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## Rewards for Environmental Services and Collective Land Tenure: Lessons from Ecuador and Indonesia

*Kelly Wendland, Lisa Naughton, Luis Suárez, Suyanto*

### Abstract

Programmes that provide direct rewards in exchange for environmental services offer theoretical advantages over other conservation mechanisms, but also pose a number of challenges, including determining who should benefit and how incentives should be structured when the environmental services are tied to state or community owned land. Case studies from Ecuador and Indonesia highlight key land tenure issues and lessons for those planning Rewards for Environmental Services (RES) projects.

### Introduction

The objective of RES schemes is to provide sufficient rewards to local owners or stewards so that they supply specified environmental outcomes. Typically, this increased supply is linked to a change in the environmental manager's land-use practices. The design of a RES programme therefore requires careful consideration as to who owns and manages the land.

Approximately 80% of the world's forests are state-owned according to national law (White and Martin 2002). However, in many of these forests indigenous and other community groups are actively managing the resource (Agrawal et al. 2008). Decentralisation is rapidly increasing the management responsibilities granted to these community groups. Some nations are taking more proactive steps, reforming land laws to recognise private community-based property rights. Often such reform is largely on paper or responsibility is shifted without transferral of rights. Thus, many globally significant environmental services come from forested land managed and/or customarily owned by local communities, but in most of these places informal or weak property rights are the norm. In this paper, we discuss RES projects occurring in two such areas.

### Ecuador

In northwestern Ecuador, the Gran Reserva Chachi (Figure 1) – established through direct economic incentives for biodiversity conservation – comprises a 7200 hectare community-managed protected reserve and an 11,500 hectare multiple-use area. The reserve lies in the Tumbes-Chocó-Magdalena Biodiversity Hotspot, and faces pressures from timber companies and the expansion of oil palm plantations. Heavy extraction threatens biodiversity and provides little economic benefit to the local communities.

In 2004, in an effort to provide communities with alternative livelihood options and to maintain the integrity of the environmental services, GTZ<sup>1</sup> and Conservation International approached three communities, comprising approximately 300 households, to discuss creating a biodiversity reserve. The idea was to provide economic incentives for biodiversity conservation that were competitive with other land use alternatives. After a year of consultation and participatory planning with local communities, a contract was agreed that established a biodiversity reserve in exchange for payments of US \$5 per hectare per year.

Historically, the Chachi people have suffered territorial displacement and had only recently acquired formal communal land titles via a lengthy and sometimes contentious effort funded by USAID/Ecuador (Project SUBIR<sup>2</sup>). SUBIR was critical in providing the financial and technical resources necessary to clarify and title land (Morales Feijóo 2002). This RES project could not have been implemented if community land titles had not been issued, since a number of overlapping land claims existed in the region. Thus, clarification of land boundaries through formal titling helped legitimise the establishment of the biodiversity reserve. Major steps taken by SUBIR to clarify land tenure included community consultations, capacity building, and boundary mapping using geographical positioning systems. This was done in collaboration with the state land-titling agency.

However, formal land titles alone were insufficient. Training community members in land rights and enforcement was necessary to increase their ability to enforce property rights

<sup>1</sup> German Technical Corporation

<sup>2</sup> Sustainable Uses for Biological Resources

# Feature

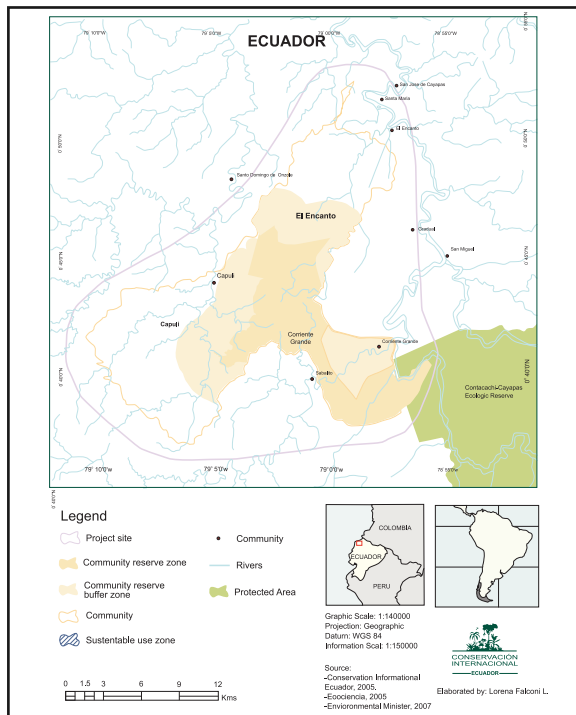


Figure 1: Gran Reserva Chachi, Ecuador

and exclude encroachers. Since the establishment of the reserve, illegal takings by logging companies and their intermediaries have declined. Yet, as in many remote forested regions, the reach of the state is limited, and even formally titled land is vulnerable to incursions. Thus, when contesting land claims arise, the legal apparatus to deal with them is missing or inadequate.

This gap in enforcement has been a critical issue in the Gran Reserva Chachi where external threats can be violent. The Chachi Federation of Esmeraldas, GTZ and Conservation International are therefore working together to support legal actions when land encroachment occurs. This has been a costly process and will likely continue to be a necessary investment. As a more permanent solution, the partners in this RES project are strengthening relationships with legal agencies in the area to facilitate the resolution of these types of land tenure conflict.

The Gran Reserva Chachi case study reveals that RES can be implemented in marginalised communal lands, provided investments are made in titling land, in granting legal support to defend communal titles, and building local capacity to negotiate and monitor outcomes. While the impacts of this programme on environmental outcomes or welfare have not been fully evaluated, a notable sign of success is that one of the participating communities recently petitioned to expand the amount of protected forest in order to gain more income for local education. In addition, adjacent communities have requested similar RES projects in their areas. Based on this pilot experience, in September 2008 Ecuador's Ministry of Environment launched a nationwide RES programme under the name "Socio Bosque" to protect forests. It has announced that the Gran Reserva Chachi is a high priority for this programme, which means that incentives are likely to increase substantially, as are contract periods within the reserve.

## Indonesia

The Sumberjaya watershed in northern Lampung Province (Figure 2) is a rural, hilly area with approximately 90,000 inhabitants, more than half of whom transmigrated from other parts of the country. The watershed provides relatively fertile soils for coffee and rice cultivation and important watershed services such as sediment regulation, which ensures the functionality of a downstream hydroelectric plant. In 1990, the government designated one-third of the watershed as protected forest, leading to the current land mosaic of national park, protected forest, and privately owned land.

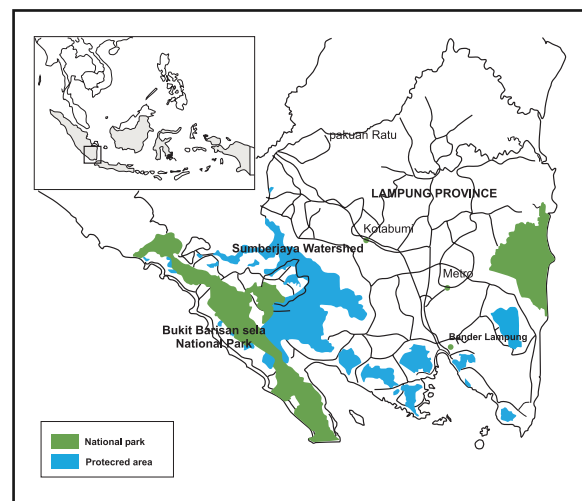


Figure 2: Northern Lampung, Indonesia

Subsequent conflicts between migrants farming in the watershed and the Forestry Service eventually led to a series of evictions. Beginning in 1998, political reformation in Indonesia resulted in reassessment of these types of evictions and the creation of a social forestry scheme – Hutan Kemasyarakatan. Under Hutan Kemasyarakatan, groups of farmers can apply to the Forestry Service for a five year permit to manage land inside protected forests. To receive a permit in the Sumberjaya watershed, farmer groups must commit to plant trees in their coffee agroforestry plots and to stop deforestation of existing forests. After the initial five years, a farmer group can apply to extend their permit for an additional 35 years.

As of 2004, only five farmer groups had obtained Hutan Kemasyarakatan permits in Sumberjaya. The process of obtaining and managing permits has proven slow and costly – taking up to four years to obtain the permit and costing as much as US \$55 per household, which is about half the average annual income for farm households (Arifin 2005). This cost includes time spent coordinating with other farmers, developing the management plan, applying to the Forestry Service, and monitoring and enforcement activities.

The Rewarding Upland People for Environmental Services (RUPES) project in Sumberjaya started in 2004 and has helped an additional 18 farmer groups obtain their Hutan Kemasyarakatan permits. Each group has about 40 farmers. RUPES aids farmer groups in participatory mapping, developing forest management plans, and establishing tree nurseries. Conditional permits now account for about 70% of the protected forest. RUPES offers an example where granting conditional land permits can act as the "reward" for forest management and protection in the watershed. In

essence, this project allows the state to maintain permanent ownership of the land while granting farmer groups temporary but secure use rights for land management.

The uncertain tenure situation in Sumberjaya is similar to many other areas where people have migrated to forests for political, economic or environmental reasons. Obtaining even temporary permits represents a major milestone for the farmers in Sumberjaya, since they have no customary claims to land and had recently faced eviction from these areas. An evaluation of the impacts on farmer groups found that incomes had increased by almost 30%, mostly because farmers no longer have to pay bribes to prevent eviction (Pender et al. 2008). Moreover, deforestation rates have slowed within the protected forests where farmer groups have Hutan Kemasyarakatan permits (Ekadinata et al. 2007). Thus, the Sumberjaya project shows that conditional land tenure can be used as a reward for improved environmental service management, while simultaneously improving the livelihoods of people who lack legal claims to land.

## Discussion

Communities provide environmental services under a variety of tenure systems, thereby creating a number of contexts under which a RES programme might need to operate. The case studies above illustrate two common collective tenure arrangements in developing countries: formal ownership titles without strong legal institutions and no formal ownership or user rights. A third context would be where formal user rights exist without ownership, for example the *ejido* system in Mexico. In the case from Ecuador, conflicts over land tenure are a serious obstacle to achieving RES outcomes. These conflicts are partly due to the fact that RES adds value to land, thus heightening the costs to property owners of land encroachment. In Indonesia the RES concept is serving to alleviate land contestations by establishing contracts between resource owners (the State) and resource users (local communities). Both cases serve to illustrate that the success of a RES project depends on correctly defining the environmental service provider – physically as well as legally – and bestowing rights accordingly.

## Conclusion

Indigenous groups and communities inhabit the majority of remaining forests most important for environmental services, and many manage that land as common property. This is especially true in remote biodiverse forests. Our review of the RES projects in Ecuador and Indonesia highlights the following key lessons for designing and implementing RES in collective land tenure regimes:

- Clarification of land ownership is critical to RES projects since RES may increase the value of land and therefore heighten conflict.
- RES must work with national and local governments to legally recognise and support customary land claims so that local communities are not alienated through these projects.
- Where customary land claims do not exist, RES projects must find creative solutions to avoid excluding resident communities. Access to temporary tenure arrangement and management contracts are possible.
- Incursions and illicit activities may persist regardless of whether land boundaries have been clarified or formal land titles exist. Thus, RES schemes should budget for institutional strengthening as well as long-term legal support of the rights of communities to manage and protect their forests.

Link to the full article here: [www.nelson.wisc.edu/ltc\\_orig/publications/!ltcbrief9-res\\_and\\_land\\_tenure.pdf](http://www.nelson.wisc.edu/ltc_orig/publications/!ltcbrief9-res_and_land_tenure.pdf)

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## LET THERE BE LIGHT! "Solar Tukis" lighting rural and urban Nepal

In Nepal, some 2.4 million households do not have access to electricity and therefore depend on kerosene lamps or candles. These are neither cost-effective nor eco-friendly. Moreover, their use has adverse effects on the user's respiratory system or otherwise may cause accidental fires. Thanks to the Environmental Camps for Conservation Awareness (ECCA)'s solar Tuki initiative, urban and village households have a cheaper and better alternative to traditional lighting systems.

Tukis are now used by 30,000 people. People in rural areas are benefitting from improved health and smokeless studying conditions. Training and awareness raising is combined with a micro-finance mechanism to promote solar Tuki in ECCA's Promotion of Alternative Energy Programme, and women's groups are engaged in assembling the Tukis. The initiative has as such had a positive income generating effect within the wider communities.

The solar Tuki set consists of one 2.5 watt solar panel and two units of 0.4 watt white light emitting diode (WLED) with built-in (NiMh) rechargeable batteries. A solar Tuki set retails for US\$50. The lamp unit also has a 3 volt outlet to connect AM/FM radio (optional). For more information, please visit the ECCA website at [www.ecca.org.np/campaigns/lightforall.php](http://www.ecca.org.np/campaigns/lightforall.php)

## Environmental Services, Equity and Productivity: Interview with Dr. Meine van Noordwijk, Chief Science Advisor at the World Agroforestry Centre (ICRAF)

Laura Keenan and Sunita Chaudhary, Mountain Forum Secretariat

*Q. Can you briefly explain ICRAF's mission, and why ICRAF focuses specifically on agroforestry systems?*

ICRAF looks at the ecological relationships within agroforestry systems. The important point is that most debates still centre around a dichotomy: there is nature and agriculture, nature provides environmental services and agriculture does not. We look at the agroforestry system as in between those two poles and find that, although not as much as nature forest, there is still substantial provision of environmental services. Of course agroforestry is also less productive than very intensive agriculture, which means that if all economic incentives purely correspond with productivity, then we will lose these intermediate intensity systems. For many years policymakers have made statistics about forest and agriculture as separate divisions. We see that actually it can be both; agroforestry systems in well-managed landscapes can be productive as well as protect the environment. You have to look at a landscape as a whole, the forest, the trees outside of the forest and the agroforestry, and try to make sure that policies will be realistic, will be based on services that are actually provided. Then you can start designing adequate incentives.

*Q. Can you give us an example of this approach in practice?*

We worked on this landscape agroforestry concept at lower elevations in Sumberjaya, Indonesia with shade-grown coffee. If you do it well, there is nothing wrong with the water flowing from a catchment that is dominated by coffee agroforest. Yet, these people were seen and treated as illegal squatters. So, we worked on agreements to ensure that they could stay there for as long as their coffee agroforestry would prosper, with tenure conditional to actually maintaining the landscape in good shape. In practice this gives use rights to farmer groups, through co-management with the forest authority. Within those agreements, these are ways to secure environmental services, to define conditionality in a way that makes sure people understand that their rights are linked to maintaining environmental services. They can't do anything they like with that land, but they can produce as long as they don't destroy or degrade the forests. We have to break through these perceptions about using forests for agriculture: forests can still be functional and productive, there's nothing wrong with it. This paradigm shift helps people out of poverty much more than the financial payment alone.

*Q. Why does ICRAF prefer to use the term "rewarding environmental services" (RES) rather than "payments for environmental services" (PES)?*

The environmental services themselves are not just natural capital, they are the combination of natural capital, social capital, and the human capital that maintain the service.

So, you don't just pay for the current service; it is about co-investment, it is about shared responsibility, it is about shared risk. For example, if you look at water, people can merely be paid per cubic metre of clean water that comes out of their watershed. If it's a dry year then there's not much water that they can sell, and these people won't have any income - this was our experience in Sumatra, where a hydropower plant didn't function during the dry season. The upland communities didn't do anything wrong, they put in their effort to protect the ground cover in that slope, they cannot control the climate. The poor have little opportunity to absorb risk. So, I think that it's about sharing responsibility. It gives a different flavour to the "PES" concept.

*Q. How does ICRAF define PES?*

We have four criteria: realistic, conditional, voluntary and pro-poor. So firstly, we assess whether there is a real relationship between land use and the service. Many things that are PES or PES-like may not actually pass the test on that one. Payments are made because people believe that an activity might work, but they don't check this, don't make the most of scientific and local knowledge. The second part is conditionality. The conditionality of a market contract is, if you don't deliver, you won't get paid, and vice versa. The contract must identify obligations on both sides and both parties need to agree on how performance is to be evaluated, and, as we discussed before, under what conditions non-delivery would be acceptable. This also links with the voluntary aspects, which is really how PES and PES-like mechanisms are contrasted with command and control. It is a contract that people can say yes or no to, and negotiate its terms. That's a very positive element and potentially a big step forward from what we have seen before. And of course, a pro-poor perspective is necessary when considering the voluntariness of prospective PES: be clear on the representation, be clear on the acuity within these groups. PES, if it favours land owners, can be anti-poor, can exclude people from the land, reduce jobs, income opportunities, access to resources for poor people. We saw this happen in Uganda around Mount Elgon where a company gained access to land in order to plant trees and sequester carbon, and excluded former land users. These people had traditional access rights, but under government rules they did not. A lot of current concerns about REDD are that government agencies will be policing the forest and keeping the people out by force in order to meet the targets of emissions reductions. If there are no other safeguards, then REDD could actually enhance poverty.

*Q. Is it possible to ensure "voluntary" conditions when PES is essentially a communal, and often government-legislated, arrangement?*

If it is a government scheme, the rules cannot be negotiated at a detailed level but people can opt out if they don't want to be a part of it. However, there's always a big challenge in clarifying the minimum level of voluntary and the scale at which it can be applied. First of all, the contract is generally with the farmers' group or the community. So, it is not voluntary at the individual level but it is voluntary at the communal level, which brings out the question of who has the biggest voice in the group: is it actually representing the interest of both men and women, is it representing only the wealthy people, is it representing the poor people? Who is deciding to agree to such a contract, on behalf of whom? There has to be public

awareness, knowledge, joint understanding. We use the reference of “free and prior informed consent”. It’s not enough if the head of a village puts a signature on a piece of paper if the village people cannot understand what this is about. So, consent and agreement is only valid when it is free. If I force you to put a signature on that paper then it is not valid, you are not free to say yes or no. It is also only valid if we can be sure that both parties actually understand it.

*Q. Is addressing poverty a realistic objective for PES in and of itself, given that a service and measurable outcomes have to be delivered?*

In early papers it is argued that we should not confuse PES with poverty, that we have to keep our objectives clear. If it is about PES then it’s about enhancing environmental services, if it’s about poverty then it should be labelled as such. We also come across the efficiency versus fairness debate. Efficiency means enhancing the environmental services and enhancing the environmental services per unit of money that’s being invested. It is easy to see that pure efficiency cannot work. If you only talk to the people who are polluting the river and you don’t give positive incentives to people who have already been keeping the water clean, then everyone will say, “OK, I only get attention if I start polluting...” A pure fairness approach cannot work either. If you give all the money to all the people who have been benefitting the environment, then the environmental service will not be enhanced because we’re not dealing with the others. So, 100% efficiency cannot work, 100% fairness cannot work. We therefore have to define a way to deal with both and make some compromises between the two.

*Q. How close are we to fulfilling these four criteria in existing PES programmes?*

The well known cases of Costa Rica and Mexico that are called PES are not really PES. What it is, is a government programme or drinking water company offering a subsidy to forest owners who maintain their land as forest, but it is not clear what type of forest, it is not clear how much water it generates, it is not differentiated. It is a similar story with EU agri-environmental subsidies. What we see in reality is that there is hardly any scheme that is 100% realistic; hardly anything can apply full conditionality and almost nothing is exactly voluntary, but all three are directions in which you can make progress. So, rather than defining the end point as PES, we see it more as an evolution of government systems. The four criteria are useful principles to aspire to. And we see that rather than saying “this is PES” and “this is not PES”, which is the focus of many of the current debates, it is more useful to explore what is being applied and how far we are meeting our criteria.

*Q. Can you talk about the necessary institutional capacity that needs to be in place for developing and implementing PES?*

One thing we are debating a lot at the moment is transparency. Transparency means that at the lowest possible level PES still has to be about delivery of the service, for example carbon, about money and payments. The same language, the same means of measurement have to be applied across all scales. But when we go to the village, maybe we don’t need to bother people with carbon

measurement, maybe it’s good enough at that level to talk about trees and things that they know and understand. And we can do the measurement, and translate the number of trees back into carbon stock. Maybe it is OK to use that money for community services, health, education, roads and whatever the local government would see as relevant for livelihoods and social development. At the same time, we have to be able to account for every dollar and cent that comes into the country, and of course institutions need to deal with realistic, conditional, voluntary conditions for core staffs. The question is whether we need to deal with these principles in the same way at every level. One view is that at different scales, different institutions can do their own things, in their own time zone, their own currency, their own language, whatever is appropriate there, as long as they can translate and as long as there is an interpreter. The need for transparency seems to reduce this freedom and this is a valid point, but it may also be restricting the overall efficiency, as well as fairness.

*Q. Do you think this is realistic? Would a buyer ever accept this sort of flexibility?*

Well of course we have to agree on what is the expected service, what is the baseline, what are positive outcomes and so forth. As an example, we might begin by measuring the sediment load in the river altogether using simple methods; we walk in the valley with the people and ask where the sediment is coming from, and what can be done about it. And we offer the money. We are not going to look at tree cover if this is about sedimentation, but we are going to measure sediment load in the stream. In this way you create clarity as to what a society actually wants and expects: we want clean water from these landscapes and we want this and those services. However, the local people can decide how best to generate these outcomes. For this to work you have to seek to bring your criteria as close to the service as you can. Actually at the international scale Guyana is the country that is most actively pursuing this approach. They have made a national development plan that says, “We have the right and opportunities to cut our older trees, we have had low emissions so far but we could increase emissions tremendously to develop our economy and improve the wealth of our people. But if we get enough incentives from the international community, we will agree on a development pathway that focuses on agriculture and urban services and we’ll pull people away from the forests. That way we’ll keep our emissions low, and we call that REDD. We want investment from the global community for REDD purposes but our institutions will do the management, you can judge us on the basis of outcomes.” That is attractive, I must say, especially when a lot of the current REDD discussions are about micro-managing.

*Q. Where do the intermediaries (like ICRAF) fit into the PES equation?*

There may be different roles for different sets of intermediaries at the scoping and contract stages. ICRAF’s role is about learning how people understand and interpret the landscape in which they live, and to find out whether we have a common understanding or how to reach a common understanding. Clearly without intermediaries that would often not happen. As researchers we are trained to look for clarity, but in the policy domain people actually seem to like terms that are a bit ambiguous: if it’s

not exactly clear than any politician can interpret it in their own way. We also help in creating scenarios and baselines, but the rest has to be negotiation between stakeholders. Now again coming back to this pro-poor question, of course people have very different abilities to raise their voice and be heard, some are comfortable talking in a meeting room, others are not, etc. We consider where and how these negotiations can be fair or what/who can actually best represent the poorer sectors. Link back with gender: who sits around the table, who signs the contracts and who implements? At the same time, how far can you transgress from the way things are normally done and how much can or should you impose norms and standards from outside?

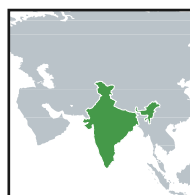
*Q. What kind of evolution would you like to see within the PES debate/implementation over the next five years?*

Well we really need to find new ways to combine these realistic, voluntary, conditional and pro-poor conditions. I think at the moment the biggest opportunity for this is to develop that co-investment paradigm, to recognise shared responsibility, shared risks, respect, the human / social capital aspects of PES before or alongside any financial arrangements. PES is getting some bad press because it tries to pull things into a market efficiency language that isn't seen as acceptable in a developing country context. I think the focus on pure financial transfer has negative connotations, has negative respect. If we can incorporate awareness of co-investment and shared responsibility, I think it would be a healthier debate.

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### Snow Leopards and 'Himalayan Homestays': Catalysts For Community-Based Conservation in Mountain Areas



*Rinchen Wangchuk, Rodney Jackson and Wendy Brewer Lama*

#### Introduction:

Payments for environmental services (PES) take many forms. In this paper, we outline how two NGOs, the Snow Leopard Conservancy (SLC) and the Khangchendzonga Conservation Committee (KCC), each working in important Indian mountain habitats, have used a unique set of monetary and non-monetary incentives to integrate powerful, sustainable biodiversity conservation actions within each community's distinctive cultural and natural heritage. We end with a summary of what we see as key success factors to grass-roots initiatives that blend traditional and scientific knowledge.

#### The snow leopard in Ladakh: from pest to valued asset – the example of the Snow Leopard Conservancy (SLC)

The endangered snow leopard *Panthera uncia* is perhaps the world's most elusive and charismatic large felid, serving as a flagship for mountain biodiversity. It persists in naturally low numbers, totalling 4500 to 7500, spread across more than one million km<sup>2</sup> of habitat in twelve South and Central Asian countries. Inhabiting mountainous regions at elevations of 3000 to over 5000m in the Himalaya and Tibetan Plateau (and as low as 600m in Russia and Mongolia), their habitat is among the least productive of the world's rangelands, due to low temperatures, high aridity and harsh climatic conditions. With naturally low prey densities, snow leopards often kill livestock, thus engendering animosity from herders. Annual economic losses in the region range from around US \$50 to nearly \$300 per household, a significant sum given per capita annual incomes of \$250 - 400.

#### The approach: supporting livelihoods, building partnerships

In Ladakh, the Snow Leopard Conservancy used a two-pronged approach to resolve human-wildlife conflicts and encourage protection of wildlife. Firstly, assistance was provided in protecting livestock from predators; secondly, SLC offered non-monetary incentives that enhanced income from ecotourism and related sources. The payment (assistance in setting up ecotourism/homestays/protecting livestock corrals) is conditional upon the village committing to specified conservation actions and is formalised in a signed contract between SLC-India and the local Village Management Committee.

The first step, emerging from planning meetings that involved a majority of households, centred on predator-proofing the most vulnerable night-time corrals. Villagers contributed materials and labour while SLC provided technical support and funds for materials. All livestock owners signed an agreement to protect snow leopards and other wildlife, and keep their livestock numbers within reasonable limits. They were also encouraged to improve daytime guarding practices, and, where possible, to set aside areas where wild ungulates would benefit through better access to forage. However, depredation losses to predators cannot be completely eliminated on the open range. The second PES component therefore sought to reduce or offset adverse economic impacts by enhancing income-generating capacities of households living in prime snow leopard habitat, such as the Hemis National Park. Villagers chose homestays and wildlife tourism as the incentives that would give value to conservation of the snow leopard and generate supplementary household income.

Supported by UNESCO, the Mountain Institute (TMI) and the Wildlife Department, the largely self-sustaining 'Himalayan Homestays' incentive programme builds upon existing tourism and trekking to enhance livelihoods and garner support for snow leopard conservation, and offers villagers training in operating homestays and nature guiding. Individual households operate homestays through established women's groups, with revenue accruing from 'bed and breakfast' services in village homes (rotated among households). Catering and handicraft sales at tented cafes along trekking routes and nature guiding provide other sources of income for households unable to operate homestays.

Currently embracing over 100 families in 20 Ladakh-Zaskar communities, 40 homestays located in prime snow leopard habitat earn US \$100-650 (average \$230) during the four month tourist season. Tourist visitation increased from 37 in 2001 to over 700 in 2006, with client satisfaction exceeding 85%. Another \$400 in sales from cafes is shared among four to eight families. Approximately 10-15% of homestay profits are directed into a village conservation fund that has supported tree planting, garbage management and recently the establishment of a village wildlife reserve for the threatened Tibetan argali (*Ovis ammon hodgsonii*). One community used the fund to construct predator-proof corrals; another paid a fulltime herder to guard livestock in high summer pastures, and a third insured large-bodied, high-valued livestock such as yak through a national insurance programme.

PES incentives can be diverse, ranging from compensation or subsidies for veterinary care to handicrafts produced through initiatives such as the Mongolian Snow Leopard Enterprises programme. Experience from this project shows that it is largely when tangible economic returns are realised that communities are willing, indeed able, to assume their role as conservation partners and serve as effective environmental stewards.

#### **Working at the ecosystem level in Sikkim: brokering biodiversity conservation – the example of the Khangchendzonga Conservation Committee (KCC)**

Rather than protecting a single endangered wildlife species, the Sikkim incentive model works at an ecosystem level, conserving the environmental and spiritual values of a large protected area, Khangchendzonga National Park and Biosphere Reserve (KNP/BR) in West Sikkim. Sikkim is part of the Eastern Himalaya biodiversity “hotspot.” Centred around Mt. Khangchendzonga, the third highest peak in the world, the KNP/BR is a primary destination for trekking and mountaineering tourism. Most of the 5400 annual trekkers to KNP/BR begin their trek in the farming settlement of Yuksam.

#### **The approach: benefit sharing for market driven biodiversity conservation**

Based in Yuksam but increasingly influential throughout Sikkim, the Khangchendzonga Conservation Committee (KCC) collects payments in the form of 1) professional service fees received for consultancy and training services; 2) grants and donations from I/NGOs; 3) fees and donations from eco-tour operators for environmental education services; 4) membership fees from KCC members,<sup>1</sup> and 5) revenue from the sales of tourism products and services. This is then used to provide the following conservation outputs:

- Training local residents in environmental trekking practices, including the removal of garbage from KNP/BR and the use of alternative fuel.
- Environmental education in schools and teacher training; organisation of garbage clean-up by Yuksam school children and construction of composting toilets at Yuksam schools.
- Advocacy at the local, state and central government levels, e.g, lobbying for a statewide ban on plastic bag use and for improved government monitoring of illegal wildlife exports.
- Raising awareness among key ecotourism and conservation stakeholders as the precursor to conservation actions, including porters, pack animal

drivers, guest house and homestay operators, trekking agencies, guides, and tourists.

- Conducting research and monitoring tourism impacts and ecological conditions.

Rather than a formal contract, KCC requires local contributions in kind for benefits received, e.g., participant payments for guide training, contribution of labour to construction work, formal training and meeting the standards required for guide certification.

Investments are now paying off in the form of market-driven conservation activities initiated by the Yuksam community and other tourism stakeholders in Sikkim. In the past, few community members realised concrete benefits from the tourism sector, and therefore took little initiative to either manage its negative impacts or promote conservation. An estimated 70% of Yuksam households now benefit from tourism, with ten households seasonally operating family homestays as part of the Himalayan Homestays network. Local forest guards and Yuksam residents patrol and monitor activities inside KNP/BR, supplementing the place of insufficient Wildlife Department staff: a recent report to authorities resulted in the capture of Russian bio-pirates carrying 200 species of butterflies and moths for export. Sikkim’s statewide ban on plastic bags also began in Yuksam, evidence that regular garbage clean-up programmes are beginning to change young people’s behaviour and attitudes towards the environment.

However, there is still a need for better impact monitoring and visitor management. In a recent study of tourism impacts on KNP/BR, students of the University of Puget Sound (Washington, USA) found that garbage and human waste is still a significant problem along the Dzongri-Goechela trekking route, while the use of pack animals to carry trekkers’ gear has affected rhododendron and alpine grass re-generation. Furthermore, an open door policy that allows non-Sikkimese operators to run treks and work as porters runs counter to KCC’s efforts to link conservation to local benefit sharing. It is clear that neither visitor demand for sustainable tourism practices nor regulation and enforcement is, as yet, strong enough.

#### **Building resilience**

Tourism is especially vulnerable to political and market forces that are beyond the control of service providers. To avoid over-dependence on tourism, practitioners should help rural communities diversify their livelihoods and improve sources of on-farm or pastoral income. Expanding tourism markets also helps temper the impacts of the global tourism economy. Connecting homestay providers with regional and national travel agencies offers new opportunities for outreach and capacity building, while personalising the process of tourism services development. By encouraging higher-paying clients from the international tourism sector, local travel agents can increase their involvement and support of rural homestays. This may include donating equipment or the co-financing of simple infrastructure such as solar showers, where rental fees benefit the entire community. International NGOs such as SLC can foster self-sufficiency by matching each service provider’s contribution to the community conservation fund. Such networking often opens new avenues for collaboration or sources for PES.

Villagers’ willingness to pay for corral improvements or livestock insurance premiums is closely linked to household capacity for

<sup>1</sup> KCC members were born and grew up in Yuksam and give their time to KCC voluntarily, as well as paying membership fees. They work as teachers, as officers in the State Department of Education and other government offices, as farmers, homestay operators, trekking and nature guides, planning consultants, etc.

generating supplemental income. Ongoing participatory monitoring and periodic review of programme impacts (e.g., household income, increased educational opportunities, community-funded tree planting) involving diverse stakeholders is critical to enabling local communities to better adapt and respond to changing conditions. Impact monitoring data is also useful in demonstrating conservation linkages and for gaining donor support, as well as international recognition in the media (e.g., SLC and the Himalayan Homestays have received numerous international ecotourism awards and recognition).

## Conclusions and lessons learned

In these two remote regions of the Indian Himalaya, Himalayan Homestays, KCC, SLC and their community partners provide rare examples of largely self-sustaining, non-profit entities that broker locally-managed biodiversity conservation in exchange for benefit sharing, monetary payments and non-monetary incentives (Figure 1).

These bottom-up models of environmental stewardship were associated with several key success factors and innovations:

- Both KCC and SLC encouraged cross fertilisation of planning experiences and tools through exchange study tours and joint workshops with project advisors, leaders and partners.
- Broad stakeholder involvement from the initial planning stages incorporated private sector and government participation (e.g. local travel agents help market homestays in Ladakh and Sikkim).
- Community ownership of key decisions is transparent (e.g. village knowledge played a key role in reducing human-wildlife conflict in Ladakh).
- Transference of skills occurs through mentoring and training of trainers (e.g. KCC has trained 120 school teachers to impart conservation education in 22 schools).
- Community-managed conservation funds support new opportunities and self-reliance.
- The existence of a relatively homogeneous, cohesive community eases the willingness to share benefits widely (e.g. homestay visitor rotation, external investments that equalise the competition).
- As homestay operators women play leading roles, generating confidence and supplemental income to support village-based conservation actions.
- Youth have also taken a key role as future conservationists and in the promotion of wildlife protection.

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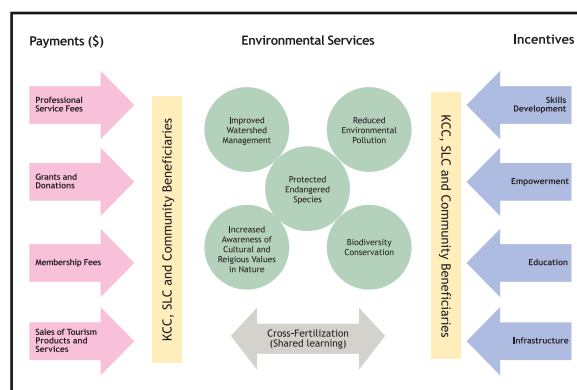


Figure 1: Model for the incentive based approach

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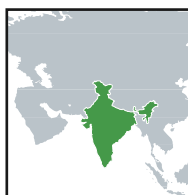
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## Khasi Community Landscape Restoration and Conservation Project: Mawphlang Lyngdohship, Meghalaya

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 fuelwood 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.

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

Table: 1 PES Payments made to Makhhan 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