

Research, part of a Special Feature on [Sustainability in tropical forests](#)
Are Direct Payments for Environmental Services Spelling Doom for Sustainable Forest Management in the Tropics?

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ABSTRACT. Over the past several decades, significant donor funding has been directed to sustainable forest management in the tropics, in the hope of combining forest conservation with economic gains through sustainable use. To date, this approach has produced only modest results in terms of changed silvicultural and land-use practices in this area. Direct payments for environmental services (PES) have been suggested as a promising alternative but still remain widely untested in the tropics. This paper first provides a conceptual assessment of PES, comparing the main features of this practice with those of other conservation instruments. Second, the paper discusses a series of critical questions that have been raised about both the environmental and livelihood impacts of PES. It is concluded that some *ex ante* judgments about the effects of PES may have been overly critical, and that, based on preliminary assessments, there is good reason to continue experimental PES implementation for purposes of consolidating our knowledge.

Key Words: *forest management; payments for environmental services; rural livelihoods; conservation; economic incentives*

INTRODUCTION

If anything spells doom for sustainable forest management (SFM), it is certainly not the emergence of the concept of payments for environmental services (PES). SFM was designed to simultaneously increase incomes and conserve forests (Salafsky and Wollenberg 2000, Pearce et al. 2003). However, despite scattered successes, silvicultural practices in the tropics have not changed significantly, and the adoption of SFM has remained limited to “niche markets” (Poore 2003). The economic logic of SFM builds on the basic premise that forests are managed for continuous, long-term production. However, most extractors of tropical timber follow a logic of cut and move on, because land is abundant, timber royalties are low, and the capital outlays for long-term horizons are excessive; this combination of factors makes it economically uninteresting to plan for even a second cut (Vincent 1992). This also means that SFM has not been viewed as a significant alternative when it comes to holding back the greatest threat to tropical forests: deforestation motivated by land-use conversion (Rice et al. 1997, Poore 2003).

Together with other indirect methods, such as integrated conservation and development projects (ICDPs) that aim to raise local incomes and change the logic of production to support sustainability, SFM has received a lot of donor attention over the past couple of decades. Often the underlying or “hidden” objective was to protect biodiversity and other environmental services, rather than a primary concern for tropical timbers and other forest products (Kaimowitz 2000). However, biodiversity funding from traditional sources like bilateral and multilateral green aid has declined sharply in recent years. Data from the World Bank’s Program on Forests show that bilateral forest-sector funding dropped from slightly more than U.S. \$1 x 10⁹ in 1990–1992 to U.S. \$600–900 x 10⁶ in the late 1990s. For multilateral agencies, the simultaneous decline was more dramatic, from about U.S. \$1 x 10⁹ to U.S. \$400 x 10⁶. Support for protected areas, the main traditional channel of biodiversity funding, may have declined from U.S. \$700–770 x 10⁶ in the early 1990s to only U.S. \$350–420 x 10⁶ in the early 2000s (Molnar et al. 2003).

This decline can be attributed to both the disappointment that donors experienced with the

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results of biodiversity-oriented development assistance, including SFM, and an incremental shift in general priorities from the environment toward poverty alleviation. Private-sector funding for biodiversity has increased markedly, but from a very small base that is clearly insufficient to offset the decline in bilateral and multilateral assistance. Private foundations may spend up to U.S. \$150 x 10⁶ annually, whereas other private-sector sources contribute in the range of U.S. \$20–30 x 10⁶ a year (Molnar et al. 2003). Much private-sector funding for biodiversity has been channelled through the three largest conservation organizations: the World Wildlife Fund, The Nature Conservancy, and Conservation International (Chapin 2004). Because the private sector usually favors quid pro quo approaches, this structural shift in funding may eventually lead to a contingent, business-type approach to conservation, of which PES is a prime example.

In other words, the limited success of SFM and other indirect tools has certainly prepared the ground for a sustained interest in direct tools such as PES. However, it would be an oversimplification to expect that PES could just replace SFM. As will be shown below, there can, in fact, be synergies between SFM and certain types of PES, with options for combining the two in conservation strategies.

This paper is divided into two parts. The first defines PES and discusses their conceptual peculiarities compared to other conservation tools. The second responds to a critique of PES (Karsenty 2004) presented at the 2005 conference of the International Union of Forest Research Organizations in Brisbane that forms the backdrop for this Special Feature. First, I will sum up Karsenty's appraisal and then discuss his specific points regarding the efficacy, fairness and equity, and legitimacy of PES schemes.

DEFINING PAYMENTS FOR ENVIRONMENTAL SERVICES

So far, the literature has not formally defined payments for environmental services (PES). For field work carried out by the Center for International Forestry Research in Bolivia, Ecuador and Vietnam, we used five simple criteria to describe the PES principle (Wunder 2005):

1. a voluntary transaction in which
2. a well-defined environmental service (ES), or a land use likely to secure that service,
3. is being "bought" by at least one ES buyer
4. from at least one ES provider
5. if, and only if, the ES provider secures ES provision, i.e., conditionality.

Compelling theoretical arguments have been made that PES schemes are more cost-effective than integrated conservation and development projects (Simpson and Sejo 1996, Ferraro and Simpson 2002). Although PES have long existed in developed economies, they remain poorly tested in developing countries. There are many incipient initiatives (Landell-Mills and Porras 2002, Pagiola et al. 2002), but for implemented PES schemes with money really changing hands in a conditional way, one is typically referred only to Costa Rica and a dozen other pioneer projects, mostly in Latin America. Four types of PES currently dominate:

1. carbon sequestration and storage, e.g., a northern electricity company pays farmers in the tropics to plant and maintain additional trees;
2. biodiversity protection, e.g., conservation donors pay local people to set aside or naturally restore areas to create a biological corridor;
3. watershed protection, e.g., downstream water users pay upstream farmers to adopt land uses that limit deforestation, soil erosion, flooding risks, etc.; and
4. landscape beauty, e.g., a tourism operator pays a local community not to hunt in a forest in which tourists view wildlife.

At least four labels have been used to describe the remuneration mechanism, i.e., the "P" in PES: payments, markets, rewards, and compensation. As discussed in Appendix 1, the choice of term implies different expectations as to what the mechanism

should achieve. Is it the competitive interaction between multiple agents (markets), a just and equitable price for services rendered (reward), or the recompense for a cost the service supplier has suffered (compensation)? Terminology can trigger different political and ideological associations, which in turn can jeopardize the adoption of a particular strategy (Wunder and Vargas 2005). In the following sections, we use “payment” as arguably the most generic term.

COMPARING PAYMENTS FOR ENVIRONMENTAL SERVICES TO OTHER CONSERVATION TOOLS

What features distinguish payments for environmental services (PES) from other conservation approaches? Figure 1 ranks a set of conservation approaches according to two criteria: (1) the degree to which they rely on economic incentives and (2) the extent to which conservation is targeted directly rather than integrated into broader development approaches. It should be noted that the approaches as described are not mutually exclusive; they could be combined in conservation strategies.

Command-and-control regulations

These regulations are tools for implementing legal instruments that prohibit environmentally damaging uses, expropriate owners, create strictly protected areas, and support other interventions targeted directly at resource protection. They do not aim to alter development paths or use economic incentives unless corruption turns these regulations into de facto unofficial taxes. They are thus located in the lower right-hand corner of Fig. 1 and stand in stark contrast to the voluntary, flexible character of PES. However, PES can coexist with, or even be enhanced by, command-and-control measures; for example, the Kyoto Protocol preconditioned the carbon-mitigation markets in which PES schemes have been widely used.

Sustainable forest management

Sustainable forest management (SFM) and similar resource-use improvements also directly pursue conservation by influencing production and extraction processes, e.g., through reduced-impact

logging. Technical modifications in production are the main instrument here, although economic incentives such as those embedded into forest concession systems can also play a role.

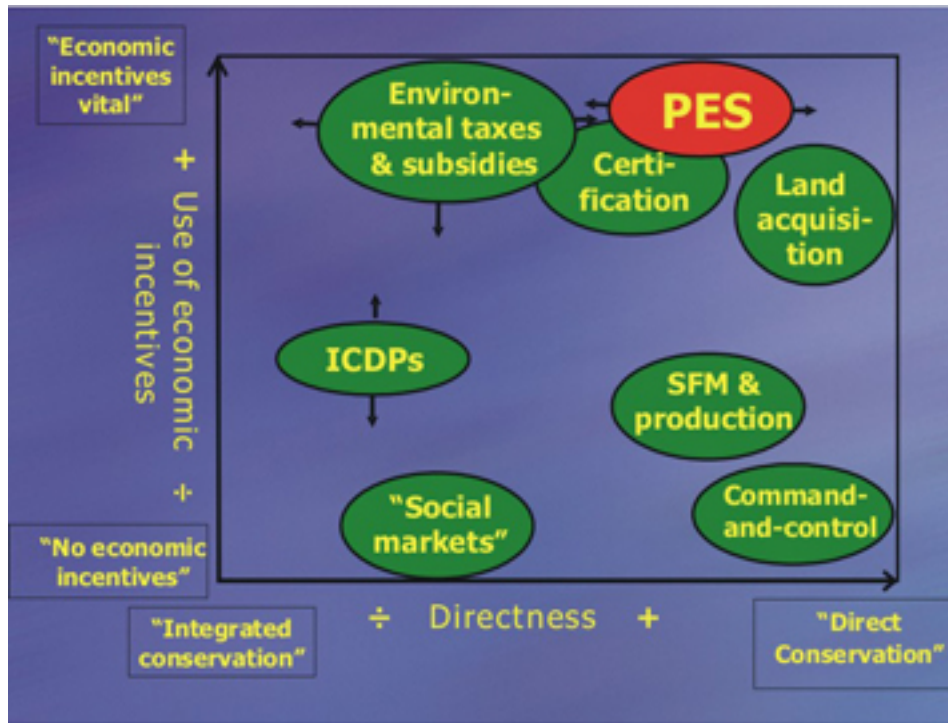
Integrated conservation and development projects

In the lower left-hand cluster, integrated conservation and development projects (ICDPs) are by their very nature the opposite of direct. They are noncontingent and explicitly integrate conservation and development concerns, looking for “conservation-by-distraction” and “less-poverty—less-degradation” effects. Raising community incomes from environmentally friendly activities is the main ICDP pathway toward sustainable development. ICDP efforts include local institution- and capacity-building, environmental education, and “buying” local conservation goodwill through benefit transfers. Economic incentives play a variable role in ICDPs. Unlike PES, ICDPs require investments in alternative production modalities. They are projects or programs that are often surrounded by mutual expectations of holistic and sometimes paternalistic interventions. In contrast, PES are designed as transactions that may be sensitive to local development dynamics, but without pretending to hold community hands. PES are simply about selling and buying services to achieve more rational land-use patterns. Eventually, PES-ICDP hybrids, such as contingently financed integrated projects, could increasingly emerge.

Social markets

Adjacent to ICDPs are the so-called “social markets” (Heyman and Ariely 2004), which comprise systems of reciprocity and exchanges of favors at different social scales. By definition, these systems are not monetary. Social markets are often traditional systems that have evolved locally over time. Points of leverage for conservation include moral persuasion, social pressure, or promised favors, all of which are factors closely linked to integrated social systems and development processes, rather than to direct conservation.

Fig. 1. Comparing payments for environmental services (PES) to other conservation approaches. ICDP stands for integrated conservation and development project, and SFM stands for sustainable forest management.



Environmental taxes and subsidies

PES belong to the family of approaches that rely heavily on economic incentives (top of Fig. 1); in fact, incentives are at the very core of PES. Although, PES could in principle merely be rewards that do not function as incentives (see Appendix 1), most service buyers are only willing to make additional payments for additional services. In this respect, PES resemble incentive-based environmental taxes and subsidies. The latter aim more at changes in broader patterns of production and resource use, whereas the PES approach of purchasing conservation conditionally is even more direct. The ecological value-added tax program practiced in several Brazilian federal states is a borderline case between PES and fiscal environmental instruments: federal states use tax transfers to reward municipalities for the size and quality of conservation areas for watershed protection and recreational benefits (Grieg-Gran 2000, May et al. 2002).

Product certification

Ecological price premiums linked to product certification can be seen as overlapping with PES. For instance, certain biodiversity-friendly agroforestry practices and products such as bird-friendly, shade-grown coffee are being sold through the vehicle of certified products (Pagiola and Ruthenberg 2002). These product-embedded eco-premium schemes are not area-specific, but they satisfy the five PES criteria given above. Certified timber usually fetches a higher market price, mainly because the buyers recognize the environmental service embedded in its production. Certification of forest products can be seen as the economic counterpart of sustainable forest management (SFM), i.e., it provides incentives for SFM implementation, arguably creating an overlap between PES and SFM. Hence, there need not be a fully antagonistic relationship between the two, as provocatively asked in this article's title. Consequently, it is not really necessary to discount SFM completely as a

conservation tool (Nielsen and Rice 2004) to make a positive case for PES.

Land acquisition

Land acquisitions for conservation, and similar measures such as buying out logging concessionaires, are one-off solutions aimed at eliminating environmentally problematic actors. PES normally do not involve changes in land tenure; instead, they are involved in deals negotiated with these actors. PES might thus be cheaper and more adaptive; for example, the local people need not be expelled, and the conservation buyer does not have to worry about enforcing land tenure. Conversely, setting up and running a PES scheme could over time require higher transaction costs for, e.g., negotiation, monitoring, etc. than once-and-for-all land purchases, and PES deals could be violated or cancelled. Notably, land purchases are fully direct; they have no significant posterior integrated conservation-development dimension. However, PES do have development effects: PES receipts change local livelihood dynamics through income, consumption, and labor and land markets. This can either strengthen or weaken conservation by affecting the sustainability of the PES deal itself or through unexpected environmental side effects. These indirect feedback loops triggered by PES development dynamics are sometimes forgotten by those who see PES purely as direct conservation.

THE CRITIQUE OF PAYMENTS FOR ENVIRONMENTAL SERVICES

A vivid debate about payments for environmental services (PES) has developed despite the fact that little has actually been published on the use of PES in developing countries. PES advocates stress that innovation is urgently needed because current conservation approaches provide too little value for declining funding; that PES can mobilize new, especially private-sector, funding; and that poor communities selling environmental services will improve their livelihoods (Ferraro and Kiss 2002, Pagiola et al. 2002, Nielsen and Rice 2004). Sceptics, however, fear that PES will bring back the fences by decoupling conservation from development, that asymmetric power distribution will enable powerful conservation consortia to deprive communities of their legitimate land-development aspirations, that hard-fought gains in forest

management practices will be wasted, and that commercial conservation may erode culturally rooted not-for-profit conservation values (Vogel 2002, Bulkan 2004, Karsenty 2004, Karsenty and Nasi 2004, Romero and Andrade 2004).

In the following, I will discuss the main points against PES schemes raised in the critique by Karsenty (2004), which can be seen as a good representative of this sceptical PES outlook. His paper reviews three PES mechanisms: conservation easements, tradeable development rights, and conservation concessions. Tradeable development rights are an instrument developed around a quantitative ceiling on land development that allows individual agents to buy or sell their individual allowances. Conservation easements are compensated permanent caps on individual land-development rights. Both measures are widely used in developed countries, but the latter have also been applied, e.g., in Minas Gerais, Brazil. Conservation concessions are similar to easements, but are time-bound land-development caps, often introduced to compete directly with use-related concessions, e.g. for timber, and have been used by Conservation International on a pilot scale.

All three tools potentially satisfy the five simple criteria defined in the second section, although, for tradeable development rights, the fulfillment of the criteria involving at least one provider and conditionality will depend on the specific design of the scheme. Karsenty selectively evaluates these PES tools based on three desirability criteria: environmental and economic efficacy, equity, and legitimacy. In the following sections, I will discuss each of Karsenty's criteria, drawing on both theoretical arguments and empirical results.

ARE PAYMENTS FOR ENVIRONMENTAL SERVICES ENVIRONMENTALLY AND ECONOMICALLY INEFFICIENT?

In terms of efficacy, Karsenty notes that all three types of payments for environmental services (PES) allegedly depend on market institutions and well-defined land rights, which in the agricultural frontier zones of most developing countries are illusory because " ... non-agricultural land is only exceptionally a freely transferable marketable good" (Karsenty 2004:5; Karsenty's translation from the French). Second, control systems are deficient, an argument that especially jeopardizes

tradeable development rights. Deforestation also has profound institutional roots and is sometimes promoted by existing legislation. Finally, conservation concessions in particular compensate landholders for lost revenues from primary resources when they opt against extraction or conversion, but concessions do not pay for the jobs, tax revenues, and added values lost by downstream actors.

In my view, some of these points are important, and may even impede the establishment of PES. If the land user has no *de facto* control over the land, he or she cannot act as a reliable service provider because he or she cannot effectively exclude external actors who might endanger the provision of services. However, it should be noted that PES do not require land sale rights or even fully formalized land tenure rights. For most PES, it is sufficient that the landowner has effective rights of exclusion (Wunder 2005). In Costa Rica's national PES scheme, indigenous community land is enrolled collectively; a recent legal change also made it possible for informal individual landholders without land title to participate. Collective bundling of individual smallholder contracts with internally loose boundary definitions is another way to ease this type of constraint. The share of forestland controlled by local communities and smallholders is already significant, and the amount is rapidly rising, providing for a more optimistic land tenure outlook (White and Martin 2002). However, Karsenty's caveat remains fully valid when no effective rights of exclusion exist, e.g., in open forest frontiers with active land grabbing, or when land and resource rights overlap between communities. In these contexts, which are quite common in the tropics, PES are not applicable unless an accompanying negotiation process explicitly clarifies land rights.

The governance framework is vital for any tool, such as tradeable development rights, that depends directly on command-and-control regulations. A scheme with deficient enforcement could easily lead to more environmental damage, e.g., if the environmental service buyer causes more deforestation, but the environmental service seller does not make the corresponding reduction, as required. Many PES tools need to create their own institutional governance framework, such as negotiation, monitoring, and enforcement mechanisms, which may often be challenging and costly, if not outright impossible. PES implementation may be

problematical when the indigenous culture is not familiar with the concept of a contract, or when its internal organization is incapable of enforcing collective restrictions on resource use. However, it should be noted that, under any circumstances that completely defy governance, many non-PES conservation actions might be equally hard to implement.

The value-added argument is important for activity-reducing schemes that cap current or planned land-degrading uses, whether for forest extraction or agricultural conversion. Some of the poorest of the poor, e.g., landless farm hands, timber workers, hunters, firewood and charcoal extractors, involved in these activities do lose out when they are curbed. In a planned conservation concession in Indonesia, wealthy timber barons and the national economy would also lose access to sizeable economic rents if forest conservation replaced timber harvesting (Wunder et al. 2004).

However, there are three counterarguments that should be considered. First, this lost value-added effect is not specific to PES but applies to any conservation action that effectively limits land degradation. Second, some PES are activity-enhancing rather than activity-reducing, and thus increase employment options. For instance, a scheme in Costa Rica, Nicaragua, and Colombia rewards the introduction of silvopastoral techniques on treeless pastures, implying environmental investments in the landscape (Pagiola et al. 2005). PROFAFOR (Programa Face de Forestación), a carbon-sequestration PES program in Ecuador, plants trees on degraded, extensively used lands, thus stimulating rural employment (Albán and Argüello 2004). Downstream effects thus depend on the specific labor intensity and income generation of PES land uses, compared to the activity PES replace. Among Karsenty's three instruments, tradeable development rights ensure economic efficiency gains and should thus stimulate economic activity in net terms, rather than reducing it. Third, even activity-reducing PES imply money inflows into cash-poor marginal zones and/or inflows of foreign exchange into dollar-poor national economies. The multiplier effects could more than outweigh the activity-reducing effect of land-use caps on development.

ARE PAYMENTS FOR ENVIRONMENTAL SERVICES FAIR AND EQUITABLE?

Karsenty's fairness argument has three components: lost value-added as discussed above, the right price for conservation concessions, and undesirable *rentier* features. First, the right price argument states that many forestry concessions are currently underpriced from the point of view of the client because of limited competition, corruption, etc. If the per-hectare rates for conservation concessions are equal to the going rate for timber concessions, this would mean that conservation could allegedly be obtained "on the cheap."

Is this static argument against conservation concessions really valid? If a new bidding agent is introduced into a monopolized, oligopolized, or corrupt game, competitiveness and the stumpage prices that resource owners receive are likely to rise. It is thus perfectly understandable that the representatives of the timber sector oppose the idea of opening up forestlands to conservation concessions, as observed by this author in the debate around the proposal for a new Brazilian concession law at the PNF-IMAZON-CIFOR Seminar in Belém in February 2004. PES are simply an unwelcome competitor, likely to drive up the fees that the timber industry must pay to landowners such as the State, the local communities, etc., who are thus very likely to gain from the introduction of PES. In a game theory model built around communities and timber companies in East Kalimantan, Indonesia, it was shown that offering PES for conservation concessions in competition with timber firms would raise the bargaining position of and the meagre timber fees currently being paid to local communities; this represents an economic benefit that is likely to predominate over any conservation effect of implemented PES (S. Engel and C. Palmer, *unpublished manuscript*). In other words, merely offering PES options can yield local livelihood benefits, even if no PES deals are actually cut.

Karsenty's next argument is that conservation concessions would keep local people in a poverty trap because, in exchange for PES, they would be forced to abandon local development totally or at least partially. This would reduce economic activities to a scale "... the limited extent of which can be imagined" (Karsenty 2004:7). By becoming passive nature-based *rentiers*, paid to do nothing, people would lose the dynamism, learning-by-

doing, and innovation gained from producing commodities. Local inequities and envies would emerge, and aspirations to eliminate poverty would be buried forever.

This argument rests on the combination of a misconception and a dubious assumption. The dubious assumption is that local people in a baseline scenario without conservation concessions would necessarily be in the process of developing. In Central Africa where Karsenty works extensively, the most significant threat to forest conservation, and thus the activity most likely to be replaced by conservation concessions, is subsistence itinerant farming with its static technologies and very low returns. Has there been any sign over the last few centuries that this activity will eventually produce endogenous, dynamic, learning-by-doing development effects, with the prospect of lifting people out of poverty? Also, Karsenty is right that a rent-seeking mentality can have extremely negative effects on development. Nevertheless, staying in the Central African context, this rent-seeking behavior is already very much present, because the local inhabitants are already seeking income from oil and mineral revenues on a scale that belittles any rents a conservation concession could ever produce. When these natural resource rents peak, rural people seek their share by migrating to the cities in which rents are spent and converted to the demand for goods and secondary employment. Conservation concession payments would produce much smaller but rural-based rents, thus decreasing the likelihood of massive urban migration, arguably a positive development effect.

The misconception in Karsenty's poverty-trap argument is that capping land use would also automatically mean capping development. Most rural households, especially the poorest ones, have highly diversified livelihoods, often combining many on-farm and some off-farm income sources to make ends meet. Personally, I do not know of any operating PES scheme in which the local people have fully, or even predominantly, lost their rights to land development. For instance, in the Pimampiro watershed scheme in Ecuador, PES participants gave up their rights to deforest a particular upper watershed, but they continue to cultivate land that has already been cleared, including on plots they own at lower altitudes (Echavarría et al. 2004). In the same country, the PROFAFOR program pays upland communities to set aside extensively degraded pastures for carbon-sequestering plantations,

but most communal lands continue in production (Albán and Argüello 2004). For larger national systems like the one in Costa Rica, landholders normally also enrol only a share of their farmlands in PES programs and reinvest some of their PES receipts in the remaining agricultural lands, thus making them more productive. In other words, in the world of real, existing PES recipients, there are no pure *rentiers* whatsoever in sight.

One should thus examine not only the land development constraints that affect the local people but also what happens to their wider asset endowments. PES schemes typically provide inflows of financial capital, the shortage of which often limits local production and welfare more than land availability does. In extreme cases, the side effects of the economic development enabled by reinvested PES revenues, e.g., increased numbers of livestock, may pose an environmental problem of their own.

Karsenty mentions that some buyers of environmental services have invested in the local social and physical infrastructure, generally for purposes of goodwill and public relations. In addition, even evaluations of PES that are mainly critical have acknowledged that such schemes tend to provide significant nonincome benefits such as de facto strengthened land tenure on PES-enrolled territories (natural asset consolidation), training courses provided by PES intermediaries (the expansion of human capital), and improved internal organization or the expansion of social capital (Rosa et al. 2003). In other words, in practice, PES schemes have diversified livelihoods and expanded various asset endowments. PES negotiations, e.g., between upstream and downstream watershed habitants, have also served as vehicles for wider intraregional collaboration and better governance (Hayward 2005). To focus exclusively on the potential impacts of partial land-use caps, as Karsenty does, is not only highly speculative, but also a severe misreading of the determinants of rural livelihoods.

ARE PAYMENTS FOR ENVIRONMENTAL SERVICES LEGITIMATE?

Karsenty's legitimacy argument synthesizes in a philosophical light the previously made points, so I will conclude my counterarguments along similar lines. Karsenty cites Amartya Sen, stating that "...

development can be understood as a process of expansion of the true freedoms that individuals enjoy ...," and that being "... the passive recipients of benefits allocated by one organization or other ... " would definitely not promote that purpose (Karsenty 2004:7). Payments for environmental services (PES) would thus reduce the freedom of the local inhabitants by turning them into poverty-trapped, dependent rent seekers, without true incentives to progress in life.

If conservation concessions and other PES totally obstructed any local development option, this certainly would be a relevant concern. However, as argued above, this is not the case. If cash flows were large and uncontrolled, negative social outcomes could certainly occur, such as in Papua New Guinea's *rentier* communities, which live off of huge compensation payments from mining companies (Filer et al. 2000, Mawuli and Sanida 2000). However, conservation money for local distribution has never reached these heights; the rents up for grabs are often too small, rather than too big.

Consequently, becoming passive recipients of large conservation rents is a totally unrealistic scenario for PES recipients. Obviously, PES implementation should follow certain practical safeguards with regard to payment intervals and cash or noncash remuneration. Often it will make sense to customize PES payments with respect to local preferences, and to choose intervals similar to those of the benefits that have been given up, e.g., cash vs. subsistence incomes, disbursing small but regular payments (Wunder 2005). If PES are carefully designed, they should certainly increase, not reduce, the capabilities and freedom of choice of the recipients. What secures this extra freedom is the proposition of an additional source of stable income to supplement, not dominate, local people's livelihoods, an option that is being offered to them on a voluntary basis. Negotiation may reveal that PES-proposed conservation is not economically attractive compared to profitable land-use alternatives such as oil palms, soybeans, or perennial crops, in which case the landowners will reject the PES offer (Wunder 2005). However, in the many cases in which conservation replaces marginal land uses, PES cash inflows are highly appreciated and well absorbed. Although direct cash transfers sometimes have negative side effects, in many cases they also do a great deal to alleviate poverty, such as Mozambican cash transfers to flood

victims and demobilized soldiers (Hanlon 2004), the payment of public pensions in the Brazilian Amazon, or the remittances sent by those working abroad to many developing countries.

In principle, one could certainly imagine extreme cases of PES recipients being lured into a scheme and then trapped afterward. However, PES programs almost always have exit options, and, to my knowledge, no systematic PES traps have been identified in the literature. An elaborate case study (Asquith et al. 2002) of the Noel Kempff carbon-conservation PES program in Bolivia, which was established a decade ago in three remote communities adjacent to an extended national park, found that conservation had indeed reduced their traditional forest incomes by limiting forest extractions and terminating employment with logging companies. However, the compensatory PES payments were higher than these losses, so that the net community economic gains from PES were positive (U.S. \$128,580). Two recent overview assessments of the preliminary evidence also conclude that poor PES recipients generally become better off as a result of PES participation (Grieg-Gran et al. 2005, Pagiola et al. 2005).

For those concerned about the welfare of rural wage laborers and other poor people who do not own land, it is true that they may more easily lose their jobs because of PES schemes such as conservation set-asides that restrict local activities. However, PES critics have entirely focused on PES recipients, a group that clearly tends to benefit. Why focus all the power of negative imagination on voluntary business proposals offered to cash-poor rural people? Why stubbornly prophesy negative local welfare impacts from PES when there is little evidence that this actually happens? Why slash a theoretically well-founded concept that has hardly had a chance to get its feet wet? In spite of its poor adoption, sustainable forest management has long benefited from tolerance, patience, and a willingness to experiment. If conservation approaches are to receive a badly needed impulse of innovative thinking and field testing, just a portion of that tolerance and patience would be highly welcome for PES programs. Only in this way can PES eventually find their consolidated place in the conservation toolbox.

Responses to this article can be read online at:
<http://www.ecologyandsociety.org/vol11/iss2/art23/responses/>

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LITERATURE CITED

- Albán, M., and M. Argüello.** 2004. *Un análisis de los impactos sociales y económicos de los proyectos de fijación de carbono en el Ecuador; el caso de PROFAFOR - FACE.* Mercados para Servicios Ambientales, Number 07. International Institute for Environment and Development, London, UK.
- Asquith, N., M. Vargas-Ríos, and J. Smith.** 2002. Can forest-protection carbon projects improve rural livelihoods? Analysis of the Noel Kempff Mercado Climate Action Project, Bolivia. *Mitigation and Adaptation Strategies for Global Change* 7:323-337.
- Bulkan, J.** 2004. Reply to Niesten and Rice's comment. *International Forestry Review* 6 (1):61-63.
- Chapin, M.** 2004. A challenge to conservationists. *World Watch Magazine*(November/December):17-31.
- Echavarría, M., J. Vogel, M. Albán, and F. Meneses.** 2004. *The impacts of payments for watershed services in Ecuador.* Markets for Environmental Services, No. 04. International Institute for Environment and Development, London, UK.
- Ferraro, P., and A. Kiss.** 2002. Direct payments to conserve biodiversity. *Science* 298:1718-1719.
- Ferraro, P., and R. Simpson.** 2002. The cost-effectiveness of conservation payments. *Land Economics* 78(3):339-353.

- Filer, C., D. Henton, and R. Jackson.** 2000. *Landowner compensation in Papua New Guinea's mining and petroleum sectors*. Papua New Guinea Chamber of Mines and Petroleum, Port Moresby, Papua New Guinea.
- Grieg-Gran, M.** 2000. *Fiscal incentives for biodiversity conservation: the ICMS Ecológico in Brazil*. IIED Environmental Economics Discussion Paper No. 00-01. International Institute for Environment and Development, London, UK.
- Grieg-Gran, M., I. T. Porras, and S. Wunder.** 2005. How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America. *World Development* 33 (9):1511-1527.
- Hanlon, J.** 2004. It is possible to just give money to the poor? *Development and Change* 35 (2):375-383.
- Hayward, B.** 2005. *From the mountain to the tap: How land use and water management can work for the rural poor*. Natural Resources International, Hayle, UK.
- Heyman, J., and D. Ariely.** 2004. Effort for payment: a tale of two markets. *Psychological Science* 15(11):787-793.
- Kaimowitz, D.** 2000. Forestry assistance and tropical deforestation: why the public doesn't get what it pays for. *International Forestry Review* 2 (3):225-231.
- 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(3):1-9.
- Karsenty, A., and R. Nasi.** 2004. Un commentaire sur l'article de E. Niesten et R. Rice. Les "concessions de conservation" sonnent-elles le glas de l'aménagement forestier durable? *Revue Tiers Monde* 45(177):153-162.
- Landell-Mills, N., and I. T. Porras.** 2002. *Silver bullet or fool's gold? A global review of markets for forest environmental services and their impact on the poor*. International Institute for Environment and Development, London, UK.
- Mawuli, A., and O. Sanida.** 2000. *Landowners' mineral rent-quest and use in Papua New Guinea*. National Research Institute, Boroko, Papua New Guinea.
- May, P. H., F. Veiga Neto, V. Denardin, and W. Loureiro.** 2002. Using fiscal instruments to encourage conservation: municipal responses to the "ecological" value-added tax in Paraná and Minas Gerais, Brazil. Pages 173-200 in S. Pagiola, J. Bishop, and N. Landell-Mills, editors. *Selling forest environmental services: market-based mechanisms for conservation and development*. Earthscan, London, UK.
- Molnar, A., S. Scherr, and A. Khare.** 2003. *Who conserves the world's forests? A new assessment of conservation and investment trends*. Ecoagriculture Partners, Washington, D.C., USA.
- Niesten, E., and R. Rice.** 2004. Sustainable forest management and conservation incentive agreements. *International Forestry Review* 6:56-60.
- Pagiola, S., A. Arcenas, and G. Platais.** 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and the evidence to date. *World Development* 33:(2):237-253.
- Pagiola, S., J. Bishop, and N. Landell-Mills, editors.** 2002. *Selling forest environmental services: market-based mechanisms for conservation and development*. Earthscan, London, UK.
- Pagiola, S., and I.-M. Ruthenberg.** 2002. Selling biodiversity in a coffee cup: shade-grown coffee and conservation in Mesoamerica. Pages 103-126 in S. Pagiola, J. Bishop, and N. Landell-Mills, editors. *Selling forest environmental services: market-based mechanisms for conservation and development*. Earthscan, London, UK.
- Pearce, D., F. Putz, and J. Vanclay.** 2003. Sustainable forestry in the tropics: panacea or folly? *Forest Ecology and Management* 172(2/3):229-247.
- Poore, D. P.** 2003. *Changing landscapes: the development of the International Tropical Timber Organization and its influence on tropical forest management*. Earthscan, London, UK.
- Rice, D., R. E. Gullison, and J. W. Reid.** 1997. *Can sustainable management save tropical forests?* Scientific American, New York, New York, USA.

Romero, C., and G. I. Andrade. 2004. International conservation organizations and the fate of local tropical forest conservation initiatives. *Conservation Biology* 18(2):578-580.

Rosa, H., S. Kandel, and L. Dimas. 2003. *Compensation for environmental services and rural communities*. Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente, San Salvador, El Salvador.

Salafsky, N., and E. Wollenberg. 2000. Linking livelihoods and conservation: a conceptual framework and scale for assessing the integration of human needs and biodiversity. *World Development* 28(8):1421-1438.

Simpson, R., and R. A. Sedjo. 1996. Paying for the conservation of endangered ecosystems: a comparison of direct and indirect approaches. *Environment and Development Economics* 1:241-257.

van Noordwijk, M., F. Chandler, and T. P. Tomich. 2004. *An introduction to the conceptual basis of RUPES: rewarding upland poor for environmental services*. World Agroforestry Center, Bogor, Papua New Guinea.

Vincent, J. R. 1992. The tropical timber trade and sustainable development. *Science* 256(5064):1651-1655.

Vogel, J. 2002. *Markets or metaphors? A sustainable livelihoods approach to the management of environmental services: two cases from Ecuador*. International Institute for Environment and Development, London, UK, and Ecodecisión, Quito, Ecuador.

White, A. and A. Martin. 2002. *Who owns the world's forests? Forest tenure and public forests in transition*. Center for International Environmental Law, Washington, D.C., USA.

Wunder, S. 2005. *Payments for environmental services: some nuts and bolts*. CIFOR Occasional Paper No. 42. Center for International Forestry Research, Jakarta, Indonesia.

Wunder, S., B. Campbell, R. Iwan, J. A. Sayer, and L. Wollenberg. 2004. *When donors get cold feet: the community conservation concession in Setulang (Kalimantan, Indonesia) that never happened*. Center for International Forestry Research, Bogor, Indonesia.

Wunder, S., and M. T. Vargas. 2005. *Beyond "markets"; why terminology matters*. Available online at: http://ecosystemmarketplace.com/pages/article_opinion.php?component_id=1252&component_version_id=6544&language_id=12.

APPENDIX 1. CURRENT LABELS FOR THE REMUNERATION OF ENVIRONMENTAL SERVICES

Payments for environmental services

Although this is the most generic term, it has a clear monetary association. This can result in ideological resistance (Wunder and Vargas 2005) and cause payments for environmental services (PES) to be seen as conflicting with the realistic alternative of transfer in kind.

Markets for environmental services

This term is widely used by, e.g., the Katoomba Group and the International Institute for Environment and Development. It incorporates the ideas of multiple actors, choices, and some degree of competition. Such markets do exist in some developed countries, but, except for carbon, in developing countries they seem to be far down the line. In addition to the general restrictions on market mechanisms in developing countries, competition on the supply side is often limited by the spatial specificity of eco-services. For instance, urban water users cannot simply choose different upstream neighbors, and one nature reserve cannot be substituted for another when it comes to protecting a targeted endemic species. Single-buyer (monopsonic) schemes such as water companies, breweries, electricity producers, and tourism operators are also quite common. Many existing schemes are consequently bilateral agreements between one buyer and one seller, i.e., not real markets. Markets have a number of desirable features in terms of a society's resource allocation, so in some cases they are desirable long-term goals. However, when the transaction costs of schemes are high, it might not be attractive to strive for multiple buyers and sellers. Our research in Bolivia, Vietnam, and elsewhere showed that markets can be ideologically equated with neoliberalism, creating a political alienation that can be detrimental to the adoption of PES (Wunder and Vargas 2005).

Rewards for environmental services

This terminology has overtones of entitlement and implies that justice for service providers can be secured through a transaction, i.e., that anyone who delivers a benefit should be rewarded. This label has, for example, been used by the RUPES (Rewarding the Upland Poor for the Services They Provide) program in Asia (van Noordwijk et al. 2004). However, this promise of a reward raises excessive expectations, because services that are not highly valuable and/or not threatened are unlikely to find buyers.

Compensation for environmental services

This concept has been used in a comparative framework (Rosa et al. 2003). Its associations are somewhat similar to those of rewards, but it refers to the cost of the conservation opportunity to the supplier of the service and becomes relevant only when there is a threat to that service. The implication is that anyone who does not bear direct or opportunity cost does not need to be compensated. By the same token, those who do bear costs will be compensated for them but receive nothing extra, so they will have no welfare gains from PES, which is hardly desirable.
