



Towards market- or command-based governance? The evolution of payments for environmental service schemes in Andean and Mesoamerican countries

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ABSTRACT

Payments for environmental services (PES) are a hybrid mode of governance, situated between markets and hierarchies. However, market structure has been used as a theoretical model to inform PES design. Based on 16 cases from Andean and Mesoamerican countries, we analyze whether PES schemes have, since their implementation, gradually incorporated more market characteristics or whether and to what extent these schemes have changed towards more reliance on command-based mechanisms. The schemes analyzed cover a range of governance mechanisms, from small markets to almost complete hierarchical organization. Our results suggest that over time an increasing number of the schemes have incorporated characteristics of a hierarchy to organize ecosystem service users. Mostly through the use of taxes/tariffs and by governments acting directly on users' behalf. Contractual agreements, with payment levels either bilaterally negotiated or set by intermediaries, and providers being mainly individual and communal landholders, remain at the core of most schemes studied. Intermediaries are important actors in almost all schemes analyzed. They organize and/or represent users, and are usually national or local governments. The evolution of the schemes analyzed suggests that there is no convergence towards a market for ecosystem services, but an increasing complexity in the schemes' design.

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1. Introduction

One way to provide incentives for the provision of ecosystem services (ES), is through the establishment of incentive based policy instruments, with so-called 'Payment for Environmental Services' (PES) schemes¹ at its nexus (Adhikari and Agrawal, 2013). PES aim at influencing behavior changes by providing (monetary) incentives instead of commanding it through direct regulation (Jack et al., 2008). PES are thus seen as different (even opposed) to

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¹ We use the terms ecosystem services and environmental services interchangeably. We exclude provisioning services such as agricultural products or timber, which are not the focus of PES.

more traditional policies such as government directives that aim to promote/enforce conservation (Adhikari and Agrawal, 2013; Kolinjivadi and Sunderland, 2012). While some scholars still refer to the mechanism of market governance when explaining how PES schemes work (Alvarado-Quesada et al., 2014; Lurie et al., 2013; To et al., 2012), literature increasingly emphasizes that PES are not 'real' markets, but rather hybrids that lie between markets and command-based mechanisms (hierarchies) (Muradian and Rival, 2012; Pirard and Lapeyre, 2014; Vatn, 2015; Wunder, 2008). However, markets are still used as the theoretical governance model by many institutes, government agencies and multilateral organizations to inform on the functioning of PES (e.g. FAO, 2011; UNEP, 2008). As Shapiro-Garza (2013, p. 6) states, "the 'pure' market mechanism remains the ideal type amongst the primary promoters and funders of PES in the global south". Thus, for the latter, while initially PES could rely on state intervention, in order to be sustainable in the long run PES should evolve towards a 'real' market mechanism.

Although an increasing number of papers present a comparative

Table 1

Overview of the 16 study cases per country.

Country	Case name	ES considered in the scheme	Starting year	Name given by implementers to mechanism used
Bolivia	Noel Kempff Climate Action Project (NK-CAP) ^{a,b}	Carbon sequestration	1997	Carbon credits
Colombia	RWA Los Negros	Watershed services	2003	Reciprocal Watershed Agreement (RWA)
	Water fund for life and sustainability	Watershed services	2009	Water fund and compensation for ecosystem services (CES)
Costa Rica	ESPH –PROCUENCAS	Watershed services	2002	PES
	PES La Esperanza		1997	PES
	PSA	Carbon sequestration; watershed services; biodiversity and provision of scenic beauty	1997	PES
Ecuador	FONAG	Watershed Services	2000	Water fund
	FORAGUA		2009	Water fund and CES
	PES Pimampiro		2001	PES
	PROFAFOR ^b	Carbon sequestration	1993	Carbon credits
	Socio Bosque Program	Biodiversity, carbon sequestration and watershed services	2008	Conservation incentive
Mexico	Plan Vivo Scolec Té	Carbon sequestration	1997	Carbon credits and PES
	PRONAFOR	Watershed services and biodiversity	2003	PES
Nicaragua	PES San Pedro del Norte	Watershed services	2000	PES
	PHES Gil Gonzalez		2008	PES
Peru	Alto Mayo Water Initiative	Watershed services	2009	Remuneration for Hydrological Ecosystem Services (RHES), CES and RWA

^a Now in transformation stage to participate in the COMSERBO program (see Bryner et al., 2012).^b No longer selling carbon credits.

analysis of PES (Grima et al., 2016; Hejnowicz et al., 2014; Martin-Ortega et al., 2013; Pirard and Lapeyre, 2014; Schomers and Matzdorf, 2013), often the distinction between initial and subsequent governance mechanism of schemes is not clear. To date, only limited information exists on how PES schemes have evolved over time (Le Coq et al., 2013; McAfee and Shapiro, 2010; Pirard, 2012). To contribute to filling this gap, we assess the evolution of PES governance structures over time.

Following Vatn (2015), we analyze PES within a range of possible governance systems between the opposing ends markets and hierarchies (command-based). To assess the changes in PES design, we conduct a comparative qualitative study of 16 schemes in the Andean and Mesoamerican region of Latin America, known for its great variety of PES schemes (Balvanera et al., 2012; Schomers and Matzdorf, 2013). Since these schemes were initiated between 1997 and 2009 we are able to focus on the evolution from their initial design to their current status.

In the following section we introduce the different schemes analyzed and present the framework and methodology used (Section 3). Section 4 presents the results of changes observed in the schemes, which are then discussed in Section 5. We close the paper with some concluding remarks in Section 6.

2. Case studies and data collection

Our study focuses on the Andean and Mesoamerican region including PES schemes in Bolivia, Colombia, Costa Rica, Ecuador, Mexico, Nicaragua, and Peru. The schemes analyzed in this paper cover a range of ES, including watershed services, carbon sequestration, preservation of biodiversity, and landscape beauty (Table 1). With the exception of two (NK-CAP and PROFAFOR²), all schemes are still operational today.

The data for our analysis were obtained in two steps. For the selection of suitable case studies we first identified the Andean

and Mesoamerican countries where specific PES have been implemented through an 'ISI Web of Knowledge' search (see Supplementary Table A.1). The cases selected were not restricted to a narrow understanding of PES schemes as defined by Wunder (2005),³ but similar to Martin-Ortega et al. (2013) we included schemes that were not explicitly designed or planned as PES schemes, but that were relabeled or interpreted as such in the literature⁴. Only schemes for which sufficient information on their initial design characteristics was available, were included in this study.

We then contacted 29 persons involved in the implementation and management of our set of 16 case studies. 17 of these case study experts replied and were surveyed by e-mail between April and August 2014. Their names and contact details were initially obtained through the websites of the respective schemes or the intermediary (NGO, government agency) funding and/or managing the scheme. The questionnaire included qualitative questions concerning the schemes' original and current governance mechanisms, based on a series of characteristics of markets and hierarchies (see Section 3). The experts were asked to verify information obtained through the literature review (Appendix A) and to clearly point out initial and current governance of the schemes.

3. Analysis framework and evaluation criteria

We defined characteristics of markets and hierarchies that would allow us to characterize the hybrid governance structures of the schemes analyzed and how these have evolved over time. Additionally, we categorized schemes according to group size, ES, and the name used by the schemes' implementers to analyze

³ Although alternative definitions exists, this definition is the most widely used in both literature and policy and project documents (Pirard, 2012; Wunder, 2015).

⁴ For example, Martin-Ortega et al. (2013) mention FONAG, which has been named a PES scheme (Goldman-Benner et al., 2012; Porras et al., 2008), PES-like (Southgate and Wunder, 2009), and not a PES (Wunder, 2012), while FONAG does not describe itself as a PES scheme (FONAG, 2014). Conversely, the Municipality of San Pedro del Norte fits Wunder's definition in the municipal ordinance regulating the local PES scheme (Municipality of San Pedro del Norte, 2011).

² We use the name of the company 'PROFAFOR' to refer to the carbon scheme that was analyzed as a PES by Wunder and Alban (2008). This carbon scheme no longer sells carbon credits, while the tree plantations continue to be managed, and the company 'PROFAFOR S.A.' continues to operate.

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