2019 Plan Vivo Annual Report
Tahiry Honko
Community-led mangrove carbon project
Southwest Madagascar

Submitted by: Blue Ventures
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Acronyms and glossary

CSE: Monitoring and Evaluation Committee
DBH: Diameter at breast height
Dina: Local laws used by communities at village level
Fokontany: Smallest unit of administrative level in Madagascar
Foibe: Executive committee of the Velondriake Association
Gendarmerie: Malagasy military police
IHSM: Institute of Fisheries and Marine Science, University of Toliara
IORA: Indian Ocean Rim Association
LMMA: Locally managed marine area
MGA: Malagasy ariary, local currency
MNP: Madagascar National Parks
NGO: Non-governmental organisation
PES: Payment for ecosystem services
REDD+: Reducing emissions from deforestation and forest degradation
SIIP: Information System for REDD+ Initiatives and Programme
USAID: United States Agency for International Development
WCS: Wildlife Conservation Society
WIOMSA: Western Indian Ocean Marine Science Association
WWF: World Wildlife Fund

Summary

Project overview	
Reporting period	January 1st, 2019 to December 31st, 2019
Geographical areas	Bay of Assassins, Rural Commune Befandefa, District Morombe, Region Atsimo Andrefana, Southwest Madagascar
Technical specifications in use	Prevention of ecosystem conversion Improved land use management Ecosystem restoration

Project indicators	Historical (2018)	Added/Issued this period (2019)	Total
No. smallholder households with PES agreements (where applicable)	0	0	0
No. community groups with PES agreements (where applicable)	10	0	10
Approximate number of households) in these community groups (if known)	895	0	895
Area under management (ha) where PES agreements are in place	1,393	0	1,393
Total PES payments made to participants (USD)	0	0	0
Total sum held in trust for future PES payments (USD)	0	0	0
Allocation to Plan Vivo buffer to date (tCO_2)	0	0	0
Saleable emissions reductions achieved (tCO_2)	1,371	1,371	2,742
Unsold Stock at time of submission	0	0	0
Total Unsold Stock (PVC)			0
Plan Vivo Certificates (PVCs) issued to date[1]			0
Plan Vivo Certificates requested for issuance (2019 Vintage)			0
Plan Vivo Certificates available for future issuance			2,742
Total PVCs issued (including this report)			0

[1] Please note credits were approved, but not issued, due to policy blockages described in section 'A2 Successes and challenges'

Part A: Project updates

A1 Key events

- **Official launch of the Tahiry Honko project**

The ceremony of the official launch of the Tahiry Honko project took place on 25th September 2019 in Ankindranoke, a village in the project area. The representatives from the REDD+ National Bureau, local and regional authorities, partners and communities were invited and attended this festivity. Tree planting was organised and 482 native terrestrial species and fruit trees were planted during the event.

Celebration of the official launch of the Tahiry Honko project

- **Training workshop on blue carbon**

The Tahiry Honko Project Coordinator was invited to present the Tahiry Honko project at a training workshop in Toliara organised jointly by the Institute of Fisheries and Marine Science of the University of Toliara, Madagascar (IHSM) and Indian Ocean Rim Association (IORA) on "Improving knowledge for research on blue carbon in the Western Indian Ocean: Focus on seagrass and mangrove ecosystems". The workshop was held from 29 April to 04 May 2019 and included participants from the Commonwealth of Australia, People's Republic of Bangladesh, Union of Comoros, Republic of Indonesia, Islamic Republic of Iran, Republic of Madagascar, Malaysia, Republic of Mauritius, Republic of Seychelles, Federal Republic of Somalia, Democratic Socialist Republic of Sri Lanka, and the Kingdom of Thailand.

- **Workshop to strengthen the mangrove forest patrol and monitoring and evaluation committee (CSE) capacity building**

A workshop organised by Blue Ventures to form a strategy to strengthen community-based ecological monitoring, surveillance and control was held on the 20th of August 2019 in Andavadoaka (centre of the Velondriake locally managed marine area (LMMA)). The concerned stakeholders in attendance included local and regional authorities (Befandefa mayor, fokontany presidents, head of Morombe District, representatives from the regional departments of fisheries, environment and forestry, police and gendarmerie), NGOs partners (Wildlife Conservation Society (WCS) and Madagascar National Parks (MNP)), LMMA association leaders, Dina Enforcement committees and the CSE local forest patrol teams. During the workshop a strategic document defining the roles and responsibilities of each stakeholder in improving the security of natural resources was created and signed by all stakeholders. Additionally, the CSE local patrol teams were officially recognised by authorities to carry out ecological monitoring, surveillance and control as stipulated by each LMMA's individual dina and local law. Following this workshop, a two-day capacity building training was held for the 14 CSE on the 28th and 29th of August 2019 in Tampolove (a Tahiry Honko village). The CSE were given training on the use of GPS devices and maps, monitoring techniques for Tahiry Honko management areas and planted mangroves.

Meeting of the key stakeholders and training of the CSE

- **Western Indian Ocean Marine Science Association (WIOMSA) symposium in Mauritius**

Research conducted on the participatory planning of Tahiry Honko community-based mangrove carbon project was presented by the Project Coordinator in a poster at the 11th WIOMSA symposium held in Mauritius in 2019. The research highlighted the participatory approaches used to develop mangrove management plans with the local communities in the ten villages of the Bay of Assassins involved in the Tahiry Honko Plan Vivo project.

The Tahiry Honko Project Coordinator presenting a poster at the 11th WIOMSA symposium held in Mauritius in 2019

- **Mangrove symposia at the 56th Annual Meeting of the Association for Tropical Biology and Conservation**

Mangrove symposia aiming to share experiences, lessons learned and challenges on mangrove management and governance as well as on mangrove carbon projects in Western Indian Ocean were jointly organised by Blue Ventures, World Wildlife Fund (WWF) and USAID Hay Tao during the 56th Annual Meeting for Association for Tropical Biology and Conservation held in Antananarivo, Madagascar from July 30th to August 4th 2019. The achievements and lessons learned from Tahiry Honko were shared and presented during these mangrove symposia.

- **Virtual tour of Tahiry Honko project area**

A virtual tour took place within five villages (Befandefa, Tampolove, Vatoavo, Ankindranoke, and Andalambezo) at the project area from 22nd to 28th September 2019. This aimed to produce materials (360° photo and video) for awareness raising on the Tahiry Honko project.

- **Training workshop on Information System for REDD+ Initiatives and Programme (SIIP)**

The Tahiry Honko project coordinator and the field technician attended a two-day training workshop on SIIP, which was organised by the REDD+ National Bureau. The SIIP is an online software created by the REDD+ National Bureau to officialise and manage the information on the REDD+ programme and initiatives in Madagascar. The objective of the workshop was to consult the REDD+ actors on the content of the software in order to maximise utility.

Participants at the training workshop on SIIP in Mahajanga, northwest Madagascar

A2 Successes and challenges

Successes

The Tahiry Honko project was officially launched in September 2019 (already stated at the key event section above).
The Project Coordinator, Cicelin Rakotomahazo, has successfully published a peer-reviewed paper describing the participatory planning process adopted to implement the Tahiry Honko project.

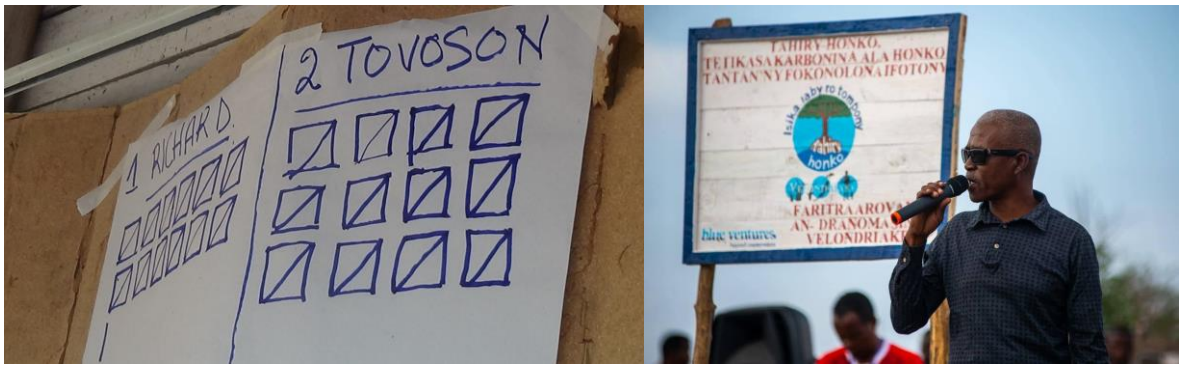
Challenges

Referring to the technical specification, we assumed that the sustainable harvest quota for mangrove wood would have been in force in 2019. However, the revision of the text prohibiting the mangrove harvest in the country intended to allow the practice of this sustainable harvest quota was delayed. This issue has been discussed during the national workshop in Toliara (Province in the southwest of Madagascar where the project is located) in July 2019, organised jointly by the Ministry of Environment and Fishery who are both the key institutions involved in mangrove governance. This national workshop resulted in the signed *"commune declaration"* between the two ministries in November 2019. This commune declaration stated that these two ministers are committed to address the sectoral issues including but not limited to the revision of the incoherent text in mangrove management.
Blue Ventures and the regional forestry department organised village outreach tours to provide updates to the community about the national regulations. The Velondriake management committee also took responsibility for undertaking outreach for reinforcing and refreshing the local regulation or *Dina* about the mangrove management.
However, the results of monthly infractions monitoring carried out by the CSE have shown that the number of mangrove cut stumps remains within the quotas (see Section E1).

Although the Tahiry Honko 2018 annual report demonstrating emission reduction generated by the project was approved by the Plan Vivo Foundation, the delay in official release of the REDD+ decree regulating the sale of verified carbon credits in Madagascar prevented the project from requesting issuance, and continues to delay the sale of the Tahiry Honko carbon credits. Reasonably so, this has proved unsettling for the community members who have spent years protecting and managing their mangroves, having already decided on their benefit sharing scheme and officially launching the project. To address this challenge, Blue Ventures will advance funds to the association in order to pay the school fees of all of the school children enrolled at the state and catholic primary schools in the Tahiry Honko project villages, as prioritised in their benefit sharing scheme.

A3 Project developments

In July 2019, the Velondriake Association Presidential and committee member elections were held in the 33 villages of the Velondriake LMMA. The elections resulted in 86 management committee members, of whom 21 were then elected to the executive committee representing the three sub-association groups (North, Centre and South). The mandate of these elected members is three years. Mr. Richard Badouraly of Tampolove was re-elected as president of the Velondriake Association.



Vote tallying for the President of the Velondriake Association (left) and Richard Badouraly, the President of the Velondriake Association speaking at the Tahiry Honko launch ceremony (right)

A4 Future Developments

No future development is currently planned.

Part B: Project activities

B1 Project activities generating Plan Vivo Certificates

Table B1: Project activity summary

Name of technical specification	Area (Ha)	No smallholder households	No Community Groups
Prevention of ecosystem conversion	257	895	10
Improved land use management	973	895	10
Ecosystem restoration	163	895	10

B2 Project activities in addition to those generating Plan Vivo Certificates

- ***Plantation of terrestrial native and fruit trees***

Four terrestrial nurseries with over 3,500 seedlings of native terrestrial and fruit trees were established in four villages in and outside of the project area.

Village	Group	Date	Species	Total seedling
Befandefa	Community	February 2019	*Cordyla*	2,990

			madagascariensis	
Ampasilava	Conservation club	November 2019	*Cordyla madagascariensis* and fruit trees	514
Tampolove	Conservation club	December 2019	Fruit trees	24
Ankindranoke	Beekeepers	December 2019	Fruit tree	129
			TOTAL	**3,657**

In 2019, 2244 terrestrial tree species (*Cordyla madagascariensis)* and 617 fruit trees (mangoes, guava and papaya) were planted by different community groups in the project areas (school children, women's association and beekeepers).

Tree nursery (left) and planting (right)

- ***Mangrove beekeeping***

Internal rules and regulations developed by the beekeepers to govern the beekeeping activity were validated by the beekeepers and Velondriake executive committee in June 2019. These rules and regulations stipulate that beekeepers must participate in mangrove reforestation events, respect the Velondriake Dina (including Tahiry Honko related protection) and establish and oversee terrestrial and fruit tree nurseries. In November 2019, 12 beekeepers from three villages in the project area (Agnolignoly, Ankindranoke and Befandefa) participated in an exchange visit to an apiculture project in Morombe (town north of the project area) in order to gain practical experience and learn best practices from local experts.

Sample for mangrove honey harvested

- *Seaweed and sea cucumber farming*

Community members within the project area are practising seaweed, *Kappaphycus alvarezzi*, and sea cucumber, *Holothuria scabra,* farming as an additional source of income.
For the reporting period, 78 farmers in Tampolove have successfully harvested 32,795 marketable sea cucumbers (with a weight of over 400g per piece) and 324 farmers within seven villages have successfully harvested 350,00 Kg of seaweed (dry weight).

Sea cucumber harvesting in Tampolove

Part C: Plan Vivo Certificate issuance submission

C1 Contractual statement

This issuance is based on signed payment for ecosystem services (PES) agreements with village leaders, as the representatives of the residents of the ten villages in the project area, who have complied with all requirements in the PES agreements.

C2 (b) Issuance request for projects where issuance is made on the basis of ongoing activities on land already managed by the project (e.g. avoided deforestation, calculated ex-post)

Table C2 (b): Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period January 2019 to December 2019

Management Plan zone	Total area (ha)	Tech. Spec	Saleable ER's (tCO_2) available from previous periods*	Total ER's (tCO_2) achieved this period**	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO_2) from this period	Issuance request (PVCs)	ER's (tCO_2) available for future issuances
Strict conservation	*257*	*Prevention of ecosystem conversion*	*119*	*140*	*15*	*21*	*119*	*0*	*238*

Sustainable use	*973*	*Improved land use management*	*422*	*497*	*15*	*75*	*422*	*0*	*844*
Reforestation	*163*	*Ecosystem restoration*	*830*	*977*	*15*	*147*	*830*	*0*	*1,660*
TOTAL			**1,371**			**243**	**1,371**	**0**	**2,742**

*Number of tCO2 sequestered or avoided emission through participants' activities in previous reporting periods which have not yet been issued as PVCs
** Number of tCO2 sequestered or avoided emission through participants' activities this reporting period.

C3 Allocation of issuance request

Not applicable as we are not requesting for issuance until policy blockages are resolved.

C4 Data to support issuance request

The targets for the prevention of ecosystem conversion, improved land use management and ecosystem restoration have been met. As detailed in Section E, the monitoring results show no decrease in the diameter at breast height (DBH) within standard error (SE) (Annex 1.1); cutting in sustainable use zones is within the allowable quotas (Annex 1.1); communities have planted over 10 ha of degraded mangrove forest (Annex 1.2) with survival rate over 88%, (Annex 2.1).

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

These credits have been allocated to buyers but payments are pending for these as the delay of the official promulgation of the REDD+ Decree, which regulates the sale of carbon credits in Madagascar, has put the sale of Plan Vivo Certificates on hold.

Table D1: Historic sales of Plan Vivo Certificates

Vintage	Buyer	No of PVCs	Price per PVC ($)*	Total sale amount ($)*	Price to participants per PVC ($)*	% Sale price received by participants
2018	My Climate	943				
2018	Only One	428				

*Pricing reported for internal monitoring purposes only. Pricing information will be removed from the final published document.

Part E: Monitoring results

E1: Ecosystem services monitoring

Nine indicators are to be monitored to evaluate the success of project activities and determine whether the targets have been met. Green indicates that annual threshold target has been achieved, amber (Level 1 mitigation required) indicates that, over the past year, the indicator has failed to reach the green level, and red (Level 2 mitigation required) indicates that a significant shortfall has occurred.

Specific: Characteristic	Measurable: Indicators		Attainable					
Ecosystem services benefits		Target	Green	Amber Level 1 mitigation	Mitigation measures	Red Level 2 mitigation	Mitigation measures	Impact on PES payments
Tahiry Honko	Carbon plots: change in average dbh	No decrease within SE	no decrease within SE	< 10% decrease outside SE	Review management plans and adjust activities, quotas or zones, if necessary	> 10% decrease outside SE	Review management plans and adjust activities, quotas or zones, if necessary	Reduce PES to communities by 10% until average dbh stabilises (no further decrease)
	Number of stumps (harvest not allowed in TH)	No harvest in conservation zones Below quotas for sustainable harvest in sustainable use zones	Less than 5% of number of trees/ha are cut	Between 5% to 15% of number of trees/ha are cut	Increase forest patrols Meet with communities to ensure "no harvest within conservation zones" is understood and respected Ensure signs delineating zones are present	Greater than 15% of number of trees/ha are cut	Increase forest patrols Adjust management zones to enlarge conservation areas Reduce quotas in sustainable use areas	
Forest area	Area replanted (in first 16 years)	10 ha/year for first 16 years	10 ha/yr	Between 7 and 9 ha/year	With communities, plan additional reforestation events to increase hectares planted	< 7 ha/yr	With communities, plan additional reforestation events to increase hectares planted Hold community meetings to discuss reasons for low numbers of reforested hectares	Reduce PES by percentage of shortfall in reforested hectares over any 5-year period if mitigation measures do not succeed
	Survival rate	>60% survival rate	>60% survival rate	30% to 59% survival rate	With communities, have areas with low survival fill planted	< 30% survival rate	With communities, have areas with low survival fill planted Investigate possible causes of mortality and address these	
Drivers of degradation	Infractions for illegal logging	% of Dina infractions enforced	> 80% of Dina infractions are charged when individuals responsible are identified	60 - 79% of Dina infractions are charged when individuals responsible are identified	Meet with KMD and VA to review infractions that were not charged Charge any additional infractions	< 60% of Dina infractions are charged when individuals responsible are identified	Meet with Chef Cantonment and regional authorities to reinforce authority of KMD to charge infractions Provide additional training and awareness raising on importance of charging infractions Charge any additional infractions	
	Number of patrols	Target = 16 per month	Annual average ≥ 16/month	Annual average between 10 and 15/month	Review with CSE supervisor reasons for lower number of patrols Provide additional training and support for CSEs, if necessary	Annual average < 10/month	Review with CSE supervisor reasons for lower number of patrols Provide additional training and support for CSEs, if necessary Recruit new and/or additional CSEs, if necessary	

The table below summarises the monitoring result and status of thresholds.

Intervention	Indicator	Target	Monitoring result	Threshold
Tahiry Honko	Carbon plot: change in average DHB	No decrease within SE	No decrease within SE on the mean DBH Annex 1.1	Green
	Number of stumps	No harvest in conservation zone Below quota on sustainable use	No increase on stump density(ha-1) within SE in conservation zones. Increase within harvest quotas in the sustainable use zones. Annex 1.1	Green
Forests area	Area planted (ha)	10ha/year	13.96 ha Annex 1.2	Green
	Survival rate (%)	> 60% survival rate	Average success rate: 88% Annex 2.1	Green
Drivers of deforestation	Infraction for illegal harvesting	% of infraction enforced	No infraction recorded	Green
	Number of patrols	16 patrols/month	12 patrols/month Annex 2.b	Amber

Monitoring of mangrove replanting survival rate

E2: Maintaining commitments

No participants have resigned from the project this year.

E3: Socioeconomic monitoring

Other monitoring

Institutional indicators	Capacity & activity level of VA	Number of meetings per year	4 or more per year	2 to 4 per year	Review minutes of the VA meetings held Meet to discuss requirements for project co-management	Less than 2 per year	Review schedule and minutes of VA meetings Provide additional capacity building in association management	
	Effectiveness of CSE monitors	Auditing of CSE work	90% of audited reports were accurate	Between 60 and 89% of audited reports were accurate	CSE supervisor to evaluate work of CSEs and provide additional training, if necessary	Less than 60% of audited reports were accurate	CSE to evaluate work of CSEs and provide additional training Replace CSEs with new hires, if necessary	
	Number of grievances handled according to procedure	> 90% of grievances received were handled according to procedure	> 90% of grievances received were handled according to procedure	Between 70 and 90% of grievances received were handled according to procedure	Co-managers to meet with Civil Society of Toliara and review grievances that were not handled properly Co-managers to undergo additional training on grievance procedures, if necessary	< 70% of grievances received were handled according to procedure	Civil Society of Toliara asked to review all grievances over the past year and recommend changes to the procedures, if necessary Co-managers to undergo additional training on grievance procedures	

In total, 14 meetings were held by the Velondriake Association in 2019 including 02 General Assemblies, 10 meetings of the executive committee board, 03 meetings for the southern group where the Tahiry Honko project is located. One complaint about the decision making process project has been received and was handled by the Velondriake Association, details are found in Annex 7. The CSE supervisors audited the quality of the CSE work by randomly re-measured the tree measurement carried out by the CSE.

Intervention	Indicator Target	Monitoring	Result	Threshold
	Capacity and activity level for the Velondriake	Number of meeting	Velondriake Association held 10 meetings	Green

Institutional indicators	Association		Annex.4	
	Effectiveness of the CSE	Audit of CSE work	CSE work audited	Green
	Number of grievances handled	90% of grievance was handled according to procedure	One complaint received	Green

E4: Environmental and biodiversity monitoring

The approach for the forest patrol was changed, further details are found in Annex 2.1 A baseline biodiversity survey in mangrove forest at the project area was undertaken in February 2018. Four species inventoried in the project area including *Pterofus rufus; Geckolepis typica; Vanga curvirostris* and *Coua verreauxi,* are recommended to be monitored every five years throughout the project period. The objective is to assess the trend of their population which correlates to the status of mangrove's health. The next survey is therefore scheduled in 2023.

Part F: Impacts

F1: Evidence of outcomes

Due to the policy blockage resulting in a delay to officially enact the national law allowing the sale of the verified carbon credits, no direct financial impacts can be determined resulting from PES. But awareness raising conducted about the importance of mangroves impacted the attitude of local communities. In addition, the other activities such as seaweed and sea cucumber farming have greater social impact within the villages at the project area.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

Table G1: Summary of payments made and held in trust

1. Reporting year (mm/yy – mm/yy)	2. Total previous payments (previous reporting periods)	3. Total ongoing payments (in this reporting period)	4. Total payments made (2+3)	5. Total payments held in trust	6. Total payments withheld
2018	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**

Part H: Ongoing participation

H1: Recruitment

In February 2019, 13 additional CSE were recruited by the Velondriake Association to undertake the mangrove forest patrols.

H2: Project Potential

No update.

H3: Community participation

Three village meetings were held at each of the 10 villages in July, September and December 2019 with a purpose to provide villages an update about the Tahiry Honko project and validate the use of the Tahiry Honko carbon revenue for school fees (Annex 7). More than 900 people participated in mangrove replanting activities (Annex 1.2).

Community meeting in Velondriake LMMA

In addition to these, students from the village of Befandefa, led by two Velondriake executive committee members, participated in the making of a film on mangrove reforestation best practices, which was distributed along with the annual dissemination of project achievements in the ten villages of the project.

Part I: Project operating costs

I1: Allocation of costs

Table I1: Allocation of costs

Expense	Narrative	Amount (if possible in USD$)	Contribution from sale of PVCs	Contribution from other sources

Mangrove replanting	Provisioning community meals at the reforestation session (8 campaigns of reforestation)	6,121,000 MGA*or 1,748 USD	Not applicable	Critical Ecosystem Partnership Facility (CEPF)
Monitoring of mangrove replanting	Food and lodging allowance of the technician and local surveyors (8 campaigns of mangrove reforestation monitoring)	4,800,000 MGA or 1,371 USD	Not applicable	Startup funding: UK government
Forest patrols	Food and accommodation allowance for the CSE when undertaking forest patrol (5 campaigns of monitoring done)	4,975,000 MGA or 1,421 USD	Not applicable	Startup funding: UK government
Carbon stock inventory	Food and lodging allowance of the CSE when undertaking carbon stock monitoring (one expedition)	1,879,000 MGA or 537 USD	Not applicable	Startup funding: UK government
Management cost	Food and accommodation for the Velondriake Association executive committee board when attending regular meeting	38,700,00 MGA or 12,900 USD	Not applicable	Startup funding: UK government
Social investment (Community project)	Not applicable	NA	Not applicable	
Fees	Fees at the bank	NA	Not applicable	
	TOTAL	**17,977 USD**		

MGA*: Malagasy ariary (local currency)
1USD=3,500 MGA

Annexes

Annex 1. Monitoring results for issuance request

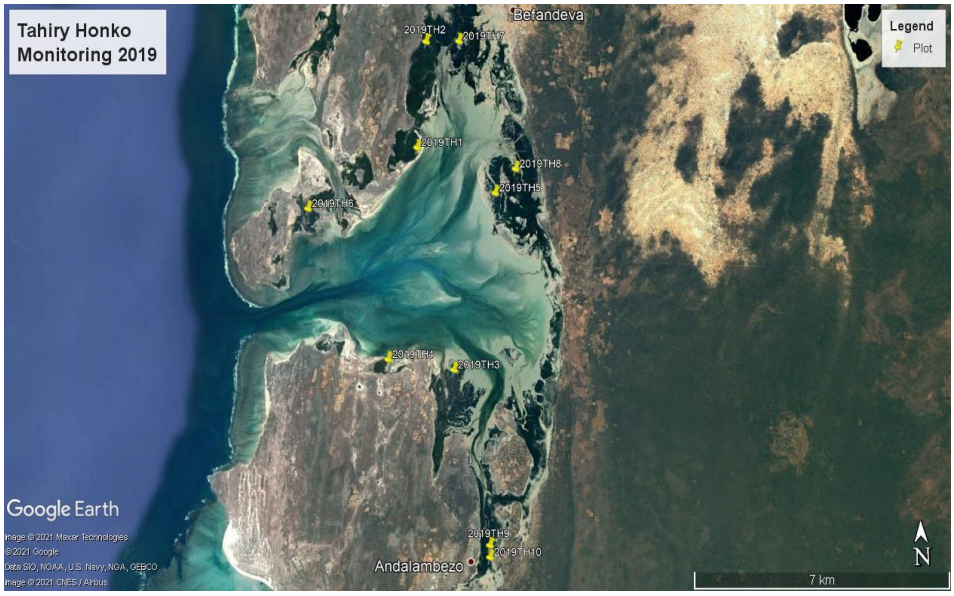
Annex 1.1. Prevention of Ecosystem conversion - Strict Conservation and Sustainable Use zones

To assess whether carbon sequestration is maintained or is increasing, tree measurements within one-fifth (1/5) of the carbon plots established in the project area in 2014/2015 were re-taken. For this reporting period, 10 plots which are different to the previous reporting period (2018) were measured. The reference baseline was the measurement carried out in 2014/2015.

Table Annex 1.1.a - Mean change in mangrove dbh and number of stumps from 2014/15 to 2019

Management zone	Forest attributes	2014/2015	2019	Mean change	Target status
Sustainable use #plots=8	Stump density (ha-1)	428.12 (±102.3)	778.1 (±257.6)	350	Increase but within sustainable harvest quotas
	DBH (cm)	9.0 (±0.8)	8.9 (0.7)	-0.1	No decrease within SE
Strict conservation #plots=2	Stump density (ha-1)	425.0 (±601)	537.5 (±537.5)	112	No increase within SE
	DBH (cm)	6.7 (±0.3)	6.4 (±0.5)	-0.3	No decrease within SE

Where DBH: Diameter at Breast Height; SE: Standard Error



Map of the carbon stock plots remeasured

Table annex 1.1.b - Result of the carbon stocks monitoring

PlotID	SiteName	Management zone	X	Y	2014-2015 Mean DBH (cm)	2020 Mean DBH (cm)	Difference in DBH mean (cm)	2014-2015 Stump Density (ha-1)	2020 Stump Density (ha)	Difference in Stump density (ha-1)
CC_01	Antsaragnaboa	Sustainable use	324241	7535939	12.5	11.3	-1.2	0.0	25.0	25.0
CC_22	Bealovo	Tahiry honko	325136	7545846	7.0	6.8	-0.2	850.0	1075.0	225.0
CC_QT_03	Ampangoke	Sustainable use	322448	7546442	11.4	11.5	0.1	825.0	150.0	-675.0
CC_TH_06	Andima	Sustainable use	322736	7549142	5.2	6.0	0.9	350.0	1625.0	1275.0
OC_02	Antsaranandaka	Tahiry honko	324241	7536242	6.5	6.0	-0.4	0.0	0.0	0.0
OC_QT_04	Beambariake	Sustainable use	323343	7540741	7.2	6.9	-0.2	525.0	1950.0	1425.0
OC_QT_05	Abedeka	Sustainable use	321593	7541046	9.6	10.9	1.3	225.0	650.0	425.0
OC_QT_13	Beakio	Sustainable use	319414	7544938	8.4	7.9	-0.5	175.0	125.0	-50.0
OC_TH_12	Antsahavaky	Sustainable use	324567	7545241	8.3	7.5	-0.9	750.0	525.0	-225.0
OC_TH_14	Antsaragnakele	Sustainable use	323644	7549136	9.5	9.3	-0.3	575.0	1175.0	600.0

			Number of plots with increasing dbh:	3	6 Number of plots with increasing cut stump
			Number of plots with decreasing dbh:	7	3 Number of plots with decreasing cut stump
	# Sustainable use	8	Number of plot with unchanged dbh:	0	1 Number of plots with unchanged cut stump
	# Tahiry honko	2	Mean dbh change:	-0.1	302.5 Mean stump change
	TOTAL	10	Reference value dbh 2020 (N=10):	0.7	220.8 SE Reference value stump 2020 (N=10)

Table annex 1.1.c - Allowable cutting vs. stump density from annual monitoring

The Monitoring Plan "Green" target stated that stump density doesn't exceed the harvest quota within the Sustainable Harvest Zones (SUZ). This practically means that stump density from the annual monitoring should not be greater than the annual allowable cutting quotas (AC/yr) defined in the management plan (PAG) document. On the contrary, if the per hectare stump density exceeds the per hectare annual allowable cutting (AC/ha/yr), we need to determine the difference and review threshold (Amber or Red).
Thus, we are aiming to determine whether the stump density (as a proxy for harvesting) exceeds the allowable cutting quotas.

Determination of annual quota at ha-level

Annual allowable cutting quotas have been estimated for the entire SUZ in the Mangrove Management Plan or PAG document, which are 77,989 (timber fence, DBH<5cm) and 55,317 (timber house, DBH>=5cm) for 1,091.6 ha of mangroves.
It implies that the total annual allowable cutting AC/yr = 77,989 + 55,317 = 133,306 trees (all size).
As the monitoring results are reported per ha, we need to determine the annual quota at ha-level for both diameter class sizes within the SUZ:

AC/ha/yr = 133,306 / 1,091.6 = 122.1 trees/ha/yr

Determination of the mean stump density

It is very important to note that the baseline monitoring was carried out in 2014/2015. Local people have continued to use the mangroves since the baseline year, in particular the family of Rhizophoraceae. Therefore, the difference between stump density in 2014/2015 and the monitoring date can be defined as the cumulative cutting since 2014/2015. As the sustainable harvest quotas are annual, for the purpose of this analysis the results have been annualised by dividing by the number of years between 2014/2015 and the date of monitoring.

Results

The mean stump densities (SD) in 2014/2015 and the plots re-measured in 2022 (when the 2019 monitoring took place) are:

2014/2015 SD (/ha) = 428.1

2022 SD (/ha) = 778.1

Annualised SD (/ha/yr) = (778.1 - 428.1) / (2020 - 2015) = 69.9

In conclusion, for the 2019 reporting period, the result of the monitoring conducted in 2019 showed that stump density (SD) within the SUZ plots re-measured did not exceed the annual allowable cutting (AC/ha/yr).

69.9 (SD/ha/yr) << 122.1 (AC/ha/yr)

Annex 1.2. Mangrove replanting

In 2019, the community at the 10 villages has planted 13.96 ha of their mangrove degraded area with 51,759 mangrove trees including *Ceriops tagal, Bruguiera gymnorrhiza* and *Rhizophora mucronata.* The target to replant 10 hectares of mangrove degraded area per year was therefore reached in 2019.

Table annex 1.2 - Mangrove replanting

Year	Date of reforestation	Village	Area planted (ha)	Number participants	*Ceriops tagal*	*Bruguiera gymnorrhiza*	*Rhizophora mucronata*	Total tree Planted
2019	Mar-07	Befandefa	1.06	107	300		4,100	4,400
2019	Mar-13	Ankindranoke	1	104	1,800	100	3,000	4,900
2019	Mar-14	Ampasimara	0.5	59	2,470	312	402	3,184
2019	Mar-15	Ankilimalinike	0.41	42	1,636	0	13	1,649
2019	Mar-26	Andalambezo	0.69	21	0	0	2,500	2,500
2019	Mar-27	Vatoavo	0.61	78	0	610	1,800	2,410
2019	Mar-28	Agnolignoly	0.86	70	0	0	4,534	4,534
2019	Apr-04	Tampolove	0.67	38	852	140	1,610	2,602
2019	May-17	Befandefa	0.3	27	1,330	0	670	2,000
2019	Jul-20	Vatoavo	0.26	30	0	0	880	880
2019	May-30	Befandefa	1.1	80	3,740	110	0	3,850
2019	Jul-22	Ampasimara	1.63	19	2,910	34	33	2,977
2019	Jul-23	Ankilimalinike	1.14	19	1,755	17	0	1,772
2019	Jul-24	Lamboara	0.53	50	2,860	9	16	2,885
2019	Jul-26	Ankindranoke	0.72	72	886	1,880	375	3,141
2019	Jul-26	Vatoavo	1.23	63	1,640	1,700	175	3,515
2019	Jul-27	Agnolignoly	0.86	25	1,260	1,080	14	2,354
2019	Jul-27	Ankitambagna	0.21	24	610	78	2	690
2019	Jul-27	Tampolove	0.18	64	1,251	239	26	1,516
		TOTAL	**13.96**	**992**	**25,300**	**6,309**	**20,150**	**51,759**

Annex 2. Ongoing monitoring results for all participants

Annex 2.1. Survival rate monitoring of the mangrove replanting

The average 3-6 month survival rate of the reforestation efforts in 2019 is 88%.

Table annex 2.1 - Result of survival rate monitoring of the mangrove replanting

Year	Date of plantation	Village	Site	Area planted (ha)	Survival rate (%)	Date of survey
2019	Mar-07	Befandefa	Bevoa 4	1.06	98	17/06/2019
2019	Mar-13	Ankindranoke	Antsaragnamahalako 1	1	96	18/06/2019
2019	Mar-14	Ampasimara	Nosibe 4	0.5	58	19/06/2019
2019	Mar-15	Ankilimalinike	Ankonkoabo 5	0.41	98	14/11/2019
2019	Mar-26	Andalambezo	Ambatosarotre	0.69	87	13/06/2019
2019	Mar-27	Vatoavo	Ampanihy	0.61	100	14/06/2019
2019	Mar-28	Agnolignoly	Ampanolora	0.86	94	06/11/2019
2019	Apr-04	Tampolove	AST 2019	0.67	96	07/11/2019
2019	May-17	Befandefa	Betsorike	0.3	100	17/06/2019
2019	Jul-20	Vatoavo	Bekobay	0.26	66	11/11/2019
2019	May-30	Befandefa	Bevoa 5	1.1	83	11/11/2019
2019	Jul-22	Ampasimara	Antsinana tana	1.63	95	13/11/2019
2019	Jul-23	Ankilimalinike	Ankonkoabo 6	1.14	98	14/11/2019
2019	Jul-24	Lamboara	Antsakoa 2	0.53	75	08/11/2019
2019	Jul-26	Ankindranoke	Antsaragnamahalako 2	0.72	40	12/11/2019
2019	Jul-26	Vatoavo	Antsinibe	1.23	91	05/11/2019
2019	Jul-27	Agnolignoly	Bevahoho 7	0.86	94	06/11/2019
2019	Jul-27	Ankitambagna	Antsahandolo 2	0.21	100	07/11/2019
2019	Jul-27	Tampolove	Antsahandolo	0.18	100	07/11/2019
			Total area replanted (ha)	**13.96**	**88**	**Average survival rate (%)**

Annex 2.2. Forest monitoring and patrolling

The approach for the forest patrol was changed. Previously, there were only three CSE members undertaking the forest patrols within the 10 villages. When the 13 additional CSEs were recruited, each CSE worked in their respective conservation zone and committed to undertake 01 patrol per month. This approach was adopted to minimise the cost of the forest patrols activity and to increase the performance of the CSE. Due to this change in the approach, the target to undertake 16 patrols/month was not reached. The number of patrols per month will not exceed 12 patrols/month for this new approach. In 2019, the patrol occurred only

in February, March, April and September 2019 with the total number of patrols, 60, falling within the Amber threshold category. This is due to the very recent adaptation of the new approach.
The number of patrols per month will not exceed 12 patrols/month for this new approach. The indicators on the Project Design Document will be updated accordingly as corrective actions.

Table annex 2.2 - Forest monitoring and patrolling

Village	Name	Sex	Role	Site Tahiry Honko	J	F	M	A	M	J	J	A	S	O	N	D	Tot
Lamboara	Christie	M	CSE	Bejoho	0	1	1	1	0	0	0	1	0	0	1	0	5
	Alphine	F	CSE	Anky	0	1	1	1	0	0	0	1	0	0	1	0	5
Ankilimalinike	Manovoson	M	CSE	Tsibekoy	0	1	1	1	0	0	0	1	0	0	1	0	5
Ampasimara	Emile	M	CSE	Ampandriam-bagna	0	1	1	1	0	0	0	1	0	0	1	0	5
Befandefa	Norbert	M	CSE	Andamalama	0	1	1	1	0	0	0	1	0	0	1	0	5
Ankindranoke	Baranda	M	CSE	Ampotapotaky	0	1	1	1	0	0	0	1	0	0	1	0	5
	Mampionina	M	CSE	Andalan-tsarety	0	1	1	1	0	0	0	1	0	0	1	0	5
Vatoavo	Naie	M	CSE	Ampanihy	0	1	1	1	0	0	0	1	0	0	1	0	5
Andalam-bezo	Andre Fenty	M	CSE	Antseragnan-daka	0	1	1	1	0	0	0	1	0	0	1	0	5
Agnolignoly	Velomama	M	CSE	Ankatsaky Tsimbogna	0	1	1	1	0	0	0	1	0	0	1	0	5
Tampolove	Jean Noely	M	CSE	Antsahandolo	0	1	1	1	0	0	0	1	0	0	1	0	5
Ankitambagna	Falea	M	CSE	Antsahandolo	0	1	1	1	0	0	0	1	0	0	1	0	5
Andavadoaka	Dany	M	CSE Leader	Not applicable	0: Patrol not occurred and 1: patrol occurred; Total patrol=60												
Andavadoaka	Patty	M	Superviseur	Not applicable													

Annex 3. Reallocation of commitments

Not applicable

Annex 4. Governance and management meetings

The Velondriake association held 10 meetings including meetings of the executive committee, southern sub-group committee and general assembly.

Start date	End date	Type of meeting	Agenda
11 Jan-2019	11 Jan-2019	Meeting of the Executive committee board	. Discussion about the venue of cruise ship at the LMMA Velondriake (where Tahiry Honko is located)
29 Jan- 2019	30 Jan- 2019	Meeting of the Executive committee board	. Discussion about the construction of the office of the Velondriake Association . Sharing update of the Tahiry Honko project: achievement and next steps

07 Feb-2019	08 Feb- 2019	General Assembly of the Velondriake Association	. Sharing information and update from all of villages . Discussion about the process to make decisions for the Velondriake Association . Discussion about the conception and validation of the annual work plan for the Velondriake Association . Remind on the internal rules of the Velondriake Association . Preparation of the election (committee, executive board and President)
21 Feb-2019	21 Feb-2019	Meeting of the Executive committee and CSE supervisor	. Update on the role of CSE for marine and mangrove forest patrol
02 Mar-2019	03 Mar-19	Southern group committee meeting	. Update on the work plan 2019 . Demarcation of the marine no-take zone . Maintenance of the Tahiry Honko signs
30 Apr-2019	30 Apr-2019	Meeting of the Executive committee board	. Discussion about the election of the Velondriake Management committee and President . Discussion about the Dina (local regulation)
31 May- 2019	31 May- 2019	Meeting of the Executive committee board	. Discussion about the preparation of the World Ocean Day
14 Aug-2019	14 Aug-2019	Meeting of the Executive committee board	. Presentation of the new elected executive committee of the Velondriake Association
03 Sep-2019	04 Sep-19	Southern group committee meeting	. Presentation of the finance situation
30 Sep- 2019	01 Oct- 2019	Meeting of the Executive committee board	. Reminder on the general objective of the Velondriake Association . Compile the priority activities . Presentation of the new member of the Octopus Management Committee . Update of the Tahiry Honko project: achievement and next step
04 Nov-2019	05 Nov-2019	Meeting of the Executive committee board	.Discussion about the quarterly work plan for the Velondriake Association
15 Nov-2019	15 Nov- 2019	Extraordinary Foibe meeting	. Discussion about the school subsidies from the Tahiry Honko carbon revenue
29 Nov- 2019	29 Nov- 2019	Southern group committee meeting	.Collection of feedback to improve the next meeting . Setting up the regular meeting for the southern sub-group executive committee
13 Dec-2019	13 Dec-2019	Meeting of the Executive committee board	. Preparation of the next general Assembly . Sharing update from villages

Annex 5. Conservation and monitoring results

A baseline biodiversity survey in mangrove forest at the project area was undertaken in February 2018 and the next survey is scheduled in 2023.

Annex 6. Impacts

The integrated social survey (originally conducted in 2016) will be carried out every five years and the comparative data analysed for impacts of the Tahiry Honko project. The next survey to assess the following indicators is scheduled in 2021:

- Impact of the project in their life through storytelling
- Average income in the community
- State of food security and activities that people rely on for providing food and income.

Similarly, the biodiversity survey in the mangrove conducted in 2018 will also be carried out every five years, the next survey will be conducted in 2023.

Annex 7. Community meeting records (summary)

Date	Purpose	Minutes
14th to 19th of July 2019	Outreach within 10 villages to provide information and updates about the achievement of the Tahiry Honko project. **Outcome** ● Over 300 adults within the 10 villages were reached	Link
2nd to 06th of September 2019	Outreach within 10 villages to disseminate the results of the mangrove carbon stock monitoring and information about the Festival official launch of the Tahiry Honko project. **Outcome** ● 339 adults within the 10 villages were reached ● Community requested a visit from the forestry department to inform them about the national forestry regulation.	Link
04th to 08th of December 2019	Outreach within 10 villages to get the opinion of the parents about the use of the school subsidiaries from the Tahiry Honko carbon revenue and to get the list of school children enrolled at the primary school (state and catcholic). **Outcome** ● 50% of attendees have chosen that the revenue from the sale of carbon credits will be used to cover **both general cost and fees** throughout the school year for the pupils enrolled at the primary catcholic and state school; ● 50% of attendees have chosen that the revenue from the sale of carbon credits will be used to cover **only the general cost** for the pupils enrolled at the primary catcholic and state school; Given that there's a 50/50 split in votes, the Velondriake executive committee during their regular meeting made a final decision to pay the general cost for the public school and school fees for throughout the school year (10 months) for the catcholic school. The parents still need to pay the general cost for the catholic school. This decision was taken because the carbon revenue is not enough to cover both of the general cost and school fees for both of the public and catholic schools. Village outreach tours within partner villages were conducted to inform them about the decision taken. One village raised their concern about the decision taken by the Velondriake because they voted that the income will cover both of the general cost and the school fees. However, when understanding the full explanation on how and why the decision was taken, they were happy with the decision.	Link