Khasi Hills REDD+ Project

Distinctive features

The Khasi Hills REDD+ Project is situated in the East Khasi Hills District of Meghalaya, India. The project is to be managed and implemented by indigenous communities with support from Community Forestry International, the Bethany Society, the Khasi Hills Autonomous District Council, Planet Action and the Waterloo Foundation. The project emerged from activities launched by Community Forestry International (CFI) in northeast India in 2003.

Meghalaya has been chosen as a pilot project area due to the existence of long established Khasi traditions of forest conservation and legal rights for natural resource management, increased population and economic development pressures, climate change, as well as the unique flora and fauna existing in the region. Rapid deforestation throughout the East Khasi Hills district threatens upland watersheds, household livelihood, while releasing substantial quantities of carbon. Recent loss of forest cover in the Khasi Hills District has been dramatic averaging 5.6% per year from 2000 to 2005.

The project seeks to demonstrate how communities and indigenous governance institutions, coordinated though their own federation, can implement REDD+ activities that control drivers of deforestation. The Khasi Hills of Meghalaya is comprised of small tribal administrative units known as Hima. Most of the forests in the project area are under the stewardship of one of 10 Hima and are managed by Hima Dorbar, an indigenous council represented by all male adults of every constituent village. The 10 Hima span approximately 62 villages and small hamlets. CFI supported the 10 Hima in the project area to form a federation to manage the project. The federation is registered under the Meghalaya Societies Registration Act as "Ka Synjuk Ki Hima Arliang Wah Umiam, Mawphlang Welfare Society" of Meghalaya.

The area under project management covers 15,217 hectares comprised of approximately 9,270 hectares of dense forests and 5,947 hectares of open forests in 2010. These forests are not contiguous but rather found in patches of varying sizes. Local institutional development is a key part of the project strategy to protect, regenerate and extend these forests. Villages within each Hima will be clustered into working units, each with an elected committee to organise and oversee activities.

Over the next 30 years the REDD+ project is designed to slow, halt and reverse the loss of community forests by providing institutional support, new technologies for forest management and financial incentives to conserve existing old growth community forests while regenerating degraded forests. The project also seeks to improve forest connectivity in order to establish

wildlife corridors by regenerating and linking degraded open forest lands. To finance the project strategy, the project is targeting not just carbon revenues but a variety of possible funding sources and support from within India.

	Heading	Explanation
Locational factors		
	**Location**	East Khasi Hills, Meghalaya, India
	Spatial boundaries	**Project area:** 15,217 ha (area under management: REDD+: 9,270 ha & ANR: 5,947 ha) Reference area: 27,139 (total project area) Leakage monitoring area: Leakage belt mapped, but size not given in PDD or Technical Specification Leakage management area: Size not given in PDD or Technical Specification
	Land cover	Land cover: Dense forests with more than 40% canopy closure, open forests with 10 to 40 per cent canopy closure, barren or fallow lands, agricultural lands, and settlements. Vegetation types: Sub-tropical Pine Forests, Mixed Evergreen Cloud Forests, Grassland and Savannas
	Agents and drivers of forest cover change	Agents: Local people, miners Underlying drivers: Population expansion, demands for timber and fuelwood Proximate causes: Conversion for agricultural land and settlements, mining for minerals, grazing, seasonal forest fires, charcoal production
Basic project features		
	**Objectives**	▪ Build community capacity to implement resource planning systems and mitigation activities ▪ Assist communities to implement a variety of forest monitoring, protection, and restoration activities to support ANR ▪ Implement soil conservation measures to check soil erosion and to improve hydrological function ▪ Enhance economic conditions of participating households targeting lowest-income forest dependent families ▪ Improve environmental services including protection of endangered flora and fauna species.
	Proponent/s	Ka Synjuk Ki Hima Arliang Wah Umiam, Mawphlang Welfare Society
	Actors involved in project design and implementation and their roles	▪ Community Forestry International (CFI) – responsible for project design ▪ Ka Synjuk Ki Hima Arliang Wah Umiam, Mawphlang

		Welfare Society (Federation) – responsible for project implementation ▪ Bethany Society – responsible for all technical support and third party monitoring once project begins
	Tenure and Carbon rights holder/s	Tenure: The Khasi Hills of Meghalaya is comprised of small tribal administrative units known as Hima. Most of the forests in the project area are under the stewardship of one of 10 Hima and are managed by Hima Dorbar, an indigenous council represented by all male adults of every onstituent village. Less than 5% of the forests are owned by individuals Carbon rights: Ka Synjuk Ki Hima Arliang Wah Umiam, Mawphlang Welfare Society Federation
	Upfront financing	The design of the project was funded by the U.K. based Waterloo Foundation ([100,000 British Pounds] from 2011-2012. CFI provides technical and logistical support from the Margaret A. Cargill Foundation from 2012 to 2014. (Government of India Schemes and programs provide much of the field and livelihood support. These include the National Rural Employment Guarantee Act (NREGA), which provides up to 100 days employment per year to low income persons which will be used for natural resource management and restoration activities as well as community development projects. In addition, the national NABARD project will provide financing for village development plans created under the REDD+ project. The Basin Project, a regional watershed improvement initiative, will also support the implementation of the Umiam River Wildlife and Conservation Corridor. The project's financial structure thus assumes multiple sources of financing over three, ten year project stages).
	Start date	01 July 2011
	Crediting period	30 years (initially 10 years for REDD and 30 years for ANR)
		Baseline emissions
	**Methodology**	Own
	Reference data (unplanned deforestation/degradation)	Reference period: 2006-2010 Types of data used: SPOT satellite images
	Reference data (planned deforestation/degradation)	Shrestha, R. (2010), Baral et al, (2009) and Jina et al, (2008) for sequestration rates in Open Pine Forests
	Stratification of	3 strata: Dense forests, Open forests, Bare land

project area	
Deforestation rate and location	**Historical** 2.8% (degradation – 0.1%) **Projected** 2.8% **Likely baseline scenario** Population expansion continues to exceed land and forest carrying capacity. **Modelling procedure** ▪A SPOT satellite image analysis was carried out to determine the land-use types and areas present in 2006 and 2010 as well as the recent rates of forest degradation and deforestation. ▪For the REDD baseline scenario, the project assumed recent rates of deforestation and degradation would continue over the next ten years in the absence of Project activities. ▪Assumptions: Dense forests converted to bare lands (no replacement value) at historical rate; Dense forests converted to open forests at historical rate. ▪ANR activities will be implemented in open forest areas. In the absence of Project activities, the project assumed that the carbon stock will remain constant at 3.3 tC/ha.
Carbon pools	**Carbon pools included** ▪Aboveground tree biomass ✓ ▪Belowground tree biomass × ▪Non-tree woody biomass ✓ ▪Litter × ▪Dead wood × ▪Soil × ▪Wood products × **Estimation method** ▪ 40 sampling plots: 20 in open and 20 in dense forests ▪ Sample plots were selected randomly along transects that follow the existing local path network running east-west and north-south. Dense forest plots were 10 square meters (0.02 ha), and open forest plots were 20 square meters (0.04 ha). In each plot, the tree species and diameter at breast height (DBH) were recorded as well as top heights of three trees at the lower, middle, and upper canopy ▪To calculate biomass from sample plot measurements for dense forest plots, a biomass equation for moist forest from Chave et al (2005) was used. For open forest plots, an equation for pine forest from Shrestha et al. (2010) was used ▪Wood densities used are from the Global Wood Density

		Database
	Carbon stock changes	▪ Carbon stock in open forests assumed not to change (grazing means they will not naturally regenerate)
	GHG emissions	None
	Net emissions without project	▪ 587,511 tCO2e (first 10 years)
Project GHG emissions reduction strategy		
	**Scope**	Avoid unplanned deforestation, enhancement (assisted natural regeneration)
	Activities	▪ Institutional development to implement project: Community federation established; Clustering of villagers into working units, each with an elected committee to organise and oversee activities. ▪ REDD+: Community resolutions on conservation and protection of forests; Closing off areas with good regeneration potential and fire control in these areas. ▪ ANR: In areas suitable for ANR, thinning, multiple coppice shoot cutting, and weeding undesirable species. ▪ Fire control: Cutting of fire lines, awareness and fire watchers in dry season. ▪ Establishment of fuelwood plantations using native species. ▪ Training on manufacturing and installation of smokeless, fuel efficient stoves. ▪ Livelihoods: Animal exchange program (assist families shift from grazing low value cattle and goats to adopt higher value, stall fed pig and poultry raising systems). ▪ Sustainable Farming Systems Program: Interventions to reduce heavy dependence on chemical fertilizers and pesticides. ▪ Training and small seed grants to self-help groups. ▪ Development and promotion of ecotourism plan. ▪ Prepare an NTFP development plan and implement through self-help groups.
	Leakage mitigation strategy	▪ Fuelwood plantations near villages ▪ Fuel efficient stoves provided to households ▪ Government agencies assist with stopping illegal charcoal trade ▪ Introduce sustainable agricultural practices ▪ Exchange grazing for stall fed animals
	Non-permanence risk mitigation strategy	▪ Establishment of institutional framework originating at the village level ▪ Develop a sliding scale of budgetary options, allowing available resource to be directed to the most critical

		project elements in times of funding scarcity ▪ Diversify sources of funding
	Additionality	Without the project, it is in unlikely that the proposed activities would be undertaken in a coordinated manner and deliver the impacts that are anticipated.
With-project emissions		
	**Effectiveness of measures**	Forest related CO2 emissions may be reduced by 33% during the initial period, falling by 57% in the second period Impact of each activity on specific drivers is assumed from field observations.
	Carbon stock changes	Open forests can regenerate into dense forest in 30 years. Open forest with ANR will sequester carbon at a rate of 1 tC/ha/yr for the first 10 years and a rate of 1.5 tC/ha/yr for the following 20 years.
	GHG emissions	None
	Leakage	**Types:** Identified leakage risks are firewood collection, charcoal making, agricultural expansion, grazing in forest **Deduction** 5% With leakage mitigation measures in place, activities causing emissions are unlikely to be displaced outside the project area. Therefore, the project assumes the risk of leakage risk to be low and has applied a 5% leakage deduction to the overall benefit calculations for both REDD and ANR.
	Non-permanence risk	**Buffer** 20%
	Ex-ante estimated net greenhouse gas emissions reductions	**Total over crediting period:** 227,038 tCO2e (1st 10 years) **Annual average:** 22,703.8 tCO2e. **Annual average per ha:** 1.49 tCO2e
	Monitoring of carbon stock changes and emissions	**Parameters** ▪ i. Parameters associated with change in forest cover ▪ ii. Parameters to calculate change in biomass and carbon stocks **Methods** ▪ i. Remote sensing ▪ ii. 60 forest plots (10m x 10m) – 20 dense forest plots, 20 open forest plots, and 20 plots under Assisted Natural Regeneration **Frequency** ▪ i. 2012 and 2016 and subsequently every 5 years ▪ ii. Annually

Stakeholder identification and engagement		
	**Stakeholders identified**	Communities, private forest owners, subgroups in communities (self-help groups), local and central government, Meghalaya Forest Department, Indian Council for Agricultural Research
	Identification process	Presence in the area: CFI began working in Meghalaya in 2003 and has been actively engaged in supporting pilot projects in the REDD+ project site since 2005. Participation in the project grew out of an earlier PES pilot project in Hima Mawphlang.
Full and effective participation		
	**Access to information and consultation**	▪ The original pilot project was initiated at the request of the Hima leadership and community. ▪ All 62 communities in the project area have participated in a series of awareness raising activities that include a description of the project.
	Participation in design and implementation	▪ The Federation of ten Hima to oversee management activities and coordinate the activities of local governments and communities. ▪ Extension workers will seek help and guidance of the local working committees to prepare a local area plan for the conservation, protection and development of forest area within the control of each village. ▪ The communities implement the main project activities.
	Feedback and grievance redress procedures	*Ditto* (When forest conflict arises, they are settled by the Hima Dorbar, or referred to the Autonomous District Council)
	Worker relations and safety	*No discussion*
Communities		
	**Without-project scenario**	Variables assessed were livelihoods, average daily and annual income, average landholding, % below poverty line, causes of poverty, development priorities, literacy rate, forest dependence Assessment methodologies was village survey (4 page questionnaire, 216 households) to construct village profiles and quantitative database that will be used to monitor changes in household income levels, participation in REDD+ project activities, changes in the environment including forest conditions, biodiversity, water availability, etc. ▪ High fertility rate leads to ongoing deforestation which, combined with increased temperature undermine the hydrological function of the watershed, disrupting agricultural practices and creating intensified cyclonic storms contributing to erosion and downstream flooding

		in the Bangladesh (Gangetic) and Assam (Brahmaputra) river basins. Heavy use of fertilizers and chemical inputs eventually leads to falling potato yields.
	With-project scenario	**Expected net benefits** ▪ Strengthened Indigenous Institutions through government and private sector partnerships and building capacity to include innovations in natural resources management and monitoring ▪Improved community access to financial support for forest restoration and conservations ▪Employment opportunities through improved forestry, agricultural and animal husbandry enterprises. ▪Women-run micro-finance institutions. **Possible negative impacts on other stakeholders and mitigation strategy** *Not discussed*
	Impact monitoring	**Monitoring variables** Indicators collected during construction of village profiles and household surveys were: children vaccinated, type of house, conflicts, families selling charcoal, perceived land pressures, new migrants to village, offer to sell land, decline in water availability, forest fire, mining in the community, family economy, participation in self-help groups, expenditures on education, money invested in banks, household income, fuel efficient stove, limits to timber collection, wildlife regulations, community area regenerating, knowledge of local working committee, attendance at community forestry, meetings, participation in community forestry activities, female attendance at village meetings **Methodologies** Village visits, meetings and household surveys **Frequency** Annual monitoring and resurvey of villages and households every 5 years
Biodiversity and ecosystem services		
	**Without–project scenario**	Variables/methodologies discussed include existing classification of biodiversity hotspots, IUCN guidelines for critical/endangered/vulnerable amphibian species listing ▪ Continued pressure on the region's water resources, farming systems, and biodiversity from deforestation and forest degradation
	With-project scenario	**Expected net benefits** ▪ Stabilization of forest cover and regeneration of degraded forests ▪ Wildlife habitat conserved and extended; rich

		biodiversity of the area preserved. ▪Linking of forest fragments to connect old growth patches ▪ Recovery of endangered animal and bird populations through rules on hunting and awareness ▪ Protection of endemic species of orchids and amphibians by creating special refugia and education ▪ Dense forests on both sides of the Umiam River protected as a wildlife corridor ▪ Improve the hydrology of the Umiam Watershed **Possible negative offsite impacts and mitigation strategy** *Not discussed*
	Impact monitoring	**Monitoring variables** Environmental and biodiversity indicators: Volume and duration of spring and stream flows; key amphibian, orchid, and animal species unique to Khasi Hills **Methodologies** Application of a landscape level forest monitoring program (remotely sensed image analysis, regular landscape photographic monitoring, community reporting) **Frequency** Environmental monitoring – every 2 years

Progress

Validation	Plan Vivo validation report issue date: Registered as Plan Vivo project on 31st March 2013
Verification	Plan Vivo verification: Annual reports for 2011, 2012, 2013 and 2014 submitted (Audit report due 2018)
Credits issued	Number: 48,545 Plan Vivo Certificates As of: 25 February 2016

Further information

▪ Plan Vivo project page:
http://www.planvivo.org/projects/registeredprojects/khasi-hills-community-carbon-project-india/

Documents reviewed

From Plan Vivo website: http://www.planvivo.org/project-network/khasi-hills-community-redd-project-india/

- Khasi Hills Project Design Document, Updated Oct 2014
- Technical specifications
- Annual Reports
- Khasi Hills Project video