Plan Vivo Annual Report: 2011-2012

KHASI HILLS REDD+ PROJECT

Submitted by

Ka Synjuk Ki Hima Arliang Wah Umiam Mawphlang Welfare Society

and

Community Forestry International

25 MARCH 2013

1. SUMMARY

Reporting period		1 January-31 December 2012	
Technical specifications in use **REDD+ = Dense Forests** **ANR = Open Forests**			
Area under management (ha) i.e. implemented *Plan Vivos*	**Areas put under management since last report (ha) (New Project)**	REDD+	Dense Forest 9,270 ha.
		ANR	Open Forest 5,947 ha.
Smallholders with *Plan Vivos* and PES agreements (total for project)	**New smallholders with PES agreements since last report**	0	0
Community groups with *Plan Vivos* and PES agreements (total)	**New groups with PES agreements since last report**	62 village groups have Plan Vivos.	0
PES made to communities to date ($)		0	
Plan Vivo Certificates issued to date		0	
Submission for Certificate Issuance for new areas under management (tCO_2)		REDD+	19,767
		ANR	2,038
		Total tCO2	21,805

2. KEY EVENTS, DEVELOPMENTS AND CHALLENGES

a. Key Events

Beginning in January 2011, a number of key events have occurred both at the field project level as well as in preparing the project for certification and developing agreement with international partners. This includes creating awareness about the project, building community institutional capacity, establishing environmental and socio-economic baselines for long term monitoring, developing community NRM Plan Vivos, and securing formal government recognition and project approval. In addition to these tasks and events, the project also made substantial progress in developing the

technical specifications and the project design documentation needed to register the project with Plan Vivo and establish a marketing strategy for Plan Vivo certificates, including successfully passing third party validation. This section will focus on the field level projects.

1. January-June 2011: A series of meetings are held between 10 indigenous governments (*hima*) in the Umiam Sub-watershed to create a natural resources management Federation and develop a long term strategy to protect and restore forests and water resources. A socio-economic household survey is conducted with 240 families representing the 5000 households in the project area. The survey covers a wide range of topics including household size, resource ownership, family income, health and educational concerns, and perceived needs and problems. The survey provides a series of indicators of change in the quality of life across a broad range of variables which will be conducted every 5 years.

2. May 2011: Community members supported by the CFANE project support team establish and measure 40 forest inventory plots, including 20 in dense forests and 20 in open forests. The resulting data provides a carbon baseline for monitoring changes in carbon stocks.

3. May 23, 2011: The project is approved by the Khasi Hills Autonomous District Council, State of Meghalaya.

4. August 18, 2011: The Federation is formally registered as a non-profit under the Government of India's Society Act providing it with the legal status to implement this Plan Vivo project.

5. August 2011-March 2012: Awareness training of REDD+ project were conducted with all 62 villages acquainted with the project following a series of trainings and meetings regarding how to participate and make the project a success.

6. February 2012: Cross Learning Exercise – NGOs from other parts of India visited the project to meet with the Federation and project communities to discuss project development process.

7. February 2012: Federation Meeting to Review Project Design Document Strategy- Federation members reviewed the Plan Vivo standard for carbon assessment and carbon certification and adopted it for the project.

8. March-May 2012: Community awareness raising meetings were held – Ongoing meetings in each and every village were held to help people understand about REDD. The meetings lead to the passing of village conservation resolutions and agreements to participate in the REDD+ project.

9. March-August 2012: Community resource mapping and PRA livelihood planning activities – These exercises were conducted to identify village boundaries, the locations of village forests, areas targeted for assisted natural regeneration and livelihood priorities for each community. PRAXIS team of India was involved with the Federation for doing PRA exercises at the initial stage as part of training in 4 villages. In addition, Bethany Society, a local NGO, has done a thorough baseline survey to understand the socio economic life conditions of the people and life dependency on forest by the villagers.

10. April-June 2012: Identification of brokers for carbon certificates – Community Forestry International, the project support organization, met with representatives from U and We, Sweden and C-Level, UK and negotiated agreements to represent the project carbon with potential buyers on behalf of the Federation. The Federation has an MoU with CFI to represent the project this year.

11. August 2012: Validation Visit - A one week validation visit was held. Third party validation team from Rupantaran, Nepal conducted the review. The review included a two-week assessment of the PDD and Technical Specifications, followed by a one- week field visit. The validation visit concluded with a two-week reporting exercise and the submission of the validation report to CFI and the Federation. After a comment period, the report was submitted to Plan Vivo and was accepted in March 2013.

12. November 2012: A federation Meeting to Review Plan Vivo Credit Marketing Plan and Benefit Sharing Strategy – CFI presented the marketing plan for the project credits to the Federation members and discussed options for benefit sharing. The membership agreed with the proposed plan.

13. December 2012: Annual Project Review – Forest inventory plots are measured. Socio-economic monitoring data is collected including reporting on community bank balances. CFI and the Federation prepared the annual report and submitted it to Plan Vivo in March 2013.

b. Key Developments:

1. Social and economic development: Achieving social and economic benefits are some of the most important goals of this REDD project. A socio-economic baseline survey conducted at the beginning of the project revealed that people are highly dependent on their forests for their livelihood. Charcoal production is one of the main livelihood activities, yet has a large negative impact on forest cover. In addition, people also collect fire wood from the forest for cooking and for sale. Substitute

livelihood activities, alternative fuels, and more efficient stoves are priority activities being developed for communities in order to control pressure on forest. To mitigate these problems, awareness regarding the importance of forest conservation, the formulation of NRM Plans or Plan Vivos for sustainable management of forest, and activities to improve economic conditions of people through Self Help Groups, Farmers' clubs and micro enterprises concept were implemented. To improvise the economic conditions of the people, 55 women run micro-finance groups or SHGs have been formed. In these groups, 80% of the members are women from families living Below Poverty line (BPL). These SHGs are fully functioning and are eligible as Micro Finance Institution. Simultaneously, Farmers' Club is another area to help farmers have their forum and get acquainted with the available agricultural schemes, benefits and marketing. The ten Farmers' Clubs and 55 SHGs created by the project have been linked to financial institutions and other line departments.

In August 2011, all Community Facilitators (CFs), Extension Workers (EWs) and leaders of Lower Working Committees (LWC) were trained to monitor and assess the performance of SHGs and Farmers' Clubs. The basic trainings on SHG concept, account maintenance, Micro Enterprise Development and management of SHGs and NGOs were covered during the training sessions. Officials from different line departments like NABARD, Tourism Department and District Industries Centre have also provided training to SHG members, Farmers Club members and other forest dependent people. Each training was coordinated and arranged by project staff. Farmers attended different trainings organized by the Indian Council for Agricultural Research (ICAR) at Barapani and Mawphlang in which 10 piglets, 10 goats, 100 chickens and 5 charcoal briquette machines and 1 ton of improved potato seeds were distributed to 100 farmers. Rural Resource Training Centre (RRTC) also imparted training to more 200 farmers on apiculture, poultry, piggery etc. in 2012. Through community participation various local water bodies in the watershed were identified and restored for drinking, irrigation and soil and moisture conservation.

2. Sustainable Agriculture: Lower working committee members (LWC) and 10 farmers clubs were linked to various extension programs implemented by the Indian Council of Agricultural Research (ICAR), National Bank for Agricultural and Rural Development (NABARD), State Soil Conservation Department and State Horticulture Department which improved and new technologies on agriculture and farming, new animal husbandry systems, and horticulture.

3. **Technical Training:**

- 7 GPS trainings have been given by Mr.Marbaniang to all the CFs, SHGs & volunteers drawn from participating communities.

- Trainings by Ms. Leima were given to the CFs on the method of girth/diameter measurement at breast height (1.37m), marking of the trees at breast height and numbering of the trees by aluminium sheets for plot monitoring

- Training on how to monitor forest was given to LWC leaders and volunteers by Roel Hendrixk, M. Sc intern student from Belgium and Enbok Thongni.

4. Forest Restoration Planning: The project has worked with villages to identify 505 hectares for ANR over the next five years. Funding for the Assisted Natural Regeneration (ANR) will be financed through carbon credit sales, support from the National Rural Employment Guarantee Act (NREGA) and the local BASIN watershed project. Implementation will begin in the fall of 2013. Detailed cost estimates have been made to guide financing for ANR activities over the next five years (2013-2017).

c. Key Challenges

The Federation needs to rapidly develop its in house capacity to manage the project including administration of project budgets and finances, reporting to Plan Vivo and government revenue agencies, implementation of mitigation and livelihood activities, and other aspects of the project. While considerable progress has been made in 2012 in creating a project office and hiring local staff, this transition from CFI support to full independent operations needs to be completed by June 30th, 2014. To address these challenges, the Federation is training a local staff and bringing experienced team members from the RTSU/Bethany Society into the Federation office as of January 1, 2013.

d. Plans for Future Development

Livelihood PRAs and community forestry maps were completed in 2012 for 57 villages. Detailed Plan Vivos are under development for each village that identify the locations of ANR sites by year, water resources for future development, and other development strategies. Each village will receive a poster size map printed in plastic of their Plan Vivo map in 2013. Ms.Leima will give training on Agro Forestry and training on Micro Enterprise Development Training will be organized in all the 10 Himas. In January - February 2013, our future plan is to have 10 Micro Enterprise Development trainings in each and every Hima.

e. New Partnerships

The following new partnerships were established with the Federation in 2012:

1. Partnership with Government of India Planning Commission's " Integrated Basin Project"

2. Partnership with NABARD for more training support to SHGs and Farmers' Clubs

3. Partnership with Indian Council of Agricultural Research (ICAR)

4. Brokerage Agreement MOU signed with U and We of Stockholm and C-Level of London

5. MOU Agreement signed with Plan Vivo of Edinburgh

6. Marketing Support MOU Agreement with CFI signed

f. Additional New Activities

The Federation is working with the Meghalaya State Rural Livelihood Society for planting/cultivating *Potentilla fulgens*, a medicinal plant with economic potential. Initial field testing will take place on 100 acres and will be conducted by farmers in the project area.

3. ACTIVITIES, TOTAL PROJECT SIZE, AND PARTICIPATION

a. Activities

1. Awareness Raising: As a new Plan Vivo project, a major effort has been spent during the first year raising the awareness among the 62 participating villages regarding the need to protect and restore community forests. During the first 10 months of 2012, 82 village level meetings were held to discuss the REDD+ project and the role of the Federation and Local Working Committees. Response to the project has been very positive with all communities signing resolutions to protect their community forests and join the REDD+ project. During these meetings communities agree to control forest fires and establish village regulations to protect and regenerate local forests. Each village selects a village youth to act as a forestry extension worker and coordinate with the Local Working Committee (LWC) which supervises the work of 3 to 5 villages in the micro-watershed.

2. Natural resource mapping: In 2012, the project was actively involved in engaging the 62 villages in the development of Natural Resource Management Plans. Of the 62 villages 57 have completed the formulation of management maps of their areas using GPS way points. The maps have been digitized and form the Federation data base. Maps currently identify all community forest areas within the project territory. In 2013, the project will further develop these initial plans into well-developed Plan Vivos including distributing maps to each community-based Plan Vivo Group!

3. Dry Season Fire Control: A major threat to the dense forests and constraint on the regeneration of degraded forests are the annual ground fires that have, in past years, damaged large areas during the dry season (January-May). The Khasi communities have a tradition of creating fire lines (*sainding*), though this practice has ceased in many areas. The Plan Vivo project is reviving this practice in the project area and many communities began to establish fire breaks during the 2012 fire season. As a result of fire line creation, as well as awareness raising and newly imposed rules prohibiting smoking and matches in the forest, the incidence of forest fire was greatly reduced in the project area in 2012.

b. Not Applicable

c. Total number of producers and community groups with registered PES agreements

Sixty-two villages within the ten indigenous kingdoms have agreed to participate in the REDD+/PEs program and have signed agreements to that effect. The villages are grouped into 18 micro-watershed clusters with an additional 4 special packets for small towns (see Appendix 3). Each village has signed a PES agreement reflecting their willingness to join the program. Each village has chosen a youth volunteer to coordinate activities within their village and joint the cluster level Lower Working Committee that operates under the guidance of the Federation.

d. Total area covered by the project in hectares (ha), with a breakdown of land-use systems

1. Dense Forest 9,270 ha.: These forests are under conservation agreements. Collection of dead and dry fuel is allowed outside of those dense forests designated by the communities as "sacred groves." REDD+ carbon offset credits are generated through protecting these areas from fire, illegal logging, mining, charcoal making, and other destructive activities.

2. Open Forest 5,947 ha.: All open forests are being protected from forest fire by communities. These areas are under the first phase of "advance closure" to reduce disturbances and facilitate regeneration.

3. Assisted Natural Regeneration Areas 500.45 ha. – ANR sites for 2013-2017 have been selected by 24 communities for complete closure and silvicultural restoration treatment including thinning, multiple shoot cutting, enrichment planting and soil conservation measures (see Appendix 2). ANR sites are drawn from the total area of open forest that has high potential for rapid natural regeneration due to the presence of coppicing species, seedlings, and mother trees. The ANR area identified has been finalized with operations initiated based on funding from carbon credit sales and Government of India project funds (MGNREGA, Basin Project, etc).

In 2012, these sites were placed under advance closure demarcating boundaries, limiting access for fuelwood harvesting, controlling fire, and grazing. The five year restoration strategy involves a series

of activities that are identified in Appendix 5. The cost structure is depends on the treatment level. Open forests with sufficient seedlings and saplings requires minimal enrichment planting, while open forests with limited seedlings and saplings will receive more substantial enrichment planting. Costs involved include the following:

Table 1: Open Forest Treatment Plan – 2013-2017

Year	Treatment	ANR with Minor Enrichment Planting (per hectare cost Rs./USD$)	ANR with Major Enrichment Planting (per hectare cost Rs./USD4)
1	Advance Closure	Rs.5,600/$104	Rs.9,000/$166
2	Planting and Weeding	Rs.4,000/$74	Rs.7,000/$130
3	Maintenance	Rs1,400/$26	Rs.3,000/$56
4	Maintenance	Rs.1,000/$19	Rs.1,800/$33
5	Maintenance	RS. 600/$11	Rs.1,200/$22
Total Cost		Rs.12,600/$234	Rs.22,000/$407

US$1 = Rs. 54

4. SUBMISSION FOR PLAN VIVO CERTIFICATE ISSUANCE

The project has expanded rapidly due to popular demand from neighboring villages and indigenous governments. Initially, the pre-project focused on two villages in Mawphlang Hima covering the Mawphlang Sacred Forest (approximately 700 ha.) and the degraded Open forests (1500 ha.). Based on the success of pilot activities in those areas between 2005 and 2009, since 2010, 60 other villages and 9 additional indigenous governments asked to participate in a proposed expanded Plan Vivo REDD+ Project. To respond to these requests, the Mawphlang Welfare Society was registered as an Indian non-profit organization to create an organizational framework or 'Federation" to bring together the neighboring governments and villages into a single project.

In response to the questions above, the project has sought to respond to the requests of neighboring communities and indigenous tribal governments that are concerned about sustaining and restoring their ancestral forests through participation in the project. As described above, this required an extension awareness raising campaign, dozens of community meeting to discuss the goals of REDD+ and the components and arrangements for a Plan Vivo project, socio-economic surveys involving nearly 300 households, PRAs to identify natural resources management assessments by the communities, and multiple community dialogues that led to agreements by each village to adopt a "conservation resolution" that would allow the Plan Vivo goals to be achieved. The challenge was to build the institutional capacity of the Federation organization to take on direct management of this Plan Vivo project. This is being achieved through support from CFI and the Bethany Society.

Participation has never been a problem for this project, as the Khasi communities are eager to receive support for their indigenous conservation values and traditions to sustain sacred forests, as well as for their long time economic dependence on forest resources.

The project has already received strong support from the Meghalaya State Government, as well as from Government of India projects. The Federation governing board continues to receive requests from indigenous governments in other parts of the East and West Khasi Hills District and has a long term plan to expand into these areas by providing technical support.

Table 2: Submitting for 'unsold stock' of Plan Vivo Certificates

Total volume of unsold stock (tCO_2)	**Total number of producers/ producer groups allocated 'unsold stock'**	**Total area (ha)**	**Technical specification applied**	**Price to producer/group (USD$/$tCO_2$)**
21,805 tCO_2	Ka Synjuk Ki Hima Arliang Wah Umiam Mawphlang Welfare Society (representing 10 indigenous governments and 62 villages)	Dense Forest 9,270 ha. Open Forest 5,947 ha	Avoided Deforestation Assisted Natural Regeneration	$5/tCO2 $5/tCo2

5. SALES OF PLAN VIVO CERTIFICATES

Not Applicable

6. MONITORING RESULTS

a. Not Applicable

b. Not Applicable

c. Not Applicable

d. In August 2012, Mr. Roel Hendrickx, a master degree student from Wageningen University, forestry program developed a monitoring protocol for measuring dense, open and ANR plots. Mr. Hendrickx trained the Federation staff in the use of this methodology which was implemented in the December 2012 as the first re-measurement of the original forest plots.

The plots could be located using GPS, but finding the exact trees have been a challenge. So to facilitate future monitoring the trees which were enumerated have been numbered by aluminum sheets and the breast height been marked with red paints. In addition, the number of Open Forest and Dense Forest monitoring plots will be increased to 40 in each classification. This will allow for a

more intensive sampling of the project forests. The additional sites will be inventoried in the fall of 2013, along with the old inventory plots.

e. Annual forest plot monitoring planned for fall 2012 has been delayed until December 2012 due to turnover in trained staff. An expert consultant was hired to lead the federation team in this assessment beginning in December 2012. The report should be produced by March 2013.

7. PES UPDATE

This represents the first annual report submitted by the Federation (Mawphlang Welfare Society) to Plan Vivo and the first issuance of project carbon offset certificates. At the time of the report submission, no sales have been secured nor have any payments for ecosystems services been executed.

8. ONGOING COMMUNITY PARTICIPATION

Ten indigenous governments (*Hima*) agreed to form a registered society for protection and conservation of the Umiam River sub-watershed. The new Federation (Mawphlang Welfare Society) has agreed to monitor natural resources and livelihood and socio economic conditions and implement a series of support activities to improve ecological and social conditions in the project area. The Federation has trained youth volunteer community facilitators and external workers to assist each *Hima* to carry-out extension activities and field work (see Appendix 3).

The Public Health and Engineering Minister of Meghalaya has agreed to help the Federation and the people of Laitkroh Hima to stop quarrying and surface mining which has accelerated the siltation and landslides that fill the Umiam River reservoir which supplies the state's capital, Shillong, with drinking water. The Principal Chief Secretary of Meghalaya state has requested the Federation to stop quarrying in Mylliem Hima as well. This indicates that the senior leadership of the State of Meghalaya are increasingly looking to the Federation to address social and environmental problems that are present in the Umiam River Sub-watershed. This REDD+ project is providing the technical and financial support necessary to implemented field activities to mitigate drivers of deforestation and forest degradation.

The success of the Federation's efforts to mobilize community support for forest protection and restoration results from over 80 community meetings were held in 2012 involving the 62 participating villages, ten Khasi kingdoms, as well as local government representatives to discuss the Plan Vivo project. The village meetings are conducted in a traditional Khasi format with open discussions and consensus based decision making. A series of meetings have also been held with the 55 Self Help Groups (SHGs) that are largely lead and comprised of village women. Participatory Rural Appraisals have also been performed with 62 villages to identify key environmental issues and priority actions to address livelihood needs. The Federation is comprised of traditional leaders forming the 10 indigenous kingdoms (Hima) and are also conducted in a participatory manner. The overall result of

the community meetings has been to raise awareness regarding the need for forest protection and create broad-based support for improving the management of local watersheds and forests, while addressing livelihood needs.

9. OPERATIONAL COSTS: 1 JULY – 31 DECEMBER 2013

	OBJECT CLASS CATEGORY	TOTAL (Rs.)	TOTAL (USD$)
A	Office Personnel		
1	Asst. Project Coordinator	240,000	4,444.44
2	Asst. Project Manager	137,510	2,546.48
3	Accountant	144,000	2,666.67
4	GIS Expert, Biren Baishya	16,000	296.30
5	Special Community Facilitator in-charge Special Package Clusters	81,000	1,500.00
6	Chief Community Facilitator (CCF)	108,000	2,000.00
7	Community Facilitators (CFs)	567,000	10,500.00
8	Extension Worker (EWs)	502,500	9,305.56
9	Asst. Accountant cum Office Assistant	53,750	995.37
10	NRM Travel	90,000	1,666.67
	Sub-total	1,939,760	35,921.48
B	Travel	396,423	7,341.17
C	Office Supplies	280,659	5,197.39
D	Meetings	68,983	1,277.46
E	Contingency	362,549	6,713.87
F	Trainings & Awareness Programme	869,719	16,105.91
G	Consultancy	1,368,000	25,333.33
H	Audit and Support	72,000	1,333.33
I	Digitization of Local management plans maps	23,240	430.37
J	Local Youth Volunteer	12,850	237.96
K	Visiting Activities	69,535	1,287.69
L	Video shooting and Editing	8,710	161.30
	PROJECT TOTAL	5,472,428	137,262.74

APPENDIX 1: MONITORING RESULTS FOR NEW PLAN VIVOS

Carbon Stock assessment

The present analysis was based on enumeration of permanent plots in dense and open forest using methods according to Chave*et.al.* (2005) and Shrestha *et. al.* (2010) respectively. The analysis was based on 20 plots in dense and 20 plots in open forest. A substantial increase in carbon stock in dense forest was observed (79.15 tC/ha to 112.9tC/ha) which may be attributed to the increase in the volume of individual trees (see Appendix 4). This level of sequestration exceeds the projections made in the technical specifications. There was a slight increase of 2.8% in the carbon stock in open forest plots. With carbon certification revenues, the ANR program in open forests will be initiated in 2013 and should accelerate the rate of regeneration and carbon sequestration in the coming year.

The detail plot-wise carbon stock and the average for the two categories are mentioned below.

Table 1: Comparison of Baseline to Current Carbon Stock

Land use	Initial tC/ha (2011)	Present tC/ha (2012)	Initial tCO_2/ha (2011)	Present tCO_2/ha (2012)
Dense forest	79.15	112.9	290	413
Open forest	3.345	3.439	12.2	12.6

Total CO2 additionality over the period based on the plot inventory data would be 24,100 tCO2 in the dense forests and 2,141 tCO2 in the open forests with a net increase of approximately 26,241 tCO2 during the first 18 months of the project if plot inventory data accurately reflects forest cover change across the project area. While the plot inventory sample size is small and the monitoring system is still being developed, the project managers feel carbon storage and sequestration goals are being achieved and requests Plan Vivo certification for 21,805 tCO2 specified in the technical specifications.

Socio-Economic Assessment

An important indicator of the socio-economic impact of the project is the rate of capital accumulation by community participants through their institutions. This project is monitoring the bank balances of local groups conducting annual reviews of community-based micro-finance institutions (SHGs), farmer's clubs, and Local Working Committees that coordinate micro-watershed management activities in each village. By the end of 2012, 18 LWC, 10 Farmer's Clubs, and 55 SHGs had been established in the project areas (see Appendix 5). Forty-one of the SHGs had established bank accounts with a total balance of Rs 865,833 or $16,033, or approximately $390 per SHG. As the project is still in the process of providing capacity building to these new institutions, a number had just begun to build their capital assets. The project will continue to monitor SHG and other participating institution account balances to track changes in participant assets. The project is developing a strategy to contract with SHGs, farmers clubs, and LWC to implement ANR restoration activities including management fees and performance incentives that will accelerate the building of community bank accounts. Since these funds are used to invest in farm and off-farm enterprises they should increase the productive and economy of the participating households.

APPENDIX 2: AREA FOR IDENTIFIED FOR ASSISTED NATURAL REGENERATION - 2013-2014

REVISED ANR AREA

HIMA	Village	Name of ANR Location	ANR Area(ha)
Mawphlang	Umtyrniut & Mawmyrsiang	Pratniuhlieh	17.30
	Laitmawpen	Laitmawpen	6.73
Lyngiong	Mawponghong	Mawponghong	1.93
	Phanniewlahneng	Phanniewlahneng	9.56
Nonglwai	Nonglwai	Kyngdong-wah-um-ar-kum	8.07
Mylliem	Mawlum Tyrsad	Khyllem & Phodlawkhla	89.50
	Mawlum Tyrsad	Phudumblang	5.18
Nongspung	Mawrohroh	Mawpalong	3.17
	Mawrohroh	Lumlaitmawkhar	5.92
Pamsangngut	Pamsangngut	Phodsohsat	2.22
	Pamsangngut	Ranab Mawblei	5.12
	Nongwah CF	Nongwah CF	111.00
Laitkroh	Mawmyrsiang	Lumdiengsai	6.80
Mawbeh	Mawkalang	Lumhati	51.32
	Laitthemlangsah	Laitthemlangsah	6.73
	Steplakrai	Lummawshieng	41.50
Sohra	Mawstep	Kseh u Kien	7.70
	Dympep	Syllai u Bir	11.50
	Laitlyndop	Phud Umjaud	7.90
	Laitlyndop	Liewlong	2.90
	Jathang	Kharai Lum Pyllun	11.90
	Laitsohpliah	Rngi Lummawlieh	20.50
	Mawkma	Mawkma	66.00
Total No. of Hectares			**500.45**

APPENDIX 3: LIST OF YOUTH VOLUNTEERS IN HIMAS, CLUSTERS, AND VILLAGES

Sl.No	Hima	Clusters	Villages	Name of Youth Volunteers
1	Mawphlang	Mawphlang (SPC)	Mawkohmon	Shri Pynshai Wankhar
			Mission	Shri Pynkhraw Blah
			Ladumrisain	Shri Babianglang Blah
		Nongrum	Nongrum	Shri. Cardinal Rani
			Dongiewrim	Shri. Fairbornwell Lyngdoh
			Lyngkien Sunei	Shri. Stoning Kharphuli
		Wahlyngkien-Ramklang	Umtyrnuit	Shri. Lanstar Sun.
			Mawmyrsiang	Shri. Diborman Syiemiong
			Wahlyngkien Ramklang	Shri. Wellshestar Lyngdoh
			Kyiem	Shri. Chestar Warjri
2	Hima Lyngiong	Mawponghong	Mawponghong	Shri . Pynshai Khongsit
			Lawshlem	Shri. Swen Kharryngki
			Nongthymmai Neng	Shri. Smington Shangpliang
			Nongthymmai Rum	Shri. Lingstar Nongbsap
		Phanniewlah	Kyndong Laitmawbah	Shri. Respingwell Swer
			Phanniewlah Neng	Shri. Krel Swer
			Phanniewlah Rum	Shri . Shain Swer
			Umkaber	Shri. Goodstar Kharshiing
			Lait Mawpen	Shri. Twansing Kharshiing
			Laitmawhing	Shri. Philing Kharryngi
		Lyngdoh Phanblang	Lyngdoh Phanblang	Shri. Srim Nongbet
			Perkseh	Shri. Jemnud Lyngdoh
			Laitsohphlang	Shri. Hum Masar
			Umsawmat	Shri. Jrel Kharchandi
		Thainthynroh Spl pckg	Thainthynroh	shri. Tramsing Wahlang
3	Nonglwai	Mawser	Kukon	Shri. Jesley Khongwar
			Nonglwai	Shri. Ignatius Jyrwa
4	Mylliem	Mawlum	Mawlum Khongsit	Shri. Kierlang Nongbet
			Kyrphei	Shri. Korjen Nongbet
			Umlangmar (M)	Shri. Dling Nongbet
			Mawspong	Shri . Phlandar Rynjah
5	Pamsangut	Pamsanngut	Nongmadan	Shri. Oining Nongbet
			Nongwah	Shri. Rosestarsing Khasain
			Pamsanngut	Shri. Mestindra Nongbet
		Tyrsad Umkseh Specl pack	Tyrsad Umkseh	Shri. Soonda Khasain
6	Nongspung	Umlangmar (N)	Mawliehpoh	Shri . Tonil Nongbet
			Mawrohroh	Shri. Wanshynshar Rani
			Umlangmar (N)	Shri. Lamjingshai Myrthong
7	Laitkroh	Mawmyrsiang	Mawmyrsiang	Shri. Lumberoil Synrem
		Laitkynsew	Laitkynsew	Shri.Karnel Sohtun
		Nongthymmai	Nongthymmai	Shri. Disil Nongbet

		Mawjrong Specl pack	Mawjrong	Shri. Kynsai Lyngdoh
8	Mawbeh	Mawbeh	Mawbeh	Shri.Patsha Myrthong
			Mawkalang	Shri. Bolimanik Khongwar
			Laitsohma	Shri. Albard Kharnaior
			Steplakrai	Shri. Shaibok Kharbhoi
		Wahstew	Synrangsohnoh	Shri. Ribadstar Shabong
			Wahstew	Shri. Shaibok Khongwar
			Laitumiong	Shri. Bores Marwein
			Laitthemlangsah	Shri. Wosston Khongngain
9	Sohra	Jathang-Mawstep	Jathang	Shri. Darling Nongrum
			Mawstep	Shri. Ribor Diengdoh
			Rngidiengsai	Shri. Mortesing Lyngdoh
			Pyrda	Shri. Manbhalang Kharnaior
		Dympep - Umdiengpoh	Dympep	Shri. Stevenson Dohling
			Laitsohpliah	Shri. Jiedkynsai Diengdoh
			Umdiengpoh	Shri. Bes Nongrum.
		Ladmawphlang-Mawmihthied	Ladmawphlang	Shri. Macdonald Kharnaior
			Mawmihthied	Shri . Teiborlang Jyrwa
10	Nongkhlaw	Mawkma-Laitlyndop	Sohrarim	Shri. Namphrang Lyngdoh
			Mawkma	Shri. Anthony Nongrum
			Laitlyndop	Shri. Benis Synrem
			Ryngimawsaw	
			Mawbri	

APPENDIX 4: FOREST PLOT INVENTORY FINDINGS MAY 2011 AND DECEMBER 2012

Open forest	tC/ha	tC/ha	Dense forest	tC/ha	tC/ha
Plot No.	**2011**	**2012**	**Plot No.**	**2011**	**2012**
3	3.085	3.158	1	99	112
6	2.826	3.828	2	30	77
7	3.008	3.008	4	14	128
8	2.827	2.827	5	57	178
12	3.53	3.556	9	142	153
13	2.977	2.985	10	34	48
15	3.553	3.585	11	39	60
16	6.02	6.068	14	119	142
17	4.994	5.075	21	5	92
18	3.06	3.119	22	104	120
19	3.03	3.237	24	92	110
20	2.855	2.866	25	18	24
23	2.892	2.896	28	87	98
26	3.45	3.45	29	58	63
27	3.197	3.348	30	158	203
31	3.021	3.029	33	73	93
32	3.022	3.046	34	86	101
36	3.116	3.221	35	65	75
39	3.584	3.584	37	232	267
40	2.852	2.9	38	71	114
Total	**66.899**	**68.786**	**Total**	**1584**	**2258**
Average	**3.345**	**3.439**	**Average**	**79**	**113**
SD	**0.8**	**0.8**	**SD**	**54.9**	**56.3**

***Open forest following the formula developed by Shrestha R.(2010)**

Biomass=$[0.011*(BA)^2+2.812]*1000*2$ Where BA=basal area

+ **Dense Forest following the formula developed by Chave *et. al*.(2005)**Biomass= $\rho*\exp[-1.499*2.148*\ln(DBH)+0.207*\ln(DBH)^2-0.281*\ln(DBH)^3]$ Where ρ=specific gravity of the wood and DBH=Diameter at Breast Height (1.37m)

APPENDIX 5: SOCIO ECONOMIC MONITORING 2012 –
FARMER CLUB FORMATION AND SHG BANK ACCOUNT BALANCES

Hima	Village	FC Formed	SHG Formed (no.active)	SHG Account Number	SHG Bank Balance (Rs)
	Mawbeh	Yes	Synroplang SHG		3,250.00
	Mawbeh		Kyntiewjingshai SHG	A/c-no-15029013734	37,567.00
	Syngrangsahnoh		Lamjingshai SHG		5,350.00
	Laithemlangsah		Treiminot SHG	A/c-no-15029013869	41,108.00
	Laitthemlangsah		Iabeitlang SHG	A/c-no-1502938646	46,643.00
Mawbeh	Kyrdemkhla	Yes	Nangiaikyrsoi SHG	A/c-no-15029013257	
	Kyrdemkhla		Shainingstar SHG	A/c-no-15029013665	
	Mawjrong		Nangkiew irat SHG	A/c-no-15029016871	18,928.00
	Laitkynsew		Iainehskhem SHG	A/c-no-15029018381	7,500.00
	Mawmyrsiang		Lamjingshai SHG	A/c-no-15029017525	6,300.00
	Laitkynsew		Maitshaphrang SHG	A/c-no-15029027011	3,500.00
	Nongthymmai		Iatreilang SHG	A/c-no-15029017795	3,414.00
	Nongthymmai		Nongthymmai SHG	A/c-no-15029013745	
	Nongthymmai		Tyllilang sHG	A/c-no-15029028934	2,100.00
	Mawmyrsiang		Nangkiewshaphrang SHG	A/c-no-87000390	7,000.00
	Nongthymmai		Maitshaphrang SHG	A/c-no-15029019486	
Laitkroh	Nongthymmai		Kiewirat SHG	A/c-no-15029016906	
	Mawphlang	Yes	Iatylli SHG	A/c-no-32394055282	1,000.00
	Dongiewrim		Mawphlang Iatylli SHG	A/c-no-Processing	500.00
	Lad-umrisain				
	Nongrum				
	Mission				
	Mawkohmon		Iatylli SHG	A/c-no-Process	
	Lyngkien Ramklang				
Mawphlang	Lyngkien Sunei				
	Phanniewlah	Yes	Iarap Markylliang SHG	A/c-no-8700109439	1,000.00
	Phanniewlah	Yes			
	Lyngdoh Phanblang	Yes	Iatreilang SHG	A/c-no-87000481120	2,547.00
Lyngiong	Perkseh	Yes		A/c,no-	3,161.00

				15026016829	
			labeitlang(JLG) for FCP	A/c-no-87000273914	3,619.00
	Laitsohpliah		Baiamonlang SHG	A/c-no-87000093012	20,143.00
	Laitsohpliah		Baniaineh SHG	A/c-no-15029045348	90,430.00
	Laitsohpliah		Senglongkmie SHG	A/c-no-15029041127	7,443.00
	Laitsohpliah		Thomshaphrang SHG	A/c-no-15029016383	45,161.00
	Laitsohpliah		Iatreilang SHG	A/c-no-15029013723	6,034.00
	Laitsohpliah		Sanngut SHG	A/c-no-15029012550	207,906.00
	Laitsohpliah		Roilang SHG	A/c-no-15029012276	29,237.00
	Laitsohpliah		Kiewirat SHG	A/c-no-Process	
	Mawstep		Tyngshainlang SHG	A/c-no-11820789793	64,093.95
	Jathang		Iaiphyrnai SHG	A/c-no-37916372639	
	Mawstep		Iatreilang SHG	A/c-no-31971034496	15,030.00
Sohra			Laitsimkhla SHG	A/c-no-8700094685-7	2,409.00
Nongspung	Umlangmar		Persara SHG	A/c-no-87000934850-0	3,100.00
	Nongmadan	Yes	Kiewshaphrang SHG	A/c-no-1502619412	10,982.00
	Nongmadan	Yes	Iatreilang SHG	A/c-no-15026010260	46,158.00
	Nongwah		Treilang SHG	A/c-no 87000019334	3,441.00
	Nongwah		Myntoilang SHG	A/c-no-87000460733	3,603.00
Pomsanngut	Nongwah		Lumawsiang SHG	A/c-no-15026009980	37,098.00
	Kukon		Nangroilang SHG	A/c-no-15029035838	21,380.00
Nonglwai	Umlangmar		Nalarympei (W)SHG	A/c-no-15026009469	18,958.00
	Mawlum Tyrsad		Iakyrshanlang (W) SHG	A/c-no-1502600943	2,704.00
	Mawlum Tyrsad		Pynroilang (W)SHG	A/c-no-15026009888	21,890.00
	Kyrphei	Yes	Iasnohktilang(M) SHG	A/c-no-87000585118	4,510.00
	Kyrphei		Bankynsew(M) SHG	A/c-no-87000617028	6,095.00
Mylliem	Kyrphei		Bamkiewshaphrang (W) SHG	A/c-no-87000473753	3,540.00
TOTAL					**865,832.95**

APPENDIX 6: PROJECT 2013 COSTS PER HECTARE FOR ANR/AR OVER 5-YEAR TREATMENT PERIOD

Sl. No.	Items of Works	ANR with minor enrichment planting per hectare (Rs.)	ANR with major enrichment planting per hectare (RS.)
A. Advanced Works			
A.1.	Survey & Demarcation	200.00	200.00
A.2.	Jungle clearance, slash burning, Pruning, Hoeing, pit digging, and staking	1,430.00	1,500.00
A.3.	Improved technology (25% of plantation & maintenance cost)	2,830.00	3,280.00
A.4.	Nursery (including 20% of plantation & maintenance cost)	640.00	3,520.00
A.5.	Camp hut & inspection	500.00	500.00
TOTAL A		**5,600.00**	**9,000.00**
B. 1st Year Creation			
B.1.	Sowing & Planting	430.00	1,140.00
B.2.	Weeding 3 (three) times	1,500.00	3,430.00
	i. Fire line cutting & control burning	790.00	860.00
B.3.	ii. Fire watcher	850.00	1,000.00
B.4.	Miscellaneous, transport of seedlings	430.00	570.00
Total B		**4,000.00**	**7,000.00**
C. 2nd Year Maintenance			
C.1.	Vacancy tilling	100.00	290.00
C.2.	Weeding 2 (two) times	1,000.00	2,000.00
	i. Fire line cutting & control burning		
C.3.	ii. Fire Watcher.		
C.4.	Miscellaneous	300.00	710.00

Total C		**1,400.00**	**3,000.00**
D. 3rd Year Maintenance			
D.1.	Vacancy Tilling	100.00	90.00
D.2.	Weeding 1 (one) time	500.00	1,000.00
	i. Fire line cutting & control burning.		
D.3.	ii. Fire watcher		
D.4.	Miscellaneous	400.00	710.00
Total D		**1,000.00**	**1,800.00**
E. 4th Year Maintenance			
E.1.	Weeding 1 (one) time	500.00	
	i. Fire line cutting & control burning.		710.00
	ii. Fire Watcher		
E.2.		100.00	490.00
E.3.	Miscellaneous		
Total E		**600.00**	**1,200.00**
GRAND TOTAL		**12,600.00**	**22,000.00**