2022

Gula Gula Food Forest Program Indonesia Annual Report for 2021

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CO2 Operate BV/ Rimbo Pangan Lestari
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Annual Report for Plan Vivo projects

Ecosystem restoration in the Singkarak river basin, West Sumatra

Annual report year Jan 2017 - Dec 2021

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Summary

Project overview	
Reporting period	1st January 2017– 31st December 2021
Geographical areas	Singkarak river basin, Solok District, West Sumatra 1. Kecamatan Junjung Sirih: nagari Paninggahan 2. Kecamatan Lembah Gumanti, nagari air dingin/koto baru 3. Kecamatan Kubung, nagari Selayo 4. Kecamatan Payung Sekaki, nagari Sirukam 5. Kecamatan X Koto di atas, Nagari Paninjawan,
Technical specifications in use	Ecosystem restoration in the Singkarak river basin, West Sumatra

Project indicators	Historical (pre 2017)	Added/ Issued Jan 2017-Dec 2021)	Total
No. smallholder households with PES agreements	0	285	285
No. farmer groups with PES agreements	0	5	5
Approximate number of households (or individuals) in these farmer groups	0	285	285
Area under management (ha) where PES agreements are in place	0	202.6	202.6
Allocation to Plan Vivo buffer (tCO_2)	0	9,521	9,521
Saleable emissions reductions achieved (tCO_2)	0	49,985	49,985
Unsold Stock at time of Submission (PVC)	0	26,496	26,496
Plan Vivo Certificates (PVCs) issued to date			**0**
Allocated to the Plan Vivo Buffer by vintage			
2019 vintage			**1,154**
2020 vintage			**3,751**
2021 vintage			**4,615**
Plan Vivo Certificates requested for issuance by vintage			
2019 vintage			**6,059**
2020 vintage			**19,695**
2021 vintage			**24,231**
Total PVCs issued (including this report)			**49,985**

Project updates

A1 Key events

Our restoration work has proven to be a game changer for the local people, as it opens possibilities to restore their degraded areas, which have been left idle for decades, in Paninggahan since the 1970s of the previous century, when a pest destroyed the Large majority of the monoculture stands of clove trees. In Air Dingin area, the land is left idle since early 2000, after a disease killed the maracuja mono culture plantations. In addition to direct financial benefits for their carbon they receive planting materials and on-going technical assistance.

1. Project validation and certification

We feel privileged to be able to submit the first annual report to Plan Vivo Foundation, following the project's validation and certification objective by early 2022 in times when Corona has not been very gentle to us in achieving restoration targets and finalizing the certification process. After a period of developing a proof of concept (2010-2016), the actual preparation for the certification process started in 2017, restoring the first certifiable area according to the Plan Vivo Standard. The official document writing for Plan Vivo started 2019. This first annual report summarizes all the efforts which began in 2017. Our local partner, Rimbo Pangan Lestari (RPL) has done an incredible job. When COVID hit Indonesia as well, it could have halted much of restoration activities. Their incredible flexible and out of the box thinking has allowed us to continue with relatively minor delays.
Also, many thanks to Plan Vivo (Luke Howard in particular) for their support and flexibility as well to find solutions in COVID times, especially to get the validation done.
Achieving the certification is more than a major achievement for CO_2 Operate BV in general, but for our local partners and local participants in particular. Everyone feels very proud achieving the formal recognition of our climate benefit activities, as well as the way we work with local communities. It has inspired a growing number of local farming households requesting to join our restoration activities.
A significant number of private sector clients have always trusted us over the years, been very patient and invested in our efforts to combat climate change and poverty since 2009. Therefore, we are very grateful that we may soon offer them the official, third-party recognised carbon credits. Recently, the Dutch FMO development bank invested a significant amount of development capital into our work, allowing us to scale up and restore another 200 ha of degraded land, and include many more farming families, who like to join the restoration efforts in their villages. This investment has occurred in the form of loans (including APR or loan interest), which has supported operations and the payments of farmers whilst the certification process has been finalized, but which will be paid back through the support of income from PVC sales.

2. Tree product development phase to access global markets

One evening (in 2020), we were having a farmer group meeting in one of our villages, the farmer participants asked me…
Pak Paul, since you are from the Netherlands, why don't you become the new Dutch VOC for us?
A lot of laughter followed, although I felt quite embarrassed, knowing the severe exploitation done by the VOC in the colonial times. Once the laughter stopped, they continued about it. But serious Pak Paul, we trust you, and we know it will be a different VOC, not based on exploitation and not taking our land. You could also help us to get a better price for our tree products in a larger market.
Reaching 2022, our participants are beginning to enter the global market through our collaborative efforts.

Over the years, more of our restoration sites have trees that are providing commercially viable volumes of tree products. Early 2021, the Dutch government agency RVO provided an 80% co-funding to cover the costs for processing units for selected tree products we see as being most suitable. The following products have available markets and were relatively easy products for participants to be trained in processing and post harvesting technologies. The focus from 2022 onwards is on coffee (both arabica and robusta) and clove-leaf essential oil production.

With the co-funding from RVO we were able to complete further activities beyond the scope of the Plan Vivo project, including conducting training and start building processing units:

Training/capacity-building
- Train farmers in good coffee tree management and best practices in harvesting coffee.
- Train farmers in compost-making
- Train farmers in clove-leaf collection for essential oil production form clove leaves.
- Train people in improving the distilling process for essential oil production.

Building processing units
- A larger and more professional distilling unit (for 500kg of leaves) has been built
- A UV house has been built to dry coffee beans better and more hygienic
- A large composting unit has been built which provides

3. New PES agreements

New PES agreements were signed with 128 farmers in January 2021, as part of the FMO development capital contract. A total new area of 103 ha has been planted since 2021. In February 2021 the first carbon payments were made to these new farmers, with a total of U$ 23,278. This is a first financial incentive which gives them the capacity to do the work (some might hire labour).

By December 2021, the FPIC process in the village (nagari) of Paninjawan, was finished. In this new site, mapping was done, and a farmer group of 47 participants has been formed. The plan is that the participants will sign the PES agreements in March/April 2022 for the restoration of 38.5 ha. There is a delay caused by the fact that the village head became seriously ill. He needs to be replaced (a process driven by the village members), for which the procedures have started. The new village head needs to sign the PES agreement with the group as well.

With another new partner from the Netherlands, we are developing a melinjo/nutmeg in-setting project in the region of *Pesisir selatan*, West Sumatra. The PES agreements will probably be signed in August/ September 2022.

A2 Successes and challenges

1 Working in times of COVID

COVID has obviously put challenges to our work. We have developed COVID regulations for our counterpart RPL, as part of our CESR policies for a safe working environment. The staff of RPL has shown to adhere to these regulations, also in their contact with farmer participants. With every meeting, sanitary measures are taken, and hand washing and wearing masks are required from those in meetings or during training. When possible, meetings and training are conducted outside where social distancing can be secured. Whenever a staff member has symptoms that could relate to COVID, he/she needs to be tested while the other team members have to go in quarantine. With 8 fieldworkers, one can imagine that on a regular basis one of them would show symptoms which forced the others to go in quarantine. In 2021, a deceleration of more than a month in our restoration activities was caused by COVID quarantine needs, but luckily without anyone being tested positive. They continue to comply to the COVID regulations we developed in 2020.

2 Deceleration translated in delay of management

In total, 54% of the total tree planting targets have been achieved. A recently added new site, Paninjawan (38.5 ha), is still in the FPIC process. Various reasons can be mentioned for not yet finishing all:

- In the recent sites, starting 2020, COVID restrictions delayed the activities.
- Successful application for funding to develop processing units added to already a full agenda.
- In the VSad site, the irregular rainfall over the past 2 years (Figure 1), caused a 65% survival after all had been planted end of 2022.
- Irregular rainfall has affected the planting in general, as participants have been hesitant to transfer the trees to the fields. However, trees continue to grow in their backyards in the polybags.

We decided to finish planting 154 ha first (Paninjawan site not yet), including replacement planting for the VSad site. Also, the focus has also been on setting up the processing units, as funding had to be implemented by late 2021. Currently, planting is still on-going and we hope to reach an 80% target in the coming 2 months.

3. Innovative approaches to village nursery establishment in times of COVID

During COVID, travels restrictions did not allow the RPL team to go around and look for seeds or seedlings from various tree species. In particular, cinnamon could not be found. However, since they know that, in the vicinity, several villages had many farmers planting cinnamon, they called the village heads and asked if farmers would be willing to bring seedlings to the RPL village nursery. Usually, cinnamon trees develop many seedlings, as seeds are easily

dispersed by birds. So many seedlings are usually found around the cinnamon trees. This has always been a common practice for cinnamon growers to simply collect seedlings from the wild. Providing the requirements to the village heads, and the payment for each "qualified" seedling was announced in the villages. Many farmers showed up by motorcycle bringing large amounts of cinnamon seedlings to the nursery. The success of this approach has now become common practice whenever cinnamon seedlings are needed, instead of looking for seeds and raising them in the nursery.
In addition to one central village nursery, COVID also helped us to decentralize nursery development in the villages. To reduce travel time and costs for seedling distribution among the participants, smaller nurseries have been established close to each farmer group. The staff just needs to monitor the seedlings whenever they visit the farmer group. If there are issues, the farmer group would also call our team to come and see. It has reduced the working load, and saves on transport costs for all farmers in need to come to the central nursery to collect their seedlings. We want to see how much carbon emissions are saved by reducing travel from decentralizing nursery development in the village.

4. Re organizing the monitoring Database

Using zoom, we have monthly update meetings with the entire RPL team in West Sumatra. Each project officer presents his/her work and progress over the past month, using a powerpoint presentation. Each powerpoint presentation contains monthly updates of data and issues discussed with farmers or within farmer groups. With the writing of the first annual report, we see that the way data are presented do not automatically fit the tables and data presentation in the annual report. Although all information is available for the annual report, reorganizing the presentation of data in a format that can easily be transferred into the Plan vivo annual report is being done. This will save a lot of time and efforts in the subsequent years of reporting. January 2022 will be the start for this adjusted set up of the PPT presentations.

A3 Project developments

1. Staff changes in RPL

The year 2021 showed an increase in offsetting contracts and generated a substantial amount of funding. This increase in activities resulted in the fact that our local partner *RPL* has 6 permanent staff members (Table 1). In addition, in 2021 one person was hired to coordinate the RVO project from July 2021-Dec 2021. Seeing the increase in work in our restoration activities, an assistant project officer was hired to support the fieldwork in the villages and to directly work with the farmer participants. From July 2020 we selected a financial officer, after Mrs. Gadis had to resign from RPL, after becoming the head of the Solok district election committee. This position is under the local government. Government officials are not allowed to have another permanent job next to their government position under Indonesian law. The new financial officer continues to work with RPL on all financial matters and reporting for CO_2 Operate BV and donors. She, Mrs. Farida and Mr. Bubung form the core management team of RPL.

Table 1 Staff dynamics of our local partner RPL

No	Sexe	Period	Position	Note
1	Female	Nov 2019 - present	Director RPL	
2	Male	Nov 2019 - present	Project	

			Manager	
3	Female	Nov 2019 – April 2020	Treasurer	Had to resign due to her parttime position as Head of Solok District Election Commission
4	Male	Nov 2019 - present	Project Officer for VD site FMO sites	FMO site paninggahan and Selayo
5	Male	February 2020 - present	Project Officer for VS site and FMO sites	FMO site Paninjawan
6	Male	July 2020 - present	Project Officer for FMO sites	FMO air dingin site and Sirukam
7	Male	July 2021 – December 2021	Project Officer for RVO project	Contract end due to end of 1st phase RVO funding
8	Female	July 2020 – present	Finance Officer	
9	Male	July 2021 - present	Project Officer Assistant for VS site	Supporting tree monitoring

2. Corrective Actions from validation report

The validation report was submitted in August 2021 and together with the PDD approved in November 2021. A few FARs (Forward Action requests) were identified, as detailed in Table 3.

A4 Future Developments

1. Project Expansion and New Partnerships

In 2022 we are expanding our activities in West Sumatra, and we like to include a new project on West Timor, Indonesia.

West Sumatra:

- An in-setting project is planned to start in April 2022 with a Dutch company producing Indonesian snacks and sauces. In Pesisir selatan, West Sumatra, we will implement a melinjo/nutmeg food forest with them. Melinjo nuts are used to make *emping krupuk*, a kind of chips, usually eaten as a side dish with Indonesian food. In the future, the company aims to buy melinjo nuts and nutmeg from this food forest. Signing of PES agreements is planned for second half of 2022.
- As part of the Development capital funding, the FPIC process in nagari Paninjawan has almost finished. The PES agreement is to be signed in March/April 2022 for 38.5 ha.

West Timor: the fashion forest

In West Timor, East Indonesia, we have started a new ecosystem restoration project. Starting in 2019 with seed funding from a Dutch NGO and modest CSR funds from a German textile company, the local community began planting of *gliricidia* cuttings for biomass accumulation and N-fixation on an area of 400 ha. New partners are:

- The local NGO Besi Pae coordinates and implements the field activities.

- In 2021, **SukkhaCitta, meaningful clothes,** has joined as a partner. This award-winning Indonesian social enterprise provides additional tree planting funds from their online sales while we are building a more strategic partnership with them on agroforestry cotton cultivation and natural dye production from indigenous trees. These funds specifically went towards supporting the creation of saplings, whilst income from climate finance continued to support the management of new trees and farmer payments.
- Late 2021, **UNDP** provided a grant for this project, which is aimed towards scoping new activities and geographic regions to include in the project. They support financially, but also collaborate with us in the project using their expertise and staff time.

We aim to include the Timor project into the Plan Vivo certification in 2022, as well as the new sites in West Sumatra.

2 Growing number of farmer groups

With new areas being under restoration, covering different villages, farmer group members in existing groups have increased, while in new villages new farmer groups are being established. In total we work with 5 established farmer groups, varying in size of members (**Table 2**). Whenever new people like to join the project, they must first of all be accepted by the members of the farmer group. However, Minang culture is very open to newcomers from all aspects of life, even from other socio-cultural backgrounds. Hence usually anyone can join, as long as they adhere to the group's objectives and workplans.

Table 2 Established farmer groups, members, restoration sites and size

	VD site	VS site	FMO1	FMO2	FMO 3	FMO 4
Kecamatan	Junjung sirih	Lembah gumanti	Junjung sirih	Kubung	Payung sekaki	Lembah Gumanti
Nagari	Paninggahan	Air dingin	Paninggahan	Selayo	Sirukam	Air dingin
Jorong	Subarang, kampuang tangah, Gando	Aia sonsang, koto, cubadak, Data	Subarang, kampuang tangah, Gando	Selayo	Kubang Nan duo	Koto Baru
PES agreements signed	Oct 2017	Sept 2020	Jan 2021	Jan 2021	Jan 2021	Jan 2021
Name of Farmer groups	Kelompok VCM Paninggahan	Kelompok Tani VCM	Kelompok VCM Paninggahan	Kelompok Tani VCM Selayo	Kelompok tani cirubuih Indah Nan Jaya	Kelompok tani bukit panjang Saiyo
Sub groups	Kelompok bukit panjang, kelompok bukit subaka	none	Kelompok bukit panjang, kelompok bukit subaka	none	None	none
No. participants	70	87	68	11	34	15
Area (ha)	34.1	65.5	29.3	13.5	45.7	14.5

Document update

The validation exercise concluded that the percentage needed for the buffer planting should be revised and most probably updated. We have indeed increased the buffer planting to 16%, and have adjusted the figures accordingly for all systems.

Table 3 Document updates

PDD (including technical specifications) document version:		
PDD section	**Date change**	**Short description of update**
Tech specs section	*January 2022*	*Increased the percentage of the bufferplanting from 10% to 16%. Recalculated all net carbon benefits from all systems and adjusted all figures where needed in the PDD.*
	February 2022	FMO systems are added to the PDD, including time averaged carbon calculations for these systems approved by Plan Vivo.

New carbon calculations were submitted to Plan Vivo on 7 February 2022, and approved by 18 February 2022.
The new PDD was submitted to Plan Vivo on 25 February 2022 and approved on the 11th March 2022.

Currently, our local partner RPL is finalizing all planting and monitoring in the field, while at the same time monitoring/supporting the build-up of processing units. This should be done March 2022, after which we can start discussing with Andalas staff on biodiversity measurements, while fieldwork for carbon baseline can be done as well. Ideally, it would be good to combine the vegetation analysis with carbon baseline to make efficient use of limited financial resources (Table 4).
If March cannot be achieved realistically, the entire work will be postponed to early May, as April is the fasting month (Ramadan), followed by the *Idul Fitri* holidays end of April/early May. In line with our CSR charter, respect for culture and religion are important aspects for all of us. We will therefore follow the Muslim calendar for working in the field.

Table 4 Progress against corrective actions

Document	Corrective action	Activity against this
Validation report	***FAR01*** Not all of baseline monitoring data for indicators described in the PDD has not yet been	- *Although baseline carbon data are based on literature from the region, there is a need for field measurements. The project will conduct carbon baseline*

	collected	*assessment in the field of above ground and below ground biomass (soil carbon) first half of 2022 (March or May).* - *(Base) line data on vegetation biodiversity done in 2012-2013, Paninggahan. COVID restricted travel of senior university staff from Andalas. Planning is first half of 2022 in new sites (May-June).* - *Comprehensive biodiversity monitoring of wildlife and soil biodiversity is desirable, seeing results from camera traps. High costs to do this mean additional funding and innovative ways on collaboration. Funding is partly available. Planned start first half 2022 (May-July).*

PART B: Project activities

B1 Project activities generating Plan Vivo Certificates

Our project has one technical specification. However, we have multiple systems as farmers have developed their own agroforest. We were able to identify 4 main farmer-developed agroforestry systems, related to similar dominant tree species (Table 5).

summary

Table 5 Project activity summary

Tree-based systems	Name of management system	Location	Planting year	Intervention	Total area (ha)	Net climate benefit (tCO2/ha)
clove based	Paninggahan (2017)	Paninggahan	2019	Ecosystem rehabilitation	19.9	189.7
clove based	Paninggahan (Subaka, 2017)	Paninggahan (Subaka)	2019	Improved land management	14.4	159.1
arabika/cinnamon	Air Dingin (2020)	Air Dingin	2020	Improved land management	65.5	300.6
robusta-based	FMO 1a	Paninggahan	2021	Improved land management	2.2	240.4
clove-based	FMO 1b	Paninggahan	2022	Improved land management	27.1	250.8
robusta-based	FMO 2a	Selayo	2021	Improved land management	11.0	192.3
clove based	FMO 2b	Selayo	2021	Improved land management	2.5	205.9

arabika/cinnamon	FMO3	Sirukam	2021	Improved land management	45.7	219.7
mahogany/cinnamon	FMO4	Air dingin (koto baru)	2021	Improved land management	14.5	292.2

Within these 4 farmer-developed systems (clove-based, arabica/cinnamon-based, Robusta -based and mahogany/cinnamon based) the significant variation in number of trees planted by the individual participants means that there are various subsystems, with varying amounts of time-averaged carbon stock. It shows that farmer preferences and site differences are being taken into consideration. Where less trees are planted, it is mainly based on the fact that here, there were vegetable gardens. Participants wish to grow vegetables (mainly a local variety of chilis) for a few years before the canopy closes. Less trees per ha mean that a few years of vegetable cultivation is possible. Annex 4 provides the full details of each system and what trees and how many were planted and protected per ha.

B2 Project activities in addition to those generating Plan Vivo Certificates

1. Product processing phase

In march 2021, we received funding from Dutch RVO, a governmental body solely supporting private sector development in the so-called high risk investment environments (Indonesia considered being one of them). The funding is an 80% RVO grant, while CO_2 Operate had to add the remaining 20%. Three products have been selected that provide good opportunities for village-based processing, two of which come directly from the carbon project in West Sumatra (coffee and essential clove oil). The funding has allowed us to train farmers in good tree management and (post) harvesting, while also allowing the building of processing units.

- The market potential research showed that building a larger distilling unit for clove essential oil production (250 kg leaf capacity) will make it a profitable business and allow many more farmers to join and earn an additional income from selling clove leaves to the unit, including non-participants in the Gula Gula Food Forest Program, but who have also planted clove trees in their upland fields. In this way, our activities and impact go beyond project participants.
- The building of a UV house for coffee bean drying in the village will also support (non) participants. Again, non-participants, growing coffee, can dry and sell their beans through this activity.
- A third product under this grant, but not (yet) part of Plan Vivo certification scheme, is arenga palm sugar from food forests in West Java. Here, the grant has gone towards achieving HACCP certification for the arenga palm sugar, while organic certification is planned to be finished by May 2022.
- Training by our coffee processing partner Solok Radjo has built capacity among (non) participants in the gula gula food forest program in good tree management and good harvesting practices, for coffee in particular (knowledge on what berries to harvest for instance was absent). This training has increased new interest in integrating coffee trees (Robusta in particular) into the food forest areas. This largely explains the addition of robusta -based systems into the tech specs.
- Finally, an important infrastructure that is being built are two large bio-composting units, which can deliver 4 tons of compost per unit each month (so 8 tons of compost in total). We aim to replace any need for inorganic fertilizers with this high quality

compost, while some surplus may be sold to other farmers.

Part C: Plan Vivo Certificate issuance submission

C1 Contractual statement

This issuance submission (Table 6 Total saleable PVCs since 2017, not accounting for already uncertified sales, or reservations (including buffer planting).is entirely based on signed PES agreements with participants complying to all the minimum requirements stated in these agreements. A PES agreement is only signed when an offsetting client has signed a contract with the project coordinator, CO_2 Operate BV for a certain offsetting target. This guarantees that carbon funds are available to work with the farmer participants.
The total number of participants with PVs under PES agreements is 285. A group of 47 new participants have already been identified in the village of Paninjawan (FMO2021-5a, FMO2021-5b), but no PES agreement has been signed yet.
All claims and reservations are made since 2017 onwards.

C2(a) Issuance request for Plan Vivo Certificates allocated to new participants and land

The issuance request for PVCs, allocated to participants from 2017 onwards, is provided in Table 6.

Table 6 Total saleable PVCs since 2017, not accounting for already uncertified sales, or reservations (including buffer planting).

				A	B	C=A*B	D	E=D*C	F=C-E
Site Code*	Site name	Tech specs System	No. participants	Total area (ha)	Carbon Potential (tCO_2/ha)	Total ER's (tCO_2)	% buffer	No. of PVCs allocated to buffer this period	Saleable ER's (tCO_2)
VD2017-1	Paninggahan (bukit Panjang 2017)	*Clove-based*	*35*	19.9	225.8	4,492	*16*	719	3,773
VD2017-2	Paninggahan (Subaka, 2017)	*Clove-based*	*35*	14.4	189.4	2,721	*16*	435	2,285
VS2020-1	Air Dingin (2020)	*Arabica - cinnamon*	*87*	65.5	357.9	23,446	*16*	3,751	19,695
FMO2021-1a	Paninggahan (FMO 1a)	*Robusta-based*	*3*	2.2	286.2	630	*16*	101	529
FMO2021-1b	Paninggahan FMO 1b	*Clove-based*	*65*	27.1	298.5	8,091	*16*	1,294	6,796
FMO2021-2a	Selayo (FMO 2a)	*Robusta-based*	*5*	11.0	228.9	2,518	*16*	403	2,115

FMO2021-2b	Selayo (FMO 2b)	*Clove-based*	*6*	2.5	245.1	613	*16*	98	515
FMO2021-3	Sirukam (FMO 3)	*Arabica/ Cinnamon-based*	*34*	45.7	261.5	11,951	*16*	1,912	10,040
FMO2021-4	Koto Baru/ Air Dingin (FMO4)	*Mahogany/Cinnamon- based*	*15*	14.5	347.9	5,045	*16*	807	4,240
	TOTAL		*285*	*202.6*	-	***59,506***	-	**9,521**	**49,985**

*see annex 7 for explanations of codes (not publicly available).

C3 Allocation of issuance request

The Gula Gula project has previously issued uncertified credits prior to Plan Vivo certification. These credits have already been sold and a proportion of the climate benefits achieved within this report will be allocated to allow these uncertified credits to be converted to PVCs. Newer unsold PVCs have either already been allocated to new buyers or will be sold to buyers in the future. More information is provided in Section D.

It is worth noting that, as the FMO sites are being restored using development capital first (loans which will support the onboarding, initial management and PES payments, which PVC sales will help pay back after issuance), carbon sales in these sites are in most cases carbon certificates to companies searching for one-year CO2 certificates. Only one client in the FMO sites is willing to go for a multi-year contract, hence 1000 credits are reserved for them for the following years to anticipate on their future unavoidable emissions. In the case of VD2017 and VS 2020 buyers, these are the clients who began developing the food forest over a period of 5 years, as a pre-purchase of carbon credits. The first 5-year contract of VD2017 comes to an end, so they have no more carbon reservations at this moment. They expressed interest in restoring another new degraded area to increase their impact in the world.

C4 Data to support issuance request

Annexes 1 -3 provide some examples of the detailed monitoring data per farmer in each of the sites (the PVs), progress in planting, survival rates and so on. **Table 7** is a summary of these detailed tree monitoring data per participant.

Table 7 Monitoring results of progress in planting and survival rates

Site code	target	ha	planted	To be planted	Survival	% survival	% PES agreement target
VD2017-1 VD2017-2	23,898	34.1	26,406	0	26,380	99.9	100
VS2020-1	131,040	65.5	119,819	11,221	78,146	65	91
FM2021-4	29,000	14.5	5,558	23,4428	5558	100	19
FMO2021-2a	16,800	11	6,882	9,918	6,882	100	41
FMO2021-2b	1,800	2.4	774	1026	774	100	43
FMO2021-3	91,400	46	43,985	47,415	43,985	100	48
FMO2021-1b	20,325	27	8,557	11,768	8,557	100	42
FMO2021-1a	3,300	2	706	2,594	706	100	21

FM02022-5	March 2022	38.5	End of 2022	To be defined	To be defined	To be defined	To be defined

As explained in Section A2, planting has been delayed, due to COVID in 2020/2021, when it was difficult to obtain large enough quantities of seeds/seedlings in one time. However, the most significant impact recently is the adverse impacts of climate change. Erratic rainfall (and in relatively low quantities, see Figure 1) has made participants hesitant to plant seedlings in the field. This became clear during monitoring meetings, where participants asked RPL staff to allow seedlings to remain and grow in the nursery, so they can be watered until good rains provide enough moisture in the soils so that planting can be done. The participants mentioned that planting in such dry and windy conditions would almost certainly result in low survival rates, something they really did not want to happen. Over the past months, rains seem to have improved. Every day participants are collecting and planting seedlings in the field, in order to achieve the target of planting (minimum of 70%) in the coming weeks. The actual survival is in fact higher, as we have not included the protected, existing trees in the field, which were already planted/present before the start of the PES agreement.

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

The Gula Gula project has previously issued uncertified credits prior to Plan Vivo certification. These credits have already been sold and a proportion of the cliate benefits achieved within this report will be allocated to allow these uncertified credits to be converted to PVCs. Newer unsold PVCs have either already been allocated to new buyers or will be sold to buyers in the future. Table 8 below breaks down those PVCs that:

- will replace old uncertified credits,
- represent new climate benefits but which have already been sold, and
- represent new climate benefits that are yet to be sold.

For greater detail, please see Table 14 in the Gula Gula Food Forest Program PDD.

Table 8 History of sold and unsold PVCs (un)certified and vintages, with total of available carbon credits

Planting/starting year	PVCs to be issued for that vintage	Previously sold as un certified credits	Never sold as uncertified credits but reserved for future purchase	Never sold as uncertified and still not claimed/sold	If sold (A or B) – buyer name
2019	6,058.4	4,000	0	2,058.8	Van Duijnen
2020	19,694.9	6,890	10,335	2,469.9	Verstegen
2021*	24,231.1	2,264.3	0	21,966.8	A number of small clients under FMO loan
Total	**49,985**	13,154.3	10,335	26,496	

***Paninjawan (as in PDD) is for now excluded from issuance request, caused by delay in signing PES agreements (waiting for replacement seriously-ill village head).**

Although historical sales have been made by the project, these have been made for uncertified PVCs and therefore will not be reported upon. Detailed sales data will be provided in the next annual report, since the sale of PVCs will have been finalised by then.

Part E: Monitoring results

E1: Ecosystem services monitoring

Our local partner is fulltime in the field during weekdays, working with the participants and monitoring progress. They monitor and coordinate tree planting progress by the participants according to their PVs, once all is planted, continuous monitoring brings forward potential trees deaths and problems associated with tree growth. In addition to adjusting the tree data in their excel sheets per farmer, a more formal monitoring/evaluation with the head of the farmer groups and respective farmers is done before the annual carbon payments. Actual tree counting and potential recent changes are included in the excel sheets (see annex1-3). If all is according the sheets and PES agreement, the members of the farmer group are paid. If not, carbon payments are withheld until all issues have been solved and if needed replacement trees are planted. Usually, the farmer will replace the trees with another tree by him/herself, if the decision is a lack of management during the evaluation. Usually, they will select a tree that shows good growth, not necessarily the same species (for instance replacing clove trees by avocado in Paninggahan is quite common).
Usually, the first 2 years of establishment show the highest variation in successes or failures. Not only because trees are still small, weather conditions (rain in particular) can have a large impact on the survival rates during the establishment phases of the trees in the field.
Source: Agricultural Department Solok Regency (2019,2020)

Figure 1 below shows data from the Solok district meteorological station. As already shown from the monthly community meeting results in Annex 5, there is clear evidence that climate change is affecting the success rates of tree planting in specific years: Source: Agricultural Department Solok Regency (2019,2020)

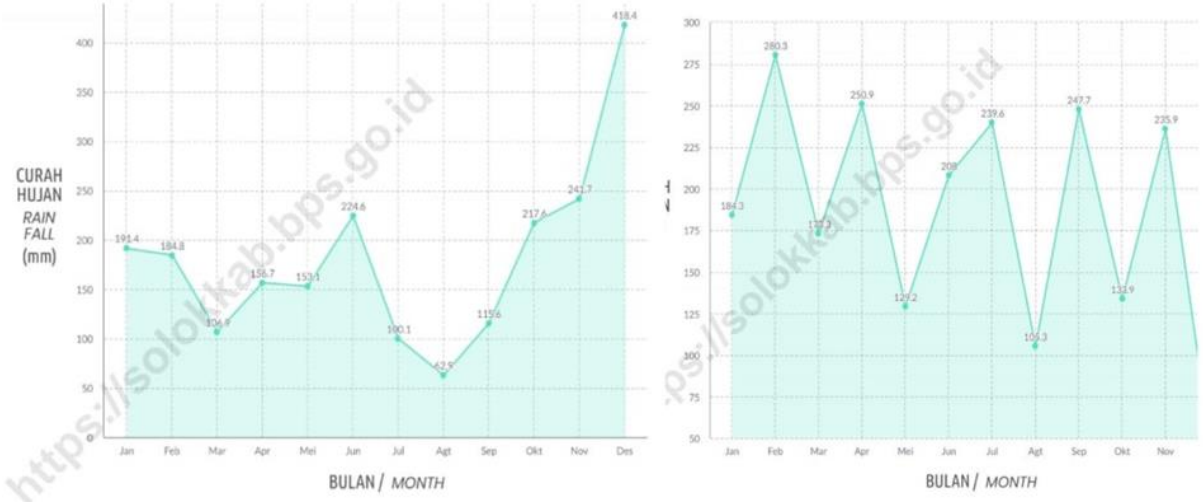
- **Figure 1** shows a rather “normal” rainy season, while the graph on the right shows a highly fluctuating rain pattern in 2020. Rains came and went in 2020, exactly what

participants explained to us. After planting the trees when the rains started to develop, expecting it to be the usual period of continuous rainy conditions, the rains suddenly stopped, and a dry spell of sometimes a month or more followed.

- Short periods of (heavy) rains do not add enough moisture to the soil, as a lot of rain will be surface run off.
- Similar concerns are raised by the participants for the 2021 rainy season. Again, rains come at very irregular intervals, and for short periods (the official data for 2021 will be available by April 2022). This high variability makes it difficult to predict when to plant trees. According to some participants, agriculture has become a gambling game. In their wordings:

What participants say about the weather:

"sekarang cuaca tidak tentu lagi,
freely translates into
"nowadays the weather can no longer be predicted".



Source: Agricultural Department Solok Regency (2019,2020)

Figure 1 Rainfall data Solok district (2019, 2020)

- A final issue for tree deaths in the new areas relates to mis-interpretation of the program's objectives among new participants in a new area. Although during the FPIC process it has been discussed that the program is for 5 years, it is obvious that our program is very different from what they have been exposed to. Many participants have only seen government tree planting programs. During the monitoring meetings participants explained that they thought it was a bit like a government program, where you get all for free, while no one from the government will do a follow-up or monitor progress. In such programs, the participants unintentionally become a bit indifferent, regularly focussing on other activities. They are however happy to hear that the program is serious about the success rate, and the fact that there is monitoring of progress, with carbon payments depending on progress made.

Adjustments to be implemented during 2022 :

- Train farmers in keeping their own records for tree planting and survival on a monthly basis. Field staff can check the forms each month, and discuss if any problem occurs. This is a more detailed approach than discussing all with the head of the farmer groups and some members.
- Our bio composting units will be in operation soon, providing large quantities of compost each month for the trees and soil. This is expected to improve survival rates, especially covering the soil around the trees, where ferns are the baseline vegetation.
- With BPDAS it has been discussed to ensure the delivery of good quality seedlings. All dead trees that can be obtained from BPDAS will be replaced by BPDAS for free.
- Field staff must ensure that all rights and duties for participants are 100% clear in new areas. During the FPIC process even more attention must be paid to thorough management needs for the trees, and that payments depend on good management. The PES agreement will be adjusted to make this point seven stronger.

E2: Maintaining commitment

As stated in section A4(2), new participants can become a member of the farmer group, after democratic consultation within the group and once the new members agree to the rules set by the farmer group. The group is very strict on discussing with new participants on their availability to do the work in relation to the land they want to manage. In addition, attending meetings is another important aspect. Due to the strong social control within the group, individual members are easily monitored by other group member to ensure all activities are done in time, or individual members join any group work. If a member does not perform according to the group rules, they may be supported by the other member, if there are good reasons for not begin able sometimes to join (e.g. illness, deaths in the family, and so on). If the reasons are related to lack of interest, the member gets 2 warnings from the group. If after 2 warnings, the member is still not willing to do his/her job, a replacement will be searched for. The selection done by the local farmer group and the high motivation of participants to join the restoration activates has shown few drop outs. Table 9 summarizes minor replacements since 2017, mainly due to illness, death or off farm employment elsewhere. However, it should be noted that, in all cases, the new participants (all from the same family/clan, as the person that left) were happy to continue the land's involvement in the Gula Gula project and actively manage the land. Therefore, the loss of participants did not constitute a loss of expected emission reductions, since the land and trees remain the same.

Table 9 Participants who left the program, reason why and solution

Number of Participants*	Contract	Area (ha)	Reason for leaving	When	Replacement
1	Van Duijnen	0.7	Lack of management due to Illness	2017	Replaced by 2 new persons, (area 0.5 ha) (0.2 ha)
1	Van Duijnen	1.2	Bad health	2020	Replaced by 4 new persons (0.2 ha, 0.5 ha, 0.4 ha, 0.1 ha)
1	FMO Sirukam	0.6	Resigned (job elsewhere)	2021	Early beginning of program, so simply replaced.
3	Verstegen	2.5	Three people passed away	2021	Family members now manage the areas. Two of them are the son of de deceased

					person (0.8 ha and 0.4 ha), while the father of a young deceased person (accident) took over (1.3 ha). This means no change in land area and trees.

*Due to privacy reasons, we do not put names here, however records are kept for each participant based on their names within each farmer group.

E3: Socioeconomic monitoring

First of all, we foresee that our efforts of food forest establishment on degraded areas should provide the participants on average a monthly income above the official minimum wage for West Sumatra, set at around € 160/month in 2022 (wageindicator.org)). Using the number of trees and species planted per ha, and looking at local prices (Solok district

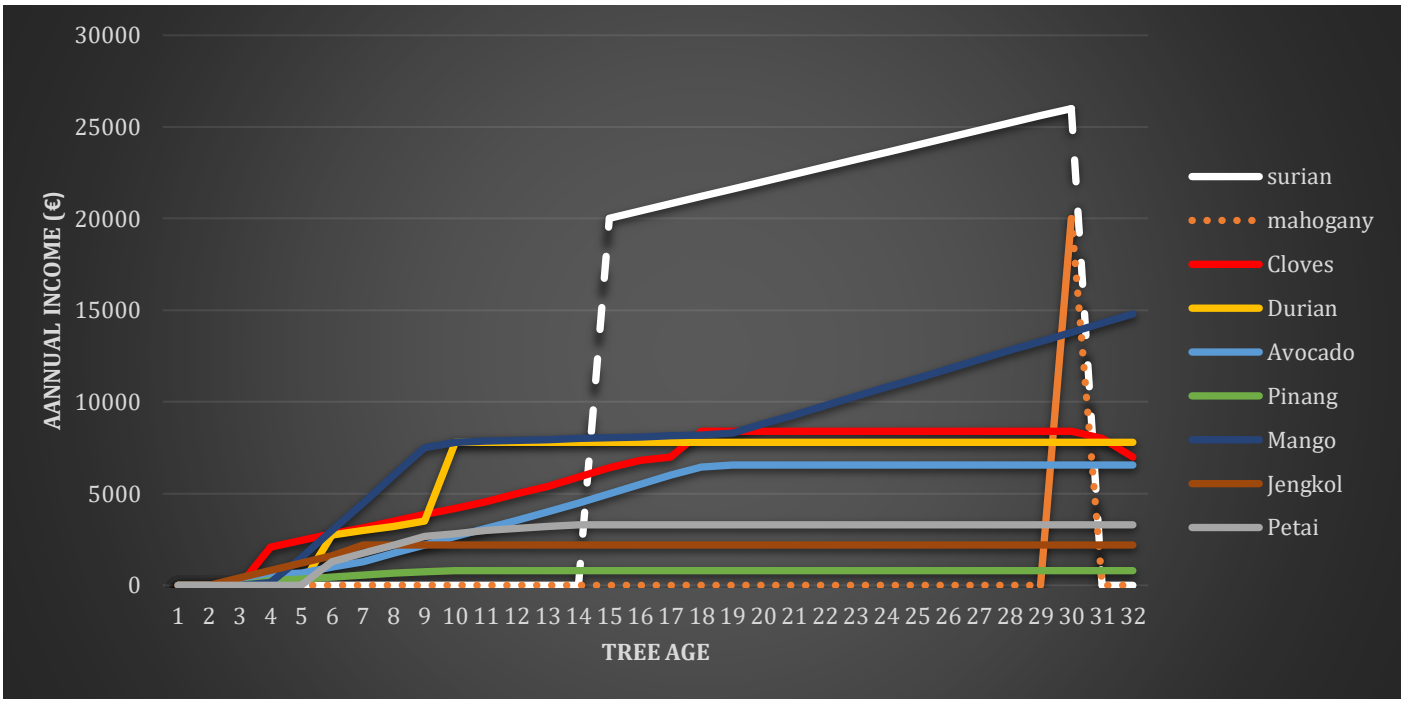


Figure 2 Potential income from the trees on 1 ha of Gula Gula Food forest

figures) for products over the past 5 years, **Figure 2** shows what could be earned when all tree products would be sold. Coffee is not yet included, but we will update the graph for next year's annual report. We took the average price from various years, but of course, income may fluctuate depending on annual prices.
It must be noted, that for trees (surian, mahogany) it is a one-time sell off after cutting the tree. The lines therefore show an increase in the price with every year the trees are left to grow before cutting them down. Obviously, the older the tree, the more timber is

produced, hence the income will be higher. Usually, for timber trees, they are not cut down during the first 15 years. In fact, timber trees are considered a saving for their children/grandchildren.
Jengkol and petai are an important food resource for the family, while prices are quite stable and relatively high for both products when sold in the local market. Since the participants judge that only a few trees are sufficient, income per ha may seem low, but it comes from relatively few trees. Avocado is a good income earning fruit. Almost all participants have integrated avocado trees into their land. Cloves are in the lower area (Paninggahan) an important cash crop, although prices can fluctuate highly each year. It explains the existence of the clove-based systems, as participants who opted for cloves will plant relatively large numbers of clove trees. This also reflects partly the high income per ha for cloves.
This graph is a kind of optimal calculation along which we will monitor the real incomes form the participants. The fact that, in the first 2-3 years no income can be obtained from the trees, also explains our step-wise approach in carbon payments, where we pay higher amounts in the first 2 years.

Table 10 Socio-economic monitoring results

No.	Socio-economic indicators	Result
1	Income improvements towards minimum wage level from tree crop sales.	Initial testing generated 8 kg. With a price of RP 150,000/kg, this can become a substantial income source with new and larger distilling unit (2022). No records yet on how incomes are improving as all is not yet producing or in testing phase. Over the past years, a total of U$ 63,786 has been paid what we defined as direct carbon payments to the farmer participants, as part of initial set up of program.
2	#tree products entering (inter)national markets	All fruit harvested were consumed by the participants, while some were sold in the local market or to middlemen in the villages. However, most commonly, excess fruits were given away to neighbours and family. A small percentage of the fruits were eaten by birds, monkeys and other wild animals in the field. No record on this. Cloves are being sold to middlemen for the national kretek cigarette market. Volumes are still small/non existent. Clove essential oil production is in testing phase, and is sold to an internationally operating essential oil company.
2	Total carbon payments received by farmer participants	0 since this is the first annual report and sales of PVCs will official start this year
3	# women involvement in the program	In total, 16% of the participants are women. Gender division may seem low. But in the matrilineal Minang society, women own the land. In general, men do not have any land. After marriage, the men will live as “a guest” in the wife’s family house. For one, they are supposed to

		work on and care for the land of the wife and her female family members. In particular in the uplands, where the restoration activities take place, men will do (most of) the work to be a "good guest".
4	# of participants managing restoration area	285
5	No. of people directly/indirectly engaged in training	20 Persons followed coffee tree management and post harvesting training of coffee 15 persons followed training on distilling unit and how to get National Indonesian Standard quality (NSI)
6	# people directly engaged in post harvesting activities	For coffee not yet. Distilling unit is run by 5 participants.
7	Collaboration among villagers has increased	A total of 5 (new) farmer groups have been established since 2017. All participants holding PES agreements are members of these farmer groups. A project evaluation done in 2018-2019 revealed that the large majority of the current members consider the increasing number of social interactions as a very important benefit.

The training of farmers was done in times of CORONA, and large gatherings were forbidden in the villages. The maximum was 25 persons at a time. We therefore decided to train "the trainers", who were the head of a farmer group or a participant where coffee is part of their food forest system, and from whom we know he will be able to train the members of the group in tree management. Therefore, the impact on training may seem little, but each of them would train the members in the farmer group, who have planted coffee trees.

E4: Environmental, climate and biodiversity monitoring

Table 11 Climate monitoring results

	Climate indicators	Result
	# participants attending training on zero burning techniques (ANR)	All participants (294 in total) receive training on zero burning techniques during village FPIC process (ANR, Zero tillage). This is a requirement before signing PES agreements.
	Occurrence of wildfires	Wildfires have ceased to exist in the project areas since the beginning of the program, so less carbon emissions from burning.
	# Total aboveground and belowground time averaged carbon stock per ha/yr	11.5 ton CO2/ha/yr
	#soild organic carbon/ha/yr	Only partially done, reporting starts next AR

Table 12 Tree biodiversity monitoring

	Tree biodiversity indicators	Result (2017-2021)
	# of ha reforested under PV (ha)	202.6

	# of agroforestry trees planted under PES agreements	363,562
	# different species found in total restoration area	19
	# indigenous regenerants (ANR) and protected trees in field	18,492
	# trees per ha (average)	1355

Source: Field monitoring data RPL

In addition to protecting (indigenous) trees and wildlings in the field, a large number of the planted trees are also considered indigenous or local species. They are either local to the area, the island of Sumatra or other islands of Indonesia. These are cinnamon, cloves (*maluku*), mahogany, mangosteen, surian, petai, cengkol, shorea and durian. The other tree species (coffee robusta, avocado, leuceana, soursup and recently coffee arabica) are not indigenous. However, they have become naturalised species as they have been introduced into Indonesia many decades ago. For instance, historical sources of Dutch officers show that robusta may have come to Sumatra by Arab "missionaries" spreading Islam as early as 1400. The officers made the judgment as they were surprised to see so many robusta trees in the forest, and local communities used the leaves for "coffee", instead of the berries. This was the common practice in the Arab states in the early days (Burgers, 2004).
Number of trees planted per ha varies between 700 and 2000, depending on the kind of trees and farmer preferences (the average being 1355 trees/ha). Trees with wide canopies, like clove trees do not allow a large number of trees per ha, as it would cause too much competition. Farmers also do not prefer too many trees in a clove-based systems as harvesting cloves requires the use of ladders hence space is needed to climb the trees. Other reason is that some of the clove-based systems are on ex vegetable cultivation areas. Farmers wanted to cultivate chilis in particular for another 2-3 years, before the canopy of the trees would be too large to enable further vegetable cultivation. Hence this system is a bit more open, compared to for instance coffee-cinnamon systems, where trees per ha can reach 2000. This is also caused by the fact, that the arabica trees are a new and small, shrub-like variety, which can be planted at close distance from each other. Since these small arabica trees begin bearing fruit already after one year, the gap is very small between planting and income generation from the coffee shrubs.

Biodiversity monitoring: flora and fauna

In addition to bringing back a diverse tree cover, we placed several camera traps to get a first picture of what kind of wildlife can be observed in our sites. This was done, as participants saw quite some damage to young trees of animals eating leaves or knock over small trees. It must be noted that the camera traps were only used in Paninggahan village, where we started the food forest program and where the food forest has been well established in some areas already. Moving the camera traps around every month, based on a methodology from WWF on camera trapping for biodiversity monitoring, it showed significant evidence of returning wildlife. Compiling pictures and videos that were taken from the camera traps, a representation of wildlife from every trophic level of the food web seems to roam around in the newly established food forest area (Figure 3).
These results have formed the basis for discussions and further collaboration with our knowledge partner in West Sumatra, Andalas University. We are looking into a multi-year collaboration on biodiversity monitoring, as part of a University collaboration. This means that annual student research from the Biology Department will be done to monitor wildlife presence. This will tremendously save costs, as it would otherwise probably too costly to monitor all biodiversity increases. The right and most cost-effective methodologies are under review and discussion. Discussions now focus on whether it will be possible to monitor indicator species and/or flagship species, using camera trap methodologies for wildlife and a

rapid inventory of indicator species for plantlife (as was done before during baseline vegetation analysis).

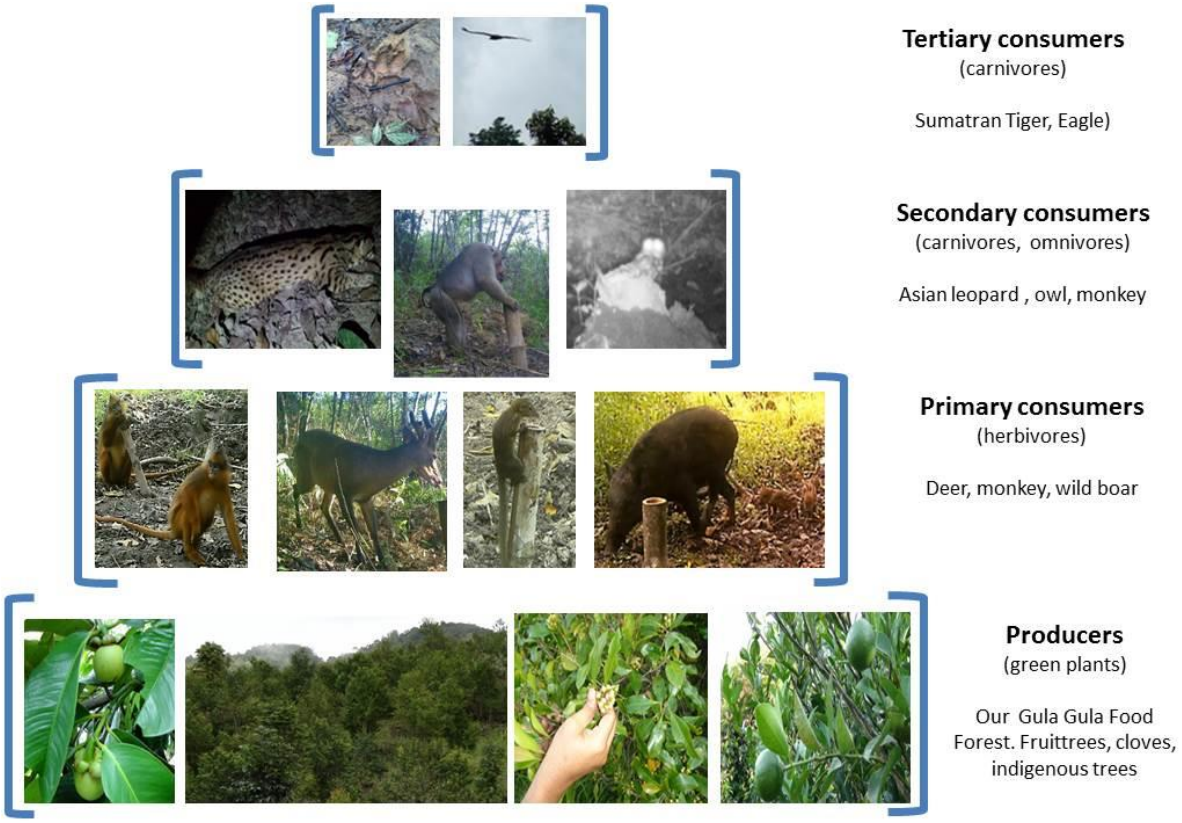


Figure 3 Building the food web using camera trap pictures

PART F: Outcomes

1. Evidence of outcomes

As our restoration sites increase, the sites serve as an important learning by doing opportunity as well, learning from and with the farmer participants.

Evidence of Environmental lessons

A major lesson learned is that the use of Assisted Natural regeneration has its limits, restricted to areas which are in the forest “bufferzone”, where natural regenerants are present and baseline vegetation consists of bit woody Imperata grasslands and/or shrubs of 50-100 cm (to make pressing successful). With more sites being restored, we are moving further away from the forest bufferzones, to areas where the baseline vegetation is a result of more intensive use. Where there were former mono culture plantations of crops and vegetables, where pesticides and insecticides have been used, it caused treeless landscapes covered with ferns (and very few shrubs). Here, pressing is not possible, as ferns bounce back. Slashing the vegetation has shown encouraging results as a zero burning/zero tillage system. However, it is more labour intensive.

In some areas, soils are highly depleted, with hardly any vegetation left, that soil biomass needs to build up. This is a main reason for building the large bio-composting units, while in Timor the planting (or through vegetative propagation) of N-fixing trees (e.g. *Gliricidia Sepium*, *Leuceana Leucocephala*), provide high amounts of biomass and are fast growing.
Table 13 below summarizes the choices between the various options, although regularly we combine various restoration options. From this table we usually make choices on what zero burning techniques are most suitable to a new restoration site, depending on the baseline vegetation.

Table 13 Restoration techniques used for various baseline circumstances

	Assisted Natural regeneration (ANR)	Minimum/ zero tillage	Planting/vegetative propagation of N-fixing trees
Distance to forest	Forest bufferzone	No/little influence from forest	No/little influence from forest
State of degradation	Degraded	Severely degraded (no trees)	Highly degraded
Baseline vegetation	Imperata grasslands, with shrubs and natural forest regenerants, some trees.	Predominantly ferns, with some shrubs, imperata, no/few existing trees.	Bare land, hardly any baseline vegetation present. Some shrubs or trees.
Labour intensity	Labour extensive (family labour only)	Medium labour intensive Often combination of family labour with some hired labour.	Highly labour intensive Group activity at community level.
Green manure from baseline vegetation	High	Low-medium	Low
Use of compost/manure	low	Medium -high	Medium-high

Using Ph meter to further identify soil conditions

Over the years we found, that trees in some areas had a bit of a slow start. Soil conditions were identified as a potential cause. In order to make a better judgement of the soil conditions, our local partner started using a PH meter to look at the PH of the soil. Knowing that a PH of 6-6.5 is needed for normal plant growth, knowing the baseline situation allows us to plan for any additional input requirements, especially if the baseline vegetation is scarce (hence green manure is little). Adding compost and/or manure where trees are planted is a good way to ensure trees adapt easily to the local field conditions, and growth is ok. With the establishment of a centrally located, large compost unit, producing around 8 tons of compost per month, so far, all trees receive compost treatment when needed. Whenever needed, a compost unit can be added at relatively low cost if the demand for compost outweighs supplies.

Evidence of socioeconomic lessons

Since the beginning, we have established performance-based farmer groups. These have shown to be very effective in working together and getting the work done. Having participants to co-decide on new members has increased social control within the groups, members discus freely about potential issues to be solved, whether at group level or at the level of

individual members.
Despite the fact that farmers in the communities we work in have been growing a variety of agroforestry tree species for a long time already, we realized that some basic knowledge on best practices related to harvesting and processing to achieve a certain quality (hence a higher price) was almost absent. One reason seems to be the lack of an incentive to provide a high quality product, as they mostly are paid based on weight, not quality. As we will pay based on quality, training on harvesting techniques and good tree management has been integrated into the Gula Gula Food Forest Program.
These improvements have recently enabled us to start collaborating with the participants to set up processing units for selected tree products. Not only will it add to an increase in income, it also means that non-participants can benefit from the restoration efforts. Non participants will also learn how to produce good quality, enabling them to supply to the village-based processing units for the selected products.
A second major lesson is that, during the FPIC process in new areas (where there is no restoration activity yet), it must be made very clear that our restoration program is very different from any government tree planting program. We have learned that this may be a general perception among potential participants, assuming that our program resembles the one time seedling delivery programs of the government, with no follow-up. Making sure that this is not the case, is an important lesson for making a good start of the participants in the program.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

Whilst payments have been made in the past, this has been for uncertified carbon credits and not necessarily in conformance with Plan Vivo's Standard. As such, payment will be recorded for those made based on sales after this annual report, i.e. payments made in 2022 onwards. Information will be provided on this in the next annual report.

Part H: Ongoing participation

H1: Recruitment

Table 7 shows that in 2021 new participants have been added to the restoration activities. They have all signed the PES agreement early 2021 (February).

H2: Project Potential

There is one new area, in the village of Paninjawan, where participants have been identified (47 participants in total) including the land to be restored (38.5 ha), but where PES agreements are in the process of signing. This will be done nest month, or April 2022 at the latest.
Another new area in Pesisir Selatan is also in the process of being targeted for restoration. Here, the Indonesian food and snack company from the Netherlands will engage in melinjo/nutmeg food forest establishment. Here, land has been identified, and currently the FPIC process is on-going to select the participants. The PES agreements will probably be

signed by September 2022.

H3: Community participation

Details of the community meetings held fall under monitoring results. Annex 5 provides details of the monthly community meeting updates presented by the field staff of RPL. For each site there is a monthly update including progress on tree planting, nursery establishment, seed and seedling raising, and challenges encountered (if any), and how they will be solved. Some pictures of community meetings/participation are shown in Annex 6.

Part I: Project operating costs

In 2021, various sources of income and donor funding has come in. First of all, the total amount of the sales of PVCs into the project/participant support in West Sumatra is 64% ($39,469/$61,572). The remaining percentage is for CO2 Operate BV. However as Co2 operate solely lives from carbon incomes, the investments made by CO2 Operate for consultancy fees (validation) and to match RVO funding are indirectly also paid through the PVCs. We have not accounted for it in the divide 40-60, as this is an indirect payment. So in reality contribution of PVC sales into the carbon project is actually even higher.

I1: Allocation of costs (USD$): fiscal year 2021

The allocation of costs for 2021, from the project coordinator, is detailed in Table 16. However, please note that these costs were paid prior to Plan Vivo Certification and therefore, whilst they are included for transparency purposes, they are not subject to the usual Plan Vivo Standard requirements. The costs listed in the next annual report will be subject to the usual Plan Vivo Standard requirements.

Table 14 Allocation of costs 2021

Expense	Narrative	Amount (USD$) Total	Contribution from sale of uncertified carbon credits	Contribution from other sources		
				FMO*	RVO	CO_2 operate
Total						
Technical assistance (VCM)	Technical assistance RPL	30,443	9,023	21,420		
	Field costs (monitoring meetings,)	2,853	189	2,664		
	Community meetings	505	75	430		
	Consultancy fees validation Indonesia	8,140	8,140			
	Consultancy fees carbon	5,000				5,000
Nursery	Nursery costs	12,086	622	11,464		
Field Mapping		3,333		3,333		
Office costs		2,523	1,500	1,023		
Carbon payments		32,206	7,315	24,891		
Product development						
Personnel		2,241			2,241	
Farmers training		31,585	12,605		18,980	
Processing units		33,737			23,100	10,637
Fee C02 operate		50,737	22,103	25,000		
Total		233,121	61,572	85,225	44,321	15,637

*** FMO contributions constitute loans that will be paid back at later dates**

Annexes

Annex 1. Detailed participant based tree monitoring results for issuance request, VD 2017
Annex 2. Detailed participant based tree monitoring results for issuance request VS 2020
Annex 3. Detailed participant based tree monitoring results for issuance request FMO2021-3
Annex 4. Detailed lay out of trees planted/protected per ha according to the farmer-based food forest systems.
Annex 5. Community meeting results for all participants (2021).
Annex 6. Selected pics showing community meetings.