



## Landscape labelling: A concept for next-generation payment for ecosystem service schemes

Jaboury Ghazoul<sup>a,\*</sup>, Claude Garcia<sup>b,c</sup>, C.G. Kushalappa<sup>d</sup>

<sup>a</sup> Institute of Terrestrial Ecosystems, Department of Environmental Sciences, ETH Zurich, Zurich 8092, Switzerland

<sup>b</sup> CIRAD, Ressources forestières et politiques publiques, Montpellier 34398, France

<sup>c</sup> French Institute of Pondicherry, Ecology Department, Pondicherry 605001, India

<sup>d</sup> C.G. Kushalappa, Department of Forest Biology and Tree Improvement, College of Forestry, Ponnampet 571216, India

### ARTICLE INFO

#### Article history:

Received 1 September 2008

Received in revised form 22 January 2009

Accepted 24 January 2009

#### Keywords:

Certification  
Community management  
Eco-labelling  
Equity  
Geographical indication  
Landscape mosaic  
Poverty alleviation

### ABSTRACT

Current payment for environmental service (PES) schemes face challenges in the form of evaluation of opportunity costs and ecosystem service delivery, high transaction costs, and difficulties in ensuring conditionality. Even when these conditions are met, PES may be undermined by a lack of inclusivity, leading to societal conflicts over land use. We propose a new PES-type approach that we call Landscape Labelling that seeks to overcome these problems by combining PES and product certification principles applied at a landscape scale with local benefits realized at the community level.

Specifically, we propose that managed rural landscapes delivering valuable ecosystem services should be awarded a 'Landscape Label', that would be used to identify products produced from the landscape. A Landscape Label could also represent and indeed publicize ecosystem service delivery as well as cultural and symbolic attributes of the landscape, as defined by local communities. This would provide greater recognition to communities and help to empower them in negotiations with outside agencies. Thus a Landscape Label has the potential to improve market recognition, secure premium payments, and gain access to niche markets. The derived benefits can, in turn, secure an incentive for managing the landscape in such a way as to continue to meet the ecosystem service criteria required for certification. Payments for ecosystem services, under a Landscape Labelling scheme, would be delivered to appropriate community-based organizations for investment in community and social projects that would benefit a far wider range of people than is currently possible in current PES.

There are various challenges to the successful implementation of this scheme, an important one being the creation of fair and transparent community-based institutions. Other challenges include the risks of freeriders. In proposing a Landscape Label we seek to promote new ideas that have potential to overcome challenges associated with current PES-type schemes, and in discussing their deficiencies we hope to conceptually and practically advance PES-type approaches.

© 2009 Elsevier B.V. All rights reserved.

### 1. Introduction

The concept of ecosystems as providers of essential goods and services for the support of human well-being lies at the heart of the Millennium Ecosystem Assessment (MEA, 2005). Ecosystem services are the multiple benefits that human societies and individuals receive from the environment, and include water purification and flood control by forests, carbon sequestration, pollination, prevention of soil erosion and sedimentation, and more intangible benefits such as aesthetic beauty and spiritual well-being. Linking ecosystem functions with human livelihoods

provides a basis for including conservation and environmentally sensitive management in land-use decisions.

One promising approach for incorporating ecosystem services in landscape management is to pay landowners for the ecosystem services their lands provide, thereby internalizing positive externalities. Thus payment for ecosystem services (PES) schemes compensate landowners for management that provides conservation or ecosystem service benefits to other parties but which necessarily constrains their own revenue-generating opportunities. PES approaches have received much publicity and have been implemented in various guises throughout temperate and tropical countries with varying degrees of success (Pagiola et al., 2002). There remain, however, a number of limitations that are common to most such approaches, principal among them being high establishment and transaction costs, low inclusivity of participation, and limited ecosystem service provision (Wunder, 2005, 2007, 2008). These

\* Corresponding author.

E-mail addresses: [jaboury.ghazoul@env.ethz.ch](mailto:jaboury.ghazoul@env.ethz.ch) (J. Ghazoul), [claude.garcia@cirad.fr](mailto:claude.garcia@cirad.fr) (C. Garcia), [kushalcg@gmail.com](mailto:kushalcg@gmail.com) (C.G. Kushalappa).

problems have constrained the uptake of PES schemes, and further undermined their potential in meeting poverty alleviation and development needs that are often concurrent with demands for habitat conservation.

We propose a new concept for PES that seeks to overcome some problems associated with current generation PES schemes. We call this approach Landscape Labelling, as it integrates existing PES ideas with the related concept of product differentiation through certification and labelling applied at landscape scales rather than individual farm units. We emphasise that landscapes cannot be objectively defined *a priori* as a geographic area with hard boundaries, as human-dominated landscapes include not only the biophysical components of a geographical area, but also social, political and psychological components of that system (WWF 2007). In the context of Landscape Labelling the 'landscape' is determined through agreements among, and by participation of, local communities who then define the area encompassed within a Landscape Label scheme, and hence the spatial extent of the landscape itself.

We introduce the Landscape Labelling idea to advance the debate on PES concepts in the hope that more effective ways of implementing PES concepts that achieve multiple benefits of conservation, ecosystem service provision and poverty alleviation can be realistically developed. We highlight its advantages over current systems, and potential disadvantages that represent researchable challenges for its implementation. We expect that the Landscape Labelling concept will be challenged, refined and perhaps even ultimately rejected, but hope that this process will accelerate the development of next-generation PES schemes that overcome some of the current problems.

## 2. Product certification and payments for ecosystem services

Certification is the process of indicating through labelling that a commodity complies with a set of regulations governing the production process. As a market tool it creates niches, increases product recognition and/or secures price premiums. It can also be used to achieve social or environmental efficiency by defining minimum performance requirements. Fair trade coffee and Forest Stewardship Council certification are two well known examples of market-based social and environmental certification initiatives (Taylor, 2005).

PES has been defined as being (1) a voluntary transaction where (2) a well defined ecosystem service or corresponding land use is (3) bought by an ecosystem service buyer from (4) an ecosystem service provider, but only if (5) the service provision is secured (conditionality) (Wunder, 2005, 2008). Of the many PES-type schemes, only a small subset fulfils all these criteria. Designing PES schemes requires three steps: (1) developing a baseline to assess additionality; (2) estimating the provider's opportunity cost of conservation (or restoration); and (3) establishing the needed institutions to monitor and enforce the terms of the contracts and distribute the benefits generated by the scheme (Wunder, 2007). The development, application and acceptance of PES schemes face challenges at each of these steps, principally in the form of evaluation of opportunity costs, ensuring ecosystem service delivery, establishing conditionality, and avoiding high transaction costs. Even when these conditions are met, a PES may ultimately be undermined by the failure to distribute benefits widely, leading to societal conflicts over land use (Pagiola et al., 2005).

## 3. Poverty alleviation and inclusivity

PES may also be used as a tool for poverty alleviation. Various initiatives in the Americas show that PES schemes focused on poor rural communities can improve livelihoods (Rosa et al., 2004). Yet there are substantial challenges to the alleviation of poverty through

PES-type approaches (Grieg-Gran et al., 2005; Pagiola et al., 2008; Wunder, 2008). At present, beneficiaries of most PES schemes are landowners who can enter into contractual agreements with institutions making the payments (companies, government agencies, non-government organisations, etc.). Poor people, especially the landless, lack the requisite skills, knowledge, contacts and resources to enter the emerging environmental markets and are therefore excluded from benefiting from such schemes (Landell-Mills and Porras, 2002). Smallholders tend to be excluded due to high transaction costs, uncertainty of formal land titles and their limited impact on ecosystem services, which undermines a credible or substantial demonstration of additionality (Grieg-Gran et al., 2005; Engel et al., 2008; Pagiola et al., 2008; Wunder, 2008).

Consequently, PES cannot provide "just reward for poor rural people who take care of the environment" (Wunder, 2007). Poor people are most dependent on forest resources and, in seeking to conserve ecosystem services through a PES system, poor people may be consequently excluded from such resources. Provision of most PES schemes is therefore strongly targeted and may be exclusionary (Wunder, 2008).

Transaction costs are often the biggest single barrier to participation of the poor in PES schemes (Smith and Scherr, 2002; Wunder and Alban, 2008). High transaction costs limit uptake by large landowners and exclude smallholders (Wunder and Alban, 2008). Buyers of ecosystem services are also disinclined to incur the costs of negotiating with many individual smallholders and therefore may specifically exclude small farmers from participation (Wunder and Alban, 2008) unless smallholders engage in collective action through strong cooperative institutions (Landell-Mills and Porras, 2002).

It is also far from clear that tropical rural communities, be they poor or otherwise, actually wish to engage in such schemes (Karsenty, 2004; Ghazoul, 2007a,b,c). PES must cover the opportunity costs of participation, which extend beyond income to encompass broader assessment of livelihood benefits and risks (Benitez et al., 2006; Ghazoul, 2007a,b; Wunder, 2008). Opportunity costs may be high, or at least perceived as such (Koh and Ghazoul, 2008). Problems associated with insecure land tenure, and suspicion of outside agencies that offer contracts in return for restricting land use options, are further barriers to participation (Pagiola et al., 2007).

Nevertheless, reward schemes that target poor smallholders do exist, exemplified by the World Agroforestry Centre (ICRAF) Rewarding Upland Poor for Environmental Services (RUPES) programme (ICRAF, 2008). RUPES highlights social mobilization, which represents community-based action to socially and politically empower communities to engage in PES schemes, and community-based institutions take responsibility for decision making and conflict management. This requires that these organizations are sensitive to gender issues and represent the interests of the poorest members of society. RUPES experience has shown that achieving broadly acceptable PES systems for smallholders depends on shared perceptions of environmental services and opportunity costs, on representative community institutions that manage the implementation of PES schemes, and trust between communities, regional and national governments and external actors as a basic condition for negotiated agreements. Similar to RUPES is the Mexican Payments for Hydrological Environmental Services Program (Spanish acronym: PSAH) (Munoz-Pina et al., 2008), but both RUPES and PSAH target legal landholders who, while undoubtedly poor, are still better off than the many smallholders with uncertain tenure or the landless poor.

## 4. Landscape Label concept

The scientific community is grappling with the challenges of developing locally inclusive, cost efficient and trustworthy PES

schemes. We propose Landscape Labelling as a potential solution to some of these challenges by

1. Combining PES with labelling of products derived from landscapes that demonstrably deliver benefits through ecosystem services.
2. Delivering the benefits of payments for ecosystem services to all stakeholders through social and infrastructural investments; and
3. Making available an easily accessible format at the national and international level by which relevant information on ecosystem service provision can be verified.

We propose that human-dominated forested landscape mosaics that are recognised to be delivering ecosystem services against relevant criteria, based on local and regional evaluation by appropriate institutions, should be acknowledged as such by granting the use of an exclusive 'Landscape Label' that is applicable across the whole landscape. This label could be used to identify a good as originating from an ecosystem service-providing region, as well as serving to symbolize the wide variety of ecosystem services provided by the landscape. It could also represent and indeed publicize the cultural and symbolic attributes of the landscape, as defined by local communities, thereby helping to define its heritage

value and uniqueness for people out with the landscape. This in turn would provide greater recognition to communities and help to empower them in negotiations with outside agencies (including government or companies), and also promote landscape recognition that could serve to generate new livelihood opportunities through, for example, tourism.

Thus a Landscape Label potentially permits producer communities to improve market recognition, secure premium payments, gain access to niche markets, and attain market benefits for minor products by association through the label with more commercially important products. The derived benefits can, in turn, secure an incentive for managing the landscape in such a way as to continue to meet the ecosystem service criteria required for certification. A Landscape Label has other benefits in terms of reducing transaction costs, improving inclusivity, cheaper conditionality determination, allowing more flexibility in response to changing market environments, and providing social pressure to limit freeriding. It also poses several foreseeable problems which we also detail below.

Exploring the feasibility of the proposed Landscape Label scheme, and the plausibility of our expectations outlined above, assumes that ecological, social and economic knowledge can be properly integrated, that appropriate community based institutions are established, and methods for easy and rapid verification

**Table 1**  
Comparison of current payment for ecosystem service (PES) concepts with the Landscape Label approach.

PES ( <i>sensu</i> Wunder)	Landscape Label approach	Examples for elements of a Landscape Label
Moderate establishment costs High transaction costs born by participating individuals	High establishment costs Low transaction costs (although transaction costs may be deferred to community level organisations)	Biosphere Reserves Rewarding Upland Poor for Ecosystem Services (RUPES) program RUPES
Low equity (participation in PES limited to, usually large, landowners) Voluntary at individual level	High equity (allows participation by all community members)  Voluntary at community level (individual non-participants effectively become freeloaders)	Biosphere Reserves
Environmental quality managed by individual landowner (possibly leading to exclusion of other resource users)	Environmental quality managed by landowners and community members and mediated through community-based organizations	Chimboco community institutions for water management in Bolivia; Kodagu Model Forest Trust in India Biosphere Reserves
Service provision at farm unit scale (aggregated units may be insufficient to provide large scale ecosystem services) Relatively few services provided Little flexibility in land use at farm scale (individuals contractually bound to limited land uses) Conditionality verified at farm scale by experts	Service provision at whole landscape scale (encompassing all ecosystem services provided by the landscape) Relatively many services provided Large flexibility in land use at farm scale, provided criteria are met at the landscape scale Conditionality can be verified by consumers through widely available remote sensing proxies measured at landscape scales	Biosphere Reserves Offsetting agreements, habitat banking Google Earth as a platform for consumer verification
Financial reward paid directly to landowner (limited distribution of PES benefits) Little potential for poverty alleviation	Financial rewards realised through a variety of mechanisms, but mainly through community-based institutions for social projects (wide distribution of PES benefits) Large potential for poverty alleviation	Uganda Wildlife Authority's Community Protected Area Institutions RUPES, Zimbabwe's Communal Areas Management Programme For Indigenous Resources (CAMPFIRE) Biosphere Reserves
Values limited to interests of ecosystem service buyers Independent of community-based institutions	Potential to encompass many landscape and environmental values, including cultural and symbolic features Dependent on effectively functioning community-based institutions	Chimboco community institutions for water management in Bolivia; Kodagu Model Forest Trust in India
Financial rewards received for provision of ecosystem services only Little potential for wider landscape recognition	Financial rewards received for ecosystem services and potentially through product labelling Large potential for wider landscape recognition	No equivalent, but Biosphere reserve designation offers a mechanism for implementation Biosphere Reserves, Geographical Indications
Top down enforcement of individual contractual obligations	Bottom-up (peer pressure) and top-down (ecosystem service buyer pressure) enforcement of community contractual obligations	Possibly RUPES, CAMPFIRE, Uganda's Community Protected Area Institutions
Entirely dependent on buyers of ecosystem services for funding	Labelling offers alternative income generating opportunities independently of payments for ecosystem services	Organic or 'bird-friendly' coffee and other ecolabels; forest product certification (Forest Stewardship Council, etc.)
Clear boundary definition	Landscape boundary definition requires negotiation and agreement	World Wide Fund for Nature (WWF) Landscape Outcomes Assessment Methodology

of ecosystem service delivery and conditionality criteria are developed. We explore each of these issues in detail below.

## 5. The additionality of a Landscape Label

The Landscape Label integrates ideas from PES and labelling into a single approach that has advantages over existing approaches, but also some difficulties that will challenge its implementation (Table 1). We examine eight features that we believe are advantages over existing PES systems, and later discuss some of the barriers to its uptake.

### 5.1. Inclusivity and poverty alleviation

A constraint of many current forms of PES is that they are largely limited to landowners who can provide quantifiable and verifiable services and who can overcome the transaction costs of participation. This excludes landless people and smallholders for whom participation is not possible due to lack of capacity or because they are specifically excluded due to insufficient size. For example, the Ecuadorian PROFAFOR scheme operates only with landowners that have a minimum of 50 ha (Wunder and Alban, 2008). Such a cut-off, applied to India's largest coffee growing region of Kodagu, would exclude almost all landowners. Conflicts can also arise among landowners and landless where, for example, landowners might exclude landless from forest resources that were previously accessible to them so as to avoid degradation that may undermine the delivery of the service in question. Employment opportunities for landless labourers might also be lost if land is set aside for conservation or ecosystem service provision.

A Landscape Label signifies effective ecosystem service provision by a landscape rather than a farm, and implicitly recognises that landscape structure is a function of management and use by all community members. It is on this basis that payments are made for the services provided by the landscape (carbon sequestration, water regulation, erosion control, biodiversity conservation, etc.) by ecosystem-service buyers (downstream communities, government agencies, national or international NGOs, etc.) to community-based organisations. These payments, we propose, should be invested in social and community projects or initiatives (see Table 2 for examples). Thus a Landscape Label scheme provides the potential to secure benefits to all community members including the landless poor through the development of public services and infrastructure, and the potential provision of financial resources (e.g. micro-credit) to all in the community, including landless. While these benefits are indirect, they may be important in improving access to markets through better transport systems, providing better education and healthcare, and security through micro-insurance, capital financing and other benefits accessible to a wide spectrum of society (Table 2). If such benefits are indeed realised, then incentives for sound environmental management will be provided to the wider community.

Landscape Labelling is also inclusive in that the use of a Landscape Label is not restricted to a particular product, as is the case with Geographical Indications, but associated with a landscape. Hence any commodity derived from that landscape can use the label to signify its production under a management system that continues to provide ecosystem services. Thus all farmers, regardless of the crop they are growing, can benefit in terms of market recognition and, potentially, price premiums (see Section 5.5). Indeed, the concept may be advanced further by extending a label to services such as tourist 'homestays', or to manufactured products, artisanal commodities and other small industries. Thus the French label "Parc Naturel Régional" has been known to benefit local services based on tourism (Angeon and Caron, 2006). Theoretically, provided the landscape as a whole continues to

**Table 2**

Examples of projects and initiatives that might be developed using revenues received through Landscape Label pathways that would deliver benefits widely across the community, regardless of land ownership, wealth or educational status.

Initiative	Potential beneficiaries
Micro-credit	All members of the community
Micro-insurance (for crop failure, wildlife conflict compensation)	Farmers, coffee planters
Achieving legal recognition of community rights	Villagers
Forest boundary delineation	Villagers with community forests
Fence construction and maintenance (protection from wildlife)	Farmers and villagers
Improved infrastructure (road, communication, etc.)	All members of the community
Improved health facilities	All members of the community
Improved school and adult education facilities	All members of the community
Temple maintenance	Relevant religious groups
Natural disaster rescue fund	All members of the community
Management of community owned forest land	Relevant villages

deliver ecosystem services according to the criteria by which the Landscape Label is awarded (which would be a matter of negotiation among the community providers and external buyers of the services), there is no reason why a label could not be used by any kind of industry within the locality. This may allow environmentally damaging industries to continue their activities, thereby resolving any conflicts that might otherwise arise, provided that their activity does not undermine the validity of the Landscape Label according to the criteria by which it is granted (see Section 5.7).

### 5.2. Transaction costs

Transaction costs may seriously limit uptake of PES. Transaction costs are particularly important for ecosystem services that can be independently and unambiguously delivered and quantified by many discrete landowners (e.g. carbon sequestration). Watershed, landscape beauty and biodiversity services can be more easily adapted to smallholder participation as the service buyer is forced to engage with collectives of smallholders at a much larger scale (Wunder, 2008; Wunder and Alban, 2008). Negotiation with many such smallholders clearly incurs high costs, and the success of the RUPES scheme is in its ability to engage individuals through collective action.

The Landscape Label approach differs from RUPES and other PES schemes in that contracts are negotiated with representative organisations rather than individuals, and verification is based on evaluating landscapes rather than multiple farm units. We expect that this will reduce the number of transactions and therefore the costs, although it is possible that these will be displaced to community institutions who would incur the costs of negotiation among stakeholders. This is a difficult area to evaluate as much depends on the social and economic coherence of the local institutions and their ability to cooperate. The Kodagu Model Forest Trust is but one example of an attempt to bring disparate groups together under a network by which broadly socially acceptable outcome can be determined, but it remains to be seen whether the transactions costs associated with establishing and maintaining such a system prove less than individually negotiated contracts with an equivalent number of landowners.

### 5.3. Bundled service provision

The perspectives that landscape scales offer allow local communities, buyers of ecosystem services (at a range of scales),



conservationists and others to identify and value a wide variety of services and landscape values. Once identified the variety of services can then be incorporated into management. This contrasts with current buyers of ecosystem services who often target one or a limited number of services (e.g. carbon sequestration, water provision) within a landscape, leading to potential trade-offs with other services that are either not recognised or undervalued. Landscape Labelling allows for a wide variety of services to be recognised and maintained across the landscape, depending on local, national and international demands.

Many current PES schemes do not distinguish the appropriateness of land for particular service provision (exceptions include the watershed PES scheme managed by the Costa Rican Electricity Institute which targets specific management units for maximal ecosystem service delivery). Thus, planting trees may provide soil preservation services in some locations, but may be inappropriate in wetlands that regulate water flows. Through community participation, an integral part of the Landscape Label, and the flexibility afforded by a landscape approach, a wide range of ecosystem services can be incorporated into management that takes account of the appropriate distribution of service-providing habitats.

A further advantage of a landscape scale application of PES is that services that transcend the scale of a private landholding can be addressed at the aggregated landscape level. Thus environmental benefits that are realised only above a threshold land cover value (e.g. large mammals that require a certain amount of forest cover below which their populations are no longer viable), can be addressed at the scale of the landscape, far more easily than would be otherwise possible.

#### 5.4. Conditionality

The success of a product certificate is dependent on the trust that consumers place in what the certificate represents. If forest cover is accepted as an appropriate proxy for ecosystem service delivery, then as a coarse measure of the certificate's validity an opportunity for verification by anyone with access to Internet is provided by widely available software such as Google Earth. Thus remote sensing that provides information on changes in land cover distribution could be made readily accessible through existing technologies and platforms, by which consumers themselves can verify the veracity of any Landscape Label, at least in coarse terms. Such platforms could also raise awareness of the region in general, with further knock-on benefits to producer communities. Remote sensing technologies can be applied to existing PES schemes that negotiate contracts with private landowners, but simple verification of this by the general public becomes exceedingly complex as it requires the identification of the participating landholders rather than a larger and contiguous land area as represented by a defined landscape.

Nevertheless, ensuring adherence to a Landscape Label requirements is likely to be complex, necessitating interaction and agreement over many individuals, villages and community-based institutions. This represents another way in which transaction costs may be shifted from the buyers of services (who would otherwise have to verify service provision by individual landowners according to specific contractual obligations) to the providers, in the form of cooperative organisations. Verification by buyers need be little more than analysis of remote sensing images at appropriate time intervals with occasional ground truthing, while it remains up to the communities to ensure that obligations are being met and conflicts associated with such obligations are appropriately managed.

An issue that needs further consideration concerns decisions that should be taken by payers for environmental services under

conditions of non-compliance. If ecosystem services fail to be delivered the expected course of action would be to reduce or stop payments. This raises concerns regarding the morality of such action in that payments could be providing widespread community benefits including poverty alleviation.

#### 5.5. Market recognition

A Landscape Label provides clear recognition of not just the landscape, which itself would be beneficial for promoting tourism and other income generating services, but also in improving product recognition in the regional, national and global markets. This offers opportunities for increasing market share and differentiating products from competitors, but it also allows for minor products to benefit by association with commercially important products that use the same label. For example, were Indian Kodagu coffee to be given a Kodagu Landscape Label, the Kodagu name could achieve national and international recognition. Other products from Kodagu could, under the Landscape Label structure, legitimately use the same Kodagu name and reputation signifying their origination from a landscape that is delivering a wide variety of ecosystem services, and thereby gain market recognition by association, as well as recognition of the ecosystem service values they represent.

A Landscape Label therefore need not deliver price premiums to be beneficial, but simply provide uniform market recognition for a wide range of products. Indeed, the Landscape Label approach does not even depend on a large market demand for certified products specifically, as it would be funded mainly through payments for the services provided. As such, it has a primarily supply-side approach. Nevertheless, labelling of products from landscapes allows for a wide variety of producers to potentially benefit from greater market recognition and hopefully improved competitiveness as a result. This will generate new additional incentives for effective management of the landscape, but is not a necessary condition for the effectiveness of a Landscape Label.

#### 5.6. Community management and social pressure

The success of community-wide schemes is dependent on effective institutional structures that provide appropriate negotiation and communication pathways among the variety of community organisations. This is particularly relevant in situations where problems are “complex” (there are no clear right or wrong answers), and where stakeholders have different levels of power and different values and perspectives (Lauber et al., 2008). These conditions are typical for human-dominated forested systems. Yet, ensuring effective interaction among a diversity of local organisations and interests is one of the most serious challenges to the implementation of landscape-level PES processes. Payments to support a landscape are expected to be made to appropriate institutions that will be responsible for making investment decisions. Conflicts and corruption among and within community-based organisations is perhaps the single most important threat to the successful implementation of Landscape Label. Nevertheless, there is growing awareness and knowledge regarding empowerment and collaboration among community-based organisations (Bodmer et al., 1997; Bajracharya et al., 2005; Stearman, 2006; Antinori and Rausser, 2007; Davenport et al., 2007; Turyahabwe et al., 2007; Thoms, 2008), and examples of collaborative networks to secure wider community benefits are known (Bodmer et al., 1997; Bajracharya et al., 2005; Stearman, 2006; Antinori and Rausser, 2007; Pandit et al., 2008).

One example of such a local platform is the Kodagu Model Forest Trust (KMFT), a partnership of organisations representing diverse groups that have interests in the environment and management of

the Kodagu landscape. It includes as its members organisations representing local landholders, non-governmental organisations, the Karnataka Forest Department, community groups, and research institutions. The governance structure of KMFT includes eight working groups each consisting of stakeholders representing all land management interests in Kodagu. In the last 5 years KMFT has been implementing programmes related to integrated landscape management, including promotion of organic farming, revival of community-based sacred forest management, and management of human–animal conflicts. The trust is now working on expanding and diversifying its base, reaching a larger number of stakeholders and undertaking activities related to the valuation of ecosystem services and the opportunity for labelling schemes with support from external donors like the European Union, the FAO and the French Agence Nationale de la Recherche.

While KMFT does not yet include representatives from the landless poor and tribal communities, there is the potential to develop the network in this direction. It could then be used as a platform to develop new innovative schemes by empowering components of the community that have been previously marginalised owing to a lack of social or political power (Garcia and Pascal, 2006).

Other examples of innovative community-based institutions responsible for the regulation and delivery of PES schemes include Zimbabwe's well-publicised CAMPFIRE programme (Frost and Bond, 2008). The Chimboco communities in Bolivia have developed autonomous self-managing institutions to regulate water use and manage water-related conflicts (Wunder and Vargas, 2005). The Ugandan Wildlife Authority has implemented Community Protected Area Institutions that help local communities to establish local environmental projects (Austin, 2006). Evaluation of community-based natural resource management institutions in Australia reveals the importance of inspirational leaders in establishing collective goals for effective resource management (Pero and Smith, 2008). The role of inspirational leaders can be filled by appropriate NGOs, as demonstrated in India (Bawa et al., 2008). The opportunities and challenges of collaborative community-based institutions in environmental management are discussed further by Margerum (2008) and Balint (2006).

### 5.7. Flexibility in decision making

Another limitation of PES is that landowners are contractually bound to restrict their activities on their land, and therefore are limited in the extent to which they can respond to changing commodity markets. This restriction of their management choices makes landowners somewhat wary of PES, as has been demonstrated in Bolivia and Nicaragua (Robertson and Wunder, 2005; Pagiola et al., 2007). However, assessing ecosystem service provision at the aggregated scale of the landscape allows greater flexibility regarding land use decisions, and allows for development when opportunity costs at a particular location are high, so long as this development is compensated elsewhere within the landscape. This raises the potential for landscape-wide offset market, permitting landowners to balance environmentally damaging activities and thereby retain the benefits of a Landscape Label. Such flexibility is likely to make a Landscape Label more attractive to wide participation as increased opportunity costs can be accommodated through reforestation or improved forest protection elsewhere within a landscape.

This becomes particularly important when marginal benefits from service provision differ across the landscape and where investment in environmental management delivers variable benefits in terms of ecosystem service provision depending on initial conditions, habitat features, location within the landscape, etc. Applying PES at landscape scales that encompass many

landholders and communities offers a potential solution by which problems associated with non-constant marginal environmental benefits can be overcome. Under a Landscape Label approach variation in marginal benefits are averaged across a larger landscape scale as it is at this scale that ecosystem service provision is evaluated and rewarded. This allows for more acceptable environmental management whereby maximum benefit can be achieved at lower cost wherever in the landscape it is efficient to do so. This, of course, permits flexibility in decision making at smaller scales as landowners are not obliged to undertake environmental investments where the costs of doing so exceed the rewards received, yet they are simultaneously not excluded from the wider benefits of participation in PES to which they might contribute in other ways.

### 5.8. Inclusion of non-market values and local community perceptions

It is possible that a Landscape Label could represent more than just goods and services that have market value, but also non-market values including the cultural and spiritual importance of landscape features, as well as natural heritage, notably biodiversity. Many tropical landscapes are rich in biodiversity that has little present economic value, or may harbour species that have local religious or spiritual symbolism but little significance for buyers of ecosystem services globally. In Kodagu sacred forest groves and trees have immense importance and a Landscape Label could identify and catalogue such features and thereby empower local communities in their actions to conserve such features in the face of external development pressures. Additionally, to avoid conflicts among landowners and landless it is important that a Landscape Label recognises local values and use of habitats. If such values are incorporated in this approach then it can serve to minimise or avoid conflicts between landowners seeking to protect their forest under Landscape Label conditions, and landless who extract resources from such habitats. In Kodagu, conflicts between landowners and landless are more likely to be related to the distribution of PES benefits, while the conflict over resource access is more an issue between state institutions (i.e. the Forest Department) and citizens, both landed and landless. A Landscape Label should therefore reduce distortions in the distribution of benefits, while providing increased recognition to landless poor or smallholders by explicitly including them as beneficiaries. The question of recognizing the claims of tribal groups over the forest is a delicate issue, but a Landscape Label can raise awareness of community management of forests and sacred groves.

## 6. Barriers to uptake of a Landscape Label

Barriers to the adoption of landscape labels may also include a lack of awareness among the farmers about the concept of labelling or ecosystem services provided by the landscape. Producers may also not appreciate the importance of PES conditionality, i.e. the need to maintain service provision to continue to receive PES payments, and to justify an associated Landscape Label. Such obstacles, however, are common to all PES schemes.

There remain several unresolved, or at least poorly resolved, concerns with regard to a Landscape Label specifically, including dealing with freeriders, managing conditionality, avoiding leakage (i.e. spatial displacement of degrading activities), ensuring effective functioning of cooperative institutions, and dealing with disturbances beyond the control of the communities (e.g. atmospheric pollution or climate change). Community relations (e.g. between landowners and other community groups) may become strained as any PES necessarily restricts the range of livelihood options available to landowners. The linking of a PES (that benefits the farmer) to a Landscape Label (that benefits the wider

community) could improve such relations by ensuring that the two groups have common goals. Peer pressure may act to minimise freeriding, but may also create and exacerbate conflicts. Opt-out agreements for individual landowners allows for flexibility in decision making, but may erode the Landscape Label concept if too much flexibility is allowed. Leakage is less likely in a Landscape Label approach as the assessment for the delivery of services is made at the scale of the entire landscape, but this would not account for displacement beyond the boundaries of the landscape. We cannot address all these issues in detail within the scope of this paper, nor are we sure how they should be addressed, but we hope that the description of the concept generates discussion that will lead to the development of improved PES systems that provide the advantages listed above without, ultimately, the disadvantages that we readily recognise.

## 7. Conclusion

The Landscape Label concept differs from other PES approaches as it specifies a landscape-wide PES scheme, invests funds into community-based projects that have the potential to benefit a far wider range of people than might otherwise be the case, bundles together products, services and ecosystem functions, and yet allows for additional benefits to land-owners through product differentiation. Payments made to community-based institutions to support community projects (e.g. micro-insurance, micro-credit, education and health infrastructure, improved transportation and communication networks, etc.) benefit a much wider range of community members, regardless of social status, and instigate social pressure acting against freeriders. Additionally, by raising awareness of the landscape in the wider social and political environment, it offers possibilities to improve communities' abilities to achieve official recognition of traditional management practices and land and resource rights. There are clear benefits over existing PES schemes, and yet there are also major obstacles to be investigated and overcome if Landscape Label is to make a useful contribution in real terms. Through this paper we hope to generate new ideas and promote discussion by which PES approaches overall can be advanced and improved.

## References

- Angeon, V., Caron, A., 2006. The 'regional and nature park' trademark: a French initiative to promote local and sustainable development. In: 46th European Regional Science Association (ERSA) Congress, ERSA, Volos, Greece, p. 19.
- Antinori, C., Rausser, G., 2007. Collective choice and community forestry management in Mexico: an empirical analysis. *Journal of Development Studies* 43, 512–536.
- Austin, J., 2006. Taking action: approaches to payments for ecosystem services. In: *A Tale of Two Continents: Ecosystem Services in Latin America and East and Southern Africa*, Katoomba Group's Ecosystem Marketplace, pp. 49–53.
- Balint, P.J., 2006. Improving community-based conservation near protected areas: the importance of development variables. *Environmental Management* 38 (1), 137–148.
- Bajracharya, S.B., Furley, P.A., Newton, A.C., 2005. Effectiveness of community involvement in delivering conservation benefits to the Annapurna Conservation Area Nepal. *Environmental Conservation* 32, 239–247.
- Bawa, K.S., Balachander, G., Raven, P., 2008. A case for new institutions. *Science* 319 (5860), 136–136.
- Benitez, P.C., Kuosmanen, T., Olschewski, R., van Kooten, G.C., 2006. Conservation payments under risk: a stochastic dominance approach. *American Journal of Agricultural Economics* 88, 1–15.
- Bodmer, R.E., Penn, J.W., Puertas, P., Moya, L.I., Fang, T.G., 1997. Linking conservation and local people through sustainable use of natural resources: community-based management in the Peruvian Amazon. In: Freese, C.H. (Ed.), *Harvesting Wild Species: Implications for Biodiversity Conservation*. Johns Hopkins University Press, Baltimore, Maryland, pp. 315–358.
- Davenport, M.A., Leahy, J.E., Anderson, D.H., Jakes, P.J., 2007. Building trust in natural resource management within local communities: a case study of the Midwestern National Tallgrass Prairie. *Environmental Management* 39, 353–368.
- Engel, S., Pagiola, S., Wunder, S., 2008. Designing payments for environmental services in theory and practice: an overview of the issues. *Ecological Economics* 65, 663–674.
- Frost, P.G.H., Bond, I., 2008. The CAMPFIRE programme in Zimbabwe: payments for wildlife services. *Ecological Economics* 65 (4), 776–787.
- Garcia, C., Pascal, J.P., 2006. Sacred forests of Kodagu: ecological value and social role. In: Cederlöf, G., Sivaramakrishnan, K. (Eds.), *Ecological Nationalisms: Nature, Livelihoods, and Identities in South Asia*. University of Washington Press, Seattle and London, pp. 199–229.
- Ghazoul, J., 2007a. Challenges to the uptake of the ecosystem service rationale for conservation. *Conservation Biology* 21, 1651–1652.
- Ghazoul, J., 2007b. Placing humans at the heart of conservation. *Biotropica* 39, 565–566.
- Ghazoul, J., 2007c. Recognising the complexities of ecosystem management and the ecosystem service concept. *Gaia-Ecological Perspectives for Science and Society* 16, 215–221.
- Grieg-Gran, M., Porras, I., Wunder, S., 2005. How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America. *World Development* 33, 1511–1527.
- ICRAF, 2008. Social Mobilization and Local Awareness of Rights and Opportunities for Environmental Services Market. In: RUPES Synthesis Note. World Agroforestry Centre, Bogor, Indonesia.
- Karsenty, A., 2004. Des rentes contre le développement? Les nouveaux instruments d'acquisition mondiale de la biodiversité et l'utilisation des terres dans les pays tropicaux. *Mondes en Développement* 127, 61–74.
- Koh, L.P., Ghazoul, J., 2008. Biofuels, biodiversity, and people: understanding the conflicts and finding opportunities. *Biological Conservation* 141 (10), 2450–2460.
- Landell-Mills, N., Porras, I.T., 2002. Silver bullet or fools' gold. A global review of markets for forest environmental services and their impact on the poor. In: International Institute for Environment and Development, London, p. 272.
- Lauber, T.B., Decker, D.J., Knuth, B.A., 2008. Social networks and community-based natural resource management. *Environmental Management* 42 (4), 677–687.
- Margerum, R.D., 2008. A typology of collaboration efforts in environmental management. *Environmental Management* 41 (4), 487–500.
- MEA, 2005. *Ecosystems & Human Well-being: Synthesis*. Millennium Ecosystem Assessment and Island Press, Washington, DC.
- Munoz-Pina, C., Guevara, A., Torres, J.M., Brana, J., 2008. Paying for the hydrological services of Mexico's forests: analysis, negotiations and results. *Ecological Economics* 65, 725–736.
- Pagiola, S., Arcenas, A., Platais, G., 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and the evidence to date from Latin America. *World Development* 33, 237–253.
- Pagiola, S., Bishop, J., Landell-Mills, N., 2002. *Selling Forest Environmental Services. Market-based Mechanisms for Conservation and Development*. Earth scan, London.
- Pagiola, S., Ramirez, E., Gobbi, J., De Haan, C., Ibrahim, M., Murgueitio, E., Ruiz, J.P., 2007. Paying for the environmental services of silvopastoral practices in Nicaragua. *Ecological Economics* 64, 374–385.
- Pagiola, S., Rios, R.S., Arcenas, A., 2008. Can the poor participate in payments for environmental services? Lessons from the Silvopastoral Project in Nicaragua. *Environment and Development Economics* 13, 299–325.
- Pandit, B.H., McDougall, C., Belcher, B., Kumar, C., Maharjan, M.R., 2008. Leveraging poor people's access to ownership and benefits of community-based forest enterprises: the role of an adaptive collaborative management approach. *Insight: Notes from the Field* 3, 45–55.
- Pero, L.V., Smith, T.F., 2008. Institutional credibility and leadership: critical challenges for community-based natural resource governance in rural and remote Australia. *Regional Environmental Change* 8 (1), 15–29.
- Robertson, N., Wunder, S., 2005. Fresh Tracks in the Forest: Assessing Incipient Payments for Environmental Services Initiatives in Bolivia. Centre for International Forestry Research, Bogor, Indonesia.
- Rosa, H., Kandel, S., Dimas, L., 2004. Compensation for environmental services and rural communities: lessons from the Americas. *International Forestry Review* 6, 187–194.
- Smith, J., Scherr, S.J., 2002. Forest carbon and local livelihoods: assessment of opportunities and policy recommendations. CIFOR Occasional Paper 37.
- Stearman, A.M., 2006. One step forward, two steps back: the Siriono and Yuqui community forestry projects in the Bolivian Amazon. *Human Organization* 65, 156–166.
- Taylor, P.L., 2005. In the market but not of it: fair trade coffee and forest Stewardship Council Certification as market-based social change. *World Development* 33, 129–147.
- Thoms, C.A., 2008. Community control of resources and the challenge of improving local livelihoods: a critical examination of community forestry in Nepal. *Geoforum* 39, 1452–1465.
- Turyahabwe, N., Geldenhuys, C.J., Watts, S., Obua, J., 2007. Local organisations and decentralised forest management in Uganda: roles, challenges and policy implications. *International Forestry Review* 9, 581–596.
- Wunder, S., 2005. Payments for environmental services: some nuts and bolts. In: CIFOR Occasional Paper, CIFOR, Jakarta, p. 32.
- Wunder, S., 2007. The efficiency of payments for environmental services in tropical conservation. *Conservation Biology* 21, 48–58.
- Wunder, S., 2008. Payments for environmental services and the poor: concepts and preliminary evidence. *Environment and Development Economics* 13, 279–297.
- Wunder, S., Alban, M., 2008. Decentralized payments for environmental services: the cases of Pimampiro and PROFAFOR in Ecuador. *Ecological Economics* 65, 685–698.
- Wunder, S., Vargas, M.T., 2005. Beyond "Markets": why terminology matters. a tale of two continents: ecosystem services in Latin America and East and Southern Africa. *Katoomba Group's Ecosystem Marketplace* 27–31.