species such as *Faguetia falcata* after removal of melaleuca populations.
- Insufficiency of coordination actions from MBG and Federation Lovasoa to enhance cooperative's efforts. This needs an improvement.
- Reforestation techniques should be improved by using specific ecological requirements of each planted species.

2.1 Study trip by PM and Representative of GCC to Benin to identify best practice for the production of charcoal from Melaleuca

In March 2023, Project Manager and a member of the Lovasoa cooperative went to Benin to exchange experiences on carbonization techniques. The choice of the Country was based on the fact that the "Casamance" carbonization technique, originating from Senegal, had been introduced to Benin and there it had demonstrated its merit. In addition, this method allows the collection of pyroligneous liquid (wood vinegar), an additional product of charcoal which has never been produced in Madagascar, but has the potential to be a valuable secondary product. The exchanges took place in the Djowanon forest, in rural commune of Ouèssè, in the Collines department (31P0431280, UTM 0926810, altitude: 179m) (Evidence Activity 2.1, Figure 4,5). The carbonization process used here takes 10 days, and the technique is quite different from the MATI (Meule à Tirage Inversé), popularized at Pointe à Larrée since the Melaleuca green charcoal operations. In Benin, we tried both Casamance carbonization and the traditional method. This allowed us to come to a conclusion that the Casamance kiln is not only more profitable but also faster. We noticed that for the Casamance kiln, the proportion of uncooked wood is almost zero, whereas with the MATI method, we had around 3.5%.
Most importantly, with the Casamance kiln it is possible to collect the valuable pyroligneous liquid (wood vinegar). According to the charcoal burners, for normal cooking, with producing 25 bags of 60 to 80 kg of charcoal, they collect 25 liters of wood vinegar. However, a leak was observed for the chimney, and because of this, we were able to collect only 17 liters. From a commercial point of view, despite the difficulty in selling the product, the value of the liquid is slightly more profitable than the charcoal itself. A liter of the liquid is worth around $4.5, while charcoal sells for around $3.3/bag locally. The possible uses of the liquid are: 1) Natural insecticide, to protect woods against insects (vegetable plantations or pillars of houses); 2) direct treatment of infected wounds on the human body; 3) an ingredient in cosmetic soaps; 4) to treat corpses to extend two fold the time a bod can be kept before burial. To facilitate the introduction of this technology in Madagascar we ordered the lower part of the chimney in Benin and transported this back to Madagascar with us.

2.2 Purchase tools for conversion of *Melaleuca* into charcoal

Following a Change Request, that was accorded, four types of equipment were provided to the cooperative to enable them to make operations more profitable:

- 20 metal barrels for chimney construction using MATI kilns.
- an electric sewing machine with a generator for packaging the green charcoal
- farm motorcycle (Kubota) for transporting products from the production site to the warehouse
-A casamance kiln as prototype for training purpose and pyroligneous liquid collecting. (Evidence Activity 2.2, figure6)

2.3 Training workshops for members of GCC in best practice for the conversion of *Melaleuca* into charcoal

All charcoal producers received training on improved carbonization techniques using the MATI (Meule à Tirage Inversé). After several months of practice, they are now convinced on the technique and are sharing their experiences with new members. On march 2024, two members, among former members of the cooperative who routinely practiced the MATI technique, conducted training for the 20 new members in order to increase production while maintaining the quality of the product (Evidence Activity 2.3 Figure7).
In addition, in YR3, after following our training the casamance kiln techniques in Benin, we propose to carry out cascade training for charcoal producers. During this session, we plan to use the new chimney equipment to collect pyroligneous liquid.

2.4 Coaching the charcoal producers and GCC in best practice

From July 2023 when the charcoal producers began production, daily monitoring was carried out by the MBG team to ensure compliance with the technical processes and also with the production contract with the forestry service (Evidence activity 2.4, figure 8). Furthermore, assistance was given to address possible blockages in the production process such as the case of rising water in the area where the kiln had been established. Coaching will be continued in YR3 after training charcoal producers in the Casamance kiln.

3.1 Conducting diagnostic to identify SWOT of the GCC:

Completed in YR1.

3.2 Developing marketing strategy and business plan of GCC

In YR2 the business plan was completed, mainly describing market studies for all types of charcoal products in the region, financial studies of the new green charcoal of Melaleuca, the marketing strategy and the Cooperative's manual of procedure (document available). Implementation is planned for five years (2023 to 2027). It is expected that even beyond the project end (March 2025), the cooperative will operate autonomously to accomplish its mission and achieve the objectives.

3.3 Coaching graduates

Four graduates, including two specialized in management and accounting and two in commerce, whose names follow, were given work experience for nine months from July 2023 to March 2024:
- Miss Albine Thérésine Rabodoharivola (Bachelor’s degree in Management, Financial and Accounting), University of Toamasina, Madagascar
- Miss Laurita Razanamamy (Bachelor's degree in Management, finance), University of Toamasina, Madagascar
- Miss Angelette Timothée Soatera (Bachelor's degree in International commerce), University of Toamasina, Madagascar
- Mr. Fabrice Toto (Bachelor's degree in Economics, specialty administration, commerce), University of Toamasina, Madagascar

Partners and consultants participated in the coaching of these graduates. At the end of their internship, we hired two of the graduates specialized in management and accounting for six months to coach the members of the cooperative in the use of the business plan until it became routine.

3.4 Workshop for validation of business plan, manual of procedure and internal rule of the cooperative

In February 2024, the “green charcoal business plan” was validated through workshop with the participation of 32 people from various stakeholder groups including: representatives of Cooperative members, local and regional authorities, partners and experts on business (Evidence Activity 3.4, figure9, 10). During the workshop, several points were discussed for improving the document in order to sustain impact of the project, including ensuring the quality and quantity of the products to nurture customer loyalty and to enhance profitability. Other recommendations included the need to develop a strong strategy to increase the number of charcoal producers.

3.5 Training of Cooperative leaders on six topics

Five training topics out of the six planned were delivered:
a- Training on Cooperative structure and functioning
Completed in YR1
b. Entrepreneurial culture
Completed in YR1

During YR2, three training themes were provided:
c. Management of the cooperative and establishment of commercial contract. This four days of training was provided by a Consultant, Mrs Razafindrasoa Hanta Beby. In total, 12 members including 11 men and one woman trained from 12 to 15 December 2023 (Evidence Activity Figure 11). A monitoring session is planned in YR3 to assess the impact of training.
d. Financial education. This two days of training was provided by a Consultant Mr Ralaimazava Barnabe Ghislain from 17 to 18 January, 2024. In total, 13 members including 12 men and one woman trained (Evidence Activity Figure 12). A monitoring session is planned too in YR3 to assess the impact of training.
e. Leadership and good governance. This four training session was provided by a Consultant Rajaonera Andrianaivo Hans Auberthin from 27 February to 1 March 2024. In total, 14 members including 13 men and one woman trained (Evidence Activity Figure 13,14). A monitoring session is planned too in YR3 to assess the impact of training..

Delivery of the sixth training theme is planned in YR3. This concerns the strengthening commercial strategy skills for these board members.

3.6 Purchase charcoal by GCC

The total production of YR1 and YR2 was 3.5 tons of green charcoal. All production was purchased by the Cooperative at Ar8000/bag (£1.6) and sold to clients at either Ar10,000/bag (£2) in 2023 or Ar 12,000 (£2.4) from January 2024 (Evidence Activity 3.6, table3). Thanks to the start-up funds the GCC was able to pay for production upfront. These funds are being used in a revolving manner.

3.7 Rents two sale’s point (Sainte Marie and Soanierana Ivongo)

Given the increase cost of fuel to transport products in cities and the increase in sale’s points rental, observed during market studies, we took the strategic decision to collaborate with resellers. It was decided that the cooperative will only sell locally in storage stores, and customers will pay the transport costs as well as the rental of sale’s points. To do this, it is imperative to establish a sale contract for each customer stipulating the methods of collaboration.

3.8 Recruitment of sale managers and skipper

It was decided that this activity will be implemented by resellers through a clear contract of collaboration.

3.9 Construction of a warehouse and extension of the existing warehouse

Among the thee warehouses planned, two have been completely achieved (Evidence Activity 3.9, figure15). The first one consisted of repairing and extending an existing store with an additional room of capacity of $30m^3$. The second is new building inaugurated in March 2024. This has two rooms, one room for product storage and one for cooperative’s office. The third

warehouse is under construction and will have the same plan as the second one having two rooms for the same uses.

3.10 Purchases a motorboat and equipment

Completed in YR1.

3.11 Monthly, RDESD validates that charcoal for sale originates entirely from *Melaleuca* and conducts control of stock in the warehouse

A verification mission was carried out by a local representative of forest service who sought to confirm compliance with the regulations (species exploited, number of bags declared, etc.). As a result, no non-compliance was raised (Evidence Activity 3.11, figure 17).

3.12 RDESD delivers agreement of sale

In fact, this regalian power falls under the jurisdiction of RDESD not to RDITC as conceived originally. During YR1, the RDESD issued five operating license for green charcoal production of Melaleuca, including one for MBG (inside of PA) and four licenses COBA (in peripheral zones). These permits expired at the end of February 2024. A renewal request was submitted to DREDD while awaiting new permits. In the meantime, charcoal production continues.

Four notebooks, each containing 25 sheets, have been delivered by the forest administration to allow the Cooperative to sell the green charcoal. Each notebook has 25 pages, ie the four notebooks are enough to support 75 transportation events (Evidence Activity 3.12, Figure17).

3.13 GCC and DM implement marketing strategy for sale

In progress. Business plan has just been completed and its implementation will begin in May 2024. Despite this, the team started collecting customer requests and advertising the product during the festivals and economic fairs by exhibiting the producers and sharing some leaflets (Evidence Activity3.13, figure 18).

3.14 DM conduct surveys for assessing the needs of consumers (risk mitigation activity).

No progress, planned on YR3

3.15 DM coaches GCC for implantation of business plan

No progress, will start on May 2024

3.16 RDITC, following each training session, conducts monthly technical monitoring for the two first months, afterwards three-monthly monitoring to continue coaching

No progress, will start in May 2024

3.17 All partners and local authorities conduct half-yearly participatory monitoring of the project progress

Ongoing: bi-monthly meetings were held to track the progress of activities during which participants discuss and find solutions in the case of blockages. During YR2, four meetings were held with the participation of the four partners. For half-year participatory monitoring, two missions were carried out in field with the participation of DREDD, MBG and Federation Lovasoa. Recommendations were provided to improve the performance of the project (Evidence Activity 3.17, Figure 19 and figure 20).

3.18 PM develops collaboration with businesses for shipment and sale

A reseller, resident in Sainte Marie island, has established a contract with the Cooperative for the sale of green charcoal. This reseller plan to sell 100 bags of charcoal per month under credit, including 50 bags for the first delivery and the second will be collected after payment of the first tranche (Evidence Activity 3.18, figure 21). Other resellers in Soanierana Ivongo have expressed their interest in buying and selling green charcoal and we are now pursuing these leads.

4.1 Creation of a website for the project

The website account of the site was created and active. This describes all information related to project and green charcoal ordering with the following link:
https://mobot.mg/conservation/pointe-a-larree-site/di-melaleuca/

4.2 Bimonthly updating of Project' progress on social media

During YR2, 12 publications were made on social media (Facebook) and five of theme concern particularly green charcoal to inform the public about the project. The launch of the sale of green charcoal was in June 2023. When feedback was received the team carefully analyzed each and endeavored to improve the project.
(Evidence Activity 4.2, Figure22).

4.3 Monthly broadcast on local radio

No progress while waiting for marketing strategy. This will starting in May 2024.

4.4 Organising annually a festival of biodiversity

In addition to social media, two festival events were organized by MBG and partners during which the dissemination of the project and product was reinforced :

1) The first was held on 10 June, 2023 during world Environment Day (Evidence activity4.4 figure23,24). The theme for the Year 2023 was "Fighting against Plastic Pollution" and this was associated with the festival theme "Harena tsara tantana, loharanom-pandrosoana" or "Well-managed resource are a pillar for development". Several activities were organized during the event during the festival including the public launch of the green charcoal of Melaleuca. This event was honored by the presence of regional authorities.
2) The second was held on 2 March 2024 at Ankitsinambo (Evidence activity 4.4 figure25,26). During this event, several activities were implemented including formalization of the common internal convention "Dina", following approval of by the court, reforestation, and the inauguration of warehouse for green charcoal located at Ankitsinambo. This is the second warehouse built thanks to Darwin Initiative Funds.

4.5 Attendance to regional and national events

Three representatives of three partners (Lovasoa, MBG, RDITC) participated in International Day of Cooperation, held at Itasy Region from 19 to 26 july 2023 - this was themed "Cooperatives for sustainable development". A total of 50 Cooperatives from different Regions of Madagascar were present. During event, Cooperative exhibited samples of green charcoal and other activities using posters, leaflets produced by the Cooperative. At the end of the event, a certificate of recognition for full participation was dedicated to the cooperative (Same as evidence of Activity 3.13, figure18).

4.6. Workshop at the end of the project
Planned close to project end

4.7 Site visit after workshop
Planned close to project end

4.8 Publication of peer-reviewed article
Planned close to project end

3.2 Progress towards project Outputs

During YR2, Output1 is substantially achieved (more than 90%) and Melaleuca populations are almost removed from the Protected Area. However, maintenance is necessary knowing that the species reproduces quickly with regrowth and that it is necessary to intervene from time to time to ensure that there is no regeneration posing the risk for reinvasion. While Output2 and Output3 are partially achieved (around 50%), the charcoal producers have now acquired the techniques and materials necessary for production, and production is evolving positively (Evidence the same as evidence of Activity 3.6, table 3). Although the quantity produced is still low compared to consumer needs, they appreciate the product, not only at the regional level but also at the national level. For Output4, much remains to be done in terms of publishing the results. Knowing that we are in the active production and sales phase and that the marketing strategy has just been defined, it is very early to scale up marketing. However, through events (festivals and participation in economic fairs), social networks, dissemination efforts upscaling

has been started and will be reinforced in YR3 (Evidence the as Evidence Activity 3.13, figure 18).

Output1. *Melaleuca* eliminated from high priority restoration zones within the PA thereby enhancing natural regeneration

Overall, we can estimate that we are at 95% of the objectives targeted for Output1.Three indicators are described below.

1.1 By YR1 study published identifying high priority zones for restoration through the elimination of Melaleuca

A map is now available showing heavily invaded areas within peninsula of Pointe à Larrée including the PA and adjacent peripheral zone (Evidence output1, Figure 27). This shows the priority areas where population of Melaleuca was completely removed with an area of 38Ha including 10.44 Ha within the PA and 27.56 Ha in the peripheral zone. As Melaleuca is mainly a anemochorous species with a maximum distance for seed dispersal of around 170 m, surrounded populations up to 200m from PA have been removed to reduce the risk of seeds from this species spreading to AP from peripheral areas. Moreover during YR3, efforts has to be made to maintain area already cleared by pulling out all saplings and removing coppice regrowth.

1.2 By YR 1 adult stems of Melaleuca (stem dbh >5cm) eliminated over 10 hectare; by YR2 over 20 hectare and by YR3 over 30 hectare.

During YR1, 5.7 Ha within the PA was cleared of Melaleuca - including all categories of stem diameter (saplings and trees). In YR2, this cleared surface has increased to 10.44Ha as well as additional surface 27.56Ha in peripherical zone (the same evidence output1, Figure 27).

1.3 By YR1, 50, by YR2 100 and by YR3 150 women involved in removal of Melaleuca

During YR1, 40 women were involved in the removal of the species. This has increased to 80 women in YR2. But as the big trees are difficult to uproot, we had to ask the help of the men, a total of 42 men helped om YR1, and 107 men in YR2 (Evidence output1, Indicator 1.3).

Output 2. Melaleuca charcoal produced preferentially by local people and accesses lucrative markets with livelihood benefits for locals

At the start of the project, only four charcoal producers were convinced and individually invested in the exploitation of green charcoal because of hard work required to remove the thick spongy bark and other technical processes (e.g. waiting a month for drying before making charcoal) compared to the much easier traditional technique. Following the our efforts in raising awareness on the one hand and the palpable income received by practitioners, this number has increased to 44 local charcoal burners (Evidence output2).

2.1. By YR1 protocol demonstrated in “real world” conditions that enables charcoal to be produced from *Melaleuca* with no more than 15% loss of efficiency compared to charcoal produced from native trees (some loss of efficiency must be expected and this will be compensated by greater sale’s price)

This was mostly achieved in YR1. Moreover, in YR2, other equipment (kubota, casamance kiln, warehouse, etc.) has just been provided and would make operations more profitable.

2.2 In YR1, YR2 and YR3 respectively, 30, 60 and 100 charcoal producers obtained 25% increase in household income from charcoal (currently zero *Melaleuca* charcoal as baseline)

Informal surveys carried out with charcoal burners revealed that their mean annual income using the traditional method with species other than Melaleuca is estimated at Ar2,000,000/year. In YR2, referring to the four charcoal makers who have already practiced, their average income from green charcoal of Melaleuca was Ar186,500, or 14% of their annual income. At the end of YR 2, there were 44 active charcoal producers. We are still far from the stated objective, but based on this increased number (and their increase in motivation), we

expect to achieve the objective of 100 charcoal burners as well as a 25% increase in income in the YR3 (The same as Evidence Activity 3.6, table3)

Output 3. Melaleuca charcoal appreciated by urban populations and product sale strategy supported sustainably

All customers who have already used green charcoal of Melaleuca are satisfied and still want to use it, although production still remains low and all production is delivered and consumed.

3.1 Permits obtained to provide a legal context for the project to exploit and sell charcoal from *Melaleuca* – including definition of mechanism to ensure that the charcoal being sold is really from *Melaleuca*

All production sites have operating permits in the names of the COBAs managing the raw materials. Exploitation contracts have been signed between the Cooperative and COBAs stipulating the conditions of collaboration, example of payment of the Ar200/bag by cooperative as management fee for COBA (Evidence Output3, Figure 28). For sales, the transportation documents will allow cooperative to sell their products across the country.

3.2 Annually, 100% of charcoal produced by charcoal producers purchased by Cooperative and delivered to sale's point directly accessible to consumers

All productions are purchased by cooperative and delivered to consumers through resellers. Local consumers come directly to buy products at local warehouses (The same as Evidence Activity 3.6, table3).

3.3. By Y1, two sale's points installed and functional in Soanierana Ivongo and Sainte Marie

The sale's point was cancelled according to the commercial strategy defined through the business plan.

3.4. Volume of charcoal sold by Cooperative of Melaleuca charcoal producers increases annually from zero at T0 to 20 tons by Y1, 40 tons by Y2 and 60 tons by Y3.

The volume of production of YR1 and YR2 is estimated to 3.5 tons. This is far from the expected production due to the initial reluctance of charcoal producers leading to delay in starting production. As currently, the number of charcoal producers has increased ten times and all production equipment is provided for producing efficiently, it is expected that the pace of production will greatly accelerate in YR3.

3.5. Y2, a business plan and a manual procedure elaborated showing the overall strategy of the cooperative for the sustainability investment including the extension of investment areas

The business plan is available, conceived to be implemented during five years (2023 to 2027). As the raw materials in the Pointe à Larrée peninsula are abundant, estimated to be sufficient for the cooperative for a period of at least 10 years, the business plan takes only into account investments in Pointe à Larrée. A revision of business plan is likely necessary beyond 2027, for the next period of five years.

3.6. From YR1 to YR3, at least 10 Leaders of the cooperative trained on at least six themes relating to the management and governance of the cooperative

Of the six planned topics, five were provided: a) cooperative structure and functioning; b) Entrepreneurial culture; c) Management of the cooperative and establishment of commercial contract, d) Financial education; e) Leadership and good governance. The remaining theme will be delivered in YR3. The number of participants, all members of the board of directors, varied from 12 to 14 (Same evidence as Activity 3.5, figure 11,12,13,14).

Output 4. Promising model of a new relationship with IAS demonstrated to land managers (including PA managers) and public awareness on IAS (threats and opportunities) increased

This output has been partially reached in YR1, specifically indicator 4 has been achieved regarding local awareness.

4.1. In YR1, YR2, and YR3 interested parties informed of the project and its progress by means of one dedicated website and bi-monthly social media posts.
In YR1, partner entities are informed of the project through focus group meetings and during regional launch. The general public is informed of the project also with up-to-date information through three channels:
1.Publication on Facebook. It is the most used social media in the area. A total of 222 friends and some tagged along people who follow the page https://web.facebook.com/?_rdc=3&_rdr which is regularly updated.
2. Participation in economic festivals and fairs at the national level. These events allow the public and private operators to be informed.
3. Mouth to ear, a quick way to convey massages in the region.

4.2. In YR3 at least 10 land managers (including Protected Area Managers) visit Pointe-à-Larrée to evaluate project.
Planned to be implemented close to project end

4.3. In YR3 one article describing and objectively evaluating the project will be published in a peer reviewed journal
Planned to be implemented close to project end

4.4. From Y2 to Y3, annually 20,000 people informed or sensitized of project results through four annual participations in local, regional, national celebration events, 24 annual radio broadcasts
For YR2, it is estimated that more than 20,000 people were informed of the project. These are people who participated in local events such as festival biodiversity (3000 people), social media (more than 2000 people), economic fairs (1000 people), mouth to ear more than 15000 people (Same Evidence as Activity 4.4 and Activity 4.6).

3.3 Progress towards the project Outcome

Outcome: A self-sustaining approach to the use of IAS is launched that demonstrably reduces the threat of Melaleuca at Pointe à Larrée PA while providing fuel-wood and income for local people.
In terms of conservation action, there is remarkable progress of the project towards achieving the objectives. Actions to eliminate Melaleuca in AP are completed despite some necessary maintenance actions. Post-control planting with native trees, with full involvement of local stakeholders has been fully completed and daily patrols by Rangers and the wider community is routine. However, we are still far from the objective for sale and increasing charcoal producers' income. Despite this, technical acquisition on charcoal production, and their motivation are essential for the progress of the project. We also believe that the volume of inputs in terms of equipment, the increase number of charcoal producers and carbonization optimization techniques propel us faster towards achieving the outcome for the coming year.

O.1 By YR 1 Melaleuca eliminated over 10 hectare of the PA; by YR2 over 20 hectare; and by YR3 over 30 hectare.
When conceiving this project, it was estimated around 50Ha of the PA was invaded by Melaleuca. But actual mapping showed that only 10.44Ha of the PA was actually invaded, but with much greater areas invaded in the buffer zone.
During YR1, and YR2, all invaded areas within PA were entirely cleaned of all stem class sizes (Same Evidence as Output1, Indicator 1.1 Figure 27). In addition, 27.56Ha at adjacent areas of PA were cleaned. A total of 38Ha are now free from invasion. We think that we achieved the objective of removing Melaleuca in conservation areas and the maintenance actions are still required to avoid recolonization of Melaleuca.

O.2 By YR3 the growth of native trees in restoration zones is at least 10% greater than in control areas where large Melaleuca stems have not been eliminated.

Commencement of elimination of Melaleuca started in February 2023 and continued in YR2. In the second quarter of YR3, we plan to assess the effects of eliminating Melaleuca on the growth rate of native tree and shrub species.

O.3 By YR3, with easy access to Melaleuca charcoal for local people, the number of infractions within the PA for exploiting native trees for charcoal has fallen by 50% compared to T0

The last case of charcoal production using trees cut from the PA was in April 2022 and involved the cutting down of seven trees. For the sake of effective measurement of this indicator, we propose to include both illegal logging in the PA, but also that within the buffer zone too. For this, the estimated annual number of native trees cut for charcoal production prior to the project was estimated at 240 trees/year (Theresice, Ranger, Pers.com). For YR1 and YR2, no logging for charcoal burning in PA, while in the buffer zone, there were the same number both years of 11 charcoal kilns were located, i.e. ca. 77 trees were cut illegally for charcoal production. Thus, illegal tree felling for charcoal decreased by 67% for YR1 and YR2, compared to the baseline (Same evidence as 3.5 Impact, table6).

O.4 Income from charcoal exploitation increased by 25% for 30 charcoal makers in Y1, 60 charcoal makers in Y2 and 100 in Y3 compared to zero as baseline

During YR2, based on the original four participants, the increase of charcoal producers' revenue is estimated to 14%. It is obvious, much have to be done for improving this situation for the next coming year (Same Evidence as Activity 3.6, table3).

O5. Consumption of Melaleuca charcoal by residents in two major conurbations close to PA (Soanierana Ivongo and Sainte Marie) increased from 0% in T0, to 10% in Y1, to 20% in YR2 and 30% in YR3 compared to charcoal of native species

So far, no survey has been carried out. We expect to evaluate this indicator as soon as possible in YR3.

3.4 Monitoring of assumptions

Outcome: A self-sustaining approach to the use of IAS is launched that demonstrably reduces the threat of Melaleuca at Pointe à Larrée PA while providing fuel-wood and income for local people

Assumption 1 : Focused and on-going exploitation of Melaleuca for charcoal followed by hand removal of young plants (unsuitable for charcoal production) will significantly reduce the abundance of this species with consequent rewetting of marsh habitats and increased growth of native swamp trees hitherto suppressed by dense stands of this species.
Comments: This assumption is true if time is invested to uproot all stems. According to our observation on the ground, in areas where the work is done thoroughly, the number of new recruits is much reduced. On the other hand, if the roots are not properly removed, the decline in abundance of the species will be compromised.

Assumption 2: While it is more time consuming to make charcoal from Melaleuca (because it is necessary to remove a thick layer of spongy bark) compared to native trees, this obstacle can be largely mitigated by providing access to bark-removing equipment and facilitating access to more lucrative markets for "green charcoal"
Comments: Now, we decided not to provide a machine for bark-removing because of increase of price of fuel, but bark can be removed quite effectively using axe and machete. In any case, the comparison that must be made is between time investment in processing Melaleuca and investment in garnering submerged trees from the marshes – which is currently a major source of wood for charcoal production. This latter activity is very time consuming. So, this assumption can be retained for the moment because the raw materials of other species, particularly native species, have become rare and the price of green charcoal of Melaleuca is still remunerative.

Output1. *Melaleuca* eliminated from high priority restoration zones within the PA thereby enhancing natural regeneration

Assumption 1: It is possible to eliminate this species from defined areas of the PA by a combination of exploitation for charcoal followed by repeated cycles of compensated hand removal of young plants. Repeated removal of seedlings will be necessary because this species germinates freely from a soil seed bank.
Comments: This is true. After a second removal cycle, regrowth is much reduced, and we believe that after a third intervention, the plant will disappear completely. However, the very long duration of floods (eight months in the year) during which Melaleuca regeneration can occur unhindered presents a problem for control. To make the method truly effective, we will intensify removal during dry season.

Assumption 2: Single women are considered a vulnerable group, unemployed and if their security is assured in the forest, they can actively participate in the implementation of the project
Comments: This is true. Security within the forest can be assured even in the forest by asking them to work in groups.

Output 2. *Melaleuca* charcoal produced preferentially by local people and accesses lucrative markets with livelihood benefits for locals

Assumption 1: Appropriate sustainable technologies can be identified elsewhere in the World and introduced to Madagascar to effectively process *Melaleuca* trees despite its very thick spongy bark.
Comments: Expertise exists in Madagascar, effective for making green charcoal from Melaleuca. The removal of spongy bark no longer constitutes an obstacle for exploitation. Our recent exchange visit to Benin allowed us to discover the very promising Casamance carbonization technique. Apparently, this technique is more cost effective compared to the MATI technique. Also, the collection of pyroligneous liquid is an added value for charcoal producers.

Assumption 2: Melaleuc*a* charcoal performs well in traditional and improved charcoal stoves and lucrative commercial markets can be identified and accessed for “green” charcoal by motivated business team.
Comments: For production, the hypothesis was verified true. Improvements in techniques for charcoal production have significantly improved the yield of green charcoal. Similarly for sale, the current price of green charcoal is better on local and regional market, compared to other alien invasive species such as Acacia, Grevillea whose abundance is comparable to that of green charcoal of Melaleuca.

Assumption 3: If Melaleuca charcoal is lucrative as we plan it to be, *Melaleuca* within the PA may become rare and uneconomical to exploit. While this is a good result for local biodiversity but be assume that value chain associated with this activity can continue to operate by exploiting the large populations of this plant existing outside of the PA. In these zones, if seedlings are not removed, then the exploited populations will quickly regenerate.
Comments: This assumption is true. In addition, if the plant is not uprooted, the regrowth comes back very quickly and this allows the charcoal burners to continue their activity. But this is not really the objective of the project, we rather want to eliminate the plant where it grows. With an estimated 500Ha of area invaded by the species at Pointe à Larrée, the Cooperative will have enough raw materials at least for 10 years.

Output 3. Melaleuca charcoal appreciated by urban populations and product sale strategy supported sustainably

Assumption 1: While charcoal produced from certain native trees will likely be preferred by local people over Melaleuca charcoal (because they are familiar with using the former and also because has a greater energy production per unit volume), legal access to wood of native trees is now non-existent and therefore *Melaleuca* charcoal will become an acceptable alternative.
Comments: Assumption is retained, although volume of Melaleuca's green charcoal at the market is still limited, feedback and loyalty of consumers are positive.

Assumption 2: Poor governance and management of the cooperative could induce tension between members and compromise the sustainability of the project but such tensions can be effectively reduced by providing training cascades, and effectively applying the manual of procedure (with periodic supervision from the services concerned and the sanction measures in the case of non-compliance with internal rules)
Comments: This assumption is true. According to the diagnostic results (SWOT), for almost 10 years, the Cooperative was only moderately active because of a lack of technical support and administrative capacity. Now, through our interventions, the situation is much improved : when we launched this the Cooperative had twenty members, but now this number has risen to 70 active members in YR1, to becomes 114 member in YR2, of which 44 are charcoal producers. One of the important factors is the equitable distribution of profits, stipulated in the manual of procedure, the profit which a member receives is based on his personal investment (in terms of time) in operations.

Assumption 3: The Pointe à Larrée area is a zone frequently impacted by cyclones could interrupt the supply of stocks to places of sale, a supply plan will thus be reinforced during the dry seasons to avoid product shortages during bad times.
Comments: The production volume in YR2 does not allow this hypothesis to be verified. Until now, all production is sold via canoe even during periods of flooding. This assumption will be better verified in YR3.

Output 4. Promising model of a new relationship with IAS demonstrated to land managers (including PA managers) and public awareness on IAS (threats and opportunities) increased

Assumption 1 : High rates of illiteracy and conservatism (e.g use of charcoal from native species) may slow down behavioral change and diminish popular appreciation of “green” charcoal but, the importance of these factors will be diminished through a robust program of popular communication using simple key messages carefully crafted for each target group.
Comments: This assumption will be better verified once sales operations is scaled-up during YR3.

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

Overall, the project has contributed to improving the management of the protected area by increasing popular participation in governance and management. In the application the expected impact was stated as: “The ecosystems of the Pointe-à-Larrée PA are restored to a more natural condition while local people obtain needed fuel-wood and access improved livelihoods from “green” charcoal”.
In terms of biodiversity conservation, there has been a clear reduction of threats on natural resources related to charcoal production. Compared to the baseline of 240 trees felled/year before the Project, in YR1, as well as YR2, there was a decrease of 67%, ie 77 trees were felled. During the patrols, it is observed that charcoal burning is not the only threat that has reduced but also there was less occurrence of slash and burn cultivation, timber exploitation, wildfires, and hunting of wild animals. (Evidence 3.5 Impact, table6)

Regarding poverty reduction, it is still too early to detect the anticipated the real impact of the project because we are still phase of scaling up of sale. The impacts are expected from the YR3 of the project onwards when more charcoal producers will be engaged, and the cost of charcoal will be reduced and the availability increased for consumers.

4. Project support to the Conventions, Treaties or Agreements

Madagascar's National Biodiversity Strategy and Action Plan (NBSAP) takes into account several international conventions to which this project contributes to their implementation:

1) Convention on Biological Diversity (CBD) (ratification in Madagascar: decree n°95-695 of 03 November 1995). Article 8 (h) "to prevent the introduction, control or eradicate those alien species

which threaten ecosystems, habitats or species". For this convention, objective 9 of Madagascar's NBSAP has defined four main actions of which this project contributed to two:

-Action 2): *Develop and implement a National Strategy and programs to combat the invasive species, emphasizing prevention and control while involving the local community in these processes*. During YR1 and YR2, a plan for Melaleuca eradication was developed and largely implemented with local communities. There are 82 people involved in control work in YR1, increasing to 187 in YR2
-Action 4) *Encourage research for the valorization of invasive species and set up dissemination/extension programs*. The transformation of the species' wood has begun, a priori for the benefit of local communities (as a new source of income) and more broadly for the population of the region thanks to green charcoal. This product is new to the region and the success of the operations will be disseminated across the Island and beyond.

2) Ramsar Convention on Wetlands (ratified in Madagascar 24/03/98, Resolution VII.14, 7th Meeting in 1999) deals specifically with promoting adequate measures on the prevention, eradication and control of invasive species in favor of wetland conservation.
Melaleuca is recognized for its ability to dry water sources through high evapotranspiration and altered hydrology. During YR11 and YR2, 38 Ha of invaded plots within the PA were freed from invasion and restoration was launched at Pointe à Larrée PA by planting an endemic tree species. This seems a modest surface, but this is a unique intervention for Madagascar and a starting-point for future more substantive actions. We will add additional native species to the restoration zone in YR3. This work will restore wetlands and their ecological functions thereby contributing to Goal 1: "Addressing the Drivers of Wetland Loss And Degradation" and Target 2: "Water use respects wetland ecosystem needs for them to fulfill their functions and provide services at the appropriate scale inter alia at the basin level or along a coastal zone" and Target 4: including "priority invasive alien species are controlled or eradicated". It is expected that ecological restoration will improve the habitats of Pointe à Larrée's native bird and fish species.

3) Madagascar has also ratified the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Climate Agreement according (Law No. 2014-022 of 10/12/14 ratifying the Doha Amendment to the Kyoto Protocol and Law No. 2016- 019 of 10/08/16). This project contributes to this Convention by reducing the risk of fire spreading into the forest (because Melaleuca is a highly flammable pyrophile). In addition, tree planting and a reduction in the cutting of native trees will contribute to the National Plan for Adaptation to Climate Change (PANLCC) of Madagascar, Axis 2: "Implement mitigation actions for sustainable development". For the Energy sector: the project contributes to Strategic Priority1: by promoting improved carbonization techniques - in line with the New Energy Policy in which the plan specifies the importance of efficient transformation techniques such as the production of "green" charcoal coming from 100% legal and sustainable resources, carbonization kilns with a yield greater than 20%. In this context, the application of Casamance kiln reveals importance insofar as it will allow on one hand to reduce greenhouse gas emissions (CO_2) by condensing smoke with pyroligneous liquid derivatives and increase in yield of production; finally, a contribution is made to the Forest sector: Strategic Priority1: by implementing forest restoration program and supporting the sustainable management of forests..

1) The achievement during the two last years tend towards the approach of SDGs (ratification in 1995) is mainly expressed in Chapter 4 of the NBSAP (Protecting and managing the natural resource base of economic and social development). The implementation of this convention is multifaceted, encompassing several sectoral programs in the Poverty Reduction Strategy Document. So, valorizing Melaleuca for "green" charcoal mainly contributes to promoting lucrative activities without compromising the integrity of ecosystems, equitable sharing of benefits arising from utilization of natural resources, and promoting equal rights between women and men.

5. Project support for multidimensional poverty reduction

With GNI per capita 490USA, Madagascar is one of the poorest countries in the world (https://www.worlddata.info/developing-countries.php). However, the country is listed among the biodiversity hotspots (CEPF, 2014). For several decades, the country has suffered greatly from the effects of severe climatic events such as cyclones, floods and drought, which have become increasingly severe in recent years. The impact of these events is to accentuate poverty, especially at rural areas, causing impoverished people to resort to the plunder of natural resources.

At Pointe à Larrée, these effects are exacerbated by biological invasions, including the spread of the pyrophilic species *Melaleuca quinquernervia*. An effective solution to solve this problem is to be pragmatic, based on a real motivation of the impacted communities to find solutions. With this project, the targets are local communities around the Pointe à Larrée PA. To tackle this problem, they must be fully involved and motivated to participate. In the region, charcoal production has long been practiced and, faced with the scarcity of raw materials, the proposal to use Melaleuca was welcomed. For this purpose, the number of beneficiary families is quite modest at 100 families with a sustained result of a 25% increase in income, yet the environmental effects are expected to be significant, allowing thousands of trees to be saved each year. To benefit more people, this project also promotes other activities allowing families to have basic needs such as food, essential products, schooling of children through compensation received from daily employment. To do this, we paid directly to the participants a fair sum of US$2.5 per person, while the national minimum wage is less than US$2. With an average compensation of US$50/month/person, this will cover family expenses. If within a family there are more members participating, this figure increases two or three times depending on the number of people participating.

The real development activities to promote with this project turns around individual investment in the conversion of Melaleuca into charcoal. The cooperative was created in order to facilitate and make profitable the individual investments of the members. According to the trial that we conducted with the charcoal producers, an usual charcoal oven produces around 20 bags for a period of one week, or 80 bags/month. With the current payment of green charcoal of US$1.7 a bag, a family could earn on average US$142/month.
To increase this potential for Melaleuca charcoal, during the two last years of the project, opportunities have been provided to the cooperative allowing them to overcome obstacles, among others:
-Formalization of the structure to allow them to sell the products according to the regulations
- -Strengthen technical skills through different training topics.
-Equipment necessary to facilitate sales operations (warehouse for storing produce and a boat for transport) as well as tools for optimizing charcoal production yield.
- Mini kubota (small tractor) for transporting produce by land
- Start-up fund so that cooperative members can start their business activity.

We believe that these elements are vital for a sustainable development approach based on investments individually and collectively. After several months of sensitization, the number of beneficiaries has increased gradually and they are ready to invest more in the project.

6. Gender Equality and Social Inclusion (GESI)

We have taken gender into account in the design and implementation of all activities. With reference to the table below, the proportion of women and men involved varies, depending on the nature of the activity. Overall, the participation of women in YR2 was 34.18% and that of men was 65.81%: little decrease of women participation on the project compared to YR1 (34.84% and 65.80%, respectively). In YR3, we will endeavor to facilitate and increase female participation in the implementation of activities. We realize that the participation of women is still low and further efforts remain to promote gender equality. It is important to point out here that single women are among the vulnerable group in the area, so they have been prioritized for activities that suit them. Also, irrespective of productivity, women have received the same compensation as men, i.e. a daily payment of $US2.5/day/person

Table1 : Proportion of women and men involved in activity implementation

Activity	Number of participants	Women	Men
Community forest patrols	[redacted]		
Quarterly participatory transect monitoring			
Removing Melaleuca			
Cooperative membership			
Training on cooperative management and establishment of contract			
Training on financial education			
Training on leadership and good governance			
Total			
Pourcentage (%)		**34.18%**	**65.81%**

Please quantify the proportion of women on the Project Board[1].	18% (4/22) women and 82% (18/22) men. For this project, the Steering committee of Pointe à Larrée PA, composed of 22 members
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[2].	25% women (1 out 4)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	X
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

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

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

7. Monitoring and evaluation

During YR2, four bi-monthly meetings of partners were scheduled to monitor the progress of activities and especially to seek synergies and resolve blockages with the participation of the four partners (08/05/2023; 07/07/2023; 30/11/2023; 05/12/2023). This provision was agreed by partners and approved in the Memorandum of Understanding in order to adjust the project by fine-tuning measures to alleviate blockages noted by the partners. So far, two main blockages were treated:

• Delay in production of green charcoal: until the end of YR1, we only produced 0.7tonnes, so special measures were taken by adding another production site in Andrangazaha where there is a high production potential;

• Delay in business plan production: partners organized themselves to ensure graduate coaching with a very specific timetable.

• Excessive flooding in the carbonization areas: it was decided to locate two carbonization locations per production site, the second location of which must be at a higher level where work can continue during periods of flooding.

In addition, two participatory monitoring were implemented, led by RDESD (April 2023 and march 2024). This monitoring allowed the technical partners on the one hand to observe the situations on the ground and make recommendations in order to improve the situation and achieve the objectives (Evidence Activity 3.17, figure19, 20).

8. Lessons learnt

As mentioned, the uniqueness of this project is that it is innovative at several levels. The target communities well understood the challenges of producing charcoal from Melaleuca (time consuming) and no one would have dared to pursue such a venture without the support that we, through DI, have provided: impoverished people cannot take risks!. This understandable reticence among locals was the cause of the initial delay in attracting participants. Therefore, we strongly recommend for such innovative projects, that project partners should allocate appropriate time for sensitization – requirement that was not adequately foreseen for this project. This work was pursued even into YR2. There is now a clear improvement in the situation with an increase in the number of charcoal producers, an increase in motivation which leads to individual commitment to the project. Also, providing support such as equipment, capacity building and tools significantly contributed to the motivation of members.

The current strength of the project is also due to the implication of different government's technical partners. . They are motivated and their voices are respected by locals because they are State Representatives. In addition, they all have strong and complimentary technical capacities and help guide the project regarding legislation. Although our partners are multidisciplinary (from four different fields), there is always a space for exchanges oriented towards the common and shared objective. The project gains strength as well from the approach that actions or decisions taken within the context of the clauses of clear MoU. In terms of collaboration, so far we have never had a case where there is a misunderstanding between partners. For this reason, we would recommend those seeking to implement similar projects should:

- prioritize good internal communication within the team as well as with other project stakeholders to achieve mutual understanding;
- explicitly state the tasks and responsibilities of each partner in a written framework and allocate adequate resources for implementation;
- for innovative projects, promoters must be ready to provide solid technical support and adequate equipment for project participants; and
- have patience and a strategy of persuasion to introduce new ideas to rural people who, through their precarious livelihoods are adverse to risk taking..

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

Not applicable for this project because we did not receive feedback

10. Risk Management

An new risk was identified. This is the lack of a product storage warehouse at one of the production sites creates a risk of products disappearing through theft, non-compliance with national regulations and ultimately reducing the motivation of members and the quantity of charcoal production. The impact of this risk has been evaluated as severe. Indeed, we requested change request to Darwin Initiative with a positive response. Currently, we are building a new warehouse at the village of Andrangazaha where there is high potential for the production of green charcoal.

11. Sustainability and legacy

This project contributes to human development by two ways:

- At the level of administrations and managers, our partnership between the four public and private institutions provides a model of an effective consortium. It demonstrates how, in the real World, to synergize the knowledge and experiences of different disciplines to achieve a shared objective. For example, two public, environmental and commercial institutions have combined their expertise to support the sustained vision that : "*the ecosystems of the Pointe-à-Larrée PA are restored to a more natural condition while local people obtain needed fuel-wood and access improved livelihoods from "green" charcoal*". The same case for public-private cooperation between government institutions, MBG and LOVASOA.
- At beneficiaries level: within the Region, working examples are rare of how individual investment, within a cooperative framework, can result in individual gain. . The local people appreciate not only that the green charcoal product is new, but also that the structure with which they operate is innovative. This project allows all members to discover a new model of personal investment while enhancing a collective structure. The project also demonstrates to these people how beneficial links can be forged between biodiversity conservation, income generation and social cohesion.

We want that achievements of this project to be, on the one hand, extended to a larger scale, at regional and then national level, and, on the other hand, to be sustainable - beyond the end of the project: hence and effective cooperative must be set up to continue operations. To do so, it is vital that the members master and live the good practices of individual investment within a collective structure. To do this, we have already provided five training topics to improve personal skills to members so that they acquire a solid conceptual and applied base. In addition, the provision of materials and equipment coupled with training on how best these can be used and maintained, will facilitate the longevity of the project. From the first year until the end of the project, all the technical partners with the consultants have had the duty to accompany the member of the Cooperative so they will have the skills, knowledge and confidence to be able to continue this work beyond the end of the project.

12. Darwin Initiative identity

During YR2, we have strengthened actions so that the public knows much more about Darwin Initiative identity that supporting financially this project. This was done in different ways: social media, website, attendance records and payment slips contain the Darwin project logo. The two warehouses and the motor boat were inaugurated in YR2, as well as kubota, all of them have logo mentioning Darwin Initiative as Donor in the commemorative signs or stickers (Evidence 12.Darwin Initiative identity).

13. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	Yes, a new Safeguarding policy has been developed for MBG
Have any concerns been investigated in the past 12 months	No

Does your project have a Safeguarding focal point?	Yes: Vola Raharijaona, email [redacted]
Has the focal point attended any formal training in the last 12 months?	No
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 100% [3} Planned: 100% [3]
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. Several partners collaborate for the implementation of this project. Also, if the competence does not exist within the team, then we must recruit consultants. In the interests of good social conduct, ethics and respect Darwin Initiative's principles, from time to time, these principles are explained to partners as well as to consultants so that everyone understands and complies with them. At end of the YR1, we submitted to each Chief Fokontany (the lowest level of government) at village level, a copy book where anyone can record grievances, the contents of which are in the table below. So far, no complaints have been received from the Chiefs of Fokontany.	
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. Yes, MBG's new safeguarding policy will be fully applied at this site.	

14. Project expenditure

Table 2: Project expenditure <u>during the reporting period</u> (1 April 2023 – 31 March 2024)

Project spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total Darwin Costs (£) (Draft)	Variance %	Comments (please explain significant variances)
Staff costs	[redacted]			Because there is an extent of graduates' contract for developing business plan, instead of six month, it becomes nine months. So we plan to use budget of year3 to cover this overspent budget
Consultancy costs				Firstly, we used mostly co-funding to cover salary of Rangers. As sale's points are cancelled according to business plan, salaries for three persons (2 sale managers and one skipper have not been used).
Overhead Costs				
Travel and subsistence				Because the cost of international ticket flight to Benin was much higher than planned in the proposal. We plan to use budget of year3 to cover this overspent budget
Operating Costs				Because we started building warehouse at Andrangazaha which is planned in Year3. Considering the urgency of needs, we were obliged to build it sonner than planned.

Capital items (see below)	[redacted]			Budget for Year2 is the last budget for capital items for this project. All planned materials were purchases with lower prices. Afterwards, we planned to buy wood humidiMeter for charcoal burners, unfortunately, this material is not available in Madagascar.
Others cost	[redacted]	[redacted]	[redacted]	Because we did not start yet publicity of green charcoal
TOTAL	**68 110.53**	**73 904.55**	**-5 794.02**	

Table 3: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)	[redacted] from two co-fundings including [redacted] from Fonds Francois pour l'Environnement Mondial (FFEM) (Agence Française de Developpement) and [redacted] from Global Environment Facilities (GEF) :	0	
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)	0	0	

11. Other comments on progress not covered elsewhere

Following the market study in the business plan, it became evident that it was more strategic to work with charcoal resellers instead of setting-up sale's points in towns like Sainte Marie and Soanierana Ivongo. Currently, because transportation costs and house rental fees have increased, and with an eye on the long term sustainability of the project it, we believe this approach is more viable than trying to transport and sell the green charcoal ourselves through dedicated salespoints. Thus we , unanimously, it was decided to cancel the activity 3.7 (rental of two sale's points at Sainte Marie and Soanierana Ivongo).

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

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

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

Project summary	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
Impact **The ecosystems of the Pointe-à-Larrée PA are restored to a more natural condition while local people obtain needed fuel-wood and access improved livelihoods from "green" charcoal.**	Steps towards natural regeneration of forest and production of green of Melaleuca	[redacted]
Outcome A self-sustaining approach to the use of IAS is launched that demonstrably reduces the threat of Melaleuca at Pointe à Larrée PA while providing fuel-wood and income for local people.		
Outcome indicator O.1: By YR 1 *Melaleuca* eliminated over 10 hectare of the PA; by YR2 over 20 hectare; and by YR3 over 30 hectare.	Completed in YR2 (Same Evidence as Output1, Indicator 1.1 Figure 27)	To maintain the areas to be cleaned by pulling out saplings regularly and to prevent areas from recolonisation of Melaleuca
Outcome indicator O.2: By YR3 the growth of native trees in restoration zones is at least 10% greater than in control areas where large *Melaleuca* stems have not been eliminated.	No change, planned in YR3	
Outcome indicator O.3 By YR3, with easy access to Melaleuca charcoal for local people, the number of infractions within the PA for exploiting native trees for charcoal has fallen by 50% compared to T0	Towards to achievement (67% of decrease compared to baseline) (Same evidence as 3.5 Impact, table6)	To continue daily patrols by Rangers and community members
Outcome indicator O.4: Income from charcoal exploitation increased by 25% for 30 charcoal makers in Y1, 60 charcoal makers in Y2 and 100 in Y3 compared to zero as baseline	Income of charcoal produced increased to 14% (Same Evidence as Activity 3.6, table3)	To strengthen charcoal production and sale in YR 3
Outcome indicator O.5.: Consumption of Melaleuca charcoal by residents in two major conurbations close to PA (Soanierana Ivongo and Sainte Marie) increased from 0% in T0, to 10% in Y1, to 20% in Y2 and 30% in Y3 compared to charcoal of native species	Insignificant (less than 1%) (Same Evidence as Activity 3.6, table3 compared with data records from market study).	Intensify green charcoal production and accelerate availability of green charcoal for consumers
Output 1 *Melaleuca* eliminated from high priority restoration zones within the PA thereby enhancing natural regeneration		

Output indicator 1.1: By YR1 study published identifying high priority zones for restoration through the elimination of Melaleuca	Completed (Evidence output1, Figure 27)	
Output indicator 1.2: By YR 1 adult stems of Melaleuca (stem dbh >5cm) eliminated over 10 hectare; by YR2 over 20 hectare and by YR3 over 30 hectare.	Completed (the same evidence output1, Figure 27)	
Output indicator 1.3: By YR1, 50, by YR2 100 and by YR3 150 women involved in removal of Melaleuca	Towards to achieved (80% in YR2) (YR2 (Evidence output1, Indicator 1.3)	To facilitate involvement of women in the project
Output 2. *Melaleuca* charcoal produced preferentially by local people and accesses lucrative markets with livelihood benefits for locals		
Output indicator 2.1. : By YR1 protocol demonstrated in "real world" conditions that enables charcoal to be produced from *Melaleuca* with no more than 15% loss of efficiency compared to charcoal produced from native trees (some loss of efficiency must be expected and this will be compensated by greater sale's price)	Completed with satisfactory yield	Continuing to optimize protocol by testing Casamance kiln in Madagascar
Output indicator 2.2.: In YR1, YR2 and YR3 respectively, 30, 60 and 100 charcoal producers obtained 25% increase in household income from charcoal (currently zero *Melaleuca* charcoal as baseline)	In progress: revenue increased estimated to 14% for five charcoal producers in YR2 (The same as Evidence Activity 3.6, table3)	To increase the number of beneficiaries and facilitating production of green charcoal
Output 3. Melaleuca charcoal appreciated by urban populations and product sale strategy supported sustainably		
Output indicator 3.1: Permits obtained to provide a legal context for the project to exploit and sell charcoal from *Melaleuca* – including definition of mechanism to ensure that the charcoal being sold is really from *Melaleuca.*	Ongoing: Regulations respected with permits (Evidence Output3, Figure 28)	To continue monitoring by forest administration to ensure that all charcoal producers follow instructions from technicians
Output indicator 3.2: Annually, 100% of charcoal produced by charcoal producers purchased by Cooperative and delivered to sale's point directly accessible to consumers	Ongoing: 100% of productions purchased and delivered to consumers (The same as Evidence Activity 3.6, table3)	To assist closely cooperative members to implement operations accordingly.
Output indicator 3.3: By Y1, two sale's points installed and functional in Soanierana Ivongo and Sainte Marie	Concealed: according to Cooperative's business plan, there is no needs to do this.	To reinforce collaboration with resellers by establishing contract for sale
Output indicator 3.4. Volume of charcoal sold by Cooperative of Melaleuca charcoal producers increases annually from zero at T0 to 20 tons by Y1, 40 tons by Y2 and 60 tons by Y3.	In progress: 3.5tones sold in YR2 (The same as Evidence Activity 3.6, table3).	To intensify production of green charcoal by increasing number of charcoal producers and to manage well start-up funds

Output indicator 3.5: Y2, a business plan and a manual procedure elaborated showing the overall strategy of the cooperative for the sustainability investment including the extension of investment areas	Completed	To start as soon as possible application by coaching cooperative members
Output indicator 3.6: From Y 1 to Y3, at least 10 Leaders of the cooperative trained on at least six themes relating to the management and governance of the cooperative	In progress: 5/6 topics provided for 12 Leaders (Same evidence as Activity 3.5, figure 11,12,13,14)	To catch up the last topic in the first quarter of YR3
Output 4. Promising model of a new relationship with IAS demonstrated to land managers (including PA managers) and public awareness on IAS (threats and opportunities) increased		
Output indicator 4.1: In YR1, YR2, and YR3 interested parties informed of the project and its progress by means of one dedicated website and bi-monthly social media posts.	In progress: Website created but just a few people are aware of it and social media posts not regularly	To inform public on the existence of website, regularly update the data on the website, to engage a member of staff to publish regularly on social medias.
Output indicator 4.2: In YR3 at least 10 land managers (including Protected Area Managers) visit Pointe-à-Larrée to evaluate project	No change, waiting YR3	
Output indicator 4.3: In YR3 one article describing and objectively evaluating the project will be published in a peer reviewed journal	No change, waiting YR3	
Output indicator 4.4: From Y2 to Y3, annually 20,000 people informed or sensitized of project results through four annual participations in local, regional, national celebration events, 24 annual radio broadcasts	Ongoing: in YR2 the target number of 20,000 people are informed on project (Same Evidence as Activity 4.4 and Activity 4.6).	To keep sensitising public by radio broadcast and other social medias

Annex 2: Project's full current logframe as presented in the application form

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: The ecosystems of the Pointe-à-Larrée PA are restored to a more natural condition while local people obtain needed fuel-wood and access improved livelihoods from "green" charcoal.			
Outcome: A self-sustaining approach to the use of IAS is launched that demonstrably reduces the threat of Melaleuca at Pointe à Larrée PA while providing fuel-wood and income for local people.	O.1 By YR 1 *Melaleuca* eliminated over 10 hectare of the PA; by YR2 over 20 hectare; and by YR3 over 30 hectare. O.2 By YR3 the growth of native trees in restoration zones is at least 10% greater than in control areas where large *Melaleuca* stems have not been eliminated. O.3 By YR3, with easy access to Melaleuca charcoal for local people, the number of infractions within the PA for exploiting native trees for charcoal has fallen by 50% compared to T0 O.4 Income from charcoal exploitation increased by 25% for 30 charcoal makers in Y1, 60 charcoal makers in Y2 and 100 in Y3 compared to zero as baseline O5. Consumption of Melaleuca charcoal by residents in two major conurbations close to PA (Soanierana Ivongo and Sainte Marie) increased from 0% in T0, to 10% in Y1, to 20% in Y2 and 30% in Y3 compared to charcoal of native species	O.1 Annual maps showing zones where *Melaleuca* eliminated (using GPS Unit) O.2 Measurements of changes in stem basal area of native trees annually in zones where *Melaleuca* controlled and control zones. O.3. Annual analysis of infractions within PA for production of charcoal from native trees recorded in ranger log books O.4 Survey using household notebooks recording the daily income from production and sale of Melaleuca charcoal from T0 to T3 O.5. Annual surveys of sales from a representative sample of charcoal sellers (resellers) in Soanierana Ivongo and Saint Marie.	-Focused and on-going exploitation of Melaleuca for charcoal followed by hand removal of young plants (unsuitable for charcoal production) will significantly reduce the abundance of this species with consequent rewetting of marsh habitats and increased growth of native swamp trees hitherto suppressed by dense stands of this species. -While it is more time consuming to make charcoal from Melaleuca (because it is necessary to remove a thick layer of spongy bark) new bark compared to native trees this obstacle can be largely mitigated by providing access to bark-removing equipment and facilitating access to more lucrative markets for "green charcoal"
Output1. *Melaleuca* eliminated from high priority restoration zones within the PA thereby enhancing natural regeneration	1.1 By YR1 study published identifying high priority zones for restoration through the elimination of Melaleuca 1.2 By YR 1 adult stems of Melaleuca (stem dbh >5cm) eliminated over 10 hectare; by YR2 over 20 hectare and by YR3 over 30 hectare.	1.1 Article published on-line showing map of zones within PA where: a) large stems of Melaleuca are abundant, and b) that were historically marshes or swamps. 1.2 Analysis of counts of number of individuals of *Melaleuca* per unit area in restoration zones and mapping of zones	-It is possible to eliminate this species from defined areas of the PA by a combination of exploitation for charcoal followed by repeated cycles of compensated hand removal of young plants. Repeated removal of seedlings will be necessary because this species germinates freely from a soil seed bank.

	1.3 By YR1, 50, by YR2 100 and by YR3 150 women involved in removal of Melaleuca	where the adult plant has been effectively eliminated. 1.3 Quarterly compilation and analysis of attendance records	-Single women are considered a vulnerable group, unemployed and if their security is assured in the forest, they can actively participate in the implementation of the project.
Output 2. *Melaleuca* charcoal produced preferentially by local people and accesses lucrative markets with livelihood benefits for locals	2.1. By YR1 protocol demonstrated in "real world" conditions that enables charcoal to be produced from *Melaleuca* with no more than 15% loss of efficiency compared to charcoal produced from native trees (some loss of efficiency must be expected and this will be compensated by greater sale's price) 2.2 In YR1, YR2 and YR3 respectively, 30, 60 and 100 charcoal producers obtained 25% increase in household income from charcoal (currently zero *Melaleuca* charcoal as baseline)	2.1 Published online report of research to quantify effort (intensity of labour multiplied by time) invested to produce one unit of energy from *Melaleuca* charcoal compared to the equivalent from charcoal produced from native trees 2.2. Annual analysis of household records of participating charcoal producers (i.e. within the Cooperative) showing volume of charcoal produced and income received by charcoal producers	-Appropriate sustainable technologies can be identified elsewhere in the World and introduced to Madagascar to effectively process *Melaleuca* trees despite its very thick spongy bark. -*Melaleuca* charcoal performs well in traditional and improved charcoal stoves and lucrative commercial markets can be identified and accessed for "green" charcoal by motivated business team. -If *Melaleuca* charcoal is lucrative as we plan it to be, *Melaleuca* within the PA may become rare and uneconomical to exploit. While this is a good result for local biodiversity but be assume that value chain associated with this activity can continue to operate by exploiting the large populations of this plant existing outside of the PA. In these zones, if seedlings are not removed, then the exploited populations will quickly regenerate.
Output 3. Melaleuca charcoal appreciated by urban populations and product sale strategy supported sustainably	3.1 Permits obtained to provide a legal context for the project to exploit and sell charcoal from *Melaleuca* – including definition of mechanism to ensure that the charcoal being sold is really from *Melaleuca.* 3.2 Annually, 100% of charcoal produced by charcoal producers purchased by Cooperative and delivered to sale's point directly accessible to consumers	3.1. Documents providing legal framework and the validation mechanism for this project. 3.2 Audits of transmission of annual purchase and sale of the cooperative 3.3. Annual sales accounts of *Melaleuca* charcoal from the two sales points 3.4. Audit of accounts of the cooperative 3.5. Annual reports and minutes of workshop for validation of the documents	While charcoal produced from certain native trees will likely be preferred by local people over Melaleuca charcoal (because they are familiar with using the former and also because has a greater energy production per unit volume), legal access to wood of native trees is now non-existent and therefore *Melaleuca* charcoal will become an acceptable alternative. - Poor governance and management of the cooperative could induce tension between members and compromise the sustainability of the project but such tensions can be effectively

	3.3. By Y1, two sale's points installed and functional in Soanierana Ivongo and Sainte Marie 3.4. Volume of charcoal sold by Cooperative of Melaleuca charcoal producers increases annually from zero at T0 to 20 tons by Y1, 40 tons by Y2 and 60 tons by Y3. 3.5. Y2, a business plan and a manual procedure elaborated showing the overall strategy of the cooperative for the sustainability investment including the extension of investment areas 3.6. From Y 1 to Y3, at least 10 Leaders of the cooperative trained on at least six themes relating to the management and governance of the cooperative	3.6. Minutes of the training, and evaluation of knowledge and skills acquired by the trainees immediately after the training and 6 months later	reduced by providing training cascades, and effectively applying the manual of procedure (with periodic supervision from the services concerned and the sanction measures in the case of non-compliance with internal rules) -The Pointe à Larrée area is a zone frequently impacted by cyclones could interrupt the supply of stocks to places of sale, a supply plan will thus be reinforced during the dry seasons to avoid product shortages during bad times.
Output 4. Promising model of a new relationship with IAS demonstrated to land managers (including PA managers) and public awareness on IAS (threats and opportunities) increased	4.1. In YR1, YR2, and YR3 interested parties informed of the project and its progress by means of one dedicated website and bi-monthly social media posts. 4.2. In YR3 at least 10 land managers (including Protected Area Managers) visit Pointe-à-Larrée to evaluate project. 4.3. In YR3 one article describing and objectively evaluating the project will be published in a peer reviewed journal 4.4. From Y2 to Y3, annually 20,000 people informed or sensitized of project results through four annual participations in local, regional, national celebration events, 24 annual radio broadcasts	4.1. Availability of webpage and count of number of social media posts. 4.2. Written evaluation of invited land managers to project including evaluation of the potential to complete a similar endeavour in their zone of intervention. 4.3. Publication of peer-reviewed article 4.4 Estimation of the number of people sensitized for each event organised or attended, and monthly estimation of people listening to the local radio according to the coverage area	-High rates of illiteracy and conservatism (e.g use of charcoal from native species) may slow down behavioral change and diminish popular appreciation of "green" charcoal but the importance of these factors will be diminished through a robust program of popular communication using simple key messages carefully crafted for each target group.

Activities that contribute to Output1:

1.1. Launch of project with full range of local stakeholders including: Regional launch, village meetings around PaL; radio broadcasts; courtesy visits with representatives of local government and decentralised technical services. Listen to feedback and address concerns.

1.2. Work with local government and decentralised technical services to provide a legal framework for this initiative

1.3 Work with Regional Direction of Environment and Sustainable Development (RDESD) to conduct research to develop annual prospections and developing exploitation plans and contract and specification clauses, map priority zones with PA for the elimination of Melaleuca (= restoration zones)

1.4. Research Manager (RM) and RDESD direct monthly members of the "green charcoal cooperative" (GCC) to the restoration zones and ensures exploitation protocols are respected.

1.5 Rangers ensure daily patrols to make sure none of the charcoal burners cut native species.

1.6 RDESD supports Rangers in law enforcement and control in the case of infractions

1.7 Federation Lovasoa (FL) organises, mobilises and plans intervention of community members for each Association COBA, removing seedlings and sapling of Melaleuca, tree planting.

1.8 Head Forest Policing (HFP) from Missouri Botanical Garden and FL direct three monthly participatory monitoring patrols to assess the cutting rates of native species within the PA

1.9 RM directs female members of the GCC in work to remove young plants of Melaleuca from restoration zones and pays them fair compensation for their work.

1.10 Assistant Project Manager (APM), RDESD conduct three-monthly monitoring for compliance with the clauses in the specifications of Melaleuca exploitation contracts.

Activities that contribute to Output2:

2.1. Study trip by PM and President of GCC to Indonesia to identify best practice for the production of charcoal from Melaleuca

2.2. Purchase tools to enable efficient conversion of *Melaleuca* into charcoal

2.3. PM conducts training workshops for members of GCC in best practice for the conversion of *Melaleuca* into charcoal.

2.4. PM and Development Manager (DM) coaches the charcoal producers and GCC in best practice for two first months

Activities that contribute to Output3:

3.1 Regional Direction of Industry, Trade and Consumption (RDITC) conducts diagnostic to identify strength, weakness, threat and opportunity

3.2. A small team of recent graduates in business (two graduates) and in accounting (two graduates) develop marketing strategy and business plan of the cooperative with assistance of RDITC

3.3 RDITC and a Consultant businessman coach graduates on developing marketing strategy and business plan

3.4 Workshop organised for all stakeholders to validate business plan, manual of procedure and internal rule of the cooperative

3.5 RDITC and Consultants conduct training the Leaders of the Cooperative on at least six topics.

3.6 GCC organises stocks of charcoal on site for transport, purchase charcoal from producers as start-up funds

3.7 GCC rents two sale's point (in Soanierana Ivongo and in Sainte Marie).

3.8 GCC hires two sale managers in Sainte Marie and in Soaniarana Ivongo and one skipper

3.9 GCC builds one warehouse at Pointe à Larrée for facilitating the marine route transportation from Pointe à Larrée to sale's points and extend existing warehouse close to national road.

3.10 GCC purchases a motorboat and equipment for provision of supply from Pointe à Larrée to sale's points

3.11 Monthly, RDESD validates that charcoal for sale originates entirely from *Melaleuca* and conducts control of stock in the warehouse

3.12 RDITC delivers agreement of sale

3.13 GCC and DM implement marketing strategy for sale

3.14 DM conduct surveys for assessing the needs of consumers (risk mitigation activity).

3.15 DM coaches GCC for implantation of business plan

3.16 RDITC, following each training session, conducts monthly technical monitoring for the two first months, afterwards three-monthly monitoring to continue coaching

3.17 All partners and local authorities conduct half-yearly participatory monitoring of the project progress

3.18 PM develops collaboration with businesses for shipment and sale

Activities that contribute to Output4

4.1. Consultant webmaster creates website for this project that will act both as a focal point for communicating progress with interested parties (including results of studies) and also as a method of attracting buyers

4.2. PM provides bimonthly updates of Project' progress on social media

4.3 PM and DM organises monthly broadcasts on local radio to explain about the threats and opportunities of IAS and also to provide more detail about this project

4.4 FL organises annually a festival of biodiversity including exhibition of charcoal of Melaleuca and some documents for sensitization

4.5. PM, APM and partners attend regional and national events (e.g. World Environment Day, World Women's Day, economic fairs) to communicate about the project

4.6. Workshop for interested parties at the end of the project to share information on methods, inputs, outputs, overall results, and issues arising.

4.7. Representatives of ten of the institutions attending the workshop invited to make a site visit so that they can properly evaluated the project and consider whether this approach can be applied in some form at the sites where they work.

4.8. Peer-reviewed article published describing the project approach, describing its results and evaluating conditions for wider application.

Annex 3: Standard Indicators

Table 1: Project Standard Indicators

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	Number of people from key national and local stakeholders completing structured and relevant training	Number of local people completing training on six topics related to management structure, Leadership, commercialisation, financial education, Casamance kiln, regulations of timber exploitation	People Proportion	Men/women	51/5	20/1		71/6	60/10
DI-A03	Number of local/national organisations with improved capability and capacity as a result of project.	Number of cooperative with improved capability and capacity as a result of project	Number of organisations	Organisation type	1	1 (the same structure as YR1)		1	1
DI-A06	Number of people with improved access to services or infrastructure for improved well-being	Number of people with improved access to warehouse for storage of green charcoal product, boat for transporting green charcoal products	People	Men/women	61/9	6/1		67/10	80/20
DI-A07	Number of government institutions/departments with enhanced awareness and understanding of biodiversity and associated poverty issues	Number of technical services benefiting cross-training and understanding of biodiversity and associated poverty reduction	Government institutions	Govt. Organisation Type	2	8		10	2
DI-B01	Number of new/improved habitat management plans available and endorsed	Number of ecosystems having research plan for removal of Melaleuca and for ecological restoration post-control endorses by government service	Number	Ecosystem	2	0		2	2
DI-B02	Number of new/improved species management plans available and endorsed	Number of invasive species having management plan for control	Number	Typology of species management plan	1	0		1	1

DI-B04	Number of new/improved sustainable livelihoods/ poverty reduction management plans available and endorsed	Number of sector to be developed available and endorsed	Number	Typology of sustainable livelihoods/ poverty reduction management plans.	1	0		1	1
DI-B10	Number of individuals / households reporting an adoption of livelihood improvement practices as a result of project activities	Number of people gaining extra income from day labour from removal of Melaleuca	People	Men/women	42/40	107/80		147/120	75/75
DI-B11	Area identified as important for biodiversity	Area where pressure from illegal charcoal burning reduced in Protected area and buffer zone by community daily patrol	Area (hectare)	Habitat	3000	3000		3000	3000
DI-C12	Social Media presence	Number of project-themed posts	Number	None	1	5		6	20

Checklist for submission

	Check
Different reporting templates have different questions. and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund. type of report (i.e. Annual or Final). and year) and **deleted the blue guidance text** before submission?	✓
Is the report less than 10MB? If so. please email to BCF-Reports@niras.com putting the project number in the Subject line.	✓
Is your report more than 10MB? If so. please discuss with BCF-Reports@niras.com about the best way to deliver the report. putting the project number in the Subject line.	
Have you included means of verification? You should not submit every project document. but the main outputs and a selection of the others would strengthen the report.	✓
Do you have hard copies of material you need to submit with the report? If so. please make this clear in the covering email and ensure all material is marked with the project number. However. we would expect that most material will now be electronic.	✓
If you are submitting photos for publicity purposes. do these meet the outlined requirements (see section 16)?	✓
Have you involved your partners in preparation of the report and named the main contributors	✓
Have you completed the Project Expenditure table fully?	✓
Do not include claim forms or other communications with this report.	