Khasi responses to forest pressures: A community REDD+ project from Northeast India

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Abstract: This paper examines the experiences of 10 indigenous Khasi kingdoms in Meghalaya, India, that are responding to rapid deforestation by developing a federated sub-watershed management institution that will build the capacity of their traditional governance bodies to conserve and restore ancient community forest lands. The Khasi have protected their forests for centuries but have been experiencing accelerating deforestation over the past decade due to growing demands for agricultural land, fuelwood, charcoal, coal, and limestone. The Khasi seek to finance this initiative through the sale of carbon offset credits (under REDD+) and through payments for other environmental services (PES), including protecting a major water source for the state capital in Shillong. Carbon and other PES mechanisms are providing an effective catalyst and programmatic framework for institutional innovation, mapping and boundary demarcation, and long-term planning, with potential funding for mitigation, restoration, and income-generating activities.

Keywords: Community forestry, REDD+, indigenous governments, northeast India, payments for environmental services, PES

13.1 Forests under pressure

Khasi communities of Northeast India possess indigenous forest conservation values reflected in an unbroken 500-year-old tradition of sacred forests possessing ancient stone megaliths. Threats to these valued ecosystems have catalysed 62 villages and 10 indigenous governments to establish a federation to coordinate the protection and restoration of their community forests within the Umaim sub-watershed. The Khasi Hills initiative represents a unique locally driven response to forest pressures that utilises innovative financing mechanisms. Indigenous institutions including indigenous multi-village governments (*hima*) and tribal village councils *dorbar*) still remain the active governance organisations

for civil society at the local level. These institutions set and enforce traditional social norms and rules through transparent and democratic processes that characterise Khasi society. Through the project a number of new village institutions have also been established, including the watershed federation to coordinate resource management and local working committees at the micro-watershed level. The new institutions are developing capacity to use scientific forest monitoring systems, which include remotely sensed data and field-based measurement conducted by community members. This initiative is India's first PES/REDD[1] project to be certified under the international Plan Vivo standard.[2] In understanding the significance of the Khasi Hills Community REDD+ project as a local response to growing pressures and global issues, it is helpful to review the larger forest

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[1] Payments for environmental services (PES); Reducing Emissions from Deforestation and Forest Degradation plus enhancing forest carbon stocks in developing countries through conservation and sustainable forest management (REDD+).

[2] A Plan Vivo certificate is an environmental service certificate representing the long-term sequestration or avoided emission of one tonne CO_2, plus additional livelihood and ecosystem benefits.

sector context in India as a whole. This case study examines some of the historically based underlying causes of deforestation and forest conflict in India, as well as local drivers of forest loss and degradation. The paper then examines some of the conditions that support positive adaptation and change by communities, analysing the case study of the Khasi Hills.

13.1.1 India's forest context

Over the past century, India's upper watersheds and forests have been commercially exploited for the benefit of urban industrial and agricultural centres. Exploitation has been facilitated by the centralisation of legal control over forest resources in state forest departments that dictate management goals and controlled-use operations. The 150 years of forest governance under this management system has resulted in a gradual depletion of natural resources and a deterioration of the capacity of forest ecosystems to deliver important environmental services and socio-economic benefits. This management paradigm has frequently created conflicts with India's forest-dependent communities, currently estimated at 250 to 300 million people.

During the colonial period, indigenous communities periodically resisted outside encroachment into their ancestral domains by the state and the private sector (Arnold and Guha 1995, Duyker 1987, Poffenberger and McGean 1996). During the 1980s and 1990s, grassroots resistance from forest-dependent communities spread as India's multiparty political system expanded in a number of regions of the country, including southwest Bengal, southern Bihar, Jharkhand, Orissa, the Western Ghats, Uttarakhand, North Bengal, and other areas (Poffenberger and McGean 1996). At that time, tribal communities in the Chota Nagpur region of eastern India, as well as in some other forest districts, began actively protecting local forests, often resulting in rapid natural forest regeneration.

In 1990, the government of India established a national Joint Forest Management (JFM) initiative to provide a programmatic framework for forest communities to participate in management. The JFM strategy extended to communities certain rights and responsibilities related to local forests, based on government JFM orders passed in 28 Indian states. The JFM program currently covers more than 22 million hectares and involves 100 000 villages that share management responsibilities for one-third of India's forests (World Bank 2006). While the program represents one of the largest public land-reform initiatives in Asia in recent history, it has been criticised for failing to sufficiently empower community tenure rights and management authority to improve environmental conditions and economic condition of forest dependent communities.

Over the past 30 years, Maoist insurgency groups have spread throughout many of India's forest districts (Singh 2006). Dissatisfaction of forest-dependent communities, including many of India's 60 million tribal people, with government policies and agencies, including state forest departments accused of corruption and poor implementation of the JFM program, has created a fertile environment for insurgency (Singh 2006).

Over the past two decades, India's forests have been increasingly engulfed in social and armed conflict. More than 20 of India's 28 states are affected by Maoist insurgencies. In the words of Home Secretary G. K. Pillai, these insurgencies are one of "the gravest threats to India's national security" (BBC News 2010). In states such as Jharkhand and Orissa, local non-governmental organisations (NGOs) report that up to two-thirds of these heavily forested regions are either controlled by insurgents or tribal communities, who often restrict the movements of government officials.

The apparent alienation of forest-dependent communities in many parts of India appears linked to the following factors: 1) a failure of government to effectively transfer forest rights to communities and local governments, 2) antiquated state forest departments that ineffectively manage government natural resource management (NRM) and livelihood projects, 3) illegal logging, 4) corruption among foresters and local government, and 5) leasing of forest lands to mining and industrial concession interests (Poffenberger and McGean 1996).

In 2006, under pressure to address the tenure problems of forest-dependent communities, the government of India approved a Forest Rights Act (FRA) to strengthen the forest rights of tribal communities. The implementation of the FRA has been slow and is frequently resisted by state forest departments, leaving the problem of forest tenure conflicts among communities, forestry agencies, and the private sector unresolved. At the national level, the Indian government has yet to finalise a national REDD policy. The continuing struggles of many of India's forest-dependent communities for greater tenure security and ongoing conflicts with government agencies raise concerns for the future of REDD initiatives in India.

While the tenure situation raises barriers to community-based REDD project development, strong community tenure rights granted under the Sixth Schedule of the Indian Constitution that apply in many upland areas of the Northeast may provide better opportunities for community-based forest carbon initiatives. The Sixth Schedule was formulated for selected upland tribal areas in Northeast India after independence, providing indigenous

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communities representation and rights over lands and forests through autonomous district councils. The following case study focuses on early REDD project experiences among the Khasi communities of Meghalaya. The case is significant as it is one of India's first REDD+ projects and could provide a model for expansion, both in the Northeast as well as in the rest of India.

13.1.2 Khasi Hills context

The Khasi Hills of Meghalaya is a propitious site for REDD+ pilot projects because of the long-established traditions of community forest management, the resurgence of community interest in strengthening protection of sacred groves and communal forests, and the unique flora and fauna of this region. Khasi community leaders approached Community Forestry International (CFI) staff at a workshop in Shillong in 2005 to request institutional, technical, and financial assistance to strengthen the capacity of their traditional management systems to conserve and restore community forests. This request was in response to community concerns about degradation of forests and growing pressures on sacred groves and other natural resources both from their own community fuelwood needs as well as from private sector firms engaged in quarrying, mining, and logging.

The ecosystems of the Khasi Hills of Meghalaya are unique in the world. Cyclonic air masses churning in the Bay of Bengal during the heat of summer generate storms that slam into the Meghalaya Plateau, which rises sharply from the flood plains of Bangladesh, creating torrential monsoon rains that make the Khasi Hills one of the earth's rainiest places. The wet, subtropical forests represent a unique habitat with impressive biodiversity, including 400 tree species, unusual and unique orchids, mushrooms, amphibians, and birds. Ancient stone megaliths dedicated to fallen warriors stand sentry throughout the dense forest of oaks, rhododendrons, chestnuts, alder, and figs; a prolific variety of epiphytic growth includes aroids, piper, ferns, fern allies, and orchids. The Khasi classify their forests as those with ritual significance, which are viewed as sacred groves and are usually well-protected, and various types of production forests where management varies from good to poor. Over the past seven years, the project sought to strengthen community management of these unique habitats and assist villages to expand and restore community forests throughout the Khasi Hills watershed.

The Umiam sub-watershed defines the 27 000 hectare project area situated at an elevation that varies from 150 m to 1961 m above the mean sea level and is characterised by a great diversity in relief. The plateau is highly dissected; steep regular slopes to the south border Bangladesh, into which the Umiam River drains. The Central Plateau region within the project area consists of rolling uplands intersected by rivers and dotted with rounded hills of soft rock. The Umiam River is one of the state's major rivers and an important source of water for the state's capital, Shillong.

While indigenous governance structures have continued to operate with reasonable effectiveness in the Khasi Hills, the landscape has changed dramatically. It is clear from historical records that the East Khasi Hills have experienced heavy land-use pressures for more than 150 years. Limestone quarrying and coal mining have been expanding for more than a century, while clearing forest for agriculture and settlements 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." A recent socio-economic baseline survey for the newly formulated community REDD+ project in the Khasi Hills found that nearly three-quarters of the respondents from 15 villages reported declining availability of water (CFI 2012) during the dry season from October to May. Water shortages result from declining steam and spring flows during the dry season, which may be caused by the loss of vegetative cover as well as climatic changes.

The Khasi communities place a high cultural value on their forests, as reflected in their oral histories. Khasi clans residing in the project area can trace their ties to the sacred groves, which retain many stone megaliths dedicated to historic figures and fallen warriors, back five centuries. Rituals continue to be performed in sacred places within and around the forest, while rules for forest conservation and use are generally well-respected by the community. The Khasi also value their forests for their capacity to protect springs and stream beds and conserve wildlife. Equally important, the forests provide a diversity of food products including mushrooms, green leaves, fruits, and nuts that are an important contribution to the family kitchen. Bamboo and timber for construction and tools are drawn from community forests, while demands for firewood from community forests are high for most households – 20 to 30 kg of fuel required each day. This high social and economic dependency upon the forests has catalysed the Khasi response to forest loss reported here.

Analysis of SPOT satellite imagery between 2006 and 2010 indicates annual forest loss of 4% per year, reflecting rapid deforestation and degradation occurring in the area (see Figure II 13.1). Red-coloured areas indicate "hot spots" where forests are being converted to non-forest areas. During discussions
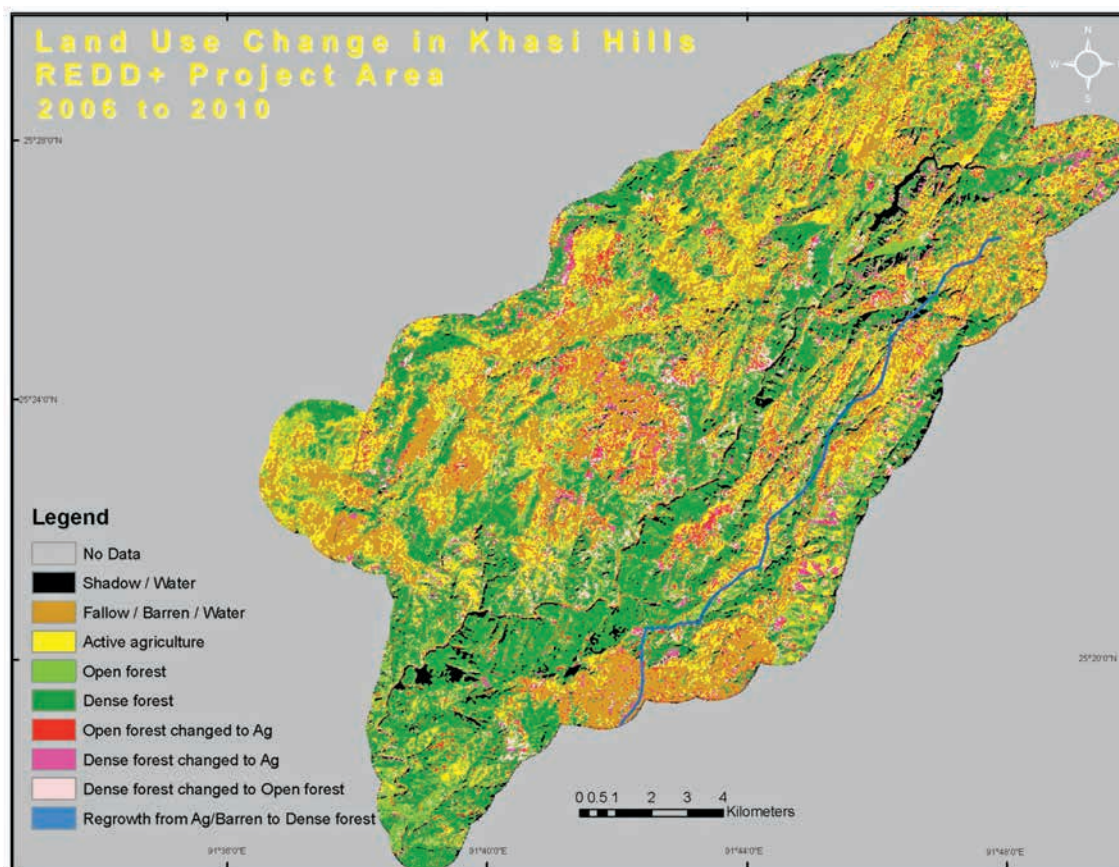
Figure II 13.1 Land-use change in Khasi Hills REDD+ project area 2006–2010.

of forest-cover change in the map, members of the 10-kingdom federation expressed clear understanding of site-specific drivers of forest loss, including charcoal making and clearing of forest for commercial farming of broom grass.

13.1.3 Challenges facing indigenous institutions in forest management

According to the Sixth Schedule of the Indian Constitution, the state of Meghalaya has a dual system of administration that includes the modern bureaucratic structure common to other Indian states and the traditional (customary) system found within the state (Nongkynrih 2002). Khasi villages retain autonomy through traditional organisations to manage their own affairs and collectively control their natural and human resources. All affairs within the jurisdiction of the village are controlled through the village council, or *dorbar shnong*. Each adult male member of the village may participate in the village council. The council is responsible for ensuring the maintenance of forests, paths, and water sources; control of fire; and sustainable harvesting of pro-

duction forests and conservation of sacred forests. Resources outside the jurisdiction of the village or that cross village lines are managed through an apex council, with representatives from the communities and clans within the area. The apex council, called the *dorbar hima*, may include a few villages or up to several dozen villages and hamlets. The hima is responsible for mediating inter-village boundary disputes, approving land sales, discussing ways to secure development grants, and coordinating with the district council. According to the Sixth Schedule, these indigenous institutions are overseen by the autonomous district council.

While the Khasi have a long tradition of forest conservation, in recent decades a growing demand for timber, fuelwood, limestone, and coal has resulted in the disappearance of extensive forest tracts of upland watersheds throughout the Khasi Hills. The privatisation of community and clan forests has often resulted in clearing forest for agricultural land. Privatisation may occur when clan leaders sell communal forest lands to outsiders without consulting community members. Privatisation is driven, in part, by the growth of land markets and entrance of private-sector investors in commercial agricultural crops and mines, as well as by the breakdown of traditional institutions. In such cases the hima may

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or may not have authorised the sale of land. Problems stemming from deforestation have been compounded by widespread quarrying for stone, limestone, coal, and other construction materials. Forest loss, soil erosion, and mining have all had significant impact on the hydrology of these critical watersheds. Due to the high demand for quality stones produced from quarries in the project area, the communities face some loss of income by closing these enterprises, which REDD project revenues must address. In the project area, most quarries are relatively small and income to the indigenous government (hima) that leases the mining rights is modest. However, low-income families working as day labourers in the quarries can lose income with quarry closings. The REDD+ project has created income-generating activities for these family members within community microfinance organisations.

While indigenous communities control approximately 90% of the forests of Meghalaya, growing political, economic, and demographic pressure on traditional institutions and customary management systems have eroded their capacity to sustainably manage natural resources. Throughout Northeast India, while community institutions continue to play a vital role in managing village society and natural resources, these institutions receive limited or no recognition or support from federal or state agencies. They frequently have weak linkages with government and line departments and agencies, in part due to their diversity, complexity, and varied constitutions, composition, and functions.

While government of India legislation supports the land and forest tenure rights of indigenous communities in the northeast hills according to the Sixth Schedule of the Constitution, the state government has done little to document community forest lands or support indigenous community institutions or their resource management capacity. Community, clan, and private forests are generally categorised as "unclassified" forests by the state forest department. This status implies that they may be eligible to be reclassified as reserved forests or protected forests at some point in the future. Some Khasi communities have expressed anxiety over potential encroachment by government, particularly state forest departments, and have often rejected overtures by this agency to participate in national forestry schemes such as JFM activities. This alienation is exacerbated by a tendency of the Indian Forest Service to appoint outsiders to senior positions in the forest department who possess limited understanding of the Khasi language and culture.

Another institutional weakness that has undermined forest cover in the East Khasi Hills district is the breakdown of community forest-use rules and regulations. While indigenous community institutions have rules and regulations governing resource use, these are often unwritten and may not reflect the growing pressures on forests, land, and water. Typically, such traditional forest-use regulations were established generations ago and continue to be accepted social norms that guide behaviour. Nonetheless, as demands on the forest have grown through population growth and market expansion, and as outside cultural communities have moved into the area, systems for monitoring and enforcing these regulations lack technical and financial support to allow effective operation. Updated rules that respond to current resource pressures need to be adopted and codified with adequate enforcement mechanisms in place. Furthermore, indigenous communities rarely have short-, medium-, and long-term management plans for their forests and watersheds that reflect a clear set of goals. As a consequence, the communities are unable to address management problems or take proactive measures to improve management. This project may provide an opportunity to systematically address these weaknesses in ways that strengthen and build the capacity of indigenous institutions to better manage their forest resources.

13.2 Early responses to local issues – lessons learned from the Mawphlang Pilot Project (2005–2010)

The Khasi Hill Community REDD+ project is an expansion of an earlier PES strategy that CFI supported in the kingdom of Mawphlang Lyngdohship (Hima Mawphlang), one of 10 kingdoms (hima) that comprise the federation (synjuk). This early experience involving two Khasi hamlets provided useful lessons regarding the effectiveness of socio-economic, technical, and institution building interventions that strengthened the capacity of indigenous governments to participate in the program. Key learning emerging from the initial pilot project includes the following:

◆ Communities in the project area were aware and concerned about forest loss, erosion, changes in stream flows, and shortages of forest products but lacked the financial and technical resources to address the problem.
◆ When financial and technical assistance was provided, local leaders and community institutions mobilised members to renew and strengthen resource management rules and regulations and implement them through consensus-based community action.
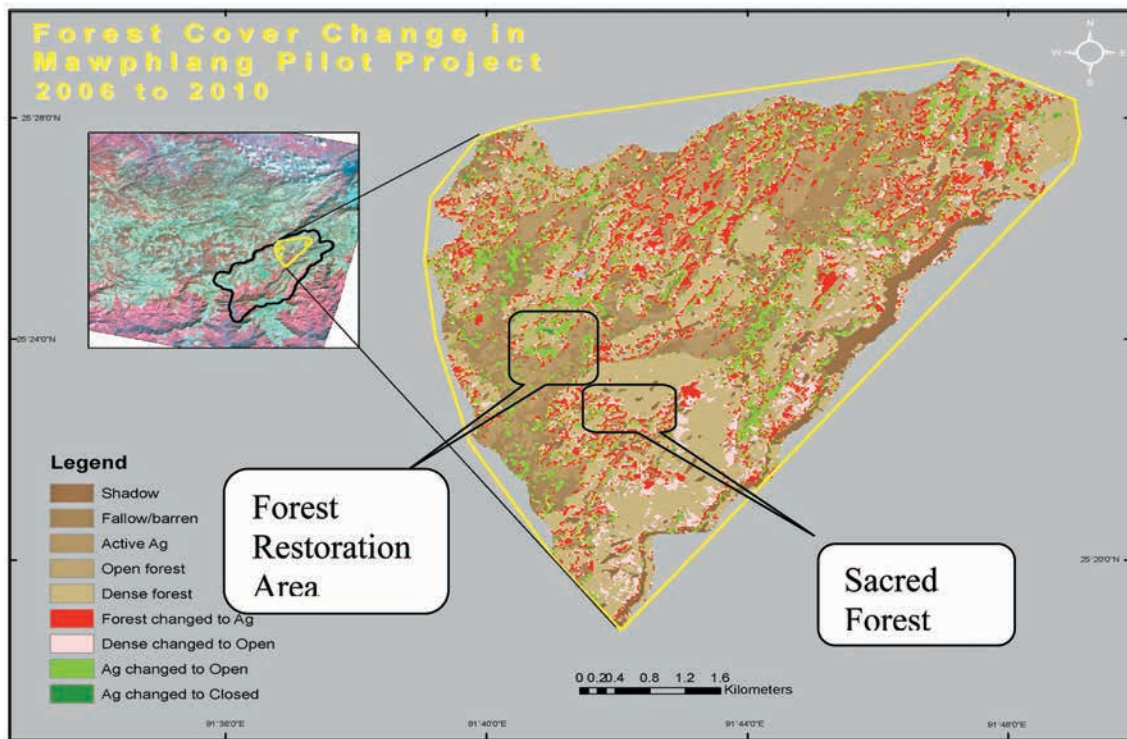◆ Community discussions were held to identify the opportunity costs of conservation and restoration

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Figure II 13.2 Forest cover change in the Mawphlang Pilot Project areas.

and find mutually agreeable activities to generate alternative income to compensate for lost income.

◆ Performance-based conservation award money provided effective incentives for implementation of watershed restoration activities and funded a revolving community bank account that sustained the community resource-management system after the project ended (Poffenberger 2012).

At the beginning of the project, CFI was invited by the hima to improve traditional community forest-management systems. Discussions with community members and leaders, as well as the executive committee of the larger hima, identified a number of resource management problems, including stone quarrying, uncontrolled grazing, forest fires, illegal logging, and unsustainable fuelwood collection. These activities were widely recognised drivers of deforestation and forest degradation. Dry season ground fires, open grazing by low-value goats and cattle, and continuous hacking and felling of trees and shrubs was suppressing natural forest regeneration and supporting a gradual loss of biomass.

After a series of discussions between the project team, the indigenous governments, and village members, the participating communities agreed to pass a conservation resolution signed by all members to control fires, grazing, and illegal logging, while the hima cancelled all stone quarrying leases in the project area. Since that time, the quarries have been

closed and soil and watershed restoration work undertaken, while incidence of forest fires has been dramatically reduced, with no outbreak in the project area \not quickly controlled by the community. A fuel-efficient stove program was initiated in the community to reduce fuel consumption, while lowering smoke levels in homes through the introduction of piped outlets. Initial stove models were tested by community women, with a number of problems identified in the design of the stoves. This led to a redesign and the improved stoves have been adopted by the majority of village households, with reductions in wood consumption of 25% to 30%.

Open grazing has been halted by transitioning animal husbandry systems to stall feeding, and fuel-wood is now collected on a rotation basis, allowing harvest sites time to recover. As a result of community actions to control ground fires and reduce pressures from grazing and fuelwood gathering, forests have begun to regenerate rapidly, while loss of the dense forest has slowed. Both of these trends are creating forest carbon assets in terms of sequestration as well as improved storage that can be certified under emerging REDD+ protocols.

Satellite images from 2006 and 2010 indicate that during this period the Mawphlang sacred forest suffered no loss, while the community reforestation area experienced significant regeneration (see Figure II 13.2). Without the project, it is likely that the open forests in the pilot project area would not have regenerated to the extent shown in the time series

of satellite images – neighbouring open forests in "non-treatment" areas showed significant lack of regeneration. The Mawphlang sacred forest would likely have continued to be protected, as it retains high cultural value for local communities.

In the past, many Khasi communities have been reluctant to map their community forests for fear of encroachment on their forest lands by the state forest department. A process of consultation by the project team has reassured the communities that they can map the forests themselves and control their own maps. Based on these agreements, the project area was surveyed by community youth teams using GPS units under the guidance of the local project support team. The mapping process not only identified boundaries of forest areas but also the tenure status (community, clan, private, etc.) and biophysical conditions of each forest block. Using the maps, the communities and hima leadership worked with the project team to develop a micro-watershed management plan that identified priority areas for restoration and conservation. Management plan maps were printed on large-format plastic sheets and distributed to the participating communities and hima government. Micro-watershed maps reflecting longer-term management plans and goals are utilised as a focal point for community discussions in planning management activities that include assistance with natural regeneration work, fire line maintenance, biodiversity conservation, and watershed restoration.

Project funds support two related strategies: assisted natural regeneration (ANR) and payments for environmental services (PES). ANR funding is channelled through the village local working committee (LWC) and covers the costs of fire-line creation, forest watchers, silvicultural operations, and forest monitoring. These activities target degraded forests and have proven to be extremely effective in stimulating rapid natural restoration of forest cover as well as improving stream flows and the presence of biodiversity. This component also supports the conservation and protection of old growth forests and facilitates the linking of dense forest fragments with regenerating forest patches to create wildlife corridors.

To create incentives for successful implementation of new forest management activities, PES are given to the LWC and self-help groups (SHGs) at the end of each monsoon season. Payments to the LWC totalled approximately USD 1000 each year, while the SHGs Criteria for Evaluating Performance include the effectiveness of fire and grazing controls, successful conservation of old growth areas, and the observable regrowth of degraded forests. During the early demonstration period (2005–2008), forest monitoring was largely done through annual photos of a small number of forest plots and watershed landscapes, walk-through at the end of the fire

season, and post-monsoon assessments of regrowth. While these activities indicated rapid regrowth, the changes in forest stock were difficult to quantify. In 2011, 40 forest inventory plots measuring 20×20 m were established to monitor forest conditions and carbon stocks during the REDD+ project. Spot and Landsat satellite images are also being used to assess historic trends in forest cover (1990–2010) as well as to provide a baseline moving forward.

Indigenous institutions in Northeast India have been largely bypassed by state and national governments, in effect disempowering them and marginalising them from government programs and projects. To address this, CFI sponsored a series of workshops for indigenous institutions and state technical agencies to review emerging forest management plans and how existing government projects can be linked. CFI has worked with indigenous leaders to seek formal recognition of the project from the Khasi Hills Autonomous District Council as well as from the Meghalaya state government and the government of India.

In addition to using funds for the protection and restoration of local forests and watersheds, the communities are utilising project financing to capitalise women-administered microfinance institutions to provide funds for small enterprise projects. Project funds were also provided to community families to build pens for raising pigs and chickens, allowing them to shift away from low-grade grazing animals such as cattle and goats, reducing grazing pressures on the watershed. It also allowed village households to collect manure for fertilising their fields and orchards.

13.3 The Khasi Hills Community REDD+ Project

Initiated by CFI in 2010, the project brought together 10 indigenous Khasi tribal kingdoms that possess legal control of the 27000 hectare Umiam sub-watershed under the Sixth Schedule of the Indian Constitution. Together, the communities formed a sub-watershed federation to create one of India's first community-based REDD+ initiative. This project was designed to build the resource management capacity of the 10 indigenous Khasi kingdoms, which encompass 62 local communities. The pilot project sought to explore how indigenous governance institutions, coordinated through their own federation, can implement REDD+ initiatives that control drivers of deforestation by conserving and restoring forest cover and hydrological function, while at the same time facilitating transition to agricultural systems that are climate-resilient. The project has been approved by the Khasi Hills Autonomous District

Council, with support from the chief secretary of the state of Meghalaya.

Under the REDD+ project framework, the federation or *synjuk* plan and implement a 30-year climate adaptation strategy for their upper watershed. Each of the 62 villages prepares a community micro-watershed management and livelihood plan. CFI provides technical and financial support to this new community institution, providing training in resource management that involves designing, certification under Plan Vivo standards, and marketing carbon credits on private voluntary markets. The project is designed to establish a 30-year income stream to support the federation. Based on initial projections, an additional 20 000 to 50 000 tCO_2 will be generated each year through community-based mitigation activities, yielding a gross income of USD 100 000 to USD 200 000 annually to finance the synjuk management institution and livelihood activities for participating communities.

The project received REDD+ registration under Plan Vivo standards in March 2013, requiring a performance-based approach to project design and implementation. Key variables that must be monitored include carbon stocks, forest condition, and other environmental indicators, including changes in biodiversity and hydrology. Socio-economic performance indicators are also being monitored by the community including tracking changes in household income, microfinance account balances and repayment rates, participation in alternative income-generating activities, energy use, and activities of newly established farmers' clubs, such as adoption of sustainable farming practices. The project is one of the first REDD+ initiatives in Asia to be developed by indigenous tribal governments on communal and clan land. If successful, the project has potential for broad-based replication among Northeast India's 240 ethnolinguistic tribal communities. The federation has established agreements with companies that focus on brokering carbon credits generated by community forestry to corporate social responsibility (CSR) buyers in the private sector. Project brokers include C Level of London and U & We of Stockholm. The brokers seek to establish long relationships with companies that will buy a fixed quantity of credits each year over the next five to 10 years.

13.3.1 Institutional empowerment – the synjuk, a 10-kingdom federation

The project seeks to demonstrate how indigenous institutions coordinated by their own federation (synjuk) can implement REDD+ initiatives that lower CO_2 emissions and restore forest cover and hydrological function while facilitating transitions to agricultural systems that are climate-resilient. Since 2010, the synjuk has been actively working with participating communities to control drivers of deforestation and degradation operating in their area, involving reduced fuelwood consumption as communities shift to more efficient stoves and alternative sources of energy, removal of grazing pressures from upland watersheds, and reduced impact of forest fires and open pit quarrying. The synjuk is working with government agencies to integrate government of India projects into their work plans, creating a range of new partnerships. This project relies on five core strategies:

Create awareness regarding climate change and forest management. The synjuk is raising awareness among communities regarding the importance of forests and the opportunities to restore them. Since 2011, the synjuk has organised more than 80 meetings of Khasi communities to discuss resource management problems and strategies to regenerate degraded forests. It has also contacted youth groups to engage in natural resource management activities and is hiring and training male and female youth to act as community facilitators and extension workers within their communities and micro-watersheds under the guidance of the synjuk.

Strengthen indigenous community institutions. The synjuk is strengthening the authority of indigenous organisations by recognising them as legal representatives of their constituencies. By creating new partnerships with national and local government projects and representatives from non-governmental organisations, the synjuk is raising the profile of local hima and community dorbar institutions. Bringing indigenous leaders into the synjuk exposes these individuals to information about REDD+ and government development schemes that they communicate to their constituencies.

Map and demarcate boundaries of community forest lands. The project has trained community members in the use of GPS equipment and GIS software. The mapping process is coordinated by the federation and performed in a transparent process with broad-based community participation from local communities and indigenous governments.

Update community resource rules. The synjuk is working with local communities to discuss forest-use rules and how they may need to be modified and strengthened to address forest pressures.

Develop community-based landscape-level management plans. Since 2011, the synjuk team has been working with communities to review their land, forest, and water requirements to formulate forward-looking management strategies, or Plan Vivos. Building community resource planning capacity through training, field visits, cross visits, and workshops is allowing members to set management

Figure II 13.3 Megaliths overlooking the Mawphalang Sacred Forest. ©Mark Poffenberger

priorities and goals, and identify activities to mitigate drivers of deforestation and forest degradation. Each community is identifying degraded forest areas that it wishes to regenerate by closing it to use for a period of time, preventing fire, and carrying out enrichment planting. In each treatment area, 20×20-m forest monitoring plots are established and measured each year by community members.

13.3.2 Technical empowerment – controlling drivers of deforestation

A number of forces internal and external to the community drive deforestation and forest degradation in the East Khasi Hills. Approximately 39% of forest lands in the project area are severely degraded as a result of unsustainable fuelwood harvesting, grazing, and fire, as well as by quarrying and timber extraction. Many of these drivers can be controlled through community actions that include improved fuelwood harvesting rules based on rotation, adoption of fuel-efficient stoves, changes in animal husbandry systems, and fire control. Early pilot project experiences documented through a time series of forest plot photographs indicate rapid regeneration of degraded forest lands under updated community management systems. Forest restoration can be further accelerated through the use of ANR techniques, which include thinning, multiple shoot cutting, and weeding. Earlier pilot activities in the area found that establishing LWCs created an institution that allowed one to three hamlets to coordinate efforts to combat annual ground fires through the construction of fire lines and engaging village youth as fire watchers. LWCs also provide a mechanism to organise ANR activities and monitor forest re-growth.

Other drivers of deforestation include surface mining of coal, limestone, and gravel that have substantial impact in the Khasi Hills. These activities can be controlled and reduced through the action of hima governments that hold the authority to oversee leases on community lands in their jurisdiction under the Sixth Schedule of the Indian Constitution. Agreements to limit mining and quarrying leases by the 10 hima under the umbrella of the synjuk federation will ensure reduction of the impact of these drivers in the future. The synjuk is already working closely with the Khasi Hills Autonomous District Council and Meghalaya state government to coordinate development planning in the forest areas of the sub-watershed.

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13.3.3 Financial empowerment – creating multi-sourced capital flows and building assets

Poverty is difficult to alleviate, in part due to the persistent dearth of capital in poor communities. Community resource-management institutions are also grossly underfunded. PES provide a potential mechanism to channel capital into low-income rural communities that are well-positioned to protect and restore critical ecosystems. REDD is one of the first PES strategies to be widely discussed and could establish capital flows into the East Khasi Hills, where financial inputs are badly needed. In 2008–2009, the East Khasi Hills District in Meghalaya had a rural per capita income of INR 21 000 (NEDFi Databank 2009); less than USD 1.50 per day.

This project is helping communities build capital through payments into the synjuk based on their demonstrated capacity to slow deforestation and facilitate natural regeneration. Since 2011, the project has supported the establishment of 39 SHGs made up of 10 to 15 members that can act as microfinance institutions within their villages. The SHGs are primarily organised and led by women, providing an opportunity to empower women and link them to resource management by building their role in supporting microenterprises. The synjuk, together with a local NGO (Bethany Society), is helping the SHGS establish bank accounts and register with the government of India rural banking program. Once carbon revenues begin to flow to the synjuk, it may be possible to contract with the SHGs to implement ANR activities. Paying a resource management subsidy to women's SHGs may create a win-win-win situation: the SHG receives a measure of non-loan finance; the finance pays for a tangible and measurable service (such as fire control in local forests); and the money is used to create a microenterprise, which in turn creates income, thus establishing a sustainable financing mechanism.

13.4 A vision for the future – indicators of success

Innovations being developed in this project include institutional strategies that build on indigenous institutions and forest management traditions, as well as carbon, environmental and socioeconomic measurement methods that communities can use to monitor changes in their environment. The project also seeks to create new approaches to sustainable financing of resource management systems and livelihood programs. The project has created the first community forestry federation in Northeast India composed of indigenous governments and communities that own much of the region's upland forest. Building local institutional capacity to adapt to climate change and create sustainable forest management systems while strengthening resource rights is a key to reversing forest loss.

In 2012, 57 villages have prepared initial natural-resource management maps and plans for their communities using GPS equipment, with five additional villages to be covered in 2013. While rural Khasi communities have been reluctant in the past to have outsiders map their community lands, by owning the mapping process, strengthening their community institutions, and adopting a unified approach to landscape-level management, they are better prepared to address the external pressures they currently confront. Parallel processes of participatory rural appraisals were also held in all communities to identify livelihood needs and set priorities for economic development. By linking resource management goals with income-generating strategies, the project recognises that the problems are interrelated and require a coordinated approach, relying in part on payments for environmental services. While the initial mapping and Participatory Rural Appraisal (PRA) provided important opportunities for community resource discussions, it became apparent that the planning process needs to be an ongoing exercise. The synjuk is still gaining capacity to manage community-based information and will need time to develop an adequate database management system that can be updated regularly. It is considering seeking assistance from the regional Northeast Hill University (NEHU) to assist with this task.

Awareness is being raised about climate change and forest restoration needs and is being discussed through a network of community facilitators and extension workers drawn from the 62 participating villages and 10 kingdoms. Federation members and community forest-management groups (LWCs) are being trained to establish environmental baseline indicators utilising cost-effective methodologies designed by the project. Carbon monitoring data being used follows international (Plan Vivo) standards to create a REDD+ project that will provide a long-term source of financing for community-based climate adaptation and resource management activities. These innovations will be developed and field tested for broad-based replication in Northeast India.

In India, there are more than 100 000 community-based resource management groups that could transition into PES/REDD projects of this type, provided tenure issues are addressed either under the Sixth Schedule in the Northeast or through the Forest Rights Act or other existing legal mechanisms. Early learning from the Umiam sub-watershed project would suggest that the following factors may be associated with the likelihood that the next genera-

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tion of community-based PES projects can achieve improved resource management in terms of sustainable environmental and social benefit flows.

- ◆ Social capital – accrued through strong local leadership, broad-based community participation, and support from experienced NGOs
- ◆ Ecological capital – developed through the regeneration of currently degraded forest ecosystems and watersheds
- ◆ Secure land tenure/or user rights – provided through national laws and community forestry policies
- ◆ Lower transaction costs – achieved by using locally appropriate management, implementation, and project monitoring
- ◆ Gender and social balance – achieved by targeting women and the marginalised and landless as beneficiaries of project income through a process of community/elite buy-in
- ◆ Socio-cultural values – reinforced by empowerment of traditional institutions and cultural values that support environmental conservation
- ◆ Environmental restoration at a landscape level – achieved through regenerating forests, sustained biodiversity, improved hydrological functioning of watersheds, and more productive and sustainable farming systems
- ◆ Forest conservation – achieved by protection and conservation of scarce primary forest
- ◆ Enterprise development – achieved through proliferation of alternative income-generating activities
- ◆ Capital asset building – achieved by establishment of women's microfinance institutions with increased capital assets

The success of any community-based resource management system depends on the community itself and its commitment to sustaining the land, forest, and water it depends upon. The 10 kingdoms in the Umiam sub-Watershed have agreed to federate, protect, and restore their forests, not because of any financial incentive but because of their own sense of an urgent need to halt deforestation and restore important ecosystems that are central to their history and culture. REDD, PES, or any other project support will facilitate this process, but it is simply a means, not an end. What is perhaps more significant is that important socio-cultural institutions in Khasi society that have been largely bypassed by national and state government are now emerging as key elements in a grassroots attempt to protect and restore local forests that possess valuable biological and cultural diversity. Communal governance structures like the dorbar and hima that rely on democratic processes to enable consensus-based decision making are being re-empowered through this project. This process strengthens traditional land tenure rights by focusing attention on communal forest resources whose management has been neglected in recent decades.

Afterword: January 2014

The Khasi Hills Community REDD+ Project was certified under The Plan Vivo Standard in April 2013. For mitigation activities undertaken during 2012, 21 805 tons of carbon certificates were issued during 2013. By the end of 2013, 5193 tons were sold by brokers at prices ranging from USD 6 to USD 7 per ton. After the deduction of issuance fees, the federation managing the project received USD 25 947 in revenues. The federation is working with carbon brokerage firms in India, North America, and Europe to market the remaining 2012 vintage carbon certificates and is anticipating the issuance of another 22 000 tons of 2013 carbon certificates in the spring of 2014. If marketing is successful, the federation should receive USD 100 000 to USD 150 000 each year, allowing an increasing percentage of carbon revenues to flow to eco-restoration and economic development activities. The federation has proposed establishing an Umiam Watershed Trust Fund with additional carbon revenues to act as a long-term financing mechanism.

In 2013, carbon revenues supported project management and monitoring, public awareness raising, the establishment of 20 community nurseries, and support to women's micro-finance groups and farmers' clubs. Participating communities also initiated forest restoration activities on 505 ha of land, with plans to add 500 ha each year over the ten year project period in order to restore 5000 ha of degraded forest.

The environmental impact of the project is already visible, with the incidence and extent of dry season forest fires in 2013 substantially reduced through fire line construction, fire watchers, and community fire control groups. Community rules and regulations, patrolling, and other human actions to restrict access and unauthorised use of forests and pastures have supported natural regeneration in many parts of the project area. While it is premature to assess the socio-economic impact of this REDD+ project on community livelihoods in the Umiam sub-watershed, the project appears to have catalysed new cooperation among the ten participating indigenous governments and created a common vision based on forest conservation and sustainable development. Training and capacity building of 52 women-run micro-finance groups and 12 farmers' clubs, supported by a team of federation funded community facilitators is mobilising a local network of leaders and micro-institutions well-positioned to implement

development activities.

The empowerment of indigenous government institutions through the creation of the watershed federation is one of the most significant outcomes of the project to date. In contrast to Government of India sponsored schemes and projects being implemented by state-level agencies, this project is under the sole direction of the indigenous governments and the 62 participating villages. The federation committee comprised of community representatives makes all management decisions, including the budgeting of income from the REDD+ project. Recognition of the Federation by international technical advisory organisations such as Community Forestry International, Plan Vivo, brokering agents, foreign researchers, and carbon market registries has given indigenous government and traditional community institutions new confidence to interact with the state government and promote community watershed management and development priorities. The establishment of communication channels and co-operative action between communities that own and manage watershed resources and the state and central government that controls investment resources is an important achievement that could help address the environmental crisis and rural poverty that characterises Meghalaya's watersheds.

This project was designed as a learning activity to foster improved approaches to sustainable resource management and community development. The initiative is already informing larger projects funded by the Government of India, bi-lateral and multi-lateral agencies within Meghalaya, as well as in other parts of India and abroad. In 2013–2014, three graduate students conducted research on the project with support from the Federation and it is proposed that a community watershed research and training centre be established in the area in the future.

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