

# Identifying Opportunities and Challenges for using PES to manage resources:

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The benefits humankind acquires through the masses of natural resources and processes of nature are referred to as ecosystem services (Sikor, 2013). Most academic literature focuses on identifying and quantifying these ecosystem services and its beneficial link with humankind's well-being (Sharachchandra, 2013). In a world governed by a global economic system that relies on constant growth in an infinite world, ecological economists advanced the theory of quantifying nature "*as a fixed stock capital that can sustain limited flow of ecosystems service*" (Norgaard, 2010, p1210). Using such economic market-system metaphors is often cited as the best way to gain the attention of "*a public deeply embedded in a global economy and distant from natural processes*" (Norgaard, 2010, p1210). Payment for ecosystem services programmes were conceived from the notion that the language of economics (Fuentes-George, 2013) and market mechanisms were an effective way to advance the cause of conservationist and environmentalists. A price based instrument (Fisher, 2008) the PES objective is to "*harness market forces to obtain more efficient environmental outcomes*" (Bulte, 2008, p.245).

However, a review of the literature draws attention to criticism of the theory itself and its implementation. Critical geographers describe PES as yet another example of the encroachment of the neoliberal agenda into environmental policies and the continued commodification of nature (Gomez-Baggethun & Ruiz Perez, 2011, Kosoy & Corbera, 2010, Fuentes-George, 2013). While others draw attention to the conflicting objectives or promotion of PES; for instance its use in achieving ecological and development goals simultaneously and the conflicts that can sometimes ensure as a result. Consequently, using examples this essay will identify the opportunities and challenges that exist in using PES to manage resources.

## *Defining Payment for Ecosystem Services (PES):*

Payment for ecosystems service has no definitive definition. Simplistic definitions describe it as a tool to promote sustainable conservation and management of tropical forests (Richards & Jenkins, 2007), as articulated through the REDD+ initiative.

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Others see it as a tool to both protect ecosystems and alleviate poverty in ecosystem rich environments (Kronenberg & Hubacek, 2013). Wunder's (2005) definition is most cited whereby voluntary transactions between a seller of environmental services and buyer of such services takes place, the condition being the seller maintains or improves the quality of the environmental service for fee (McElwee, 2012, Wunder, 2005).

### *Primary Function of PES:*

Ultimately, the purpose of PES is to “*translate external, non-market values of the environment into real financial incentives for local actors to provide such services*” (Engel et al, 2008, p.664). Consequently, different practitioners have different understandings of the objectives for PES. Ecologists understand PES as a tool to financially support or incentivise conservation of ecosystems; Economists understand it to be a tool to bring about efficiencies in ecosystem services and to internalise the externality; Others understand it as a prospective means to encourage development and alleviate poverty in resource rich regions (McElwee, 2012). Despite similarities, different perspectives about the end goal of PES have only added to the uncertainties that surround its implementation.

Additionally, PES schemes can take on three different forms; (1) PES as pollution control, Vittel, the bottle water company paying farmers near the spring to convert to organic production thereby reducing nitrates in the water; (2) PES programs that incentivise conservation of forests (Costa Rica), mangroves (Mexico) and particular species (Kenya); (3) PES programs that pay for the upkeep or improvement of environmental public goods such as REDD+, the CDM programme that pay for the protection or afforestation of tropical regions to sequester CO<sub>2</sub> and/or the protection/improvement of upland watersheds (Bulte et al, 2008). PES schemes are further differentiated by its implementation as a land diversion (divert agriculture production) or working land program (different forms of agriculture production, Bulte et al, 2008). Subsequently, PES ‘market led transactions’ now span four ecosystem services such as landscape aesthetics, watershed services, biodiversity conservation and carbon sequestration (Milder et al, 2010, Sharachandra et al, 2013).

### *Approaches to PES:*

PES programs have to date taken two approaches; (1) public or state intervention plays the leading role in PES implementation through taxes or subsidies to protect ecosystems (Gomes-Baggethun & Ruiz Perez, 2011) and (2) an approach based on the

Coasean economics concept favouring “*policy options based on market or quasi-market bargaining, underpinned by the allocation of property rights, to achieve socially optimal levels of environmental externalities*” (Muradian et al, 2010, p.1203 citing Turner et al, 1994). Costa Rica was the first state to implement PES programs based on the first approach, subsidising farmers and land-owners to take part in ecosystem services protection (Gomez-Baggethun & Ruiz Perez, 2011).

Current debates on PES often refer to the opportunities its presents for social co-benefits (Brown et al, 2009) in addition to its main goal of ecological conservation. Conversely, debates surround the challenges associated with PES programs to manage resource in addition to aiding development. Concerns include the ability of PES to efficiently manage resources and alleviate poverty under conditions of unsure land tenure, volatility and institutional compositional weaknesses (Kronenberg & Hubacek, 2013).

### *Opportunities & challenges in using PES to manage resources:*

An example that illustrates these concerns is a PES scheme implemented in a forest landscape in Cambodia. Three different PES schemes were initiated in Cambodia with variations in payment methods and involvement, with one being a direct payment to an individual, the other two being filtered down and out through community organisations (Clements et al, 2010). All three schemes distributed approximately the same income levels to individuals; however institutional compositions and administrative costs were dissimilar (Clements et al, 2010). The direct payment PES scheme was set-up to help protect endangered bird species, by incentivising individuals to protect bird nests. The other two comprised one ecotourism PES scheme that incentivised communities to protect local habitats and species whilst the other was an agri-environment scheme that involved land-diversion methods and a working-land approach. These two involved significant start-up costs compared to the bird nest PES scheme and significant investment in local institutions (Clements et al, 2010).

On the ecological front, the bird nest PES scheme initiated in 2002 has seen increased numbers of threatened and near threatened bird species, with 416 nests ‘protected’ between 2007-2008 and an increase of 36% each year in the number of nests protected and monitored (Clements et al, 2010). Such figures exemplify the opportunities afford in species conservation through PES. However, two concerns expressed by critics did arise, that of land-

tenure and volatility associated with perspectives. Individuals who took part in the bird nest PES spoke of issues with stopping others from hunting for these birds given they did not have tenure over breeding grounds (Clements et al, 2010). In addition and in comparison to the other two PES schemes, no local institution was set-up to monitor or aid in the protection of bird nests which limited the opportunity to foster better community cohesiveness. As a consequence “*villagers in Antil were not sufficiently motivated to protect this species, despite high levels of payments..partly because..payments were widely perceived as being unfair, because only a few individuals benefited and no local institution existed to mediate conflicts*” (Clements et al, 2010, p1289). This example draws attention to Wunder (2005) and Zilberman et al (2008) analysis that PES schemes will struggle to meet both poverty reduction and improve environmental conservation (Bulte et al, 2008); highlighting the challenges that exist in using PES as an effective means of resources management.

In contrast however, the other two PES schemes resulted in better longer-term self-funding sustainable programs. However, the cost of investing in local institutions resulted in a reduced payment (Clements et al, 2010). Nevertheless, through the ecotourism and agri-environment PES schemes, the whole community was incentivised to protect both the habitat and related species. Both communities refused in-migrants which stalled deforestation and Tmatboey witnessed a marked increase in wildlife numbers; “*for example the population of Whithshouldered Ibis, one of the rarest birds in the world...has increased from one nest and a single pair in 2002 to at least six nests and 23 individuals in August 2008*” (Clements et al, 2010, p1286). Effective implementation of PES schemes are hindered by weak institutions (Wunder, 2008), however this case emphasizes the ascertain made by Bulte et al (2008) that PES can achieve twin objectives depending on program design that take account of context specific conditions.

However, some researchers argue that such varying alternatives to targeting PES schemes afford a trade-off opportunity to policy makers and/or purchasers of ecosystems services (Bulte et al, 2008). For instance if the purchaser is the state, political economic concerns may overshadow environmental concerns resulting in a PES schemes whose over-arching goal is to alleviate poverty, not environmental degradation (Bulte et al, 2008). For example, the WfW PES scheme in South Africa, has more in common with a public works scheme focusing on creating employment and training for “the unemployed and historically disadvantaged individuals” (Ferraro, 2009, p.531).

Furthermore, other debates surround the appropriateness and inherent contradictions of integrating of ecosystems services into capitalism neoliberal market systems (Kronenberg & Hubacek, 2013, Fuentes-George, 2013). Natural systems through some PES schemes are merely reduced to another commodity, that is to say “*the transformation of goods and services into objects meant for trading*” (Kosoy & Corbera, 2010, p1228) and the “*modification of relationships, formerly unaffected by commerce, into commercial relationships*” (Gomez-Baggethun & Ruiz Perez, 2011, p7). PES schemes such as the carbon forestry projects in Mexico and Costa Rica have undoubtedly aided in the conservation and as in the case of Costa Rica further expanded rainforests. The opportunities presented by utilizing PES for resource management is evident in Costa Rica where since 1997 “*nearly one million hectares of forest in Costa Rica have been part of the PES programme at one time or another, and forest cover has now returned to over 50 per cent of the country’s land area, from a low of just 20 per cent in the 1980s*” (Porrás et al, 2013).

However, the challenges and concerns as regards PES expressed by critical geographers are also evident in these programmes. For instance in the case of Mexico’s PES scheme farmers payments are determined by the expected amount of carbon that will be sequestered over the lifetime of the contract with the amount payable determined by the willingness of investors to pay for carbon (Kosoy & Corbera, 2010). Since payments are determined by the estimated amount of carbon that will be sequestered, the planting of fast-growing tree species or species that harvest more carbon over and above the planting of native species has already been documented in Mexico and Ecuador carbon forestry PES schemes (Kosoy & Corbera, 2010). Utilising PES to manage resources in this way has led to concerns that tree plantations that sequester more carbon and are therefore more lucrative on the market will out-pace the restoration and/or conservation of tropical and sub-tropical species (Hunt, 2008).

Moreover, initiatives such as Reducing Emissions from Deforestation and forest Degradation, REDD+, which on the one hand helps alleviate the funding problems associated with forest conservation; at the same time renders this conservation susceptible to market fluctuations and speculation (Phelps et al, 2010). For instance an over-supply of REDD+ carbon credits would force the price payable to conservationist down, leaving such PES schemes open to risks and price volatility (Phelps et at, 2010).

*Deliberating the opportunities & challenges in using PES for resource management:*

This essay has offered a brief discussion of the opportunities and challenges associated with using PES as a tool for resource management. The prospects and contestations exemplified above has resulted in questions about whether PES is the most effective tool of resource management and is perhaps “*being prompted too heavily as a solution to what are very disparate conservation problems*” (McElwee, 2012, p313). Risks and benefits are evident in the ecosystem services approach (Redford & Adams, 2009). Given the popularity and attention given to PES schemes by organisation such as the World Bank, Global environmental Facility and ENGO’s, perhaps the most effective approach to take is that advocated by Phelps et al (2010); “*We need to acknowledge the associated risks in order to better prepare conservationists, governments, local land-owners, and forest users to deal with the incoming, but by no means reliable or permanent, investments in forests*” (p.92).

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