



Payments for biodiversity conservation in the context of weak institutions: Comparison of three programs from Cambodia[☆]

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ABSTRACT

Implementing any conservation intervention, including Payments for Ecosystem Services (PES), in the context of weak institutions is challenging. The majority of PES programs have been implemented in situations where the institutional framework and property rights are strong and target the behaviours of private landowners. By contrast, this paper compares three PES programs from a forest landscape in Cambodia, where land and resource rights are poorly defined, governance is poor, species populations are low and threats are high. The programs vary in the extent to which payments are made directly to individuals or to villages and the degree of involvement of local management institutions. The programs were evaluated against three criteria: the institutional arrangements, distribution of costs and benefits, and the conservation results observed. The most direct individual contracts had the simplest institutional arrangements, the lowest administrative costs, disbursed significant payments to individual villagers making a substantial contribution to local livelihoods, and rapidly protected globally significant species. However, this program also failed to build local management organisations or understanding of conservation goals. By contrast the programs that were managed by local organisations were slower to become established but crucially were widely understood and supported by local people, and were more institutionally effective. PES programs may therefore be more sustainable when they act to empower local institutions and reinforce intrinsic motivations.

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1. Introduction

Although the global benefits of conservation and ecosystem services are well recognised (Balmford et al., 2002; Daily, 1997; Stern, 2006), these benefits are often valued differently at the local level (Kremen et al., 2000), and there may be local costs associated with conservation. Payments for ecosystem services (PES) have been proposed as a mechanism for changing incentives for local people and Governments to more accurately reflect global benefits (Ferraro, 2001; Ferraro and Kiss, 2002; Wunder, 2007). PES have been described as voluntary transactions where a well-defined environmental service is bought by a buyer (i.e. someone who is willing to pay for it), if and only if the provider secures the provision of such service (Wunder, 2005). This view of PES is based in Coasean economics,

where transaction costs are assumed to be low and property rights clearly defined. The largest global PES programs are government programs in developed countries, such as conservation easements in the USA or the Common Agricultural Policy in Europe (Ferraro and Kiss, 2002). These programs conform to the Coasean view: land ownership or resource tenure is clearly defined, these rights are protected by law, enforcement agencies are well funded, and there are credible external monitoring systems. Within the past 10–15 years a number of government-financed PES programs have been established in developing countries with similarly well-defined institutional frameworks (Engel et al., 2008), including the Costa Rican payments for environmental services program (Pagiola 2008; Zbinden and Lee, 2004) and Mexico's payments for hydrological environmental services program (Muñoz-Piña et al., 2008). In addition, there are a growing number of user-financed programs, such as payments for watershed services between downstream users and upstream forest owners in Ecuador (Wunder and Albán, 2008) and Bolivia (Asquith et al., 2008), and contracts brokered between organisations and private landowners, communities or governments (Milne and Niesen, 2009). In the vast majority of cases, but not all, these PES programs have been established in situations where property rights

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are clearly defined, although other aspects of the institutional framework may be weaker.

Wunder (2007) suggested that effective implementation of PES may be considerably more difficult where institutions are weak. In many countries land ownership and resource tenure are unclear, with land and resources technically still owned and managed by the state (Agrawal et al., 2008); natural resources have high rents thereby attracting resource grabs and corruption; powerful individuals can often act with impunity; and government agencies have poor capacity and may receive little political support. These are also the conditions known to lead to high rates of habitat destruction and over-exploitation of natural resources (Chomitz et al., 2007; Geist and Lambin, 2003). The high level of threat to species and habitats means that some of these areas are of the highest urgency for conservation. Institutional failure is problematic for implementation of a PES program to protect biodiversity for a number of reasons: poorly defined property rights makes it challenging to determine who to pay, contracts cannot be legally enforced, elite capture is common, and enforcement of laws (e.g. prohibiting land clearance) may be weak. However, institutional failure makes it challenging for any conservation intervention to succeed (Barrett et al., 2001), hence a critical area for research is to understand which approach is most effective given these circumstances.

Muradian et al. (2010-this issue) have proposed a continuum of types of PES as an alternative to Wunder's and Ferraro's original descriptions, ranging from direct payments that conform to the Coase theorem, to collective action problems where property rights may be poorly defined and benefit distribution is unclear. This paper compares three PES programs for biodiversity conservation that were implemented within a weak institutional setting in Cambodia, for wildlife populations and their habitats that were either under open-access or common property regimes. The three programs vary in the extent to which payments were made at the individual or collective level, ranging from direct payments to individuals for bird nest protection; a hybrid program that combines agri-environment payments to farmers with local management by a village authority; and a community-based tourism enterprise based on collective action. All were designed in response to a high level of threat where conservation opportunity costs, at least for conversion of forest lands, were also moderately high. The comparison focuses on the institutional effectiveness of the programs: the institutional arrangements, the distribution of costs and benefits, and the conservation results observed. A full evaluation of program impacts on wildlife or habitats (c.f. Ferraro and Pattanayak, 2006) is beyond the scope of this paper; the programs were initiated only recently and as yet insufficient data exist for comparison of implementation sites with controls.

2. Description of the PES Programs

2.1. Background

Cambodia lies within the Indo–Burma hotspot (Myers et al., 2000) and contains four of the Global 200 Ecoregions (Olson and Dinerstein, 1998). The country is of global conservation importance due to the largest remaining examples of habitats that previously spread across much of Indochina and Thailand, which still contain nearly intact species assemblages, albeit at heavily reduced densities (Loucks et al., 2009). These include the deciduous dipterocarp forests that once supported the greatest aggregation of large mammals and waterbirds outside the African savannas (Wharton, 1966). Many of these species are listed on the IUCN (International Conservation Union) Red List (WCS, 2009), including 45 mammals (7 Critically Endangered or Endangered), 46 birds (12 Critically Endangered or Endangered, including the Giant and White-shouldered Ibises, *Pseudibis gigantea* and *P. davisonii*) and 17 reptiles (9 Critically Endangered or Endangered). Conservation strategies are therefore frequently focused

on remnant populations of highly threatened species where there is little room for error. Hunting, habitat destruction and human disturbance—both by residents and immigrants—are the major and urgent threats to biodiversity conservation. National annual deforestation rates were 0.7% during 1973–1997 (DFW, 1998) and 0.5% during 2000–2005 (Forestry Administration, 2008), despite the fact that since 2002 most forest clearance has been illegal. Based on these statistics Cambodia has one of the highest rates of land-use change globally. Deforestation is driven by a variety of processes, including large-scale development projects such as agro-industrial concessions, improved road access, population growth, and smallholder encroachment both by landless in-migrants and established communities (Forestry Administration, 2009). Encroachment is attractive to local people because land is an easily available secure form of wealth which is viewed as an open-access resource and enforcement of laws is rare. Many plots are claimed but not cleared, forcing new farmers to move further into the forest (An, 2008).

Initial conservation strategies in Cambodia focused on protected area (PA) management. The PAs were established from 1993 and have a small number of poorly paid staff with limited capacity or infrastructure, i.e. they are 'paper parks' (Wilkie et al., 2001). PAs usually contain existing human settlements with unclear property rights, as is often observed in other countries (Bruner et al., 2001). The Cambodian PA system was also declared based on relatively little information and consequently excludes many areas of importance for biodiversity conservation, again not an uncommon situation (Brooks et al., 2004), emphasising the importance of working both inside and outside PAs. Under these conditions PA management is not sufficient to achieve biodiversity conservation goals.

The Ministry of Environment and Ministry of Agriculture, Forestry and Fisheries, with the support of the Wildlife Conservation Society (WCS), an international Non-Governmental Organisation (NGO), instituted a series of pilot PES programs as a complement to protected area management in 2002. This paper compares three different programs which were initiated in the same villages within two PAs in the Northern Plains landscape; the 4025 km² Kulen Promtep Wildlife Sanctuary, which was established in 1993 and is managed by the Ministry of Environment, and the 1900 km² Preah Vihear Protected Forest, declared in 2002 and managed by the Forestry Administration of the Ministry of Agriculture, Forestry and Fisheries. Both PAs contain or are used by long-established communities that practice either lowland rain-fed paddy rice cultivation or upland shifting cultivation for rice and other crops, collection of forest products and fishing (McKenney and Prom, 2002; McKenney et al., 2004). Forest resources are a crucial livelihood safety net, and provide cash income particularly from the sale of liquid resins from dipterocarp trees (McKenney and Prom, 2002; McKenney et al., 2004).

For the two village-managed programs, payments were initiated following an initial two-year participatory land-use planning process, which established forest management zones and clarified ownership over land and natural resources (Rock, 2001). The land-use plan is approved by the relevant Government authorities and is managed by an elected village committee of nine people. It specifically sets out which areas can be used for agriculture and residential land, including expansion areas that are currently forest. The village organisations and approved land-use plans provided the necessary institutional foundation for subsequent initiation of the PES programs.

2.2. Community-based Ecotourism

The community-based ecotourism program was initiated in 2004 in the village of Tmatboey in Kulen Promtep Wildlife Sanctuary, following initial awareness-raising in 2002–2003, and has since been replicated in other villages in the landscape. We focus here on Tmatboey, although the program operates in a similar manner at the other village sites. Tmatboey is a small village of 236 families, located in a large mosaic of

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