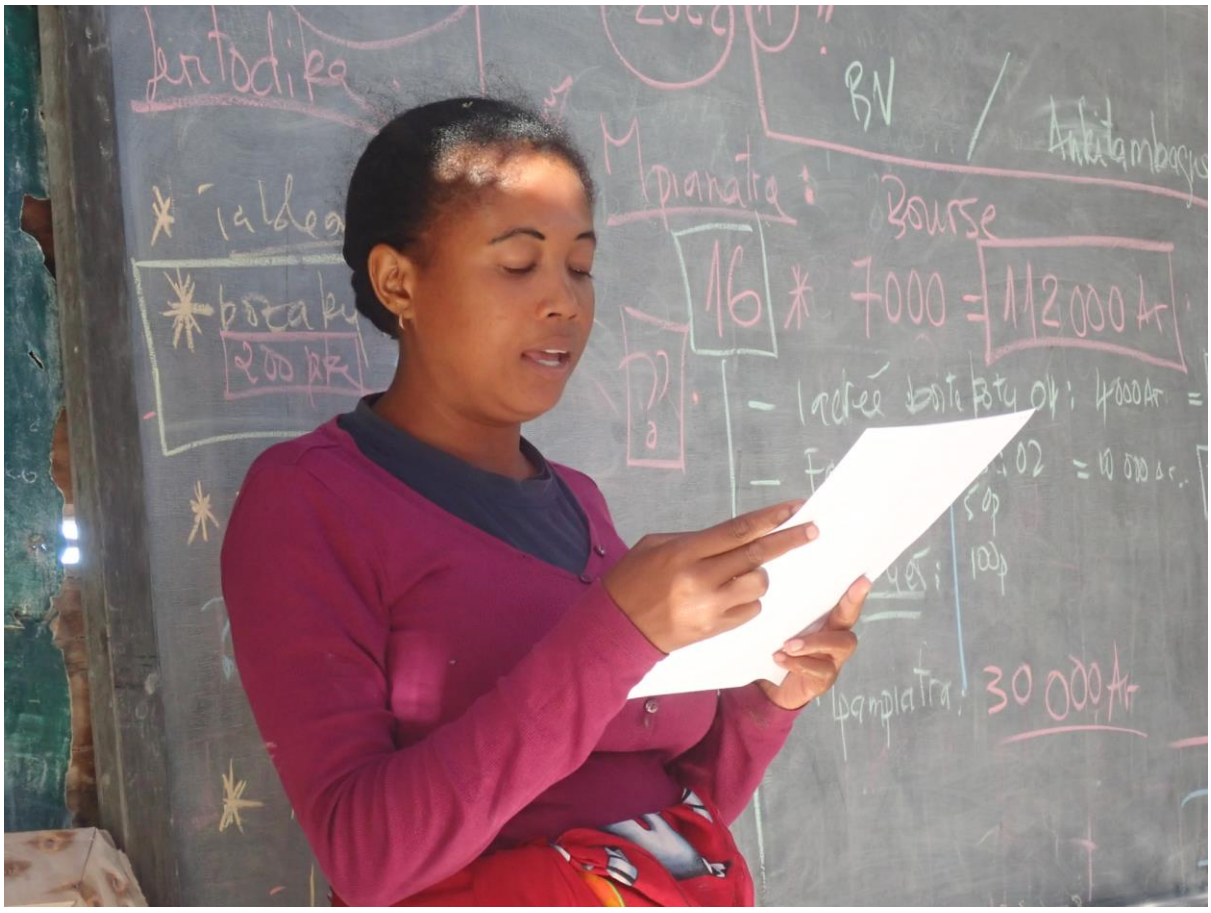
2022 Annual Report

Tahiry Honko

Community-led mangrove carbon project
Southwest Madagascar



Submitted by: Blue Ventures
Date of submission: February 2024

Acronyms and glossary

CAST: Special Appropriations Account of the Treasury

CSE: Monitoring and Evaluation Committee

DBH: Diameter at Breast Height

Dina: Local laws used by communities as a social norm at village level

Fokontany: Smallest unit of administrative level in Madagascar

Foibe: Executive committee of the Velondriake Association

KMD: Dina Enforcement Committee

LMMA: Locally Managed Marine Area

MGA: Malagasy Ariary, local currency

NGO: Non-Governmental Organisation

PES: Payment for Ecosystem Services

REDD+: Reducing Emissions from Deforestation and Forest Degradation

SUZ: Sustainable Use Zones

Vondrona: administrative sub-units of the Velondriake Association

PVC: Plan Vivo Certificate

Summary

Project overview	
Reporting period	January 1st, 2022 to December 31st, 2022
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 to date (reporting period end)	
No. smallholder households with PES agreements (where applicable)	N/A
No. community groups with PES agreements (where applicable)	10
Approximate number of households (or individuals) in these community groups (if known)	895
Area under management (ha) where PES agreements are in place	1,393
Total PES payments made to participants (USD)	$2,036[1]
Total sum held in trust for future PES payments (USD)	$ 20,000*
Plan Vivo Certificates (PVCs) issued to date	0[2]
Allocation to Plan Vivo buffer to date	0
Unsold Stock at time of submission (If comprising various vintages, detail all vintages on additional lines as required)	0

*The sum held in trust refers to amounts received from buyers of carbon credits who sent the money with the understanding that they will receive the credits once the policy issues are resolved.

Project activity this reporting period	
No. smallholder households with PES agreements signed	0
No. community groups with PES agreements signed	10
Approximate number of households (or individuals) in these community groups (if known)	895
Area put under management by participants with PES agreements this year (Ha)	1,393

[1] Please note that since certificates have not been issued, in this reporting period Blue Ventures has advanced USD 2,795.08 for PES payments. This is reported in Table I2 Allocation of costs.

[2] Please note that from 2018-2021, 5,484 certificates have been verified, but not issued, due to policy blockages described in section 'A2 Successes and challenges'

Plan Vivo Certificates (PVCs) requested for issuance this reporting period	0

Part A: Project updates

A1 Key events

- ***International Women's day***

From the 6th to 8th of March 2022, to celebrate the International Women's Day, mangrove reforestation campaigns were carried out in three villages of the project areas, Vatoavo, Ampasimara and Befandefa. As a result, 4.38ha of mangrove degraded areas were replanted. The total number of participants reached 271 people (18% men, 37% women and 46%youth). As usual, alongside the event, awareness raising about the importance of mangroves was done.

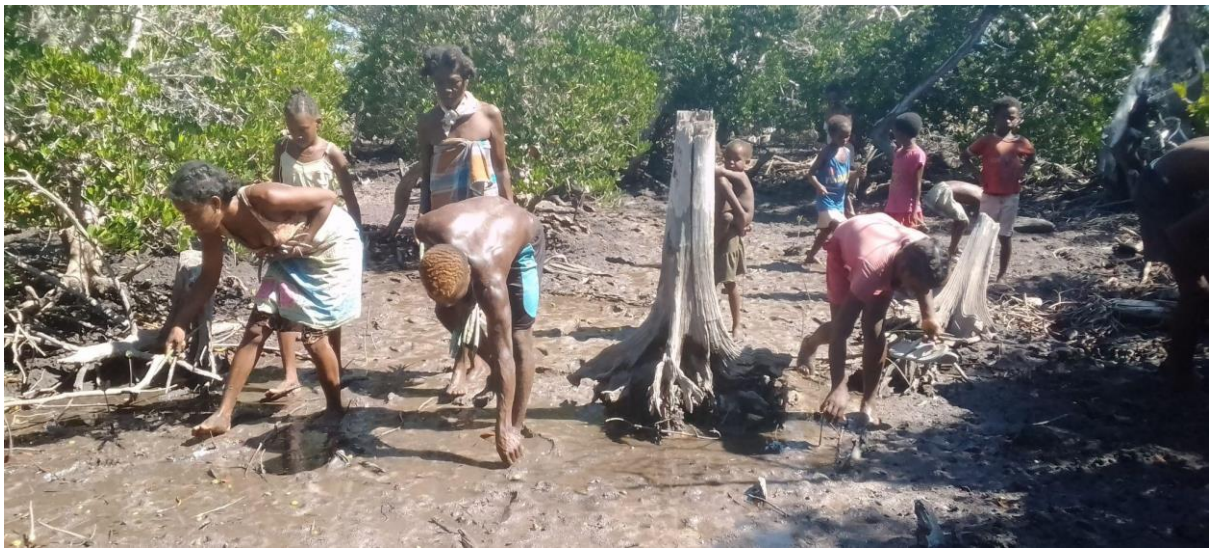


Figure A1 (a) Mangrove replanting during the mangrove international day in the village of Vatoavo

Figure A1 (b) Women selecting the mangroves propagules to be planted in the village of

- ***International Day for the Conservation of the Mangrove Ecosystem***

The same reforestation event and awareness raising were organised during the International Day for the Conservation of the Mangrove Ecosystem or Mangrove Day. The event was organised from 27th to 28th of July in the villages of Ankindranoke and Befandefa. As a result, 2.63 ha of mangrove degraded areas were replanted with 230 participants (28% women, 20% men and 52% youth). Survival rates are respectively 70.77 and 76.27%.

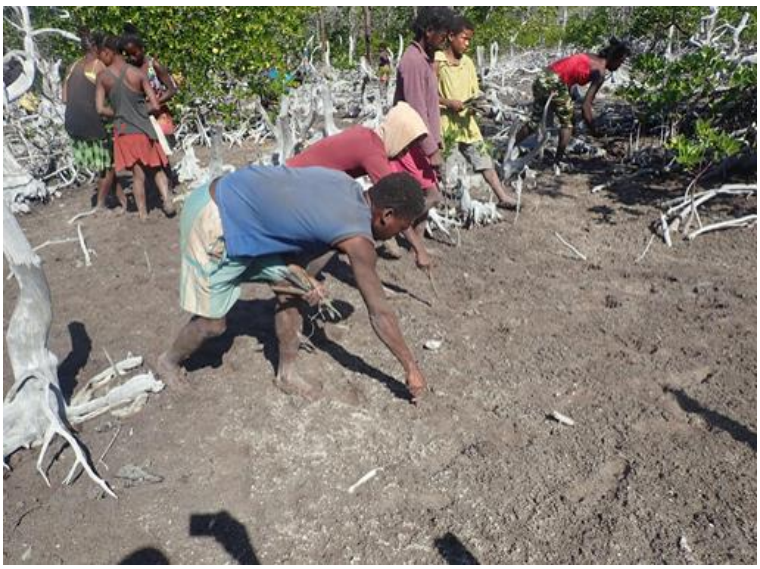


Figure A1 (c) Mangrove plantation during the Mangrove International Day in the village of Ankindranoke

- ***12th Symposium of the Western Indian Marine Science Association (WIOMSA)***

The year 2022 was also an opportunity for the Tahiry Honko project team to present the work done by local communities from the project area at the Western Indian Marine Science Association (WIOMSA) 12th Symposium held in Port Elizabeth, South Africa. The coordinator of the Tahiry Honko project gave a presentation on the capacity building for the mangrove local monitors at a special session. This presentation shared experiences and lessons learned from the local monitoring.

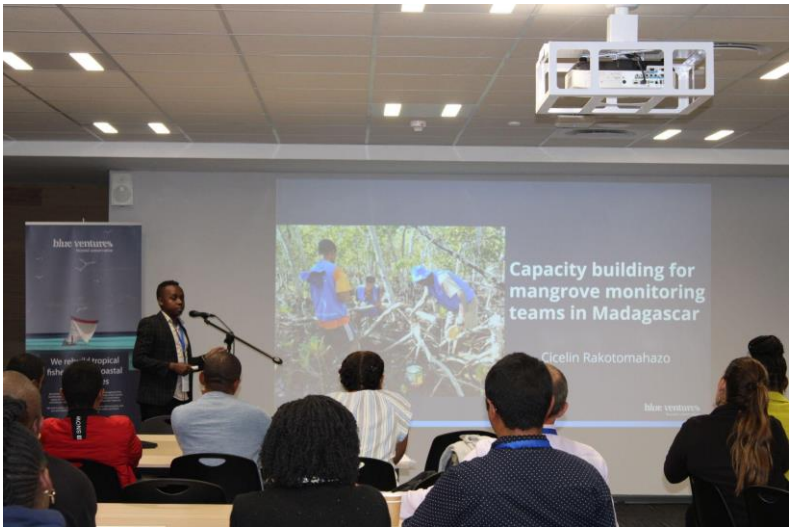


Figure A1 (d) Tahiry Honko project coordinator (Cicelin Rakotomanahazo) presenting capacity building for local monitors at the WIOMSA special session

- ***PhD Defence***

Cicelin Rakotomahazo, the coordinator of the Tahiry Honko project, has defended his PhD titled 'Assessing the implementation of the community-based Payment for Ecosystem Services (PES) project in the mangroves of Madagascar' using Tahiry Honko project as the case study. The study aims to contribute to the sustainable management of the mangroves of the Bay of Assassins and to the improvement of the local communities' livelihood conditions through the establishment of global knowledge regarding the implementation of the PES scheme. The study highlighted the carbon stocks and mangrove ecosystem dynamics of the bay, the local perception of the proposed PES project in their mangroves, the community planning for the implementation of this mangrove PES project, the policy and institutional context of the PES scheme for mangroves, and the profitability of this mangrove PES project in terms of management and livelihoods for the local communities. This is the first study of a PES scheme conducted in the mangroves of Madagascar and constitutes a reference for future related studies, and also highlighted the need to consider mangrove ecosystems of Madagascar in terms of management and policy.

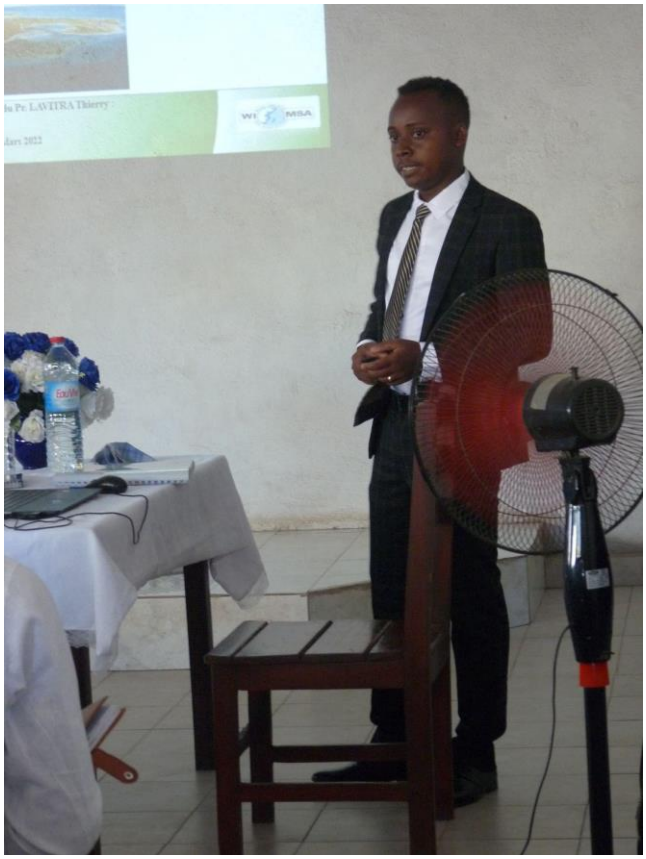


Figure A1 (e) Cicelin Rakotomahazo defending his PhD at Marine science and Fisheries Institute of the University of Toliara Madagascar

- ***Hybrid conference, Addis Ababa***

The National Technical Advisor for Mangroves and Blue Carbon Lalao Aigrette was invited to talk about the Tahiry Honko project, at a Chatham House Africa Programme conference held in Addis Ababa, Ethiopia. The conference was held in partnership with the United Nations Development Programme (UNDP), on T*owards Just transition in Africa: Continental coordination on green financing and job creation*. The speakers took stock of policy efforts and preparations ahead of the 'African COP27' and discussed the key priorities for streamlining continental cooperation on policy approaches to just transition, job creation and green financing.

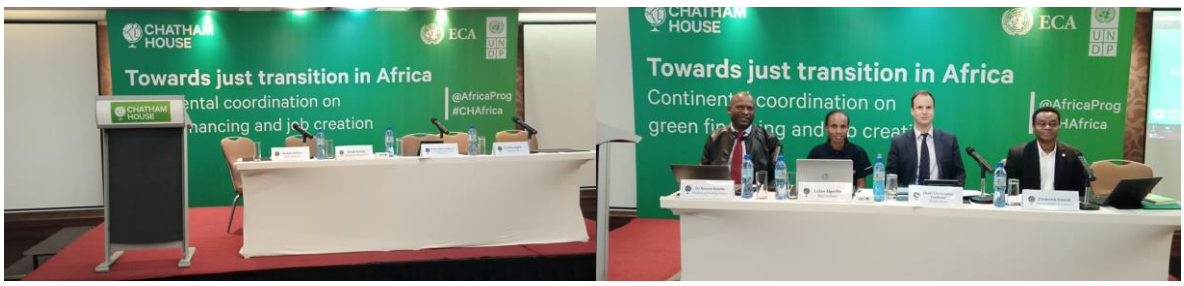


Figure A1 (f) Lalao Aigrette, presenting Tahiry Honko project in Addis Ababa, Ethiopia

- ***Training workshop on "Research and sustainable management of Blue Carbon Ecosystems in the Indian Ocean"***

This workshop was organised jointly by the Institut Halieutique et de Sciences Marine (IHSM), University of Toliara and the Indian Ocean Rim Association (IORA) and held in Toliara. This successfully gathered participants from the Republic of Bangladesh, Union of Comoros, Islamic Republic of Iran, Republic of Madagascar, Malaysia, Republic of Mauritius, Federal Republic of Somalia, Republic of South Africa, Democratic Socialist Republic of Sri Lanka, United Republic of Tanzania and Kingdom of Thailand. The project Coordinator Cicelin Rakotomahazo and the National Technical Advisor for Mangroves and Blue Carbon Lalao Aigrette presented the best practice and lessons learnt from the Tahiry Honko project, and challenges faced by blue carbon ecosystem restoration and conservation.

Figure A1 (g) Group photo of the participants at the training workshop on Blue Carbon, Toliara-Madagascar

A2 Successes and challenges

- **Successes**

In total, 963 primary school children enrolled at the primary state and catholic school within the 10 villages have benefitted from a scholarship from the advance funds from the carbon revenue paid by Blue Ventures.

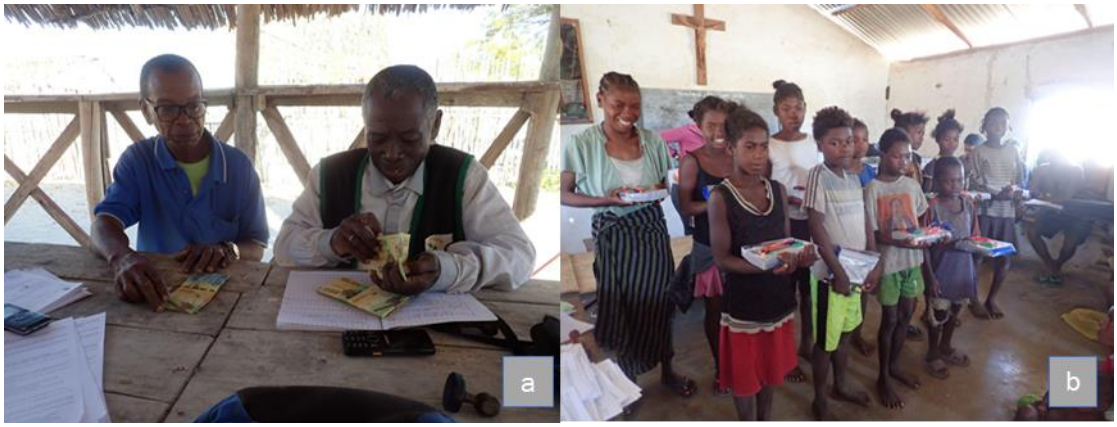


Figure A2 (a) The president of the Velondriake Association doing a payment of the school fees for the primary catholic school, (b) School children at the Primary Public School receiving school stationery items.

- **Challenges**

The delay of the full implementation of Decree n° 2021-1113 continues to put the sale of Plan Vivo Certificates on hold. No actual sales have been made due to this blockage. The Treasury (*Compte d'Affectation Special au Tresor; CAST)* has not yet been put in place. The Emission Reduction Purchase Agreement (ERPA) was submitted to the REDD+ National Bureau. While waiting for the signature, the proposed follow up action was to submit a formal letter requesting to proceed on the homologation of the Tahiry Honko. This step is required by the Decree n° 2021-1113 setting the access to the forestry carbon market (section 1: art 22 to 25). In this context, Blue Ventures continues to advance funds to the Velondriake Association (VA) 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

No update.

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

- ***Beekeeping***

In May 2022, 15 beekeepers within six villages successfully harvested 134.3Kg of honey. The honey was sold locally, because there was high local demand for this. The beekeepers earned a net value of 1,333,000 MGA, which is an equivalent of 400 US$. In order to scale up this activity and to network with the national beekeeping actors, we are currently identifying potential partners to further develop this activity.

Table B2 Summary of honey harvest from the six villages

Villages	Number of beekeepers harvesting honey	Total honey harvested (kg)
Befandefa	8	90.6
Ampasimara	1	4.4
Ankilimalinike	1	3
Lamboara	1	4
Ankindranoke	3	28.3
Vatoavo	1	4
TOTAL	**15**	**134.3**

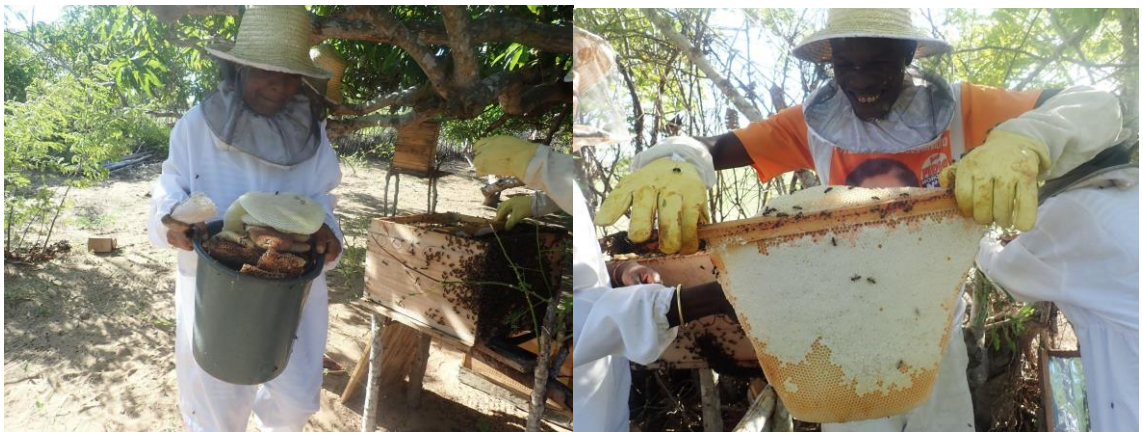


Figure B2 (a) Harvest of honey in the village of Befandefa

- ***Terrestrial tree plantation***

91 fruit trees (including date trees, lemon, and papaya) and 111 terrestrial trees (including baobab trees and acacia) were planted by the beekeepers in Befandefa. At the same village, students and teachers from college also planted 63 fruit trees (papaya and date trees) and 104 terrestrial trees (including baobab trees, acacia, and *Cordyla madagascariensis*).

Figure B2 (b) Women beekeepers planting trees in the village of Befandefa

In total, 5,116 trees were planted in the nursery, of which 1,397 are fruit trees and 3,719 are terrestrial trees. The tree nursery was moved to the village of Andavadoaka, the central village of the locally managed marine area (LMMA) Velondriake, where the trees receive good maintenance because the water is fresh and the women's association looks after them.

Figure B2 (c) Nursery established in the village of Andavadoake

Figure B2 (d) Women taking care of the small trees planted and nurseries in Andavadoake

Monitoring of trees planted in the nursery showed the average survival rate of fruit trees planted is 97.67% and that of terrestrial trees is 87.82%.

Figure B2 (e) One year papaya trees monitored in the village of Lamboara

We also conducted field visits of the trees planted in the villages of the Tahiry Honko project and some of them had grown well (see figure below) despite the dryness of the area, caused by low annual precipitation.

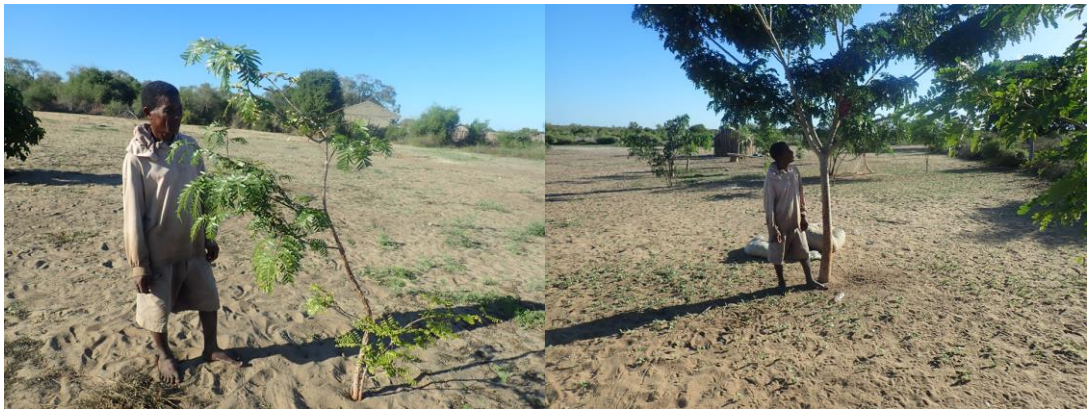


Figure B2 (f) Planted terrestrial tree in Ankindranoke, four years old

- ***Seaweed and sea cucumber farming***

For the reporting period, 78 farmers in Tampolove successfully harvested 22,508 individuals of marketable sea cucumbers, *Holothuria scabra*, with a weight of over 400 g per individual, and 427 farmers within seven villages of the project area harvested 155,343 Kg (dry weight) of seaweed, *Kappaphycus alvarezi*.

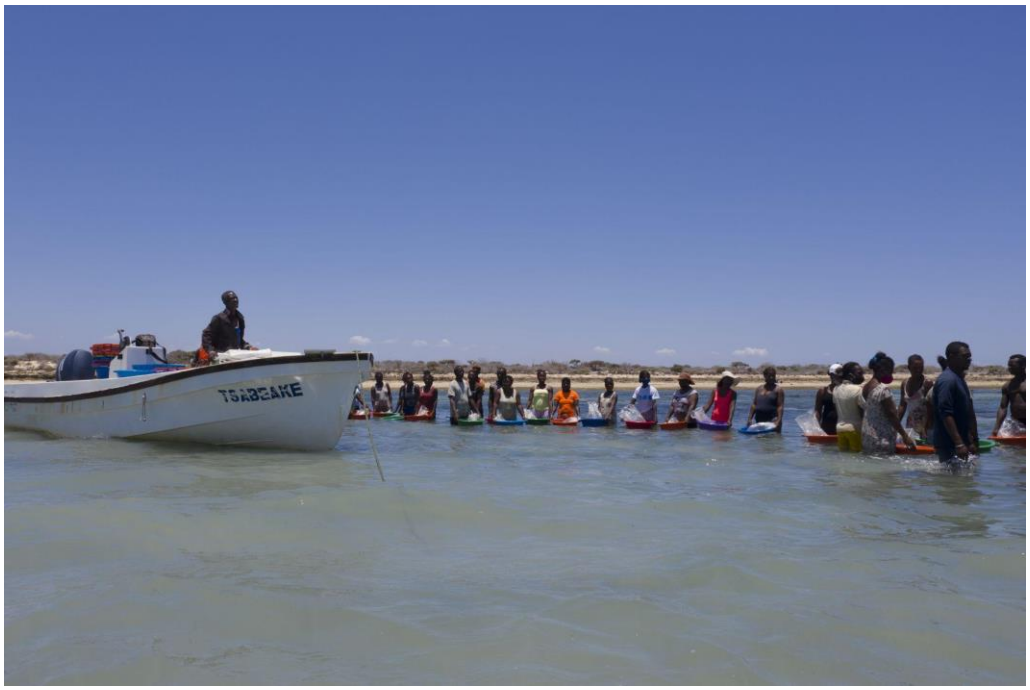


Figure B2 (g) Delivery of the sea cucumber juveniles in the village of Tampolove

Part C: Plan Vivo Certificate issuance submission

C1 Contractual statement

This issuance is based on a single PES agreement signed by village leaders of the ten partner villages, as the representatives of the residents of the villages in the project area, who have complied with all requirements in the PES agreement.

Village name	Number of households
Tampolove	103
Ankitambagna	31
Agnolignoly	125
Andalambezo	77
Vatoavo	66
Ankindranoke	130
Ampasimara	18
Befandefa	194
Ankilimalinike	38
Lamboara	103

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 2022 – December 2022

Area ID	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*	*476*	*140*	*15*	*21*	*119*	*0*	*595*
Sustainable use	*973*	*Improved land use management*	*1,688*	*497*	*15*	*75*	*422*	*0*	*2,110*
Reforestation	*163*	*Ecosystem restoration*	*3,320*	*977*	*15*	*147*	*830*	*0*	*4,150*
TOTAL			***5,484***			***243***	***1,371***	***0***	***6,855***

*Number of tCO_2 sequestered or avoided emission through participants' activities in previous reporting periods which have not yet been issued as PVCs

** Number of tCO_2 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, all of the threshold targets from the project intervention were met, the monitoring result shows that:

- there is no decrease in the diameter at breast height (DBH) within standard error (Annex 1.1);
- cutting in sustainable use zones is within the allowable quotas (Annex 1.1);
- communities have planted 15.4 ha degraded mangrove forest, surpassing the set annual objective to replant 10 ha (Annex 1.2);
- Survival rate of the planted mangrove is 84.4%, surpassing the required 60% (Annex 2.1);
- One infraction was reported and enforced (Annex 2,2)

However, the number of forest patrols was not reached because of the change in our approach , which now envisages 12 patrols/month (Annex 2.3). We plan to update the PDD to reflect this change in the next five-year review.

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

The delay of the full implementation of Decree n° 2021-1113 continues to put the sale of Plan Vivo Certificates on hold. No actual sales have been made due to this blockage, but the price was negotiated with the buyers.

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 and to request the new issuance. 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.

Table E1 (a) Measurable indicators

Specific: Characteristic	Measurable: Indicat		Attainable					
			Green	Amber		Red		
Ecosystem services benefits		Target		Level 1 mitigatior	Mitigation measures	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% surviv	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	

* Figures in the area replanted, between 9ha-10 ha is not presented in the threshold indicators but this is to be adjusted in the next verification

Table E1 (b) Monitoring results

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	Below quota within the sustainable harvest quotas Annex 1.1	Green
Forests area	Area planted (ha)	10ha/year	15.4 Annex 1.2	Green
	Survival rate (%)	> 60% survival rate	84.4 % Annex 2.1	Green
Drivers of deforestation	Infraction for illegal Harvesting	100 % of infraction reported enforced	No report received Annex 2.2a	Green
	Number of patrols	16 patrols/month	12 patrols/month Annex 2.2b	Amber*

*The number of patrols is limited to 12 patrols/month because of the change of the approach which will be incorporated to the PDD during the next verification. This target number was achieved.

E2: Maintaining commitments

No participants have resigned from the project this year.

E3: Socioeconomic monitoring

Table E3 (a) Other 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	Less than 2 per year	Review schedule and minutes of VA meetings
	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 89% 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

The Velondriake Association (VA) carried out eight regular meetings, details found in Annex 4.

Table E3 (b) Institutional indicators

Intervention	Indicator Target	Monitoring	Result	Threshold
Institutional indicators	Capacity and activity level for the Velondriake Association	Number of meetings of the VA per year	Velondriake Association held 08 meetings Annex 4	Green
	Effectiveness of the CSE	Audit of CSE work	CSE work audited	Green
	Number of grievances handled	>90% of grievance received were handled according to procedure	No grievance report was received	Green

E4: Environmental and biodiversity monitoring

A baseline biodiversity survey in mangrove forest at the project area was undertaken in February 2018. The frequency of the monitoring is every five years throughout the project period. The next survey is therefore scheduled in 2023.

Part F: Impacts

F1: Evidence of outcomes

In total, 963 primary school children enrolled at the primary state and catholic school within the 10 villages have benefitted from a scholarship from the advance funds from the carbon revenue paid by Blue Ventures, details found in Annex 6.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

Table 8: 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
2019	0	0	0	0	0
2020	0	0	0	20,000*	0
2021	0	0	0	0	0
2022	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**20,000**	**0**

* The sum held in trust refers to amounts received from buyers of carbon credits who sent the money with the understanding that they will receive the credits once the policy issues are resolved.

Part H: Ongoing participation

H1: Recruitment

No recruitment occurred during this reporting period

H2: Project Potential

No update

H3: Community participation

Village outreach in Baie des Assassins was held in December 2022 to disseminate the results of the activities that have been conducted throughout the year. The dissemination included achievements, challenges faced and the next actions. This was also an opportunity for the community from the 10 villages to interact with the project developer (Blue Ventures) and the project coordinator (VA). The number of the participants in this dissemination is summarised in the table below.

Table H3 Total number of attendees at the village outreach for dissemination

Village	Men	Women	Total
Andalambezo	6	28	34
Ankitambagna	18	20	38
Agnolignoly	18	39	57
Tampolove	15	23	38
Vatoavo	26	34	60
Ankindranoke	28	34	62
Befandefa	15	44	59
Lamboara	19	27	46
Total	145	263	408

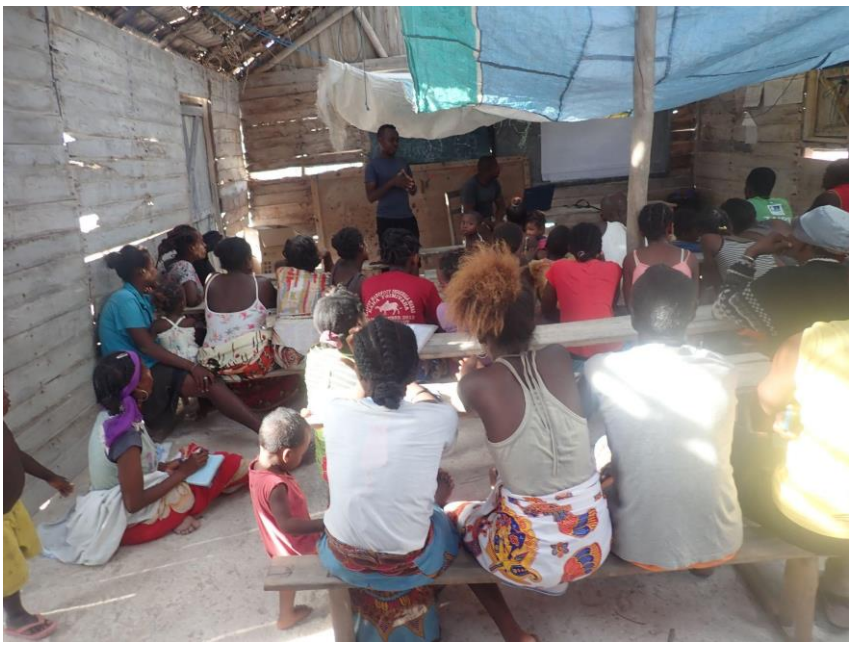


Figure H3. Outreach for dissemination held in the village of Ankitambagn

Part I: Project operating costs

I1: Allocation of costs

Table I2 Allocation of costs (link)

Expense	Narrative	Amount (USD)	Amount (MGA)	Contribution from sale of PVCs'	Contribution from other sources
Ecosystem restoration	Mangrove plantation (village meals for the 12 sessions)	417.14	1,460,000	0	Cartier Foundation Funding
	Food allowance for the CSE carried out the monitoring of the survival rate of the planted mangrove	672.71	2,354,500	0	Cartier Foundation Funding
Forest patrols	Food allowance for the 12 CSE and equipment for the forest's patrols (paints & field sheet)	4,272.71	14,954,500	0	Cartier Foundation Funding
Carbon stock monitoring	Carbon stock inventory carried out by the CSE	472.14	1,652,500	0	Cartier Foundation Funding
Other project activities (alternative wood plantation and beekeeping)	Alternative wood plantation	514.29	1,800,000	0	Funding from UK Government (ICF)
	Beekeeping	1,461.51	5,115,300	0	Funding from UK Government (ICF)
Governance	Outreach tours in 10 villages to disseminate the Tahiry Honko achievements and update	708.57	2,480,000	0	Funding from UK Government (ICF)
	Meeting of the VA executive committee regular mangrove management meeting	2,857.14	10,000,000	0	Funding from UK Government (ICF)
	Meeting of the VA management committee in the southern group (01 meeting)	600.00	2,100,000	0	Funding from UK Government (ICF)
	General Assembly	3,085.71	10,800,000	0	Funding from UK Government (ICF)
Social investment community project	School fees for 963 school children from the 10 villages enrolled at	2,795.08	9,782,780	From cash advance from Blue Ventures	Blue Ventures Un restricted funding

	primary school (state and catholic)			fund (from the 60% community share)	
		TOTAL	**17,857.02**	**62,499,580**	

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

Annexes

Annex 1. Monitoring results for issuance request

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

To assess whether carbon sequestration is maintained or is increasing, tree measurements within one fifth (total = 10 plots) of the carbon plots established in the project area in 2014/2015 were re-taken.

Table Annex 1.1 (a) Mean change in mangrove dbh and number of stumps from 2014/15 to 2022

Management zone	Forest attributes	2014/2015	2022	Mean change	Target status
Sustainable use	Stump density (ha^{-1})	496.88 (±200.25)	265.63(±119.61)	-231.25	Below quota
# plot: 08	DBH (cm)	8.28 (±0.69)	7.39 (±0.80)	-0.89	No decrease within SE
Strict Conservation	Stump density (ha^{-1})	675.00 (±675.00)	325.0 (±275.00)	-350.00	Significantly decreased
# plot: 02	DBH (cm)	7.17 (±0.94)	7.11 (±0.50)	-0.05	No decrease within SE

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

* Allowable quota is 122.1 trees/ha. Negative values imply that stump density significantly decreased while compared with the baseline data. The annualised stump density between 2014/2015 and 2022 equals to - 33.0 per ha, which is below the quota.

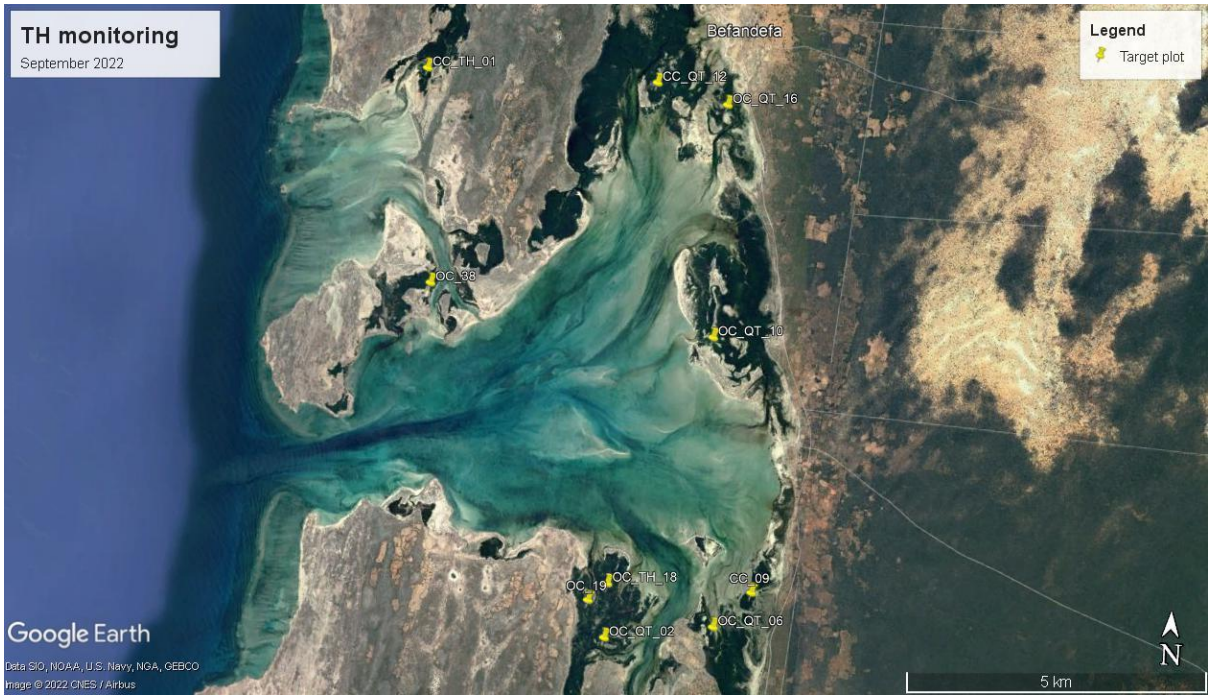


Figure annex 1. - Map of the carbon stock plots remeasured

Table annex 1.1 (b) Result of the carbon stocks monitoring

PlotID	SiteName	Management zone	x	y	2014/2015 Mean DBH (cm)	2022 Mean DBH (cm)	Difference in mean DBH (cm)	2014/2015 Stump density (ha-1)	2022 Stump Density (ha-1)	Difference in Stump density (ha-1)
CC_QT_12	Befandefa	Sustainable use	323634	7548837	6.48	6.75	0.28	1425	875	-550
OC_QT_16	Befandefa	Sustainable use	324841	7548539	6.97	6.74	-0.23	75	150	75
CC_09	Vatoavo	Tahiry Honko	325752	7540442	8.12	7.62	-0.50	1350	600	-750
OC_QT_06	Vatoavo	Sustainable use	325146	7539834	10.03	10.81	0.79	150	725	575
OC_QT_02	Agnolignoly	Sustainable use	323325	7539593	6.78	6.32	-0.46	0	75	75
OC_TH_18	Agnolignoly	Sustainable use	323340	7540440	11.46	11.12	-0.34	1325	75	-1250
OC_19	Agnolignoly	Sustainable use	323033	7540145	7.64	5.83	-1.81	375	25	-350
CC_TH_01	Bejoho	Tahiry Honko	319744	7548836	6.22	6.61	0.39	0	50	50
OC_38	Lamboara	Sustainable use	320042	7545238	10.19	6.36	-3.82	125	200	75
OC_QT_10	Ampasimaraha	Sustainable use	324850	7544637	6.76	5.19	-1.57	500	0	-500

Number of plots with increasing dbh:	3	5	Number of plots with increasing cut stump
Number of plots with decreasing dbh:	7	5	Number of plots with decreasing cut stump
Number of plot with unchanged dbh:	0	0	Number of plots with unchanged cut stump
Mean dbh change:	-0.73	-255.00	Mean stump change
StdDev dbh 2021:	2.01	326.27	StdDev stump 2021
SE Reference value dbh Nov 2022 (N=10):	0.64	103.18	SE Reference value stump Nov 2022 (N=10)

The Monitoring Plan “Green” target stated that stump density does not exceed the harvest quota within the Sustainable Use 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). We therefore 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 PAG document, which are 77,989 (fence timber, DBH<5cm) and 55,317 (house timber, 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, in particular the family of Rhizophoraceae, since the baseline year. The difference between stump density in 2014/2015 and the September 2022 monitoring results 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 2022.

Results

The mean stump density with 2014/2015 measurement within the sustainable use zone (SUZ) is 496.88 (per ha), whereas that of 2022 is 265.63 (per ha).

So, annualised SD (/ha) = (265.63-496.88)/(2022-2015) = -33.0

In conclusion, for the 2022 reporting period, the result of the monitoring conducted in September 2022 showed that stump density (SD) within the re-measured SUZ plots decreased below the annual allowable cutting (AC/ha/yr).

- 33.0 (SD/ha/yr) << 122.1 (AC/ha/yr).

This decrease in stump density within re-measured plots can be explained by the decomposition of most of the old cut stumps in 2014/2015 and the assumption suggesting that minimal to no further cutting occurred throughout the remeasured plots.

Annex 1.2. Mangrove replanting

The communities in villages partners of the project have successfully replanted 15.4 ha of mangrove degraded area with 56,169 mangrove seedlings of *Ceriops tagal*, *Bruguiera gymnorrhiza* and *Rhizophora mucronata.* The achievement surpassed the annual goal to replant 10 ha.

Table Annex 1.2 Mangrove replanting

Year	Date of replanting	Village	Area planted (ha)	Total participants	*Ceriops tagal*	*Bruguiera gymnorrhiza*	*Rhizophora mucronata*	Total Planted
2022	Apr-07	Lamboara	1.1	99	6,000	24	485	6,509
2022	Apr-08	Agnolignoly	1	45	2,430	0	2,745	5,175

2022	Apr-09	Ankindranoke	1.2	83	360	16	4,065	4,441
2022	Jul-26	Befandefa	1.2	108	2,110	0	96	2,206
2022	Jul-26	Ankindranoke	1.5	378	920	1021	3,494	5,435
2022	Dec-06	Ampasimara	1.1	50	5,660	0	2	5,662
2022	Mar-08	Vatoavo	2.1	100	7,270	920	9	8,199
2022	Mar-06	Ampasimara	1.1	94	1,740	102	1,605	3,447
2022	Mar-07	Befandefa	1.1	77	387	38	2,620	3,045
2022	Mar-29	Vatoavo	2.6	80	1,840	1671	2,660	6,171
2022	Mar-30	Andalambezo	1	47	2,056	0	1,429	3,485
2022	Apr-06	Ankilimalinike	0.4	27	2,180	0	214	2,394
		TOTAL	**15.4**	**1,188**	**32953**	**3,792**	**19,424**	**56,169**

Annex 2. Ongoing monitoring results for all participants

Annex 2.1. Mangrove replanting survival rate monitoring

The overall survival rate of the planted mangrove in this reporting period was 84.4 %, surpassing the target (over 60%).

Table Annex 2.1 Mangrove replanting survival rate monitoring

Year	Date of replanting	Village	Area planted (ha)	*Ceriops Tagal*	*Bruguiera gymnorrhiza*	*Rhizophora mucronata*	Total Planted	Date of monitoring	*Survival rate (%)*
2022	Apr-07	Lamboara	1.1	6,000	24	485	6,509	18-Sep-22	75.3
2022	Apr-08	Agnolignoly	1	2,430	0	2,745	5,175	17-Apr-23	98.2
2022	Apr-09	Ankindranoke	1.2	360	16	4,065	4,441	11-Nov-22	73.1
2022	Jul-26	Befandefa	1.2	2,110	0	96	2,206	13-Jul-23	76.3
2022	Jul-26	Ankindranoke	1.5	920	1021	3,494	5,435	11-Jul-23	70.8
2022	Dec-06	Ampasimara	1.1	5660	0	2	5,662	16-May-23	88.7
2022	Mar-08	Vatoavo	2.1	7,270	920	9	8,199		
2022	Mar-06	Ampasimara	1.1	1740	102	1,605	3,447	10-Nov-22	93.6
2022	Mar-07	Befandefa	1.1	387	38	2,620	3,045	09-Nov-22	78
2022	Mar-29	Vatoavo	2.6	1,840	1671	2,660	6,171	12-Nov-22	76.4
2022	Mar-30	Andalambezo	1	2,056	0	1429	3,485	13-Nov-22	98.4
2022	Apr-06	Ankilimalinike	0.4	2,180	0	214	2,394	13-Jul-23	100
		TOTAL	**15.4**	**32,953**	**3,792**	**19,424**	**56,169**		**84.4**

Annex 2.2. Dina enforcement

For this reporting period, there was no infraction reported to the *Dina* enforcement committee (KMD).

Annex 2.3. Forest monitoring and patrolling

The number of patrols is limited to 12 patrols/month because of the change of the approach which will be incorporated to the PDD during the next verification. For the reporting period,

the 12 CSE carried out 144 patrols. The objective to carry out one patrol per month per CSE or 144 patrols per year was reached.

Table Annex 2.3. Forest monitoring and patrolling

NUMBER OF PATROLS FOR 2022																	
Village	**Name**	**Sex**	**Role**	**Site TH**	Jan	Fév	Mar	Avr	Mai	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Lamboara	Christie	M	CSE	Bejoho	1	1	1	1	1	1	1	1	1	1	1	1	12
	Alphine	F	CSE	Anky	1	1	1	1	1	1	1	1	1	1	1	1	12
Ankilimalinike	Manovoson	M	CSE	Tsibekoy	1	1	1	1	1	1	1	1	1	1	1	1	12
Ampasimara	Emile	M	CSE	Ampandriambagna	1	1	1	1	1	1	1	1	1	1	1	1	12
Befandefa	Norbert	M	CSE	Andamalama	1	1	1	1	1	1	1	1	1	1	1	1	12
Ankindranoke	Baranda	M	CSE	Ampotapotaky	1	1	1	1	1	1	1	1	1	1	1	1	12
	Mampionina	M	CSE	Andalantsarety	1	1	1	1	1	1	1	1	1	1	1	1	12
Vatoavo	Tsivalake(Naie)	M	CSE	Ampanihy	1	1	1	1	1	1	1	1	1	1	1	1	12
Andalambezo	Andre(Fenty)	M	CSE	Antseragnandaka	1	1	1	1	1	1	1	1	1	1	1	1	12
Agnolignoly	Velomama	M	CSE	Ankatsakitsibogna	1	1	1	1	1	1	1	1	1	1	1	1	12
Tampolove	Jean Noely	M	CSE	Antsahandolo	1	1	1	1	1	1	1	1	1	1	1	1	12
Ankitambagna	Falea	M	CSE	Antsahandolo	1	1	1	1	1	1	1	1	1	1	1	1	12
				TOTAL	**144 patrols**												

Annex 3. Reallocation of commitments

Not applicable

Annex 4. Socioeconomic monitoring results

- ***Integrated Social Survey***

The Integrated Social Survey (ISS) was carried out within 11 villages in the LMMA Velondriake in 2021-2022. Preliminary results found here.

The findings of the survey highlighted that:

- 90% (n=338) of respondents support the mangroves reserve because of the direct benefits that villagers have gained from its protection;
- 86% (n=322) of respondents attended village meetings on the management of marine resources.

- ***Meeting of the Velondriake Association executive committee***

The Velondriake Association executive committee held eight meetings, summarised below.

Table Annex 4. Socioeconomic monitoring results

Date of meeting	**Type of the meeting**	**Topic of the meeting & discussion**
17-18 March 2022	Executive committee	• Reinforcement of the rules of the executive committee for the VA; • Update on the achievements following the General Assembly and the next step; • Financial reporting; • Developing the monthly work plan of the VA. Full report
April 2022	Southern Vondrona	• Presentation of the VA interim and treasurer; • Assessment of the internal organisation of the VA; • Collect of information and issues from each village; • identification of the activities planned for May and June. Full report
06-07 May 2022	Executive committee	• Update from each of the three Vondrona and each villages; • Financial reporting for the expenditure April; • Update from each programme (e.g. saving groups, mangroves, fisheries and education.); • Explanation of the collaboration between Blue Ventures and VA; • Work plan of the VA for May-June-July. Full report
23-24 July 2022	Executive committee	• Discussion about the sea cucumber farming issues (theft in Antsatsamoroy); • Discussion about the Dina for the beach seining occurred in July 2022; • Preparation of the General Assembly scheduled in August 2022; • Information about the new model of sea cucumber farming. Full report
16-17 September 2022	Executive committee	• Sharing information about the achievements about the ongoing program (e.g. fisheries, mangrove, sciences, education, seaweed and sea cucumber farming); • Sharing update from each villages within the LMMA Velondriake; • Financial reports from the VA;

		• Update about the annual work plan for the VA for september and October Full report
30 September- 01 October	General Assembly	• Sharing information about the achievements • Discussion and consultation about the structure of the VA (election of the president); • Financial reporting; • Discussion about the Tahiry Honko scholarship. Full report
11-12 November 2022	Executive committee	• Presentation of the new structure of the VA and collect inputs from the executive committee members ; • Update about the seaweed and sea cucumber farming (contribution from the sale and infractions); • Proposition to amend the Dina, increase the fine relates to the beach seining and sea turtles poaching. Full report
09 December	General Assembly	• Financial reporting of the VA (bank statement) • Reinforcing the idea of the executive committee to address all of the financial issues; • Establishment of the election organiser committee • Official announcement of the closing mandate of the general assembly members - which is mandatory before the election of the new President. Full report

Annex 5. Conservation and monitoring results

A baseline biodiversity survey in mangrove forest at the project area is scheduled every five years. Given that the biodiversity survey was undertaken in February 2018, the next survey is therefore scheduled in December 2023.

Annex 6. Impacts

In total, 963 primary school children enrolled at the primary state and catholic school within the 10 villages have benefitted from a scholarship from the advance funds from the carbon revenue, provided by Blue Ventures.

Table Annex 6. Number of the school children receiving Tahiry Honko scholarships

Villages	Type of school	Number of school children

Andalambezo	Primary Catholic School	65
Tampolove	Primary Catholic School	114
Agnolignoly	Primary Catholic School	53
Lamboara	Primary Catholic School	68
Vatoavo	Primary Catholic School	51
Ankindranoke	Primary public school	226
Befandefa/Ampasimarà	Primary public school	318
Ankilimalinike	Primary public school	35
Ankitambagna	Primary public school	33
	TOTAL	**963**

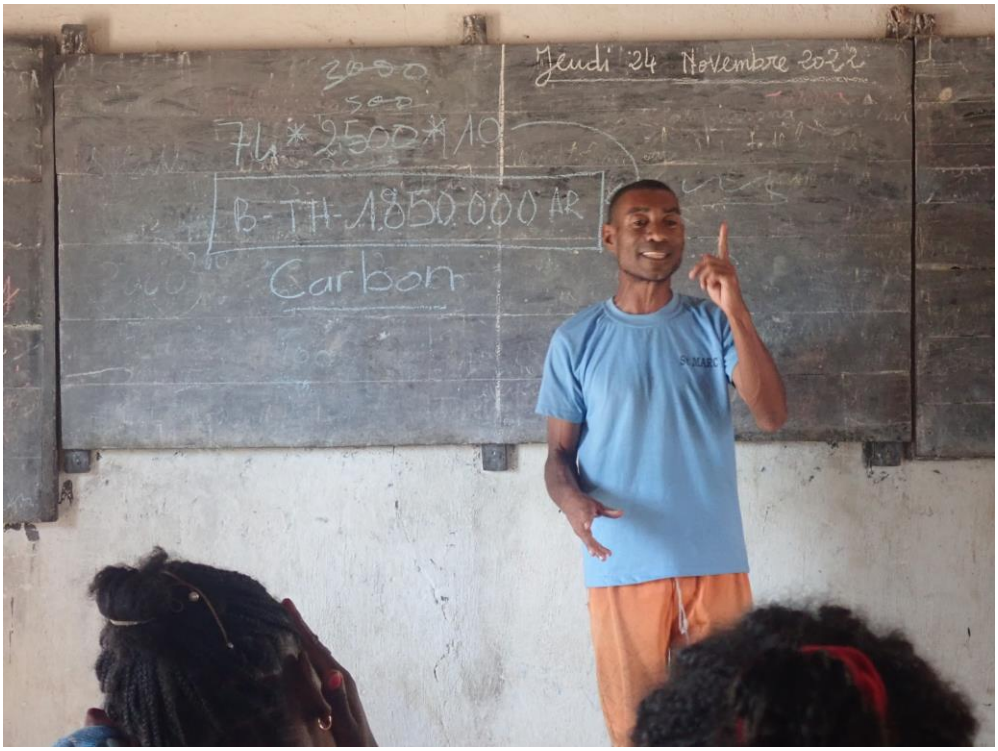


Figure Annex 6, A teacher at primary catholic school in Andalambezo village explaining the amount of scholarship from Tahiry Honko

Annex 7. Community meeting records (summary)

Village meetings were held across the 10 village partners of the project from 6th to 10th of December 2022. This aimed to provide updates about the project activities, particularly the

achievement on the forest patrols, carbon stock monitoring, mangrove replanting and survival rate, payment of the school fees, situation of the national policy and mangrove beekeeping activities. This also aimed to provide updates about the next steps.
An increased number of participants was recorded in 2022 compared with the record th 2021. The high participation may be influenced by the update about the payment of the school fees. Full report found here.

Figure Annex 7 . Dissemination in the village of Ankitambagna