2021 Plan Vivo Annual Report

KHASI HILLS COMMUNITY REDD+ PROJECT

Submitted by

Ka Synjuk Ki Hima Arliang Wah Umiam Mawphlang Welfare Society

Table of Contents

Title of Project: Khasi Community REDD+ Project
Annual Report Year: 2021
Summary of Project

Project overview	
Reporting period	1 January – 31 December 2021
Geographical areas	East Khasi Hills, India
Technical specifications in use	REDD+ and ANR

Project indicators	**Historical (2012 - 2020)**	**Added/ Issued this period (2021)**	**Total**
No. of smallholder households with PES agreements	0	0	0
No. of community groups with PES agreements (where applicable)	62	23	85
Approximate number of households (or individuals) in these community groups	5,963 (ca. 35,735 individuals)	1,299 2,640	7,262 (38,375)
Area under management (ha) where PES agreements are in place	15,334 ha REDD 1,564.2 ha ANR	0 ha REDD 75.5 ha ANR	15,334 ha REDD 1,639.7 ha ANR
Total PES payments made to participants (USD)	$236,605.82	$113,844.92	$350,450.74
Investment in forest conservation and management	$209,278.96	$44,615.89	$253,894.85
Total community benefit	$445,914.78	$158,460.81	$604,375.59
Total sum held in trust for future PES payments (USD)	$290,137.08	$857.14	$290,994.22
Allocation to Plan Vivo buffer (tCO_2)	81,139 tCO2	6,323	87,462
Saleable emissions reductions achieved (tCO_2)	324,552 tCO2	25,289	349,841
Unsold stock at time of submission (PVC)			
2020			1526
Total			1526
Plan Vivo Certificates (PVCs) issued to date			**324,552**
Plan Vivo Certificates requested for issuance			**25,289**
Plan Vivo Certificates available for future issuance			**0**
Total PVCs issued (including this report)			**349,841**

PART A: PROJECT UPDATES

- The Project's Socio-economic Team has intensified support to the network of women's micro-finance groups and the farmers' clubs by creating a Federation of Self-help Groups (SHG).
- The Forestry Team has developed a method for calculating the carbon of scrub land to have a more complete estimate of carbon within the project area.
- The team has moved forward with extension plans for the coming year and has approached communities in the Garo Hills and Ri-Bhoi District in Meghalaya and in the state of Manipur to explore the development of new REDD+ projects among the Kuki community. The team has also extended its reach to nearby villages in the Project area through awareness programmes now with a total of 85 villages. This increase in villages is also attributed to those within the Project area splitting into multiple villages based on population growth and as a strategy for development.
- Community Development Grants (CDG): An important benefit sharing mechanism is the Project's Community Development Grant programme. Each year every active village is provided with a small grant of $215 for activities that benefit the entire community. See Annex 1 for more information.
- Improved marketing of the project's carbon offset credits has allowed the additional community benefit programme expenditure to increase from $103,956.50 in 2020 to $58,460.81 in 2021.
- Liquid Petroleum Gas Cooktop programme continued to reach Project families throughout the last year increasing by 846 households in 2021.

A1: Key events and impact

1) Mitigating Forest Fires: The Project continued its community-based effort to control forest fires. Awareness raising and rapid mobilization to halt outbreaks has been extremely effective in reducing forest fires. Unfortunately, the Project saw multiple fires in 2021 as charcoal production on private land was unchecked and fire moved into Project land. The Project staff meets with charcoal makers in efforts to dissuade them from clear cutting forests and provides options of alternative livelihoods. However, with colder winters, the demand for charcoal is high and those in production continue to rely on the income. The strong winds and prolonged dry season during the spring of 2021 also contributed to the spread. Communities have worked hard in the end of the year to build fire lines as a preventive measure for the 2022 fire season. Any potential impact will be assessed at verification. However, the Project is confident that due to its fire mitigation measures the overall impact fires may have had on carbon stocks compared to the baseline has been minimized due to the work of the communities and prompt emergency measures to contain fires.

2) Community Development Grant Programme: The annual community grants are one of the major benefits provided by the Project to the participating communities and households. In 2021, 5,325 families benefited from 84 village grants. Each village determines what type of project will benefit the most families and have the greatest impact. In 2021, the communities primarily selected public health improvement activities including safe drinking water systems, improving bathing and washing

facilities, purchasing cooking materials for the community, and renovating public facilities. A few communities used the grant toward fencing of tree plantations and better road access. In 2021, the Community Development Grant programme budget was $19,500. See Annex 1 for details. The Community Development Grant is one of the many different support mechanisms that sit under the overall PES to communities.

3) Eco-Tourism Infrastructure Programme: The Project area has seen a steady increase in visitors for over a decade, though it has declined during the pandemic during which the state saw heavy lockdowns. It is projected that there will be a rapid growth in domestic and international visitors in the next decade and the Project team is working with communities and the state government to prepare the infrastructure to handle the future tourist volume. This year an Eco-tourism Development Specialist was hired to assist communities in planning for long term sustainable tourism. This role is important to identify locations and activities that will draw tourists while creating a network of support for communities to protect wildlife and village life from disturbance. Communities which undertook grants in 2020 for eco-tourism based projects continued to work on improving facilities in 2021 and other communities are working with the team to develop proposals for future projects.

4) Liquid Petroleum Gas (LPG) Cooktop Project: The LPG cooktop project was initiated in 2019, but it has accelerated dramatically in the last two years and has now covered nearly 2000 households. The goal of the project is to distribute LPG cooktops to all participating households in the area. This cooktop project is part of a long-term energy transition strategy to allow village families to shift away from a heavy dependence on fuelwood. The benefits include reduced pressure on local forests and forest habitat, improved household air quality, and a 50% reduction in carbon emissions. The cooktops also save families substantial time in the cutting and transport of firewood. This incentive is especially popular among village families and has increased the recognition of the Federation service to the communities.

5) Biodiversity Rehabilitation: The Project undertook rehabilitation programmes for threatened fauna, like owls, falcons, and herons, that were reported to the office by the field staff and youth volunteers. The intervention encourages the inhabitants of the Project area to cease hunting threatened species and release the stray fauna to a more protected environment. Field staff report increasing frequencies of sighting key species including leopard and civet cats, several bird species, and rare plant species. This is directly linked to the rehabilitation of forest habitat as well as the linking of forest fragments to create larger wildlife corridors. A number of species were also reported again this year as animals moved more freely into occupied areas during the second lockdown period. Those animals which were found injured or in danger were rescued and handed over to the wildlife department for rehabilitation and release. See Annex 2.

6) Self-help Groups and Farmer's Clubs: The Project is distributing temperate fruit saplings, mushroom spawn, piglets, and chicks through subsidies from the Synjuk and convergence with Government departments of Meghalaya and Central Government, while also providing training programmes on proper nutrition, common diseases, and medical treatment. The beneficiaries are also visited to ensure the shed and feeding systems for the animals are in good condition. One hundred and forty-nine SHGs are continuously being supported and provided advice on building their capital assets to finance micro-loans to their members allowing a proliferation of small income generating businesses.

7) Fruit Tree Plantations: The Project has been working to meet the needs of the interested participants for horticulture by procuring tree saplings from Social Forestry of the Government of Meghalaya to carry out a plantation programme. The Project distributed 2631 fruit tree saplings to 141 interested beneficiaries in 2021. The types of fruit trees distributed included peach, chestnut, pear, plum, pomegranate, and apple.

8) SHG Federation: In 2021, a Federation of SHGs from all ten Hima throughout the Project area has been initiated. This will strengthen the bargaining power of the SHGs, provide linkages to more market opportunities, and increase the loaning available to members. The Federation also offers groups from different areas to meet on a regular basis to strategize, discuss benefits and challenges, and exchange ideas with one another.

9) 10-Year Anniversary of the Synjuk: The Federation of Hima involved in the Project (the Synjuk) celebrated its tenth year as an organization in June of 2021. Though there was no formal gathering due to strict lockdown restrictions in place in Meghalaya, the Project team, Synjuk members, and community members reflected on the many successes that have occurred in the past decade. The Project team also updated its Tech Spec and Project Design Document (PDD) for Plan Vivo in anticipation of the next five-year period of the REDD+ Project.

A2: Successes and challenges

<u>Successes:</u>

- The Project continues to experience improved community participation by youth volunteers and villagers to protect and manage their forests as the Project was able to provide direct financial and technical assistance to all villages to improve the land management system of community forests.
- The Project has contributed to the empowerment of the traditional resource management institutions and leadership. Especially important in 2020 as well as 2021 as India saw a very restrictive lockdown periods, community facilitators were able to continue data collection in their localities while training youth volunteers to assist, monitor SHGs, and report back to team members on their findings. Community-based resource managers play an important role in

helping strengthen and improve resource management plans, rules, and institutions, as well as conduct regular forest management activities such as protection, fire control, replanting, and monitoring.

- An increasing number of women involved in micro-finance and entrepreneurial activities are actively participating in Synjuk activities. The SHGs and Farmers' Clubs (FCs) are key organizations for mobilising the activities in the Project. The collective participation and involvement of various SHGs and FCs has broadened the mind-set of the people in the community about the Project regarding its unique approach on conservation and preservation of forest. Several SHGs have come forward with voluntary participation in tree plantation and interest in pig breeding.
- During the lockdown period communities saw a large increase in wildlife species both in forests and in villages. There was a high rate of biodiversity sightings and wildlife rehabilitation throughout the Project in 2021. It was a great joy to see many animals returning to local forests during this time and communities took pride in trying to protect them from hunting. Those who took part in rescuing and rehabilitating species were acknowledged for their efforts.
- The Project has been able to accommodate new villages adjacent to the Project area. Twenty-three villages adjacent to the Project area have had a consensus for the extension programme.

Challenges:

- The Project was challenged by the Covid-19 pandemic as the Delta variant of the virus spread rapidly throughout the state. Many communities were affected, and many activities were postponed or cancelled again in 2021. This year, the Project was also concerned that the lockdown restrictions triggered many unlawful activities like poaching and incessant timber collection. The Project played its part in voicing its concern through the Headmen and the village councils and has implemented mitigation measures such as recognizing those who protect and rehabilitate wildlife found in the project area and distributing fuelwood reducing cooking devices. Any impact of poaching and timber collection will be assessed at verification; however, the Project believes that any negative impacts caused by responses to Covid-19, have been mitigated through Project activities and overall have a minimal impact considering the overall Project achievements over the Project period. The Project believes that the pressure will ease once lockdown measures are lifted.
- Forest fire occurrence has been reduced by timely human intervention, but the issue remains a threat during the dry season. Charcoal production, strong winds, sparking transformers, accidents by humans, and agricultural burns that lose containment contribute to forest fire incidents. In 2021, an overall area of 77.5 ha burned, which is over the annual threshold, but still within overall targets over the Project period. The Project staff continues to work with Headmen and village councils on awareness of fire control and have implemented fire watchers to increase the speed at which fires are spotted and extinguished on project land.

- The Project seeks to limit and reduce the amount of land used for quarrying. It has been successful working with participating local governments responsible for community lands; however, private quarry owners continue to be reluctant to meet with the Project staff as they fear they will lose income if they shut down their sites.

A3: Project developments

The Project celebrated its 10th year of operation and has submitted the updated Technical Specification and Project Design Document to position it for a second, ten-year phase (2022-2031). The Project has contracted Landscapes and Livelihoods, an Edinburgh-based company to assess its past performance in storing and sequestering forest carbon as well as to model future carbon benefits. During 2021 the Project team has updated the maps to include additional villages of the Project and revise the Project area based on GPS points taken by the team. The villages are those which have split from existing villages due to population growth and as a strategy for development. These villages reflect the same conditions as the previous villages and are within 5% of the total project area. These changes are included in the updated technical specifications (2022). Furthermore, the Forestry Team has developed a method for calculating scrubland within the Project area to better evaluate the carbon sequestration throughout differing land cover types. The team continues to pursue extension areas of the Project and has spent time developing the programme in the Garo Hills and Ri-Bhoi Districts of Meghalaya and in the neighbouring state of Manipur. These project areas will each develop separate PDDs due to the varying environmental and socio-economic differences found within their respective forests and villages.

The Project is partnering with the Khasi Hills Ecosystem Private Limited to assist with the marketing and management of its carbon offset credits. This includes shifting the credits to a new Markit Registry account under the name of the Khasi Hills Ecosystem Private Limited. This will facilitate the flow of funds from the sale of offsets to the Project. The Project retains all authority over the planning, implementation, and budgeting of Project revenues.

The Project is enabling the SHGs to form a SHG Federation to bring together representatives of SHGs from each Hima with the goal of economic and social empowerment and capacity building. At the Hima level, a forum will exist as a platform for sharing experiences of SHGs and extending mutual support to improve overall performance.

A4: Future developments

The Project will continue to develop the relationship with those in the Garo Hills with the goal to assist in implementing REDD+ activities there. The Project is planning for its verification process in March 2022 based on the revised technical specifications and updated Project Design Document that were completed in 2021 and submitted to Plan Vivo in January 2022.

PART B: PROJECT ACTIVITIES

B1: Project activities generating Plan Vivo Certificates

Project activities to generate Plan Vivo certificates continued as planned in 2021. An additional 75.53 hectares were taken up for advance closure and silvicultural treatment bringing the total ANR to 1,640 ha. The most recent ANR forest plot monitoring has shown that these young regenerating forests were sequestrating carbon at an annual rate of .99 tC/ha for open forests and 1.71 tC/ha for dense forests per year (Tables G8b and G8c, 2021 KHCRP Technical Specification). These rates show similarities with the range of rates seen in studies of similar open Chir pine forests in Nepal (Jina et al, 2008) (Shrestha, 2010).

Avoided forest degradation and deforestation (REDD+) in dense forests is succeeding through strict community fire control, reduced firewood consumption, and raising community awareness through the preparation of village forest plans and maps. Fire control efforts by communities in 2021, including the maintenance of 93 km of fire lines, limited the total burn area to 77.5 hectares. Not only are the older dense forest areas being protected from deforestation and degradation ensuring carbon stored is not lost, these dense forests are also increasing their carbon stocks per year (see Annex 3, Table 3).

Table 1: Project activity summary

Name of technical specification	Area (Ha)	No. Smallholder Households	No. Community Groups
Advance Closure for ANR	1639.7	4,210	48
REDD+	15,334	7,262	85

Tables 2a and 2b: Area protected for natural regeneration and enrichment planting in 2021 and the first two implementation phases in Hectares

Hima/LWC	ANR area added 2014	ANR area added 2015	ANR area added 2016	ANR area added 2017	ANR area added 2018	ANR area added 2019	ANR area added 2020	ANR area added 2021	Total ANR to date
Mawphlang	24	85.9	21.7	8.3	0	0	20	17.7	177.6
Laitkroh	6	40.9	29.9	0	100	0	11	0	187.8
Nonglwai	8	0	0	0	0	0	0	0	8
Lyngiong	9.6	278.5	68	0	20	0	30	10.7	416.8
Mylliem	32.1	12	20.2	0	20	0	40	28	152.3
Pamsanngut	7.3	21	115.4	0	0	0	15	0	158.7
Nongkhlaw	0	19	30.6	0	10	0	5	0	64.6
Nongspung	9	3.9	0	0	0	0	10	11.7	34.6

Sohra	19.7	18.6	200.9	0	20	19	20	0	298.2
Mawbeh	34.9	30.7	7.1	0	20	6	35	7.4	141.1
Total	**150.6**	**510.5**	**493.8**	**8.3**	**190**	**25**	**186**	**75.5**	**1639.7**

ANR TREATMENT TYPE	IMPLEMENTATION PHASE 1 2012-2016 (ha)	IMPLEMENTATION PHASE 2 2017-2021 (ha)	TOTAL 2012-2021 (ha)
ANR advance closure	1154.9	484.8	1639.7
Of which receive further ANR treatment	500	484.8	984.8

B2: Project activities in addition to those generating Plan Vivo Certificates

The Project strategy in generating additional social and economic benefits depends on the involvement of members of the 85 participating villages. In order to engage over 37,400 people scattered over 270 square kilometres, the Project has hired and trained a growth staff of community organizers. Table 3 illustrates the steady growth in Project staff over the past five years, with the number of female staff members increasing over the same period as well. Over 90 percent of the Project staff are members of the participating communities and include both men and women, young and old. The allocation of Project resources for socio-economic activities is guided by the input from the Project participants themselves.

The governance of the Federation or Synjuk that oversees the Project is comprised of the leaders of the ten participating indigenous governments, representatives from the SHGs and FCs, and members of the staff including youth volunteers. This approach to bottom-up planning and local management allows the Project to be grounded in and owned by the participating communities providing it with greater sustainability. The Project's efforts to engage school students in conservation activities directly links these young Khasis to their traditional environmental values as well as motivates them to engage in ongoing and future forest and land stewardship projects.

Table 3: Project Staff Engaged in Community Development and Resource Management

Year	Office Staff	Male Community Facilitators	Special Task Community Facilitators	Assistant Community Facilitators	Female Community Facilitators	Male Local Youth Volunteer	Female Local Youth Volunteer	Total
2016	9	5	1	0	0	62	0	77
2017	12	6	1	3	4	62	62	150
2018	8	5	1	4	6	62	62	148

2019	14	9	0	6	10	62	62	163
2020	15	9	0	6	10	62	62	164
2021	19	9	0	8	10	85	85	216

- **Training Programmes**: An important component of the Project strategy is capacity building. The team conducted a series of vocational training sessions on bookkeeping, piggery, charcoal monitoring, mushroom cultivation, tree plantation, and nursery management to both refresh knowledge of those who were already involved in the Project and to orient those who are new to the Project activities.

- **Technical Advisory Committee (TAC) Meeting:** The team met with members of the Technical Advisory Committee on 26th November 2021. The programme was introduced by the Project Director and presentations were given by the forestry team and socio-economic team. Updates were given on the newly revised Project Design Document and Technical Specifications as well as mapping techniques and calculations conducted by The Landscapes and Livelihoods Group.

PART C: PLAN VIVO CERTIFICATE ISSUANCE SUBMISSION

C1: Contractual statement

The Federation (Synjuk) has signed PES (Payment for Ecological Services) agreements with 85 participating villages in the Project area.

Table 4: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 1/21 – 12/21

Total area (ha)	Tech. Spec	Saleable ERs available (tCO2) available from previous periods.	Total ER's (tCO_2) achieved this period (2021)	No. of PVCs allocated to buffer from ER's (2021)	Saleable ERs available (2021)	Issuance request (PVCs) Vintage	ER's (tCO_2) available for future issuances
15,334	REDD+		34,024	6,805	27,219	27,219	0

1,640	ANR[1]		0	0	0	0	0
Over issuance from previous ANR miscalculation to be subtracted from total 2021 issuance[2]			2,412	482	1,930	1,930	
Total			31,612	6,323	25,289	25,289	0

C2: Allocation of issuance request

Table 5: Allocation of issuance request

Buyer name/ Unsold Stock	No. PVCs transacted	Registry ID (if available) or Project ID if destined for Unsold Stock	Tech spec(s) associated with issuance
Khasi Hills Community REDD+ Project	25,289	10300000000432	REDD+/ANR
TOTAL	**25,289**		

C3: Data to support issuance request

See monitoring results Annex 3.

[1] The team has done an assessment of the ANR area during 2021 and found a slight shortfall in number of hectares from the ten-year target of 1800 ha. Therefore, the project is not seeking issuance for ANR PVC from the year 2021 and values have been set at 0. See Annex 5 for analysis.

[2] Upon analysis of the past issuance and ANR area, the team found an over issuance of 1,930 ER's and has deducted it from the 2021 issuance. See Annex 5 for analysis. These figures will be checked by the verifier during the 2022 verification process and amended if necessary in the 2022 annual report.

PART D: SALES OF PLAN VIVO CERTIFICATES

Table 6: Summary of sales 2012-2021

Vintage	Sale Date	Buyer	No of PVCs	Total $
2012	6/15/2013	Zeromission	2,463	
2012	7/31/2013	C-Level	200	
2012	8/9/2013	Bioclimate	1,306	
2012	9/2/2013	CeramicaSantogostino	1,225	
2012	9/25/2013	Zeromission	501	
2012	4/30/2014	Zeromission	4,474	
2012	6/10/2014	COTAP	283	
2012	7/15/2014	CeramicaSantogostino	360	
2012	5/15/2014	C-Level	200	
2012	3/16/2015	COTAP	674	
2012	6/12/2015	CeramicaSantogostino	340	
2012	6/15/2015	C-Level	500	
2012	7/3/2015	Zeromission	251	
2012	7/11/2016	ShaikaRakshi	1	
2014	11/4/2015	COTAP	269	
2014	10/15/2015	Zeromission	15,000	
2014	12/10/2015	WeForest	2,132	
2014	3/2/2016	Zeromission	6,500	
2014	6/9/2016	CeramicaSantogostino	350	
2014	9/14/2016	COTAP	660	
2015	7/8/2016	WeForest	2,102	
2015	11/24/2016	WeForest	2,075	
2015	11/10/2016	Anima Impreza	20	
2015	12/6/2016	Zeromission	8,099	
2015	5/5/2017	Zeromission	9,727	
2015	6/2/2017	C-Level	850	
2016	9/13/2017	COTAP	1,467	
2016	10/25/2017	Zeromission	250	
2016	12/27/2017	Zeromission	9,718	
2016	3/9/2018	WeForest	1,876	
2016	05/14/2018	Zero Mission	300	
2016	07/21/2018	Zero mission	10,530	
2016	9/1/2018	COTAP	1912	
2016	11/28/2018	Zero Mission	5700	
2016	12/31/2018	Zero Mission	403	
2016	03/31/2019	Zero Mission	600	
2016	04/30/2019	Zero Mission	1500	
2012	05/13/2019	COTAP	1644	
2014	05/12/2019	COTAP	573	
2016	06/14/2019	Weforest	2565	
2016	08/16/2019	Zero Mission	5,500	
2016	09/03/2019	Zero Mission	5,146	
2016	09/30/2019	Zero Mission	530	
2018	10/31/2019	Zero Mission	10,000	
2016	1/13/2020	COTAP	5,299	
2016	3/31/2020	Zero Mission	5,000	
2016	5/26/2020	Climate Seed	1,000	
2019	7/2/2020	Zero Mission	7,001	
2012-2016	6/2/2020	Lund Fund	24,000	

2012-2016	6/2/2020	Lund Fund	22,000	
2012-2016	6/2/2020	Lund Fund	22,000	
2017	6/18/2020	C-Level	2,000	
2019	6/18/2020	C-Level	2,000	
2017	7/8/2020	We Forest	2,475	
2018	7/30/2020	Zero Mission	5,313	
2019	8/28/2020	Zero Mission	5,738	
2018	9/22/2020	Zero Mission	2,565	
2019	12/8/2020	Zero Mission	20,000	
Transactions in 2021				
	6/5/2021	Climate Seed	318	
	22/6/2021	Ekos	3,000	
	24/8/2021	Climate Seed	8,000	
	27/8/2021	COTAP	3,729	
Total for 2021			**15,047**	

PART E: MONITORING RESULTS

The Project monitors the impact of activities, which directly benefit forest ecology. The key indicators fall into two categories: 1) forest conservation linked to REDD+, and 2) forest growth linked to ANR. Forest fire control is critical to both strategies as fires destroy older growth and dense forests, while restricting regeneration in open forests. These targets from the Technical Specification Table 20 were revised during the annual report process in 2020 based on more realistic assumptions.

Moreover, indicators and targets for a revised monitoring framework were devised in 2021. Some targets mentioned below have been missed as the monitoring framework was revised after the end of the monitoring period for this annual report. The Project will report against these targets going forwards. These targets from the Technical Specification Table 21 were revised during the annual report process in 2020 based on more realistic assumptions.

This table is divided into two sections, 1) benefit sharing and participation and 2) institutional capacity. The baseline and monitoring targets for socio-economic monitoring from Table 22 in the Technical Specifications were revised in 2017 and revised during the annual report process in 2020 based on more realistic assumptions.

Table 7: Monitoring targets

2021	Activity	Indicator	Target Achieved			Target
1. REDD Driver Mitigation			**Full**	**Partial**	**Missed**	

Forest fire	a. Fire control	No. of hectares burned[3]		77.54		<100
		Length of fire lines constructed	93 km			>60
Firewood collection	b. Fuelwood reduction	Smokeless *Chulas*[4]				
		LPG cooktops	846			
		Rice cookers	200			
		Reduction in fuelwood use at household level[5]	2.5 kg			>2 kg
	c. Forest plan	No. of plans produced		2		>2
Charcoal-making	d. Charcoal-making retraining	No. of families	298			>200
Agricultural land-clearing	e. Planning & mapping	No. of village maps produced	7			>3
	f. Forest land cleared	No. of ha. cleared	0			0
Grazing	g. Stall-fed livestock	No. of poultry	1450 poultry			No target set
	h. Forest closure	No. of ANR ha. closed [6]		75.53		>100
Quarrying	i. Outreach	No. of new mining licenses granted	0			0
2. Forest Restoration (ANR)						
	a. Silvicultural operations	No. of ha. under silvicultural treatment	1,604 ha			1500
	b. Trainings	No. of trainees	85			>50
	c. Meetings	No. of meetings	6			>5
	d. Incentive awards	No. of awards			0	>2
3. Socio-economic						

[3] The Project has reduced the annual burn area from an average of 86 ha per year during the from 2011 to 2014 to an average of 35 ha per year from 2015 to 2021, a 59 percent reduction.

[4] Participating communities have found this activity to be less effective and have therefore focused on LPG cookstove and rice cooker distribution

[5] See Annex 4

[6] The project had a miscalculation in previous ANR area and is working to include more ANR land throughout the project area and is on track to include these in the upcoming years. The issuance has been adjusted to account for actual ha of ANR included in the project.

	a. Benefit sharing & participation	No. of CDGs	84			59
		No. of shade nets	2			
	b. Agricultural /Horticulture	No. of fruit trees	2631			>1000
	c. Institutional capacity	No. of trainings	6			>5
		No. of families	310			>200
	d. Meetings	Meetings 1. Synjuk meeting 2. Team meeting 3. CF meeting 4. LWC meeting	 4 41 11 52			
	e. Incentive awards	No. of awards			0	>5
	f. Eco-tourism	No. of visitors walking DST		760		>1000
		No. of guided tours			20	>60
		No. of tea shops		3		>5
		No. of overnight guests at Resource Centre	90			>25
4. Biodiversity						
	a. Surveys	No. of surveys	5			>5
	b. Keystone species	No. of keystone species sightings	6			>5

Although the targets for fire control were not met this year for the number of hectares that were burned by fire, the project continues to work with communities to increase awareness on fire containment, implement fire watchers to quickly extinguish fires, and is still within the five year target on area burned. See Annex 3, Table 1.

The five year target for ANR area closed off to grazing was not met due to errors in calculations from 2014. In the recent remapping that was done for the revisions of the PDD, the team found the area of ANR closure to be about 200 ha less than what was previously accounted for. The Project is working with communities to add more area for ANR closure in the upcoming years and has met the target set for silvicultural activities within the ANR area. The success of ANR within the Project continues to be monitored carefully and the team is looking forward to analysing which activities are making the most impact in the communities.

Incentive awards were not given out in 2021 due to the Covid-19 Pandemic. The awards will continue once again in 2022 as community members have been active in protecting biodiversity and in reforestation activities. Similarly, the targets for eco-tourism were not met due to lockdowns and heavy restrictions on local, national, and international tourists.

PART F: IMPACTS

F1: Evidence of outcomes

The Project has demonstrated a variety of impacts that are directly or indirectly linked to Project activities. Information and other evidence that document these outcomes are included in the Annex. Forest cover and conditions are improving throughout the 27,000-hectare Umiam Watershed as community awareness has heightened village forest protection activities. This, in turn, has resulted in improving hydrological function with increased stream and spring flow through the dry season. Biodiversity is also increasing as habitat improves reflected by the growing number of sightings of endangered species.

The Project achieved or exceeded its targets in 2020. While forest fire impact area increased in 2021 due to a longer dry season, delayed monsoon and high winds, the Project has still reduced the annual burn area from an average of 86 ha per year during the from 2011 to 2014 to an average of 35 ha per year from 2015 to 2021, a 59 percent reduction (see Annex 3, Table 1). The Project has also accelerated household transition to alternative energy sources from fuelwood by increasing the distribution of LPG cooktops from 27 units in 2019 to 1,973 units in 2021. The Project also distributed 200 rice cookers to households in 2021. The addition of 75.53 hectares of degraded forest for assisted natural regeneration represents a consistent increase.

Co-benefits reflecting the Sustainable Development Goals can also be seen as household incomes increase as a result of Project supported entrepreneurial and innovative farming systems including organic agriculture. The use of community development grant funds by participating villages to improve village forests in 84 communities demonstrates that the Project is having an impact on improving environmental conditions. More than 7,160 households have benefited from access to the mature forest for fuelwood, support for livelihood, support for the poor families, and as a watershed source for drinking water. An important impact from the Project is the increasing participation rates and interest of the 36,279 people in the watershed. From the outset, the Khasi Hills Community REDD+ Project was ambitious in taking on 62 communities with a population of 25,000. The continued success of the Project is reflected in its steady growth adding an additional 23 villages and as neighbouring communities requested to be included in the forest conservation and restoration activities. The Project has been contacted by other tribal communities in northeast India in the past few years further demonstrating its impact as a model for a successful approach to village resource management.

An additional Project impact has been the adoption of project innovations by the World Bank funded Meghalaya Community Watershed Project that draws on the Khasi Hills experience. The Project is thereby shaping national and state-level policy regarding how communities can be empowered to address climate change through REDD+ and afforestation and reforestation projects.

PART G: PAYMENTS FOR ECOSYSTEM SERVICES

G1: Summary of Community Development Grants by year

Payments for Ecosystem Services (PES) include all socio-economic activities, restoration, and environmental services. The breakdown for these funds can be found in Table 9, Part I. The primary mode of PES distribution is through the annual Community Development Grant Programme. Payments were made to assist 5,325 households in 84 villages (the 85th village was added at the end of 2021 after CDG had been distributed). All payments to communities through the CDG programme were paid at the end of the reporting period. See Annex 1, Table 1. Distributions through this mechanism are summarized in Table 8 below:

Table 8: Summary of payments made and held in trust

Reporting year		Total previous payments (previous reporting periods) $	Total ongoing payments (in this reporting period) $	Total payments made (2+3) $	Total payments held in trust $	Total payments withheld $
01/2021-12/2021	Community Development Grants	2357.00	17,142.86	19,499.86	857.14	0
	Small Livelihood Grants	0	7,468.10	7,468.10	0	0
01/2020-12/2020	Community Development Grants	692.31	28,690.25	29,382.56	2,357.00	0
	Small Livelihood Grants	0	1,221.64	1,221.64	0	0
01/2019-12/2019	Community Development Grants	952.38	17,111.40	18,063.78	14,307.69	692.31
	Small Livelihood Grants	0	808.00	808.00	1,769.00	0
01/2018-12/2018	Community Development Grants	1,563.00	14523.80	16,086.80	0	952.38
	Small Livelihood Grants	0	785.00	785.00	0	0
01/2017-12/2017	Community Development Grants	19,762.00	19,762.00	39,524.00	1,563.00	1,563.00
	Small Livelihood Grants	0	2,018.00	2,018.00	0	0

01/2016-12/2016	Community Development Grants	0	18,102.00	18,102.00	19,200.00	0
	Small Livelihood Grants	0	2,759.00	2,759.00	0	0
01/2015-12/2015	Community Development Grants	0	17,970.41	17,970.41	0	0
	Small Livelihood Grants	0	2,124.00	2,124.00	0	0
01/2014-12/2014	Community Development Grants	0	12,750.00	12,750.00	0	0
	Small Livelihood Grants	0	1,658.33	1,658.33	0	0
TOTAL			**164,894.79**	**190,221.48**		

Please note that this is only comparing Community Development Grants throughout the years. The Community Benefit extends to other services which are summarised in Table 9.

PART H: ON-GOING PARTICIPATION

H1: Project Potential

The Project leaders are meeting with village leaders in neighbouring Ri-Bhoi District, Garo Hills, adjacent villages to the Project area and Manipur areas to assess potential interest in expanding the Project into their areas.

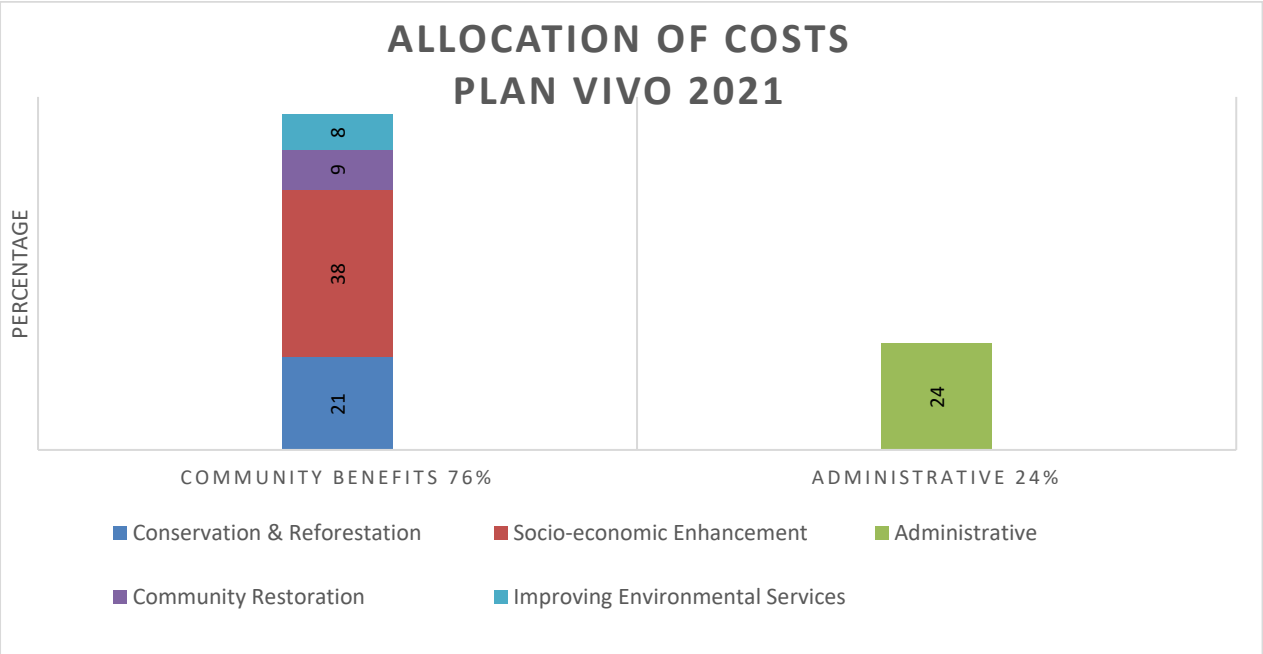
H2: Community Participation

The Project strategy is based on the intensive participation of the communities. Again in 2021, this was more difficult and challenging given the tight restrictions on travel during the lockdown due to Covid-19. However, when possible, meetings and field activities took place with the proper precautions throughout the Project area. The community facilitators roles were heightened during this period as they were able to work more closely with their communities and report back to the team on activities that were taking place. Additionally, the Project employed 216 individuals drawn from the 85 participating villages, an increase from 77 staff in 2016. The Project strategy relies on local people to both manage and implement the Project both to strengthen the sense of ownership, utilize local knowledge regarding development priorities and environmental problems, and to reduce overhead costs. The Project has emphasized the involvement of women and youth in order to create an age and gender balance that reflects the larger community, while drawing on the experience and authority of traditional leaders.

PART I: PROJECT OPERATING COSTS

Table 9: Allocation of costs 2021

COMMUNITY BENEFITS	INR	USD	%
Conservation & Reforestation			
Conservation & Reforestation: LPG Distribution, plantation, training, silviculture, site selection, capacity building	31,23,112.00	44,615.89	21%
PES Payments			
Socio-economic enhancement: Temperate fruit trees, livestock, vermi-composting, mushroom cultivation, SHGs, LWCs, FCs, training, Community Development Grant, Special Village Grant, solar streetlights, income generating activities	55,37,688.00	79,109.83	38%
Assist community with restoration: CFs, Training, Tree Adoption Programme, Fireline	13,05,355.00	18,647.93	9%
Improving Environmental Services: Eco-tourism grants, Biodiversity monitoring, Advocacy and Networking	11,26,101.00	16,087.16	8%
Total	**1,10,92,256.00**	**158,460.81**	**76%**
ADMINISTRATIVE OVERHEADS	**INR**	**USD**	**%**
Administrative	35,27,471.39	50,392.45	24%
Contingency	Nil	Nil	0%
Total	**35,27,471.39**	**50,392.45**	**24%**
TOTAL COSTS	**1,46,19,727.39**	**208,853.26**	**100%**



See Annex 1, Table 2 for a complete list of community benefits provided by the Project.

ANNEX

Annex 1: Community impacts

Table 1: Community Development Grants provided to 84 participating villages in 2021.

Community Development Grants for the year 2021				
Sl. No	**Village**	**Activity**	**Number of Households**	**Benefitted Households**
1	Mawkohmon	Repair of drinking well (Pung shiangiar) at Gate, Mawkohmon	222	40
2	Mission	Painting and repair of Dorbar Hall.	85	85
3	Ladumrisain	Construction of kitchen chimney at ICDS, Ladumrisain	135	135
4	Nongrum	Purchasing of speaker for installing at Nongrum Community Hall	144	144
5	Dongiewrim	Repairing toilet at Dorbar hall.	196	196
6	Lyngkien Sunei	Buying cooking material.	98	98
8	Umtyrniut	Buying village materials	90	90
8	Mawmyrsiang	Construction of water tank at Dorbar Hall	74	74
9	Lyngkien Ramklang	Buying village materials	114	114
10	Kyiem	Construction of washing place at Kyiem	131	15
11	Wahrahaw	Buying village materials.	85	85
12	Ur Ur	Buying village materials.	100	100
13	Wahumlawbah	Buying village materials.	96	96
14	Laitmawpen	Construction of drinking pond.	60	60
15	Lawshlem	Construction of washing place at Kyndong Nam Lawshlem	48	18
16	Kyndonglaitmawbah	Construction of drinking well at Wahktieh	50	50
17	Phaniewlah Neng	Improvement of the approach road from the village to Laitsynning	106	106
18	Phaniewlah Rum	Repair of three washing places, two at Mawlyngruh and one at Mawtynrong	76	50
19	Umkaber	Purchase of table and chairs	80	80
20	Nongthymmai Rum	Buying village materials (cooking utensils)	53	53
21	Lyngdoh Phanblang	Repair of Durbar hall at Lyngdohphanblang	33	33
22	Perkseh	Construction of washing place at Wah Iewshkiat	76	40
23	Laitsohphlang	Construction of washing place	33	6
24	Umsawmat	Buying cooking utensils.	110	110

25	Laitmawhing	Buying village materials.	64	64
26	Thainthynroh	Construction of spring chamber at Donglum	191	20
27	Nonglwai	Buying village materials and chairs	200	200
28	Laitsohum	Renovation of drinking water source.	67	67
29	Kukon	Purchase of chairs.	21	21
30	Mawlum Tyrsad	Construction roof top of washing place.	98	98
31	Kyrphei	Buying PA System.	167	167
32	Umlangmar M	Buying PA System.	79	79
33	Mawspong	Construction of washing place	27	24
34	Nongmadan	Construction of wooden almirah at Dorbar hall	118	118
35	Pamsanngut	Construction of public toilet	46	46
36	Mawsawrit	Construction of public dustbin	62	30
37	Nongwah	Construction of public toilet at football playground	134	134
38	Remdong	Construction of drinking well	28	28
39	Tyrsad umkseh	Construction of wooden almirah at Dorbar hall	200	200
40	Mawliehpoh	Purchase of PA system (stagnant)	65	65
41	Mawrohroh	Construction of drinking well at Mawrohroh	66	66
42	Umlangmar(N)	Purchase of village cooking utensils.	33	33
43	Lawkhla Mawlong	Construction of washing place at Pernoken	44	13
44	Lawkhla	Construction of washing place at Lawkhla	72	14
45	Laitniangtlong	Purchasing office equipment for the Durbar hall	52	52
46	Wahrisain	Purchasing office equipment for the Durbar hall	32	32
47	Mawsadang	Construction of washing place at Madan Kliang	121	20
48	Niamsang	Construction of footpath	41	41
49	Pyndenumbri	Construction of drinking well	40	7
50	Mawbeh	Construction drinking well at Lumpyllun.	140	10
51	Laitsohma	Construction of drinking well at Laitsohma	34	6
52	Steplakrai	Fencing at tree plantation Lumshnong Steplakrai	39	39
53	Mawkalang	Construction of pond at Sohra	22	20
54	Wahstew	Construction of dustbins at Jalynteng and Khlieh Shnong	45	45
55	Laitthemlangsah	Continuation of viewpoint at Lum Thwei U Ren	21	21
56	Laitumiong	Construction of washing place.	13	13
57	Synrangshohnoh	Construction of bus shed.	38	38
58	Jathang	Silvicultural activity at Law Adong at Riat Sawlia.	44	44
59	Mawstep	Renovation of public toilet at Umsohphlang (continuation from Special Grant)	52	52
60	Rngidiengsai	Purchase of cooking materials.	15	15
61	Pyrda	Construction of washing place at Wahsohphie neng Pyrda	56	20
62	Dympep	Construction of washing pond at Lum Kseh I Kong Phlim Nongbri (Dympep)	75	6

63	Laitsohpliah	Construction of washing pond at Madan Rngi, Laitsohpliah.	73	12
64	Umdiengpoh	Repair of water storage tank & purchase of dustbin.	88	60
65	Mawkma	Purchase of PA system	265	265
66	Laitlyndop	Construction of help desk at Prut Tourist Spot.	117	20
67	Lad-Mawphlang	Construction of washing place at Wah Marbor	104	25
68	Mawmihthied	Continuation of washing shed at Wah Pdemdieng (continuation from Special Grant)	129	98
69	Mawbri	Repair of water source at Mawpait.	29	29
70	Sohrarim	Repair of Wahtongum Wah Jindak at Pdengshnong	135	50
71	Lumkyntung	Repair of Lumkyntung village road	74	50
72	Umtyngngar	Purchase of village public materials	86	86
73	Shankhla	Construction of washing place at Umshyngir	27	24
74	Lyngkienshih	Construction of washing pond at Themmawsiang	52	40
75	Kynton Syrwa	Construction of drinking well at Myrthah	56	56
76	Mynsain	Construction of washing place at Umsawlia.	87	40
77	Nongthymmai Pdeng	Renovation of drinking water source at Nongthymmaipdeng	30	30
78	Lummawkong	Purchase of sound system (Stranger)	82	82
79	Kyrdemkhla	Repair of Durbar Hall.	106	106
80	Diengkynthong	Purchase of village cooking utensils	85	85
81	Mawjrong	Purchase of cooking utensils	121	121
82	Mawmyrsiang	Construction of drinking well at Samkhyllieh	125	60
83	Tiewlieh	Construction of drinking well at Umsatiewlieh	131	40
84	Laitkynsew	Washing place at Mawkhyllem Laitkynsew.	201	100
			7160	5325

Those villages in which not all households were beneficiaries of the CDG is due to the location of the project which was given in the plan of the village. The households may benefit from funds in the future based on the village plan presented.

Table 2: Structure of Community Benefits

Community Benefits		
Conservation & Reforestation		LPG Distribution
		Plantation
		Training
		Silviculture
		Site selection
		Capacity building
PES	Socio-economic Enhancement	Vermi-composting
		Temperate fruit trees
		Shade nets
		Livestock
		Mushroom cultivation
		SHGs/Farmers Clubs
		Income Generating Activities
		Training
		LWC
		Community Development Grants
		Special Village Grants
		Rain harvesting
		Solar streetlights
	Assist Communities with Restoration	Fireline
		Tree adoption programme
		Community Facilitators
		Youth Volunteers
		Training
		Forest Conservation Extension Programme
	Improve Environmental Services	Eco-tourism Grants
		Advocacy and networking
		Biodiversity documentation

Annex 2: Conservation monitoring results

The biodiversity survey provides a record of sightings of flora and fauna in the Project area. The survey is kept by the community facilitators (CFs) to the best of their capability through the inputs of the youth volunteers and resident villagers to get a glimpse of the status of the faunal and floral diversity in the area.

Sightings	**Village**	**Condition**
Jungle owlet	Ladumrisain	Rehabilitated
Monkeys	Perkseh	Not threatened
Rabbit	Phod Lawkhla	Not threatened
Giant lilies	Nongspung	Protected
Orchids	Nongspung	Protected
Frog	Nongspung	Protected
Lesser caucal	Mawrohroh	Rehabilitated
Unknown bird	Kyrphei	Protected
Giant centipede		
Bridal Veil Stinkhorn (*Phallus indusiatus)*	Kyrphei, Perkseh, Mawstep	Not threatened
Rhesus macaques	Perda	Rehabilitated
Arundina graminifolia	Kyrphei	Protected
Falcon	Mawphlang	Rehabilitated
Heron	Nongrum	Rehabilitated
Ferret Badger	Nongrum	Found deceased
Hummingbird	Mawphlang	Not threatened
Leopard cat	Laitkynsew	Not threatened
Ri-War birds	Mawphlang	Not threatened

Annex 3: Carbon monitoring results for issuance request

Table 1: Data on annual burn areas

	Forest Fire Incidence in the Khasi Hills Project Area: 2010-2021													
Sl.no	Hima	Total Area Burned (in ha) Area in blue before REDD Project												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
1	Mawphlang	20	1.7	4	1.5	9.1	0.4	2.75	10	20	18	0	5.8	87.45
2	Nonglwai	3	0	0	0	0	0	0	0	5	0	0	0.28	8
3	Lyngiong	2.4	6.8	2.3	1.6	1.9	0	8.2	0	2	17.5	28	0.03	70.7
4	Mylliem	0	0	0	5	0	0.8	0	0	5	2.7	5	2.52	18.5
5	Pamsanngut	0	0	0	0	0	0	0	0	0	0	.65	40.6	.65
6	Laitkroh	6	7	9	0	1.6	4	2	0	6	0	13	0.94	48.6
7	Sohra	0	0	43	14	0	0	0.4	0	1	0	3	9.2	61.4
8	Mawbeh	35	75	30	40	107	0	0	0	0	0	10.7	0.4	297.7
9	Nongspung	0	3	0	0	0	0	0	0	1	0	0	0.67	4
10	Nongkhlaw	0	0	0	0	0	0	0	0	0	0	0	15	0
		66.4	93.5	88.3	62.1	119.6	5.2	13.35	10	40	38.2	60.35	77.54	597

The average area burned over the past project period (2017-2021) was 45.2 ha which is within the target that was set in PDD.

Tables 2 and 3 show the changes in carbon stock in the open forest inventory plots that are monitored annually. A larger sample of expanded plots began in 2018 and was increased further in 2021. The new sample includes 53 randomly selected open forest plots and 71 dense forest plots.

Table 2: Open forest plot carbon stock change for 2018, 2019, 2020, 2021 in tC per hectare

Plot No.	2018 Open (tC/ha)	2019 Open (tC/ha)	2020 Open (tC/ha)	2021 Open (tC/ha)
1	10.431	11.082	14.675	15.184
2	1.993	2.160	2.605	3.753
3	10.376	10.811	11.792	
4	13.867	14.363	17.871	21.329
5	10.026	10.589	11.624	15.864
6	12.865	13.940	15.471	18.322
7	9.577	10.003	10.883	11.090
8	6.330	6.510	6.853	7.141
9	12.367	12.979	13.841	14.599
10	1.226	1.238	1.301	1.332
11	12.573	12.917	14.317	16.790
12	8.124	8.516	9.147	9.484
13	13.885	14.275	14.666	
14	11.609	11.952	12.923	12.149
15	10.576	11.301	13.333	14.922
16	9.743	10.087	9.892	11.346
17	6.723	7.070	7.417	
18	11.067	11.946	13.494	
19	7.861	8.194	9.141	9.624
20	11.917	12.403	12.428	12.811
21	11.056	11.424	12.437	13.425
22	6.328	6.697	6.824	7.816
23	9.357	9.793	10.430	11.427
24	5.974	6.266	7.053	8.165
25	14.190	15.392	17.218	
26	7.080	7.117	7.506	8.934
27	14.517	15.115	18.384	
28	5.450	6.010	8.369	10.216
29	7.314	7.693	8.567	9.041
30	2.697	2.818	3.126	
31	11.409	11.761	12.755	
32	4.930	5.208	5.903	
33	9.402	9.799	10.606	
34	13.262	13.790	15.316	
35	12.045	12.513	17.372	21.521
36	5.906	6.229	9.588	11.846
37	3.035	3.335	6.769	8.040

38	14.161	14.472	16.193	17.127
39	5.146	5.416	7.062	6.658
40	7.416	7.717	9.125	10.140
41	9.798	10.380	10.862	
42				11.163
43				4.271
44				28.479
45				4.340
46				40.112
47				57.803
48				7.455
49				19.083
50				51.003
51				12.328
52				46.066
53				14.656
54				30.659
55				12.408
56				26.135
57				21.325
58				39.027
59				43.045
60				36.056
61				26.392
62				51.044
63				27.248
64				17.611
65				15.835
Total	**373.613**	**391.283**	**445.137**	**983.640**
Mean (tC/ha)	**9.113**	**9.543**	**10.857**	**18.559**
Std Dev	**3.59**	**3.74**	**4.19**	**13.39**

Table 3: Dense forest plot carbon stock change for 2018, 2019, 2020, and 2021 in tC per hectare

Plot No.	2018 Dense tC/ha	2019 Dense tC/ha	2020 Dense tC/ha	2021 Dense tC/ha
101	80.325	80.985	83.182	
102	90.301	90.652	92.374	
103	76.865	77.484	80.270	84.752
104	124.088	125.809	127.939	
105	126.880	127.612	134.450	

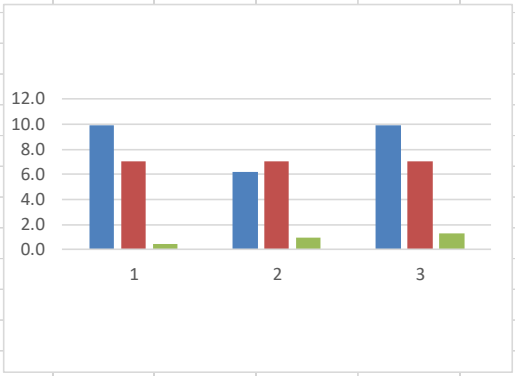
106	107.716	108.900	116.454	118.657
108	123.975	124.991	128.814	
109	64.394	65.880	68.613	69.787
110	69.885	70.559	72.530	
111	134.670	135.783	136.040	140.674
112	66.460	67.997	70.189	73.113
113	69.431	71.135	74.565	73.853
114	108.484	109.505	109.794	
115	126.821	128.046	125.905	149.640
116	79.782	81.776	85.506	
117	65.045	66.852	70.752	71.426
118	90.042	91.265	99.727	100.549
119	109.408	110.406	112.918	
120	62.876	64.808	79.013	72.199
121	75.810	76.803	84.015	85.391
122	112.210	113.317	120.472	126.460
123	154.102	154.570	157.695	151.452
124	94.355	95.192	114.580	
125	102.083	103.825	109.872	116.311
126	172.541	173.502	179.370	175.197
127	136.509	137.764	143.430	149.480
128	92.193	93.786	94.979	97.589
129	148.434	150.010	153.051	158.217
130	91.101	93.090	102.234	105.235
131	88.367	91.141	95.420	99.271
132	121.011	123.165	127.935	131.288
133	117.292	119.090	123.191	123.597
134	101.108	102.987	112.443	110.468
135	170.654	172.473	176.031	188.412
136	121.321	123.430	126.816	132.580
137	145.216	146.128	150.960	156.040
138	124.594	125.461	137.148	133.250
139	156.411	157.098	166.716	173.031
140	103.224	104.827	108.055	
141	135.743	138.119	143.498	144.879
142	109.681	111.129	114.709	116.883
143	118.622	121.083		
144	120.923	122.477	132.110	134.101
145	93.365	94.583	97.214	101.978
146	65.209	66.850	70.546	71.907
147	78.476	80.136	83.861	85.719
148	79.937	81.157	86.251	87.735
149	72.047	72.944	67.464	68.532
150	89.999	91.794		

151	90.872	92.282	97.385	100.141
152	91.312	93.428	97.346	101.946
153	124.080	125.491	127.995	140.781
154	113.948	116.104	120.702	121.345
155	84.516	85.819	84.327	88.383
156	83.728	84.970	92.687	94.670
157	79.755	80.668	81.962	87.266
158	65.129	65.794	68.111	
159	67.122	68.342	71.843	79.067
160	88.370	89.744	102.404	105.690
161	63.346	63.712	68.582	71.598
162	75.201	76.691	76.893	79.963
163	95.980	98.265	101.835	
164	84.412	86.612	90.981	89.470
165	132.488	134.253	137.800	145.306
166				97.630
167				105.999
168				63.516
169				74.180
170				114.042
171				65.828
172				79.183
173				139.490
174				117.508
175				115.400
176				103.994
177				123.609
178				107.059
179				114.525
180				80.001
181				120.227
182				56.450
183				144.502
184				112.881
185				72.505
186				113.459
187				140.529
Total	**6510.243**	**6600.554**	**6669.957**	**7747.796**
Mean (tC/ha)	**101.723**	**103.134**	**107.580**	**109.124**
Std Dev.	**28.13**	**28.13**	**29.00**	**30.30**

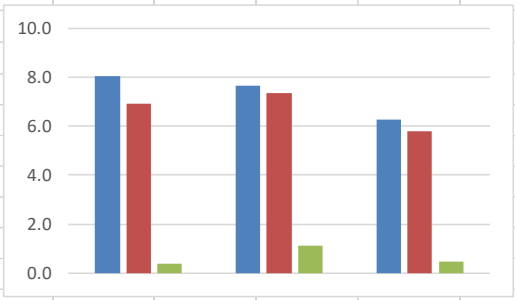
Annex 4: Fuelwood reduction analysis

Fuel usage surveys were conducted with 250 families in the Project area to determine the benefit of LPG distribution to communities dependent on wood and charcoal for fuel.

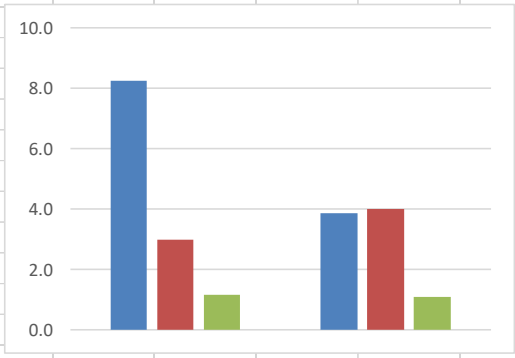
	With Pig Feed			
		above 5		
Daily Consumption (Kg)		Family members		SD above 5
9.9	(Fuelwood)	7		0.49
6.2	(LPG)	7		0.92
9.9	(Fuelwood/charcoal)	7		1.3



	With Pig Feed			
Daily Consumption		Family members		SD above 5
8.0	(Fuelwood)	6.91		0.38
7.7	(Fuelwood/charcoal)	7.33		1.14
6.3	(LPG)	5.78		0.48



	No Pig Feed	**below 5**		
Daily Consumption (kg)		Family members		SD below 5
8.2	(Fuelwood)	3		1.15
3.9	(LPG)	4		1.08



Annex 5: ANR area and issuance analysis

Year	Area Planted (Ha)	Cumulative Area Planted (Ha)	Carbon Uptake (tC)	Emissions Reductions (tCO2)	leakage applied	buffer applied (20%)	what has been issued
2012	0	0	0	0	0	0	2038
2013	0	0	0	0	0	0	0
2014	150.6	150.6	150.6	552.7	525.065	420.052	1364
2015	510.5	661.1	661.1	2426.2	2304.89	1843.912	2650.4
2016	493.8	1154.9	1154.9	4238.5	4026.575	3221.26	3,885
2017	8.3	1163.2	1163.2	4268.9	4055.455	3244.364	3,588
2018	190	1353.2	1353.2	4966.2	4717.89	3774.312	4,438
2019	25	1378.2	1378.2	5058	4805.1	3844.08	4,466
2020	186	1564.2	1564.2	5740.6	5453.57	4362.856	4,785
2021	75.5	1639.7	1639.7	6017.7	5716.815	4573.452	
Total	**1,639.70**	**9,065.10**	**9,065.10**	**33,268.80**	**31605.36**	**25284.29**	**27214.2**
					Over issuance of 1930 tCO2		