

Khasi Community Landscape Restoration and Conservation Project: Mawphlang Lyngdohship, Meghalaya

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Destruction of forest areas due to stone quarrying. Photo: Mark Poffenberger.

Introduction

This case study describes experiences from a Khasi community in Meghalaya, Northeast India, where a Community Forestry International (CFI) project is testing the viability of Payments for Environmental Services (PES). The project design team recognised that upland communities often lose income when they stop commercial fuelwood collection and small scale quarrying, restrict grazing, and transform marginal farmlands back to natural forests. At the same time, communities require financial support to build capital within households and village institutions, generate new small enterprises, and transform agricultural systems and animal husbandry practices. The case of Mawphlang Lyngdohship is an excellent example illustrating new resource management partnerships that strategically allocate funding based on management performance, thereby creating a win-win situation for local communities and their cultural traditions, as well as those interested in investing in enhanced environmental services.

Environmental challenges – forest fires, quarrying, and landscape denudation

The Khasi people of Mawphlang have protected their sacred forest for over 400 years, honouring their ancient fallen warriors with towering stone megaliths that are erected near crystal clear streams flowing through highland cloud forests, draped in a staggering variety of orchids and epiphytes.

However, historical records reveal that the East Khasi Hills have experienced increasing deforestation for over 150 years. Recent satellite data from the State of the Forest Report, 2005 from the Forest Survey of India indicates that between 2001 and 2005, the district lost 28% of its forest cover - over 5% per year. Limestone quarrying and coal mining have been expanding for over a century, while forest clearance has progressed rapidly as the population has grown. One 78 year old village man noted, "Our land was once covered with dark green hills and deep blue streams. We were once the rice bowl of the East Khasi Hills, but now the hills are barren and the streams run dry."

While the East Khasi Hills ranks high among the world's heaviest rainfall areas, communities now experience extended droughts in the dry season where springs run dry and rivers shrink to a trickle. The disappearance of extensive forest tracts has also been driven by an increasingly short swidden or Jhum fallow cycle that has resulted in the denudation of waste tracks of upland watershed. Dry season forest fires are frequent occurrences suppressing the natural regeneration of forests. The privatisation of community and clan forests has often led to their permanent clearance for agriculture. Forest loss, soil erosion, and mining have all had significant impact on the hydrology of these critical watersheds. The upper hill slopes are riddled with stone quarries being carried out mainly by the local communities, and the quarrying debris is dumped downhill, causing mud-slides during the rainy season that generate heavy sedimentation in the ponds and streams and destroy aquatic life, including rare amphibians. Due to the high demand for quality stones produced from quarries in the project area, the communities face significant lost income in closing these enterprises.

Mawphlang's landscape restoration and conservation strategy

To make critical land management transitions, CFI's strategy is based on supporting indigenous communities through their traditional institutions such as the Lyngdoh, the Council of Myntris and the community Durbar, or parliament. Since 2002, the CFI project has mobilised the indigenous government of Mawphlang Lyngdohship in cooperation with communities and youth groups to revitalise forest and biodiversity conservation activities such as forest protection, commercial quarrying, and illegal logging through volunteer patrols. Traditional rules protecting forests have been strengthened and encoded and discussed widely at Durbar meetings and other community gatherings.

CFI and local communities developed a contractual agreement with both sides responsible for supporting the project (Box 1). The community passed a resolution to initiate action to restore their forests. CFI agreed to provide the community with payments for environmental services (PES) including carbon sequestration, watershed restoration, and biodiversity conservation (usually old growth forests, rivers, and sacred groves). PES also funds women-run self help groups, organised by the project, that in turn finance small enterprises through low interest micro-loans.

The CFI team has worked with the indigenous government to negotiate the permanent closure of the rock quarrying that was devastating the watershed around the Mawphlang sacred forest and polluting downstream ground water. The Village Chief, the Council of Elders of the Lyngdohship and the

participating communities agreed to enforce closure of the quarries and grazing areas and strengthen natural resource management (NRM) throughout the watershed. The community has constructed and maintained over five kilometres of fire lines around the degraded forest, completely suppressing ground fires this season and with significant natural regeneration occurring when the monsoon arrived in June 2009. As a result of this on-going project, community management of the 75 hectare sacred forest has improved dramatically with an additional 619 hectares of degraded community forest regenerating and connected to the old growth area, providing wildlife corridors.

With project support, most villager households have sold their low-value cows and goats whose grazing pressure had suppressed forest regeneration, replacing them with commercially valuable pigs and hybrid chickens that have less detrimental environmental impact on the forest. One of the most popular initiatives of the project has been to train community youth to help villagers construct fuel-efficient, smokeless stoves. This has greatly improved air quality in village houses and reduced the amount of fuel-wood collection.

The PES mechanism

To implement this project, CFI entered into a contract with local communities to develop a resource management strategy that would generate a range of environmental benefits. The payments were based on estimated opportunity costs to the community incurred from closing quarries, banning fuel wood collection, grazing, and other environmentally destructive small enterprises. The payments were split between funds for landscape restoration activities, small grants and awards to fund small enterprises, and support to community consultants and youth. The cost of the project has been Rs. 3,535,085 (US \$77,000) from 2006 to 2009 (see Table 1). Approximately half of the funds were provided directly to communities as contracts for landscape restoration work including fire control, assisted natural regeneration control, river bed rehabilitation, erosion control, etc.

An annual performance-based award of Rs. 150,000 (US \$3300) was provided to the community at the end of the fire season, on the condition that substantial natural regeneration had occurred in the upper watershed and that the conservation area was well protected. The annual cost of the project was \$32 per hectare. The project has not only resulted in dramatic regeneration of degraded forests, but also the complete closure of all quarries in the project area. Neighbouring communities have adopted a number of the project's strategies to accelerate the regrowth of their own

community forests. While support to Mawphlang communities ends in December 2009 under the current project, participating communities are committed to continue to implement their new management system in order to restore and expand community and sacred forest areas, and are now planning a larger sub-watershed project with their neighbours.

Project benefits

Key elements of the CFI strategy involve providing financial and training assistance to community households to:

- Build community institutions including the Local Working Committee (LWC) as an operational NRM unit and to form self-help (microfinance) groups (SHGs) for entrepreneurial activities.
- Establish financial accounts with local banks and operate savings and loan programmes.
- Provide jobs through construction of 5 km of fire line and 1000 hectares of forest restoration activities through LWC and SHGs.
- Initiate commercial animal husbandry enterprises by exchanging low quality community cattle and goats for stall-fed pigs and chickens.
- Adopt fuel-efficient, smokeless stoves.

Biodiversity benefits

Community conservation activities focus on protecting and expanding existing habitat for endemic and endangered orchids and other epiphytes, and amphibians. The current sacred grove area will be strictly conserved, with an additional 619 hectares added to the Community Conservation Area.

Hydrological benefits

Restoring the hydrological functions of the Mawphlang watershed involves vegetative restoration as well as closure of surface quarrying and mining operations. The total project area of the watershed is 1197 hectares. Villagers report increased stream and river flows in the dry season as a result of forest protection and regeneration activities.

Carbon benefits

The Mawphlang Project estimates an annual carbon additionality of approximately 1 metric tonnes (mt) per hectare per year during the first three years for the 619 hectare Forest Restoration Areas. The project has established 50 forest inventory plots (50m x 50m) to monitor changes in carbon stocks and is seeking support to develop a Project Design Document for a REDD + activity.

Table: 1 PES Payments made to Makhon Community: 2006-2009

Activity	2006	2007	2008	2009	Total
Community Landscape Restoration	Rs. 150,000	Rs. 730,000	Rs. 384,000	Rs. 491,085	Rs.1,755,085
PES Awards and Small Grants to SHGs	Rs.180,000	200,000	200,000	200,000	780,000
Community Consultants and Youth Groups	Rs.250,000	250,000	250,000	250,000	Rs.1,000,000
Total	Rs.58 0,000	Rs. 1,180,000	Rs 834,000	Rs. 941,085	Rs.3,535,085



Mawphlang Women's Self Help Group (SHG-micro finance) with Conservation Area. Photo: Mark Poffenberger.

We the members of the Community Forest Management Committee of Wahlyngkien Sunei and Wahlyngkien Ramklang Villages under Hima Mawphlang Lyngdohship, East Khasi Hills District, which constitute a part of a Pilot Project of Community Forestry International, and represented by the Local Working Committee, realise that our forests are in a state of severe degradation due to fire, grazing, unsustainable collection of firewood, unregulated quarrying, etc. We therefore adopt the following resolutions for restoration of our forest landscape on the assumption that the Government of India or any other donor agency will come forward to help us by providing the fund for taking care of the opportunity costs of protection and also for the support activities.

1) Fire Control: Fire is the most destructive factor to our forests, occurring mainly during the dry months when the forest floor is covered with a thick layer of flammable material. It is therefore resolved that members will identify the causes of the annual fires and undertake to create and maintain fire lines to prevent fires from entering the forests from the adjacent villages, negotiate with cooperative agreements with neighbouring villages to prevent fire from spreading, and appoint firewatchers from forest dependent families during the fire season. If fire breaks out all able-bodied members of the community will put out such fire. Signboards will be posted banning smoking and match boxes within forest areas. The community will also strictly enforce local customary laws prohibiting setting of fire to the forests.

2) Control of Grazing by Cattle: It is realised that unregulated grazing by cattle and goats in forest areas is a major cause of forest degradation. In order to protect

regenerating plants in the forests, it is imperative that grazing of cattle within the forest areas be prohibited. In order to achieve this, it is resolved that village cattle will only be allowed to graze in areas outside community-conserved forests. Cattle if reared should be of superior breed and stall-fed with cattle feed procured from outside, and inferior breeds will be replaced by more profitable livestock, such as pen-raised pigs and poultry.

3) Control of Unsustainable Harvesting of Firewood: It is realised that unsustainable harvesting of firewood from the forest is another major cause of its rapid depletion. The community agrees to ban the cutting of green trees for firewood, prohibit the sale of firewood outside the village, develop alternative sources of energy such as coal briquettes and other eco-friendly and affordable fuels and efficiencies, and adopt smokeless stoves. No felling of trees for commercial purposes will be permitted.

4) Control of Quarrying: Stone quarrying in the steeper areas of the project site has resulted in accelerated soil erosion and deposition of debris in the streams and reservoirs in the lower reaches. This has resulted in silting and drying up of such streams with the rapid depletion of fish, amphibians and other live populations. The community will ensure that no quarrying will be permitted within the watershed containing the Mawphlang Sacred Grove and Community Forest areas by order of the Lyngdoh.

Box 1: Mawphlang Community Conservation Resolution

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