PES, Peasants and Power in Andean Watersheds Jean Carlo Rodríguez de Francisco 2013

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Power relations and payment for environmental services projects in Colombia and Ecuador

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PES, Peasants and Power in Andean Watersheds

Power relations and payment for environmental services projects in Colombia and Ecuador

Jean Carlo Rodríguez de Francisco

Thesis

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Abbreviations and Acronyms

Asocaña	Asociación de Cultivadores de Caña de Azúcar de Colombia
Asurnima	Asociación de Usuarios de Aguas del Rio Nima, Colombia
AVSF-CICDA	Agronomes et Vétérinaires Sans Frontières
Camaren	Consorcio de Capacitación en el Manejo de los Recursos Naturales, Ecuador
CARE	Cooperative for Assistance and Relief Everywhere
CBC	Centro Bartolomé de las Casas, Peru
Cederena	Corporación para el Desarrollo de los Recursos Naturales, Ecuador
CESA	Central Ecuatoriana de Servicios Agrícolas
CI	Conservation International
CIAT	International Centre for Tropical Agriculture
Cinara	Instituto de Investigación y Desarrollo en Abastecimiento de Agua, Saneamiento Ambiental y Conservación del Recurso Hídrico, Colombia
CNRH	Consejo Nacional de Recursos Hídricos, Ecuador
CVC	Corporación Autónoma Regional del Valle del Cauca, Colombia
DFC	Desarrollo Forestal Comunitario, Ecuador
DNP	Departamento Nacional de Planeación, Colombia
EPSA	Empresa de Energía del Pacífico, Colombia

ES	Environmental Service(s)
FAO	Food and Agriculture Organization of the United Nations
FICI	Federación Indígena y Campesina de Imbabura, Ecuador
FAA	Fundación Arboles y Arrecifes, Colombia
GEF	Global Environmental Facility
IEP	Instituto de Estudios Peruanos
IIED	International Institute for Environment and Development
IUCN	International Union for Conservation of Nature
JH	Justicia Hídrica/ Water Justice Research Alliance
MAE	Ministry of Environment, Ecuador
MEA	Millennium Ecosystem Assessment
MinAmbiente	Ministry of Environment, Colombia
NGO	Non-governmental Organisation
PES	Payment for Environmental Services
Proderena	Proyecto de Apoyo para la Descentralización de los Recursos Naturales, Ecuador
Pronima	Comité de Protección del Río Nima, Colombia
Sina	National Environmental System, Colombia
Sinap	National System of Protected Areas, Colombia
Sipae	Sistema de Investigación de la Problematica Agraria del Ecuador
SKKC	Smurfit Kappa Cartón de Colombia

TNC	The Nature Conservancy
TEEB	The Economics of Ecosystems and Biodiversity Programme
UAESPNN	Unidad Administrativa Especial de Parques Nacionales Naturales , National Park Service, Colombia.
Ucicma	Unión de Comunidades Indígenas y Campesinas de Mariano Acosta, Ecuador
UNEP	United Nations Environment Programme
WRM	Water Resources Management Group, Wageningen University, The Netherlands
WUA	Water Users Association
WWF	World-Wide Fund For Nature

Foreword

Far from being a general criticism on conservation, which I consider a very relevant aspect in a world where the environmental crisis is reflected in our own way of living, this thesis deals with the hidden or subsurface political aspects of conservation as linked to watershed management. This includes the power dynamics within scientific framing and prioritisation of environmental problems, the ways put forward to solve these problems, and the social implications that these induce or reinforce.

My great interest in conservation issues has led me, in my professional trajectory, to work both with the theme of Payment for Environmental Services (PES) and with many professionals concerned with conservation issues and the forging of a more equal society. Initially, for my first bachelor internship as an 'Economist in formation', I had the opportunity to collaborate with a local NGO (Fundación Arboles y Arrecifes) in the elaboration of a financial plan for the setting up and operation of the Turtle and Iguana Research Station in the islands of Providencia and Santa Catalina, in the Colombian Caribbean. In my second internship, I worked on the elaboration of a protocol for including green accounting into the Colombian Gross Domestic Product at the Departamento Nacional de Planeación (National Planning Department). Thereafter, for my bachelor thesis, I focused on the economic valuation of the Tayrona National Park (Rodríguez-de-Francisco, 2003).

After this, from 2002 until 2006, I worked as an Economist with a group of highly motivated researchers at the Humboldt Research Institute in Colombia. Here I was working in several projects related to setting up incentives for conservation, which included the design and implementation of a PES scheme in the municipality of Villa de Leyva in the department of Boyacá (a case not included in this thesis), and I was linked to on-going research into a number of PES schemes in various regions of Colombia.

Soon after, I came to Wageningen to do my Master studies in Environmental Sciences with a major specialisation in environmental economics and a minor in environmental policy. For my master thesis (Rodríguez-de-Francisco, 2008), I had the opportunity to do research in Ethiopia, where I focused on analysing the pre-conditions for setting up a PES scheme in the Central Rift Valley. Here I was confronted with the situation where the actors that were best positioned to contribute to the

conservation of water sources in this area, a Dutch flower company, were also causing severe seasonal water shortages for drinking water downstream to the people of the village of Bulbula. This made me reflect on similar situations that I had encountered in Colombia and that from my educational background I was unable, or did not know how, to include in my research analysis. Still, I was always conscious of the fact that the social sphere was a determinant in the success of all conservation interventions I had been affiliated with in the past. For example, I was aware of the great inequalities that exist in rural Colombia, but strangely enough, I was not really able to link this to my work in projects involving natural resource management. The great differences of one study area in comparison to another, in terms of ecological, historical, economic and socio-cultural conditions, made me think about the implications of power in relation to the development of PES schemes in each case, and how several 'on-the-ground' socio-economic dynamics (such as social differentiation) are or can be strengthened or weakened by the implementation of PES.

This is how via football practice, the same way in which many good things have come to my life, I had the opportunity to become acquainted with researchers working on issues related to political ecology at Wageningen University. My curiosity drove me to dig deeper into this field of science, which opened in front of my eyes through the work of Bauer (1997, 1998), a geographer analysing, from a political ecology perspective, the environmental and social impacts of economic instruments in natural resource management. This led me to apply for a scholarship in a call for PhD proposals related to the network around the Justicia Hídrica Alliance and with the Water Resources Management Group – formerly known as the Irrigation Water Engineering Group – of Wageningen University. This was how, in 2009, I wrote the proposal for analysing power in PES, a research subject starting to be explored by that time, under the supervision of Rutgerd Boelens (Wageningen University), Jessica Budds (University of East Anglia) and Linden Vincent (Wageningen University).

This thesis is also an effort, in line with the objectives of the Water Justice Alliance, to contribute to greater water justice in the form of democratic water policies and sustainable development practices that support a more equitable distribution of water. Complementarily, it seeks to provide evidence to answer the critical questions of scholars and social movement

leaders pertaining to the Andean delegations of this Alliance (especially Peru, Ecuador and Colombia). They asked for a grounded research engagement to show the fundaments, practices and impacts of PES scheme development in their countries (see, for example, Isch and Gentes, 2006). Such regional interest originated from the fact that, in a very short period, PES scheme implementation boomed in their countries and was quickly adopted in national policy and legislation but without any evidence of positive impact for the targeted marginalised communities, and without any public debate about the desirability and consequences of adopting this new policy model.

Acknowledgements

This thesis is the result of four years of hard work. However, I did not do this thesis alone; many persons contributed to it in direct and indirect ways. To address all of you I will just start from when I started my fieldwork and continue chronologically, though not in order of importance. I owe this thesis to all of you and to the Pachamama who kept me safe and strong.

In Ecuador, a country that I thought I knew until I really went there, I would like to express my gratitude to Rolando Iles and his family, for making me feel welcome and supported in discovering Pimampiro and its surroundings. Also many thanks to Doña Aidita for letting me sleep in the warmness of her kitchen, so close to the volcano 'taita' Cayambe. My gratefulness is also extended to the people of Nueva America and to the people of the Asociación Floresta Guagala for letting me do research with them and for showing me what taking part in Mingas meant, celebrating the Inti Raimi and helping me understand empirically a new dimension of conservation. Likewise, I would like to thank the Lemarie-Yepes family for their hospitality and almost adopting me when I happened to be in Quito. Carolina, Consuelo, Margarita and Ariana, thanks for treating me like a member of the family (Es uchuva no uvilla!). My memory of Ibarra comes together with the help that the great people of AVSF-CICDA gave me in terms of guidance, information and all the nice invitations I received. Many thanks to Rosita Murillo and her family, to Andrea Tafur and her family and to Sylvane Bleuze. Also in Quito, I appreciate the 'line to land' that Edgar Isch, Aline Arroyo, Antonio Gaybor (Camaren), Francisco Roman (CESA), Francisco Hidalgo, Paola Roman and Marcela Alvarado (Sipae) provided me during our talks, discussions and collaborations.

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that clearly enriched my research. I would also like to thank Adam Ranking (Fundaexpresión), Gustavo Saavedra from La Reserva Natural Campesina 'Los Maklenkes' and most specially Laura Velasco and the Velasco-Bermudez family, from whom I learned very valuable lessons of life and tenacity. Laura you are so far one of the most intelligent persons I have ever met in my life (who needs a PhD after all?). I would also like to thank my ex-colleagues from the Humboldt Research Institute for giving me the opportunity to make a critical self-reflection on our conservation quest. Inés Cavelier, Felipe Murtinho (El que me mostro esta vacante), Carlos Andrés Borda, Ana María Vargas and María Claudia Fandiño. I would also like to thank Yvan Lopez and the Lopez-Gonzales family for receiving me in Lima when I went to present my research in a workshop organised by Jessica Budds. In the same way, my gratitude goes to Rogier Floors who received me in Copenhagen when I took part in a course there.

This thesis would never come to be without the support of my co-promoters and promotor. Rutgerd Boelens, many thanks for giving me the opportunity to do research with you, but also for providing me with the scientific and empirical grounds for being critical and socially aware. I am truly thankful for your guidance, support and patience during these years, like you I do not want to be normal. Jessica Budds, many thanks for giving me a second breath when I was tired of climbing the mountain. I really treasure all the discussion we had, they were really jet-turbines for me, and helped me see new things and discover the many ways of political ecology. Linden Vincent, many thanks for the careful revision of my compiled work and for your support.

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And now, with laws and miserly payments for conservation, they want to control the land and forest that we in former days simply used (smallholder Chamachán PES, 2011).

Chapter 1. General Introduction

Money, as presented in this illustration from the Colombian government promoting payment for environmental services, is the flying carpet that connects people and environment.

Source: Acosta, 2006.

> The peasants were driven further and further up …, and not only the servants but also the free communities. Good irrigated land; beautiful, fertile valleys and gentle mountain slopes along the ancient valleys; there, where the Incas built terrace gardens; the good land was occupied by the masters. Communities got dry, barren land and, as the Indians tamed this wild land, irrigated it or cultivated it, timing their crops to the variable rainfall; the hacienda owners pushed them even higher, and spread their own plantation boundaries, just the way they liked it (Arguedas, 1980:32-33).

1.1. Problem context

Throughout history and at this very moment, peasant indigenous families have been and are struggling for the access to and control of natural resources necessary to make a living in different Andean watersheds[1]. This indigenous[2] peasant[3] struggle has been evolving since the Spanish colonial times. It continued and deepened through the process of feudalism,[4] and also during the Republican agrarian reforms that were shaped toward the needs of the new capitalist-industrial sectors[5]. In

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[1] See e.g., Baud, 2010; Bebbington et al., 2010; Himley, 2009; van der Ploeg, 2006, 2008

[2] Indigenous are those who defined themselves as such, differentiating them in historic, cultural and forms of organisation from other 'peasant communities' (Hoogesteger, 2013).

[3] The peasant condition is defined as "the struggle for autonomy taking place in a context characterised by dependency relations, marginalization and deprivation. The peasant condition aims for and materialises as the creation and development of a self-managed resource base, which in turn allows for those forms of co-production of man and living nature that interact with the market, allow survival, and that give further prospects and feed back into and strengthening of the resource base, improving the process of co-production, enlarging autonomy and, thus, reducing dependency" (van der Ploeg, 2008:23).

[4] See e.g., Boelens, 2013; Bolin, 1990; Fals-Borda, 1975; Flores-Galindo, 1988; Gaybor-Secaira, 2008)

[5] See e.g., Baud, 2010; Gaybor-Secaira, 2008; van der Ploeg, 2006.

recent years, this indigenous peasant[6] struggle has encountered conservation and water management projects such as Payment for Environmental Services (PES). Under PES, highland peasant indigenous communities, now labelled as 'environmental service providers', have to enter into negotiations with 'environmental service buyers', the users who pay, to define exchange terms for the adoption of certain land uses (e.g., maintaining forest and shrub lands, reforestation, agro-forestry) that are beneficial for the provision of 'environmental services' downstream (e.g., water regulation and water purification). For peasant indigenous communities this has meant increased levels of negotiations and interactions with supra-local actors, including conservation agencies, national and international NGOs, private-public partnerships and water utilities, hydro-electric companies, water-user associations and watershed boards (Himley, 2009). However, a dimension that, indeed, has been largely neglected in PES policies and projects and one that this thesis seeks to unravel, is the understanding of how power dynamics influence terms of exchange in watershed PES schemes, and the implications that these dynamics have for natural resource control and management by indigenous peasant communities.

By the late summer of 2009, when this study was started and rudimentarily designed, there were, to my knowledge, only a few studies that hinted as to how power relations could potentially influence PES. The examples existing then were (i) with regards to bargaining power (see e.g., Alix-Garcia et al., 2008; Kosoy et al., 2007; Wunder, 2005), (ii) potential green grabbing[7] by powerful actors (Lee and Mahanty, 2007; Pagiola et al., 2005), (iii) powerful actors shaping PES (Rosa et al., 2003; Sullivan, 2009a; Sullivan and Igoe, 2008) and (iv) discursive, institutional and economic power in PES green development (McAfee, 1999).

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[6] Indigenous peasants are not static actors but are dynamic and engaged in global and national networks. They cannot only be considered as making a living solely from natural resources and they do not only assess livelihood options according to income criteria, as their livelihoods embody powerful concepts of community and retain a special affiliation between people and their environment, often giving special and ritual dimensions to water and land use practices (Bebbington, 1999; Vincent, 1998).

[7] Green grabbing refers to situations whereby green credentials are wielded to justify seizing communal land and water resources (Fairhead et al., 2012, Vidal, 2008).

Indeed, despite the widespread popularity of PES, the analysis of the social impact created or reinforced through PES, from the side of the PES advocates, has remained modest (Bennett et al., 2012; Provost, 2013). Attention centred only on technical and economic aspects, for example, adequacy of project design, technical implementation, institutional capacity building, economic calculation and planning, income generation, social capital, institutional arrangements, labour and food markets and their promising economic benefits for poor communities[8]. Therefore, there is an important need to empirically address the issue of power in PES-based conservation projects, as many of the potentially problematic outcomes of PES projects (by that time) were based on assumptions and for that reason still not taken seriously by those scholars engaged in PES replication. This is an element that this thesis specifically tackles and develops. During the thesis period much new work has been published, deepening the critical and urgently needed debate, and this changing field of work is acknowledged across the following chapters.

Moreover, the rapid global spread of market environmentalism has catalysed an increased activist and academic scrutiny on its empirical dimensions. Analyses of special importance are those in the context of developing nations, where human rights and indigenous territorial rights over natural resources are more often relegated to the interest of those with power (e.g. Fairhead et al., 2012; Martínez-Alier, 2002; van der Ploeg 2006; Vidal, 2008). However, while a few studies have started to focus more specifically on power dimensions in relation to PES (e.g., Büscher, 2012; Kosoy and Corbera, 2010) most have not yet focused on deeply analysing their influence on PES design and natural resource control (for more power centred analyses, see Kronenberg and Hubacek, 2013; Milne and Adams, 2012). There is thus still little analysis of the influence of power relationships on the institutional setting up of a PES scheme, and how this might impinge on natural resource control.

Therefore the aim of this thesis – based on the compilation of several articles transformed into chapters – is to enhance the understanding of

[8] E.g. Duncan, 2006; Engel et al., 2008; FAO, 2011; Locatelli et al., 2008; Pagiola et al., 2005; Pagiola et al., 2007; Porras et al., 2008; Rosa et al., 2003; Smith et al., 2006; UNEP/IUCN, 2007; Wunder, 2005; Wunder and Albán, 2008; Zilberman et al., 2008.

the power dimension of PES: the power relations that shape PES formulation and implementation. Thereto, this investigation sets out to examine how power relations influence the formulation of PES as a policy model in the context of conservation, watershed management and development, the setting up of PES schemes in Andean watersheds, and the effect of the PES/power linkages on access to and control over natural resources in smallholder communities and territories in the Andean region.[9] Its first target audience are peasant communities, in order to provide information for decision-making on engaging or not with PES. A second target audience are practitioners, scientists and policy makers engaged in PES promotion, offering them a critical, alternative perspective on PES.

The main research question guiding this research is:

> How do power relations influence the promotion of PES as a policy model and the crafting and operation of PES (-like) projects, and how in turn do these influence natural resource management and control by PES-targeted peasant communities, in the Andean regions of Colombia and Ecuador?

1.2. Defining payment for environmental services

Environmental services are the benefits that people obtain from ecosystems, which include regulating services (e.g. flood, climate and water regulation), cultural services (e.g. spiritual, recreational and cultural heritage) and supporting services (e.g. nutrient cycling, evolution and soil formation) but exclude provisioning services (e.g. food, fuel, wood and genetic resources) (Daily, 1997; MEA, 2005). The FAO (2010) explains that provisioning services, such as food and timber, are generally produced intentionally for sale or direct consumption, and buyers and consumers can influence production through the market. However, the other ecosystem services that are mentioned are provided only as externalities, in that they are unintended external effects that are not compensated or paid for, brought on third parties as the result of, for

[9] The empirical investigations for this thesis were carried out in Ecuador in 2010 and in Colombia in 2010, 2011 and 2012.

example, certain land use activities. The MEA (2005) states that environmental services refer to the subset of ecosystem services characterised as externalities. PES, now, aims at internalizing these externalities.

PES policies and schemes are increasingly being exported by international organisations to developing countries (Gómez-Baggethun et al., 2010). PES has become a favoured mechanism in the policy toolbox of conservation projects to deal with spatial interactions of upstream and downstream water users (Porras et al., 2011). This popularity is based on the widespread assumption that PES can provide incentives to reduce environmental degradation, the 'carrot' that makes the 'stick' of regulations more palatable, and if well designed, reduce poverty (Engel et al., 2008; Pagiola et al., 2005).

From an environmental economics perspective, PES has been defined as:

> (i) A voluntary transaction where (ii) a well-defined ES (or a land-use likely to secure that service), (iii) is being 'bought' by a (minimum one) ES buyer (iv) from a (minimum one) ES provider (v) if and only if the ES provider secures ES provision (conditionality) (Wunder, 2005:3).

However, it must be underscored that schemes featuring all five of the above mentioned characteristics turn out to be rare in Latin America. Most schemes, in the above terms, could rather be defined as PES-like schemes (Southgate and Wunder, 2009). The empirical diversity and 'messiness' has led PES scholars to acknowledge that the most important condition for defining whether a conservation project paying landowners for conservation is a PES or a PES-like scheme is that these payments are made conditional to the provision of environmental services (Wunder, 2012).

From an ecological economics perspective, the Coase approach[10] informing the environmental economics approach to PES has been criticised, on the basis that it:

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[10] Coase argues that despite the initial distribution of property rights, when a party causes a negative or positive environmental externality to another, this can be solved or

> ... does not pay enough attention to the role of institutions and shared beliefs in shaping PES design and outcomes, even if these are critical under 'non-perfect' market situations (Muradian et al., 2010:1205).

Besides this, it is argued that environmental service buyers do not always have a clear definition of the environmental services they are paying for as there might be problems of high complexity, uncertainty, and imperfect and asymmetric information in the linkages between desired environmental services and ecosystem management practices (Muradian et al., 2010; Muradian and Rival, 2012; Ravnborg et al., 2007). Therefore, it is argued that a fully developed market approach, in which PES would function precisely according to economic theory, remains more a theoretical assumption than an empirical fact taking place in local conservation contexts.

In response to these differences between theory and practice, Muradian and colleagues – taking into consideration the complexities of power relations, distributional issues and social situatedness in which PES operates (and therefore more in line with the objective of this thesis) – define PES as:

> A transfer of resources (monetary or non-monetary) between social actors (through market or market-like mechanisms), which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources (2010:1205).

In general terms, as Engel et al. (2008) explain, PES schemes differ according to the characteristics of their design. Buyers of environmental services can be private, public or mixed, while many PES schemes operate in practice through private-public partnerships. Sellers of environmental services can be single private landowners (or landholders) or communities

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rewarded if parties enter into voluntary negotiations to distribute the costs and benefits of conservation. The conditions for such bargaining are that property rights are well-defined, information is available, and transactions costs (e.g. the cost of setting these negotiations or gathering information) remain lower than the expected benefits of the deal itself.

owning (holding) land. Other characteristics that define PES design include: the type of exchanges negotiated for PES (whether cash or in-kind payments); the type of actions to be taken regarding protection of the environment (e.g., changing or retaining land uses); the conditionality of payments (e.g., paying according to ES performance); and the frequency of payments (e.g., a single onetime payment, several continuous payments).

In practice PES is referred to by scientists, practitioners, policy makers and environmental service buyers and sellers in several ways. For example, as a scheme, a project, a programme or a policy model, depending on the context where the term or label is used. This thesis also allows for this diversity of labels for PES. However, the focus of this thesis is on PES as a conservation tool in the toolbox of watershed management.

1.3. Conservation, PES schemes and watershed management

The conceptualisation of environmental services can lead to both a specific focus on particular natural resources – such as forests, land and water – or an integrated ecological focus on habitats that supply services such as a watershed. Both also bring a focus onto spatial units of resource availability which is very important, not only in how they are scientifically defined and analysed but also what social relations between users and controllers emerge to broker the use and transfer of resources across different ecological zones.

This thesis focuses on PES schemes or projects that are operating within the spatial focus of watershed management, hereafter referred to as watershed payment for environmental services (watershed PES) or payment for watershed environmental services. Swallow et al. define watersheds as:

> A terrain united by the flow of water, nutrients, pollutants, and sediment. Watersheds also link foresters, farmers, fishers and urban dwellers in intricate social relations. Both factors – the biophysical attributes and the policy and institutional environments – shape people's livelihoods and interactions within the watershed... Because watersheds have such broad impacts at so many levels, they raise special issues for the management of resources through property

> rights and collective action ... The extensive nature of resources and the interdependency of users within a watershed underscore the need for broad stakeholder participation in developing and implementing watershed management technologies and practices. When stakeholders do not have an opportunity to participate, the complexity of local realities and the promise of local solutions may be overlooked ... Watershed systems are highly complex: resources frequently have many uses and users: resources and the institutions that manage them span multiple scales ... If manipulated secretly, these interdependencies can cause suspicion, distrust and possibly violence and retard economic progress. When addressed in an open, transparent and dynamic manner, these interdependencies can be the foundation of political cooperation, economic development and social cohesion (Swallow et al., 2004:1).

Kerr and Jindal (2007) note that a key characteristic of watersheds is that "upstream land uses affect downstream conditions through hydrological linkages" and that "watershed management efforts aim to influence this upstream-downstream relationship" by encouraging upstream land-use practices that are consistent with maintaining the watershed so it yields water that is unpolluted, low in sediment, buffered against flash floods and with minimum fluctuations in dry-season and groundwater flows. These are the environmental services under focus in the case studies in this thesis. Kerr and Jindal go on describing the basic scientific challenge in managing watersheds:

> ... to understand how upstream land-use practices affect natural resource conditions downstream, while the basic socio-economic problem is to encourage people in the upper watershed to adopt those practices even though benefits will accrue downstream – in other words how to encourage them to deliver this environmental service (Kerr and Jindal, 2007:1).

Kerr and Jindal (2007) note how watersheds are the focus of a number of PES and PES—like arrangements, even coining the phrase 'payment for watershed services' for such schemes.

In fact PES schemes for watershed management may be introduced over and include older conservation programmes and tools introduced for forest, soil conservation and water management, not only leaving diverse

and disconnected initiatives in place in watershed management but also controls by different Ministries or landowners and their local representatives. For forests, older interests to promote sustainable supplies of valuable timber (creating plantations and controlling planting) remain under newer local initiatives part of habitat preservation for endangered species and biodiversity, and most recently carbon sequestration for international carbon trading for climate change policies. Soil conservation programmes may still require certain cultivation technologies and land use control. Water companies may control land use around important water sources. These older schemes may often have strict enforcement policies that are not simply protective but are also repressive and even coercive (where force and even military control may be used). Peluso (1993) has debated how, while on the one hand the environmental community may justify coercive-protective measures on moral high grounds, there should be attention to how states may use such tools, equipment and the moral ideology of global conservation in order to justify state systems of resource extraction and production.

This danger is important and evident since also PES schemes for watershed management have attracted attention for applying the same moral conservation ideology, framing it as their promise to assist small local land users, and to be an opportunity for 'pro-poor' assistance. International research organisations and funding agencies, including FAO and CIAT (International Centre for Tropical Agriculture), and diverse national programmes for watershed management have worked to develop PES as a means through which more cohesive, inclusive and beneficial programmes would be installed. These claimed that they have focused particularly on promoting participatory approaches to land use planning (with multi-stakeholder processes and platforms aided by facilitators and new local collective groups), better attention to the remuneration of the service providers, and improving trust and the level of legal and institutional equity (Farley et al., 2011; OIKOS and IIRR, 2000; Ravnborg et al., 2007). Thus there is a strong scientific effort, internationally, at creating guidelines to define what 'makes PES systems work', that has also become part of this international community voice on how conservation measures are socially as well as technically relevant. In fact, in some of these approaches, what are seen as PES or PES-like processes have actually been aided by broader development initiatives including micro-finance and self-help programmes, sustained extension support for

capacity building and micro-planning targeting local community institutions and practices. The 'pro-poor' and 'anti-poverty' discursive focus of these broad programmes is not always present in PES schemes, although many supporters have slipped into claiming these pro-poor potentials for them. Thus the actual design, implementation and operation of PES and PES-like projects deserve special attention.

These challenges become significant in the large-scale Andean watersheds which are the locations of the case studies here. Upstream users are great distances from downstream users in very different agro-ecological zones. The upstream users are often small and marginal farmers whose social history has forced them to migrate and seek a livelihood in such areas and they have worked to find farming strategies through which they can survive. They are governed within local communities that have limited negotiating power against the larger councils or private enterprises representing users of services elsewhere (or at higher scales) in their own region. As the studies will show, the governments of Ecuador and Colombia have not generated the development planning approaches that give systematic focus and local administration for community and smallholder-oriented development planning. In these contexts, international support to research centres and special programmes has enabled experimentation with PES and PES-like schemes in these Andean watersheds (Farley et al., 2011). As Peluso notes, development efforts:

> … have largely been structured on the state's terms and have failed to consider the political-ecological histories of contemporary resource use patterns. Externally-based resource claimants (including the state itself) frequently redefine resources, the means by which they can be conserved or harvested, and the distribution of benefits from their protection. Such definitions override, ignore or collide with local or customary forms of resource management. When competition between external and local legitimation is played out in the environmental arena, the result is social and political conflict, which causes environmental degradation and ultimately fails to achieve the goals of international conservation interest (and development aims) (Peluso, 1993:52).

1.4. Defining power

The concept of power is central to understanding the processes and structures associated with natural resource governance and policy reform, including management decentralisation, the introduction of markets or market-like institutions and the redefinition of distributive mechanisms and property rights (Raik et al., 2008). As mentioned before, scrutinizing power dynamics with regards to PES can help to understand both the huge expansion of PES in the policy and donor worlds, and the on-the-ground impacts of PES schemes on social and economic relationships of peasant communities and watersheds.

The different article-based chapters present the elements of the power analytical framework of this research: the conceptual notions will unfold throughout the chapters and will be related to the case studies and their empirical processes and evidences. Here, a short reflection on power is presented.

From a theoretical perspective, power is a relational means inducing the capacity or potentiality to make or to receive change, or to resist it (adapted from Foucault 1980, 1995; Lukes 2005a). Power has been classified by Lukes (2005) in three forms. The first form of power – *visible power* – refers to the observable mobilisation of resources to defeat an opponent's preferences in decision making processes (Gaventa, 2006; Lorenzi, 2006; Lukes 2005). The second form of power – *hidden power* – refers to how, in a concealed manner, the rules of the game in decision making are set by actors to privilege themselves in relation to others.

In accordance with the work of Foucault, Boelens (2008) characterised these two types of power as coercive power, or as 'classic' power that is importantly based on inequalities, vested in the rulers; hierarchical, centralised and centrifugal; visible; repressive, negative and exclusive. Furthermore, this power is based on formal rights and institutionalised in structures and laws; paternalistic and personalised; linked to territory but incidental and not omnipresent; and a generator of localised scarcity on the basis of outright usurpation of property.

Strikingly, the history of power production, as explained by Foucault (1977), has shown that coercive power has transformed into another, often more effective, normalising form of using power in society where

power is not explicitly present as a property possessed by dominant actors, but invisible and imposed 'from within'.

The third form of power – *invisible power* – is a normalising power, also described by Foucault (1975, 1991) as capillary power. This form of power entails the shaping of beliefs, desires, perception, cognition and preferences of potential opponents in a way that they will not question or oppose the decisions of the powerful (Lukes, 2005a, 2005b).

Invisible power, therefore, is defined as the power that is unconsciously internalised and reproduced by agents, narrowing their range of actions (Foucault, 1982). In this way it normalises or standardises agents. Furthermore, power here is inclusive, anonymous and more functional as it is more individualising. It also is omnipresent as it works from 'within', so it is reproduced by everyone (Boelens, 2008). This power involves what Foucault calls governmentality projects that, through different technologies of power, aim to 'conduct the conduct' of the dominated (Foucault, 1991).

Coercive and capillary power cannot be separated dichotomously, and are not complete, as other dimensions of power simultaneously play a fundamental role in natural resource control. These dimensions may even counteract the subjugating forms of power and may be characterised as 'power-to' and 'power-with'. While the former relates to the individual ability to act, linked to ideas of capability and creativity, the second relates to collective action, the ability to act together as an organised group or through a common understanding (Moffat et al., 1991; See also, van der Ploeg, 2003; van der Ploeg and Long, 1994).[11]

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[11] Complementarily, there is much said about economic and political power. In this thesis, economic power is the capacity of an individual or a group of individuals to have enough productive resources at hand to be able to determine and impose, through visible, hidden or invisible power, the selective allocation and distribution of specific natural resources. Political power is the capacity of an individual or group of individuals to have the connections, resources, and the authority to influence (through visible, hidden or invisible power) governmental decisions regarding the allocation and distribution of specific natural resources.

As explained in the previous section, PES design requires that environmental buyers and sellers negotiate the terms of exchange for internalizing environmental externalities. However, buyers and sellers are heterogeneous (e.g. they have a wide array of world views, histories, social status, interests, connections, types of knowledge backing up their positions and terms of valuation through which buyers and sellers see nature) and these negotiations might be profoundly shaped and coloured by power differentials and the different forms of power. Thus this research sets out to explore, from an empirical perspective, how these theoretical forms of power occur in relation to PES, within a social context comprising many heterogeneous actors.

1.5. Understanding natural resource management and conservation from a political ecology perspective

Political ecology is used here as the main framework for analysis of PES schemes as it focuses on the use of power to explain actors' differential access to environmental resources and services. Complementarily, it studies the use of power to decide upon procedures for decision making in environmental issues (Martínez-Alier, 2010).

The recognition of natural resource management and policies, as responsive to particular definitions or framings of environmental change, has moved its understanding from a merely technical perspective to a political perspective (Budds and Hinojosa, 2012). Indeed, for political ecology, natural resource management interventions are, rather than a set of neutral, pragmatic and technical-economic interventions seeking to tackle environmental issues, a political endeavour, as they define and authorize specific uses of and access to natural resources (Stott and Sullivan, 2008).

The political understanding of PES and natural resource management is closely related to the interlinked local-national-global political economy, sustaining inequitable patterns of use and access to natural resources between the power-heterogeneous social actors (Blaikie et al., 1987; Robbins, 2004). Bryant and Bailey (1997) explain how environmental problems cannot be understood in isolation from the economic and political contexts within which they are created; local contexts are situated within wider regional or global networks of resource control and struggle.

Political ecology has documented the production of different framings of environmental change, and how through power relations, the framing that is instrumental to the interests of powerful actors often becomes consolidated in the field of conservation, natural resource management and development (Blaikie, 1995; Forsyth, 2003). Early actor-oriented approaches sought to uncover the vested interests of the different stakeholders involved through both material actions as well as discursive framings and over wider spatial and temporal scales (e.g. Bryant and Bailey, 1997). More recent scholarship has turned to the role of power relations in shaping economic development and environmental change, with greater emphasis on how power produces, and is embedded in, new socio-ecological arrangements (e.g. Robbins, 2004). Examples include hydro-social networks (Boelens, 2013; Linton, 2010; Zwarteveen et al., 2005), waterscapes (Budds and Hinojosa, 2012; Swyngedouw, 1999), socio-natures (Swyngedouw, 2009) and socio-technical 'Empire' networks (van der Ploeg, 2007, 2008).

As shown above, the centrality of power in the political ecology scholarship contrasts with how Coasean economics omit power asymmetries and power techniques from PES analysis. Coase (1960) does not consider how powerful agents may, through various techniques of power, impose their will on others. Also, no reference is made to unequal resource control and distribution among the agents that enter into bargaining. In this sense, Büscher (2013) explains how the politics of PES are based on the search for consensus or a rhetoric that portrays PES schemes as a neutral arena in which everybody can be included and win. Furthermore, McAfee and Shapiro (2010) and Büscher (2013) explain how PES schemes are supported by apolitical framings of natural resource management and environmental science by presenting solutions only in technical terms. Büscher (2013), in this line of thought, shows how the promotion of PES is based, among others, on a marketing strategy where a particular market logic is induced in policy agents as a form of capillary power or neoliberal governmentality. Thereby, he argues that its promotion is based on a Foucauldian knowledge-power that seeks, to portray a-political socionatures and promote de-politicised environmental management. A process in which nature is neoliberalised thus consequently takes shape.

1.6. PES and the neoliberalisation of nature

Neoliberalism is a powerful political ideology that aims to subject political, social, and ecological affairs to a competitive framework that is geared towards capital accumulation (Büscher et al., 2012). With respect to conservation, neoliberal reformers argue that the cause of environmental degradation is the result of a natural resource managers' incapacity to see and integrate the economic value of nature into their decision making regarding the use of these resources. Therefore, they argue for a natural resource management and conservation based on 'selling nature to save it' (McAfee, 1999). PES has been linked to the process of neoliberalisation of nature and neoliberal conservation, as it "... [aims at] construct[ing] aspects of nature as tradable commodities, ... extend[ing] commodity relations into realms heretofore regarded as distinct from 'the economy'" (McAfee and Shapiro, 2010:580).

The neoliberalisation of nature entails, among others, the process of commodification (Bakker, 2005:545). Commodification implies the creation of an economic good through the application of mechanisms intended to appropriate and standardize a class of goods or services, enabling these goods or services to be compared and measured through interchangeable units and sold at a price determined through market exchange. From a political economy perspective, it is argued that natural resources are commodified if they have a price and if market incentives and private companies play a role in establishing this price.[12] Complementarily, Castree (2008:12) argues that the neoliberalisation of nature entails:

- Privatisation as the assignment of clear private property rights to social or environmental phenomena that were previously state-owned, unowned, or communally owned.
- Marketization as the assignment of prices to facilitate market exchange.

[12] However, from a conceptual standpoint, this view may be incorrect as, when failing to acknowledge the neoliberal definition of a commodity, political economy analyses often lead to misreadings of neoliberalisation. These misreadings refer mainly to the assumption that commodification has already occurred, obscuring active, on-going, and sometimes thwarted attempts to convert goods into commodities.

- De-regulation as the roll-back of state interference in markets.
- Re-regulation as state policies that facilitate privatisation and marketization or state's roll-out.
- The establishment of market proxies in the residual public sector. This is the state-led attempt to run remaining public services along private sector lines as 'efficient' and 'competitive' businesses.
- The setting up of respective flanking mechanisms in civil society. This is, the state-led encouragement of civil society groups (charities, NGOs, `communities', etc.) to provide services that interventionist states did, or could potentially, provide for citizens. These civil society groups are also seen as being able to offer compensatory mechanisms that can tackle any problems citizens suffer as a result of the previous five processes listed.

Neoliberal conservation is then best related to *market environmentalism* and the *green economy.* This thesis refers to market environmentalism as a generic term, as the majority of PES especially in watersheds are not market-based "but bilaterally negotiated agreements between individual actors or groups of buyers and sellers" (Wunder, 2007:51). This is because environmental services are not always fully identified by buyers of these services (Muradian, 2013; Muradian and Rival, 2012), or that buyers of watershed services are bounded by water related institutions (i.e. water concessions and water rights), the geographical location of the ecosystems providing watershed services or the infrastructure that delivers water. In relation to this, and in line with Bakker (2005), PES does not always mean commodification per se, as there are characteristics of nature that render it as 'uncooperative' to the commodification process (see Bakker, 2005; 2010). Therefore, whether commodification is achieved or not is dependent on the biophysical characteristics of the resources that are intended to be pulled into capital dynamics, the possibility of establishing markets for conservation, and the social contestation that this might generate in each case. Therefore, rather than analysing PES and the neoliberalisation of nature as fixed and static elements in natural resource management and conservation, this research considers the variegated shapes that they take at the field level.

In relation to the neoliberalisation of nature and neoliberal conservation, PES may promote the idea that all natural resource managers are and behave like the *homo economicus* (Gómez-Baggethun et al., 2010). As

such, it brings a capitalistic economic rationale into places where such logic is only a part of making a livelihood. For example, Golte and de la Cadena (1986) explain that a peasant household optimizes its intervention in the social process of production looking both at income generation through the market, and at what can be obtained through the non-mercantile sphere (far from a romantic conception, this is a communal reciprocal economy based on the need to cooperate in order to make a living)(See also van der Ploeg, 2003, 2008). If natural resource management and conservation strategies are to be ruled under capitalist and marketized dynamics, the rights and access to natural resources by peasants will be transformed. This argument brings two questions to the fore: who has the power to impose a specific type of natural resource management, and who benefits from these changes?

1.7. Case studies and brief context description

The first PES schemes in Latin America were the result of efforts by global and national conservation groups and local private water users (Stanton et al., 2010). In some cases, however, PES has made it into national public policy, as for example in Colombia and Ecuador.

1.7.1. PES in Colombia

During the 1960s and 1970s, natural resource governance in Colombia was carried out by means of a centralised regulatory state control, issuing and enforcing command-and-control instruments[13]. In addition state intervention was done on the basis of 'fortress conservation' through the

[13] This refers to a wide range of regulatory instruments. Howlett and Ramesh (2003) mention the following: rules, standards, permits, prohibitions, laws, decrees and executive orders.

creation of protected areas[14], and by purchasing areas important for the provision of water to departmental and/or municipal water utilities.

In this respect, Colombia's environmental legal framework is one of the oldest in Latin America, including the 1969 Forestry Law, a 1973 statute covering flora, and a 1977 statute creating the National Parks System. By far one of the most important laws, however, is the 1974 National Natural Renewable Resources and Environmental Protection Code, a comprehensive statute that remains one of the pillars of Colombian natural resource and environmental law (Blackman et al., 2005).

However, in recent years, there has been a shift towards a natural resource governance that prioritises economic instruments and incentives before command-and-control instruments (Tobasura-Acuña, 2006). This shift responds partly to issues of corruption and inefficiency associated with command-and-control polices, but it is propelled by several environmental treaties promoting the introduction of economic and incentive-based policy instruments for conservation and development. For example, the Earth Summit in Rio de Janeiro in 1992 inspired the crafting of the Law 99 of 1993, Colombia's environmental law, that decentralised many environmental public offices via the National Environmental System (Sina) and introduced and reinforced the use of economic instruments for natural resource governance and management (incentives, taxes, fees, etc.) (Rudas-LLeras, 2009). Moreover, the convention on biological diversity inspired Colombian law 165 of 1994, which created the National System of Protected Areas (Sinap). Also, the 2005 Millennium Ecosystem Assessment promoted PES as a conservation and developmental policy. This all was reflected in the 2008 National PES Strategy. This reform bears the stamp of concerns about decentralization and sustainable development, based on market institutions, which have dominated policy development in Latin America in the last decades.

Since 1996 there has been a reduction in the budget that the decentralised organisation of the environmental sector, such as the Regional Environmental Offices, received from the central state

[14] Fortress conservation, as explained by Doolittle (2007), is a conservation model based on the belief that biodiversity protection is best achieved by creating protected areas where ecosystems can function in isolation from human disturbance.

government (Rudas-Lleras, 2008). This budget reduction has happened alongside the assignation of additional tasks to regional environmental offices, also with a reduction in personnel, and has debilitated their capacity to control and safeguard the environment (Blackman et al., 2005; Rodríguez-Becerra, 2009). Such changes have led to an increased involvement of international aid and private companies in shaping environmental governance in Colombia.[15]

Since the late 1990s and in the first decade of the twenty-first century, PES has evolved from a private undertaking into an instrument of the public environmental sector in Colombia.[16] PES introduction in Colombia responds to the belief that PES, besides being a conservation tool, can also become an important development tool with regards to the income and in-kind benefits that environmental service sellers (most frequently thought to be local communities and small farmers) receive from PES (Pagiola et al., 2005; Wunder, 2005). This reflects the framing of the Millennium Ecosystem Assessment (2005) arguing that poverty is also the result of environmental degradation. In addressing the political reasons for the shift from government to governance in Colombia, this thesis, in chapter 2, will analyse how power relations from global to local scales played a role in introducing PES in the Colombia legislation.

1.7.2. PES in Ecuador

Like Colombia, Ecuador has also embarked on the shift from government to governance. The 1981 Forestry Law, the 1996 Biodiversity Law, the environmental elements contained in the 1988 Constitution and the 1999 Environmental Management Law are the most important elements that constitute environmental governance from the perspective of the state in Ecuador (Himley, 2009). However, this shift has discontinued with the election of Rafael Correa in 2007. Correa's new policies discursively follow the anti-neoliberal claims of civil society groups in Ecuador. However, in

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[15] This has happened with regards to conservation but also, among others, in the cases of mining, hydro-electric production and forestry.

[16] See the Colombian National PES Strategy and the Decree 953 of 2013, plus the government plans of presidents Alvaro Uribe and Juan Manuel Santos.

practice, Correa's government does not advocate to simply restore former state centralism but relies on market mechanisms and capitalist economic rationality under close state control in order to boost development (Boelens et al., in press). One example of the hybridity between state and markets in Correa's Ecuador is the Socio-Bosque programme for conservation. The Socio-Bosque programme is led by the Ecuadorian Ministry of Environment (MAE). The MAE enters into conservation agreements with private and communal landholders by offering yearly compensation (payments) in exchange for maintaining forest cover. This conservation and development programme seeks to create an alternative to what is now seen as unsustainable use of natural resources by land managers, and to reduce the impoverishment and social disintegration said to be happening as a result of current land use practices. Another example is the Yasuni-ITT project, where Correa himself asked the (developed) world for a monetary compensation for at least half of the income that Ecuador will get if they would decide to extract the oil reserves under the Yasuni National Park.

1.7.3. Case study areas

Apart from literature and archival research, this thesis is based on the analysis of the Colombian PES national policy, which was briefly explained in the previous section, and the in-depth field study of three PES schemes in three empirical case studies in Colombia and Ecuador. As figure 1-1 shows, the Nima PES scheme is located in Colombia, while the Chamachán and Nueva America PES schemes are both located in Pimampiro, Ecuador.

The choice for countries was determined on the basis of the 'success stories' of PES achievements in scholarly literature, the research experience of the author and (co-)promoters who joined in the writing of the chapters of this thesis, and on the requests that were expressed by members of the Justicia Hidrica Alliance. The selection of locations of PES projects was made, again, on the basis of their particular level of claimed success, as also expressed in national and international PES agency discourse and reflected in the amount and quality of case-specific scientific research publications. Also, it was based on each project's time of establishment and continuity.

Figure 1-1 Location of case studies in this thesis
Source: Adapted from Google-earth

The Nima PES scheme in Colombia is one of a series of different PES schemes that the Sugarcane producer association (Asocaña), the regional environmental authority and the sugarcane producers' water users association originally implemented. Later, many other water using companies decided to join. These PES schemes have been implemented in different watersheds feeding the Cauca River in Cauca Valley Department (e.g. Bolo River, Guabas River and the Nima River). This group of PES schemes have served as an example for many PES practitioners in Colombia, as a case in which environmentally aware private companies and water users fund conservation for the Colombian society.

The Valley of the Cauca River is located in the Department with the same name. This valley has been recognised as one of the most fertile agricultural valleys in Colombia and lies between the Western and Central rifts of the Colombian Andes with an area of 376,000 hectares. This area

has been subjected to a series of land use changes which started with Spanish Colonialism and that nowadays relates to the intensive development of sugarcane agribusiness, which occupies 200,000 hectares in this catchment in order to supply 13 sugar mills (Echavarría, 2002; Motta-González and Perafán-Cabrera, 2010). Such processes together with a strong process of mestizaje resulted in a very racially mixed peasant sector that is nowadays mainly located in the margins of the flat areas of the River Cauca Valley (Gómez, 2005; Motta-González and Perafán-Cabrera, 2010; Taussig, 1978). These changes mean that crops that initially where present or introduced in the flat areas of the valley are now present in the foothills of the Andes.

Indeed, as one travels from Cali to the localities of Caluce, Tenjo and La Maria[17] in the Nima watershed (see Figure 3-1), one finds oneself literally surrounded by sugarcane fields crossed by many irrigation canals, where huge sugarcane trucks transport the sugar cane previously harvested by mainly black and, oftentimes poorly paid, workers. As the road gets steeper, one leaves this sugarcane dominated landscape to find other farming systems: mixing cattle, coffee, cacao, plantain and many other agricultural products in fields managed by *mestizo* peasants and indigenous mixed descendants. There are also some big cattle and poultry farms, plus some recreational second homes and tourism facilities. However, a remarkable anecdotal observation must be made: as one goes higher and higher following the contour of the Nima River, the landscape in this area is not as deteriorated as one imagines from reading certain environmental reports. Moreover, one can see that in some farms, especially close to the different streams feeding the Nima River, there are areas enclosed and containing big *guaduales* (Bamboo stands) surrounded by barbed-wire. One can also see, especially in Tenjo, that there are big areas planted with exotic species in forest plantations. The violence that this area witnessed in the past is nowhere to be found in the friendliness of the people that were interviewed in the rural areas[18] but there is a constant reminder in the sound of army helicopters heading towards

[17] The localities in the Nima watershed where this research was mainly carried out.

[18] Sadly, I cannot say the same for the urban centre of Palmira where, from a "safe" distance, I witnessed coincidentally some gun assaults and a killing.

neighbouring watersheds where an intense war was being fought at the time that this research was carried out.

Nueva América and the Chamachán PES schemes are located in the highlands of Mariano Acosta in the municipality of Pimampiro in Ecuador (See Figure 4-1 and 5-2). When travelling from Ibarra to the highlands of Mariano Acosta, one first passes black communities living close to the low, hot valleys of the Escudillas River, where there are also plenty of sugarcane fields. As one goes higher towards the main urban centre of Pimampiro one finds many irrigated fields and tomato greenhouses that are mainly managed by mestizos. Such irrigated fields are located in highland plateaus which were formerly hacienda terrain. As one leaves Pimampiro towards Mariano Acosta through a cobbled winding road, the terrain becomes steeper and there are more peasant indigenous families working their rain-fed lands where potatoes, beans and other products are grown. Mariano Acosta's urban centre is located on a plateau and nowadays is witness to an increased presence of mestizo population that, among others, are agricultural producers and traders. However, as one leaves Mariano Acosta urban centre towards the highlands, one passes along a road surrounded by forest and agricultural fields where use of the Spanish language is less common than in communities in lower altitudes. However, despite their geographical location, the watershed environmental service buyers in the lowlands and the sellers in the highlands have many commonalities. One of these commonalities is that they are virtually connected through two PES schemes that the people from the municipality are very proud to talk about.

1.8. Research questions

The main research question 'How do power relations influence the promotion of PES as a policy model and the crafting and operation of PES (-like) projects, and how in turn do these influence natural resource management and control by PES-targeted peasant communities, in the Andean regions of Colombia and Ecuador' will be answered by addressing the following sub-questions:

- Why and how has the PES model received strong support as a key conservation and development policy instrument in Colombia?

- How do power relations influence the design, implementation and operation of PES (-like) schemes in the Pimampiro and Chamachán watersheds in Ecuador and in the Nima watershed in Colombia?
- How do PES (-like) schemes influence social relations, organization, and resource access of communities living in the watersheds targeted by these schemes?

1.9. Methods for empirically addressing power in PES

Büscher explains that the development of scientific literature around PES clearly demarcates two streams of thought:

> Those who view PES critically and believe it is a (familiar) process of capital intensification […], and those who basically 'try to make PES work' despite acknowledgments of difficulties and disclaimers of conditionality (2012:29).

At the same time, both PES critics and advocates agree in that there is a need to unravel, through grounded-empirical research, the impacts of market-based or market-like conservation interventions (Igoe, 2006; Pagiola et al., 2008).

Consequently, this thesis is based on empirical investigations. In the case of the PES policy in Colombia, information was partly collected throughout my involvement in Colombia's environmental sector during previous years and during three additional fieldwork periods in Colombia in 2010, 2011 and 2012. In the case of the Nima PES scheme in Colombia, fieldwork was carried out from August to November 2011. In the case of Pimampiro and Chamachán PES schemes in Ecuador, qualitative empirical information was retrieved through extended field visits, from March to September 2010. Literature and archival reviews were conducted throughout 2009. The PES schemes analysed in this thesis have been heavily promoted and presented as successful PES project implementations in the scientific literature. Therefore, findings regarding these projects are presented in such a way that allows critical comparison between PES outcomes as understood from, first, a stream of science that situates natural resource management in an apolitical space and, second, the political perspective that this thesis engages with.

Fieldwork entailed in-depth qualitative research to document and analyse the experiences and perspectives of the peasant farmers living in the communities where a PES scheme had been implemented. Semi-structured interviews formed the principal research method and were used to collect: (i) information and opinions regarding the people living in the areas addressed by the PES schemes; (ii) the negotiation and implementation process of PES, the procedures through which decisions were taken, involvement in decision making and places where decisions were taken; (iii) participation and non-participation in the scheme and stances towards conservation and its implications. Other issues that during the research appeared to be important for the community members in relation to natural resource control, and that were related to PES, were also taken into account. Details of selection and numbers of individuals interviewed are given in each chapter.

Participant observation was another method to gather insights into the relations among communities, families and peasants living in the areas providing environmental services and other stakeholders buying them and brokering them, in order to understand how issues around the PES scheme and conservation were presented and contested. These included attendance at local meetings and assemblies, as well as taking part in day-to-day activities (e.g. farming, collective labour events (mingas), and community celebrations).

The research also used focus group workshops, which were carried out with peasant landholders to discuss the PES scheme in the cases of Pimampiro and Chamachán, and to try to unravel the social dynamics around them.

Specifically for the cases of the Chamachán and the Nima PES schemes, the investigation was carried out through Action Research. In the Chamachán case, I was involved in the elaboration of a digital map demarcating one of the territories of the Floresta Guagalá Peasant Indigenous Association, as this association was cheated by an engineer whom they first hired while they never got the map. This map was needed in order to start the procedure of formalizing their land tenure. In the process of making this map, I was able to get insights into how these community members were being treated by state officials and how community members treated each other outside their own lands and villages. In the case of the Nima PES scheme, I was involved in linking

two communal water utilities with a regional and a national association of communal water utilities that was working in order to defend the community's autonomy in water resource management. This helped me to get a deeper understanding of the struggle of these community-based organizations.

Qualitative data methods were strengthened by the collection of secondary data from public institutes, universities, farmer federations, local government offices and NGOs, which included contextual information (e.g. geographic, historical and demographic data) in the form of official and private reports, datasets and other documentation from organizations that carried out natural resource-, social- and economic- studies in this area. Another element adopted in the thesis methodology was dissemination workshops where community members were given the opportunity to hear and debate the initial results of this investigation; consequently their opinions helped to shape each chapter.

Information from the semi-structured interviews was organised so as to compare the information given by each individual with respect to the group of stakeholders they belonged to, and between different stakeholders. This exercise permitted me to identify similarities within the 'stories' of a group of stakeholders, but also contradictions. Both similarities and contradictions were 'put to the test', again and again, by analysing them with respect to information that the other research methods provided. The results of this analysis were 'put again to the test' by presenting them in dissemination meetings organised in each case before finishing fieldwork. Translations of the different chapters of this thesis were also sent to some stakeholders who had an email account, for their further comments, which were included in the chapters before submitting them for publication in different journals.

An important issue is, obviously, how power dynamics have evolved between the researcher and the participants in the research process. In fact, there is no easy answer to this question. Before arriving at the case study areas it was not very clear to me how power would be manifested with respect to PES; but this idea became more and more apparent during discussions with research participants. I have come to realize and made it gradually more explicit where my perspective on the subject matter is situated. In this research, power is analysed from an angle that aims to decipher its impact on the 'poor of the countryside'. My empirical

perception and view of power was not a politically preconceived idea but one that was built gradually, based on the different answers of the research participants, considering their position, attitudes, economic and political interests, my own position, and being explicit about this. Second, power is inescapable but not determining. This means that even the dynamics of power described in this thesis are not written in stone and can always change, as shown in the many victories that indigenous campesino movements in Colombia and Ecuador have had with respect to recognition and defence of their rights.

1.10. Structure of this thesis

This thesis consists of a compilation of articles which are presented as chapters.[19] The contents and structure of the chapters in this thesis follow, as close as possible, the original submitted and published articles. However, extra information has been included, or its contents have been slightly modified, in order to present richer insights while simultaneously clarifying the key arguments and findings of this thesis outside the requirements of a specific journal.

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[19] However, apart from these four chapters, this research is based on other academic work related to the critical analysis of PES but which are not included in this thesis. The products of this work consist of a book chapter entitled "Injusticia hídrica y pagos por servicios ambientales: Mirando detrás del telón en Pimampiro, Ecuador" (Rodríguez-de-Francisco and Boelens, 2012) and another scientific article under the title, "Commoditizing water territories? The clash between Andean water rights cultures and Payment for Environmental Services policies" published in *Capitalism Nature Socialism* (Boelens et al., 2013). It also includes several presentations in conferences including: (i) the International Meeting of Researchers of the Justicia Hidrica Alliance organised by Wageningen University and the Centro Bartolomé de las Casas in Cusco in 2010; (ii) The conference "Nature™ Inc? Questioning the market panacea in environmental policy and conservation", organised by the International Institute of Social Studies in The Hague in 2011; (iii) The workshop "Segundo Festival de Expresiones Rurales y Urbanas" organised by Censat Agua Viva-Friends of the Earth Colombia in Bucaramanga in 2011; and (iv) the international conference "Agua", organised by the Research and Development Institute for Water Supply, Environmental Sanitation and Water Resources Conservation in Cali in 2012.

In order to analyse how power relations influence the design of watershed PES, the social analysis presented in this thesis organises the case studies according to the countries were research was carried out. Coincidentally, and not by design, this order also presents a changing focus of the watershed environmental service buyers. This is a public-private partnership (Chapter 3), a private group of drinking water users (Chapter 4) and a group of international and national public organisations (Chapter 5) in each case funding different PES schemes.

The chapters present a series of different settings regarding environmental service buyers, moving through different institutional complexities, and different countries (from Colombia to Ecuador). All make a particular effort to compare the views gathered by past research with the findings of this thesis. In addition, the thesis transitionally moves from a very conventional description of PES sellers into a more sociologically rich language and descriptions of communities addressed by PES schemes.

This introduction has given a taste of what this thesis is about by stating the aim of this research, presenting the theories and methods that informed this research, and the main and sub-research questions. It ends with a brief explanation of how each chapter contributes to reaching a better understanding of power relations in the context of PES for watershed services conservation.

Starting in Colombia, the second chapter, entitled "*Payment for environmental services as a powerful policy model*" presents a power analysis of the mainstreaming of PES in the Colombian legal framework. [20] Based on the work of Achterhuis et al. (2010), Mosse (2004) and Rap (2006) on the power of different policy models and the market utopia discourse, this chapter reconstructs the process of developing the National PES Strategy that was issued in Colombia in 2008 and that culminated

[20] This chapter was co-authored with Rutgerd Boelens and submitted to *Environmental Politics*. In addition, a reworked and extended version of this chapter has been translated into Spanish under the title: "Pago por servicios ambientales, ambientalismo mercantil y la indiferencia hacia el mundo campesino" and has been accepted as a chapter in a scientific book edited by the Justicia Hídrica Alliance and is to be published in 2014 by the IEP Publishing House.

with the legal inclusion of PES in several laws and decrees. This chapter scrutinizes how PES policy adoption in Colombia is driven by the reality-indifference induced by market environmentalist models and financial and political pressures by international development banks and environmental NGOs.

The third chapter,[21] "Payments for environmental services and changing control over natural resources: public and private sector roles in conservation of the Nima watershed, Colombia", analyses a PES scheme financed by a public-private-partnership. In this case, a number of companies – including a water utility company, a hydroelectric company, a cardboard company and a water user association of sugar cane growers – plus several governmental organisations, pay for the implementation and maintenance of fences around water springs, the enrichment of forest stands close to springs, and the planting of vegetation along river banks and between unconnected patches of forest in order to reduce seasonal water shortages and erosion. This chapter examines the shaping of a PES project by the interests of large-scale water users. The chapter argues for less focus on the characteristics of PES, and to 'think out of the PES box' and for greater attention to address PES outcomes with regards to social and environmental impacts.

Thereafter, this thesis moves to Ecuador, the fourth chapter, "Payment for environmental services and unequal resource control in Pimampiro, Ecuador" (Rodríguez-de-Francisco et al., 2013), engages with the analysis of a privately-financed PES scheme.[22] In this case, clients of the water utility of Pimampiro pay an extra percentage on their water fee to the Nueva America Association in order to enhance the watershed

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[21] This chapter has been written together with Jessica Budds and has been submitted to *Ecological Economics* as part of a special issue titled "In markets we trust? Contrasting views on the performance of market based instruments in global environmental governance". This special issue is co-edited by Erik Gómez-Baggethun and Roldan Muradian.

[22] This chapter has been written together with Jessica Budds and Rutgerd Boelens and has been accepted in *Society and Natural Resources* as part of a special issue on "The institutional dimension of market-based instruments for enhancing the provision of ecosystem services" co-edited by Roldan Muradian and Erik Gómez-Baggethun

environmental services provided by the forests and páramos[23] in this region of the northern Andes of Ecuador. This chapter analyses PES design and its impacts on environmental service providing communities.

The fifth chapter,[24] "Payment for environmental services and power in the Chamachán watershed, Ecuador", examines the second PES scheme in the same highland region, one that is a public-financed PES scheme in the Chamachán watershed, a PES scheme that is, also, located in the jurisdiction of the Pimampiro municipality, Ecuador. Here payment is given to private owners in the higher part of the Chamachán watershed for conserving forests and changing land use that are considered to increase the provision of watershed environmental services to different water users downstream. This chapter analyses, using Gaventa's power cube, the crafting of the Chamachán PES scheme.

In the sixth and final chapter of this thesis, I return to the research questions to draw the conclusions of this research and to discuss its implications in relation to wider societal issues.

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[23] Paramo formations occur on high isolated peaks and ranges, with this one being no different, located at elevations of about 3,000 m.a.s.l, between low-lying montane forest and snow-capped peaks (WWF, 2012).

[24] This chapter has been co-authored with Rutgerd Boelens and been submitted to *Human Organization*.

Chapter 2. Payment for environmental services as a powerful policy model

Street of the water inlet. Street name board in the traditional neighbourhood of La Candelaria, Santafé de Bogotá, Colombia.

Source: Rodríguez-de-Francisco, 2005.

Based on: Rodríguez-de-Francisco, J.C., Boelens, R., under revision. Payment for environmental services as a powerful policy model. *Environmental Politics*.

2.1. Introduction

These days, Payment for Environmental Services (PES) is among the most popular policy instruments for environmental conservation. PES schemes are reward schemes in which landowners are compensated with cash or in-kind direct payments for the land management practices they contribute, which aim to improve the provision of specific 'environmental services' (FAO, 2007; Wunder, 2005). By providing economic incentives for enhancing environmental services, PES encourages landowners to build nature's economic value into their management plan.

Given the perceived development opportunities offered by the spatial coincidence of natural resource rich areas with the occurrence of rural poverty in many places of the world (Kosoy et al., 2007) and the idea that poverty is the result of environmental degradation (MEA, 2005), PES is regarded not just as a conservation instrument but also as a powerful policy to effectively help overcome poverty, while positively affecting rural development (Gómez-Baggethun et al., 2010). This policy assumption, together with the predicted cost-effectiveness of PES relative to command-and-control policies and the reduction of public expenditure to reach conservation policy goals (Pattanayak et al., 2011; Repetto, 1987), has made PES an extremely attractive instrument for international donors and for policy makers in developing nations.

Protecting watershed environmental services has been one of the main targets of PES. In a recent study by the US non-profit research organization Forest Trends, Bennett et al. (2012) report that watershed services were bought in no less than 117 million hectares around the world, for a total of $USD 8 billion, between 2008 and 2011. "We are witnessing the early stages of a global response that could transform the way we value and manage the world's watersheds," explains Michael Jenkins, president and chief executive of Forest Trends (Jenkins, in Provost, 2013).

It is startling, however, that the socioeconomic impact of PES projects has been given so little policy attention till now. The latter is restricted to some recent critical studies by political ecologists. For instance, Bennett et al. (2012) analysed 205 watershed PES projects and found that socioeconomic monitoring was carried out in only 16 of them. The report concludes that "worryingly little socioeconomic monitoring ... appears to

be taking place" with respect to the analysed PES projects (Bennett et al., 2012:viii), but still recommends for a "... widespread adoption of PES [as a] key part of any strategy for ensuring secure and sustainable water systems" (Bennett et al., 2012:ix). Corbera and Unai (2012) explain that PES mainstreaming without a proper understanding of PES potential impacts of PES on service providers' livelihoods is ethically untenable.

Why and how has the PES model been supported as a conservation and development instrument in Colombia? This chapter deals with this question by analysing the PES policy-making process as a national policy model in Colombia. As Mosse, in another regional context, argued:

> Despite the enormous energy devoted to generating the right policy models in development, strangely little attention is given to the relationship between these models and the practices and events that they are expected to generate or legitimize (2004:639).

Likewise, Rap (2006), when analysing the production of the irrigation management transfer policy model in Mexico, noted that a specific policy is promoted by claiming it as a success right from the outset, and aligning the policy elements within a strong network. It requires re-affirmation in specific epistemic communities – "networks of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain" (Haas, 1992:3).

The promotion of policy-models as a 'success' hinges, strongly, on the establishment of an epistemic network, that discursively adopts and institutionally/politically advocates for these models. Weyland explains that "success gives rise to impressions of high promise, the representativeness heuristic induces policy-makers to jump on the bandwagon of the [policy] diffusion process" (2007:8).

This chapter reconstructs the development of the National PES Strategy that was issued in Colombia in 2008. The role of the transnational policy network for environmental governance will receive specific attention in investigating how Colombian policy-makers implemented PES as a tool for addressing conservation issues and poverty alleviation, despite the lack of clear evidence regarding the social impacts of PES.

The chapter is structured as follows: The next section conceptually examines how policy-making and its assumptions are socially-produced discourses that frame, stabilize and help to disseminate policy models among stakeholders. They simultaneously create a particular (virtual) reality and tend to generate indifference toward 'on-the-ground' existing realities and diverse 'alternative realities'. Section 2.3. presents the research methods. Section 2.4. scrutinises the policy-making process of the Colombian National PES Strategy. Section 2.5. discusses the findings of literature and archival research and interviews made, in the light of the theories presented. The conclusion makes a plea for a critical approach toward adopting PES as a policy instrument. A market (-like) approach might be suitable for conservation in some contexts, but this study questions the fact that national laws in the region embrace PES uncritically. This phenomenon is even more worrisome since evidence shows that PES projects tend to reproduce rural inequality rather than addressing the social injustices provoked by natural resource management and development interventions.

2.2. PES policy modelling, experts, and reality construction

> By simplifying out the multiple goals, roles, sources of identity and affiliation, and worldviews within which the so-called rational decision-making of economic actors is embedded, we lose all but peripheral vision of the roles of social factors and community in how people relate to and deal with their commons (McCay, 2001:186).

As with other policy models, PES policy aims to establish, within existing realities, the need for reform in accordance with the model's concepts, assumptions and predictions, and in accordance with the model's presumed or self-acclaimed achievements in other places. The policy model, therefore, establishes a set of guidelines in order to replicate its achievements, and needs a network of active supporters to frame it as a success (Ferguson, 1990; Mosse, 2004; Rap, 2006). Policy and project implementation are profoundly entwined discursive partners, and their intimate relationship is not necessarily based on existing realities. Policies shape projects and, in turn, projects are successful because they sustain policy models. As Mosse shows through his field work on water development in India, actual results in the field are less important: "the

gap between policy and practice is constantly negotiated away" (2004:664). Rap (2006) explains how, indeed, a policy model is subject to continuous processes of production and promotion; for this, it requires the mobilisation and maintenance of political consent among the epistemic community to which it is directed.

The workings of power in policy making and implementation are therefore crucial. Orenstein (2008) argues that power is ideational and material in the context of the politics of policy. Policy models act as regimes of representation and as discourses they organize and predict reality and at the same time they induce the models' acceptance and provision of other explanatory elements (i.e. representativeness heuristic). Policy models and their norms organize objects and subjects in (newly-shaped) reality and hierarchies, and – as Foucault (1975) argued – they aim to make subjects self-organize in the framework of this policy network and conform to its rules of conduct. Thus, the ideational normalising power that is operational in policy-making and implementation aims to produce and control reality and its subjects, and to forge their beings and mould their minds (Foucault, 1975, 1980). This relates to what Foucault denominates as governmentality. Similarly, Agrawal (2005) describes how subtle technologies of governance and control are involved in the creation of new subjects concerned about the environment. Büscher (2013) argues that these techniques of power are part of the marketing and the politics of neoliberal conservation policies, where a particular logic is induced in policy agents. Hereby, material resources refer to incentives (i.e. promotion possibilities) and coercion (i.e. conditionality) within the policy network.

The larger and more stable ('powerful') the policy network is in which policy concepts are defined and through which projects and policy outcomes take place, the stronger its truth-claims and the larger its 'real' successes. Or as Latour phrased it: "Nothing becomes real to the point of not needing a network in which to upkeep its existence" (1991:118). No policy model can ever extend beyond its network. The network provides standards, categories, measurement instruments, logical relationships and criteria for success, and aims to align actors and points of view. A truth claim in such an epistemic policy network, therefore, is to be understood as a system of ordered procedures to produce, regulate, circulate, and operate a statement (Foucault, 1980:133; see also Rossi, 2004).

Therefore, as Ferguson (1990) demonstrated for water development in Lesotho, Mosse (2004) for India, Rap (2006) for Mexico, and Boelens and Zwarteveen (2005) and Budds (2004, 2009) for Chile, project practices institute and protect sets of representations, which in turn serve to interpret policy models' activities, measure their performance and define their success. In the same way, success of PES policy formulation and implementation depends on how experts and agencies are able to tie other actors and their interests to their market environmentalist project rationality. According to Mosse, this results in particular practices of project discursive alignment in development and funding agencies:

> Policy discourse among international donors struggles to ensure that practices are rendered coherent in terms of a single overarching framework rather than celebrating a diversity of approaches or the multiplicity of rationalities and values (2003:19).

At the same time, it is common to see in the field how scientific policy experts and development professionals work to confirm and not contradict the principles and assumptions of the models they are following and framing. These models validate their identities as professionals and experts, they confirm their achievements, and, as Mosse says, "they ensure coalitions of support and justify the flow of resources" (2004:664). He concludes that even though project practice is entirely stubborn and actual results are often unpredictable:

> Everybody is particularly concerned with making, protecting, elaborating and promoting models with the power to organize authoritative interpretations, concealing operational realities, re-enforcing given models and limiting institutional learning (2004:664).

In direct relation to this (but in other thematic areas), German philosopher Gunther Anders (1902-1992) profoundly examined the disconnection between, on the one hand, new policies, technologies and intervention models, and on the other hand, the human (in)ability to think of and perceive their impacts on the ground. As Anders (1980) argued, human moral imagination lags behind; it cannot keep up with the development of economic and technological models and related intervention policies. "We are able to do more than we can feel and justify" (Anders, in Notenboom, 1979:15). This means that in the field of

policy-making, experts and planners often cannot grasp or accommodate (within the policy model) what the implications of their models will be when actually implemented in local communities and watersheds. Illustrations of this are given, for example, by Lynch (2012) explaining the new Peruvian water regime, and Perramond (2013) who analyses water governance transformations in New Mexico, USA. Similarly, Weyland explains that planners:

> … overwhelmed by abundant information resort to cognitive shortcuts that turn decision making more efficient, but at the risk of distorting inferences substantially. In this view, rationality is distinctly bounded as hard-pressed decision-makers regularly and automatically rely on heuristics that facilitate the complicated process of making choices, but that can also cause significant biases (2007:5).

It is common to see how policy-making experts and planners, in their quest for objectivity and representativeness, keep a scientific distance, avoiding emotional contacts with the people 'downstairs', which contributes to the inability of most scientific research, technology development and policy formulation to feel what is actually happening or imagine what might happen in reality (Anders, 1980). This is greatly enhanced by the apolitical and technically top-heavy character of conservation and water development framing, which defines its own reality. Consequently, 'economic and technical rightness' is presented as neutral, devoid of moral and cultural meaning, devoid of social relations and political interests.

Indeed, a fundamental belief that fuels modern expert views is that water users and managers follow the same incentives, which are largely determined in expert institutions and markets (Boelens and Zwarteveen, 2005). Often, the outcome of organizational and political processes in conservation and water management are seen as the sum of rational decisions made by individuals, based on interests that can be objectively defined and known by outside analysts: given the proper incentive structures, human beings will present the same conservationist conduct

universally.[25] In principle, 'inside' the expert view, all actors are equal – therefore, the rules of the conservation and water management game are or should be the same for all.

There is a strong tendency for water policy models, invented for universal application and then applied in the Andean countries, to separate theoretical outcomes from multi-dimensional reality (Boelens and Vos, 2012). In this way, policy and intervention results, in a circular fashion, correspond to disciplinary theoretical predictions. Whenever the actual outcomes are problematic or even dramatic, and can in no way be covered by the model's assumptions, it is common not to abolish the model but either to blame the 'model receivers' (the local communities and their water users) and/or to 'silence the drama' – the results are not incorporated in the evaluation of the model or program, and the social 'drama scene' is left behind (see Boelens, 2009; Budds, 2004). Indeed, in general, the epistemic community is not really confronted with the social results of their plans. Usually they are not obliged to do so, neither by their own institutional and economic incentive structures, or even by scientific needs, since commonly their contribution to the model 'has been established' and their credits are not based on the logic of improvement in the eyes of the water users themselves. As a result, even though the promotion of 'accountability' among actors is a major theoretical-conceptual cornerstone of market-environmentalism, expert institutes and agents themselves will and cannot be held accountable. The results are there, in the field, but they are not seen.[26] In a similar vein:

> When presented with 'contradicting empirical data', policy experts remain indifferent, as their main concern is to continue to underwrite and stabilize the assumptions in the face of high uncertainty, complexity, and polarization (Roe 1994:2 cited in Rap, 2006:1303).

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[25] Boelens and Zwarteveen, 2005 on neoliberal water policies; see also Büscher, 2012 on neoliberal conservation; Fletcher, 2010 on neoliberal environmentality; see also Springer, 2010 on neoliberal discursive formations.

[26] E.g., Achterhuis et al., 2010; De Vos et al., 2006; Fairhead and Leach, 1995; Goldman, 1997; Li, 2007

Partly as a result of this indifference toward actual reality (Bennett et al., 2012; Büscher, 2012; Igoe and Brockington, 2007; Morgan, 2007), the shared and uniformising, bounded rationality and discourse of the PES epistemic community has been impressively and enormously influential during the last decade. Beyond just scientific workers and their desk works, most international donors, development NGOs and state agencies have adopted the PES discourse and its client-oriented, economic-technocentric rationality. This entails huge changes not just in the world of academia and development institutions but most of all 'on-the-ground', for instance, in Andean water user communities. As Goldman argues:

> For development experts to assert that they have a game plan for making productive relations on common property 'better', 'more efficient' and 'sustainable', they first have to construct a world of values and property relations which befits an imagined reality. To do so, they must agree to a definition of property – as well as appropriate mechanisms for interpreting the 'true value' of property and natural resources (for example, prices) – however far removed these definitions are from the irreducible material activities of highly diverse, resource-dependent communities (1997:33).

After outlining the methods in the following section, this chapter continues to explore the PES policy-making process in Colombia in order to comprehend the background of its nearly blind adoption, its rapid proliferation and the meaning of 'success'.

2.3. Methods for analysing PES mainstreaming in Colombia

This chapter reconstructs the development of the National PES Strategy that was issued in Colombia in 2008. It is based on literature review and empirical research, partly throughout the first author's involvement in Colombia's environmental sector, from 2002 to 2006. In this period, he was specifically involved in implementing economic incentives for conservation, such as PES. The literature review covered those documents (case studies, legal developments, conference reports) that led to implementing PES as a National Strategy. During two additional fieldwork periods in Colombia, in 2010 and in 2011, representatives of several leading organizations were interviewed regarding the case studies underlying the design and implementation of the National PES Strategy.

These institutions were the Ministry of Environment (two interviews), UAESPNN (two interviews), Conservation International (one interview), Patrimonio Natural (two interviews) and the Alexander von Humboldt Research Institute (two interviews).

2.4. Framing the Colombian National PES Strategy

2.4.1. Towards a new policy

In the late-1990s, there were a series of administrative-institutional and legal project developments that rapidly set the context to start talking about PES in Colombia and that marked the felt urgency to 'move forward' towards a National PES Strategy (Mendoza-Páez, 2010; Mendoza-Páez and Moreno-Díaz, 2009). First of all, an influential ad-hoc group 'Grupo de Incentivos para la Conservación y Uso Sostenible de la Diversidad Biológica', with multiple links to the World Bank, was created around 1999, in order to discuss how to introduce incentives for conservation in Colombia (Hernández-Pérez, 2000). This group comprised national public organizations, such as the Alexander von Humboldt Research Institute (managing the largest Global Environmental Facility (GEF) project in Colombia at that time, and whose environmental economics office was led by an ex-World Bank consultant), the National Park Service (UAESPNN), the Departamento Nacional de Planeación [National Planning Department] (DNP), national private organizations such as the Civil Society Reserves Network and an international NGO, the World-Wide Fund For Nature (WWF). One of the main outcomes of this group's work was to highlight the need for an incentive approach toward environmental problems in the light of a general disenchantment with the conventional command-and-control approach in conservation projects.

Nearly at the same moment, four PES projects were formulated and implemented, projects that preceded the elaboration of the National PES Strategy. The first PES project is in the Cauca watershed, a PES project implemented in the 1990s in the Cauca Valley (See Chapter 3). Echavarría (2002) explains how a group of water user organizations formed by large-scale agricultural water users from the Cauca tributaries (sub-watersheds) started the process. In response to growing concern over the quantity of water supply for agricultural purposes, they decided to take action and fund the implementation of sub watershed management plans that would

benefit upland communities, projects for which the Cauca Valley Corporation (CVC) lacked the economic resources. For instance, in the case of the Nima watershed, in terms of numbers, there has been a significant conversion of land that previously was used for extensive cattle grazing into forest areas and forest plantations. According to the CVC (2011), in this watershed, in 1982 there were 1,946 hectares of natural forest, while by 2008 this land cover accounted for 6,775 hectares.

The second project with PES is the Chaina watershed project, implemented in 2005-2006 as part of the GEF-Andes program (see WorldBank, 2001). Borda et al. (2010) explain how this project, located in Colombia's eastern Andes, was financed by five rural water supply systems, organised under water user associations, which serve 880 households in the rural area of the municipality of Villa de Leyva. Each member of the water user associations pays a monthly fee of US$0.50 per household that goes to pay 11 upstream landholders (US$250/hectare/year) for taking measures that improve 'hydrological services' downstream (sedimentation reduction and dry-season flow). The payment of the members of the association also covers the costs of an annual management plan for watershed protection. At the beginning of PES implementation, only two families were living constantly in the area and five were renting land for agriculture and cattle-raising. Borda et al. (2010) mention that though land use changes are likely to have reduced sedimentation and organic pollution while increasing water regulation throughout the year, the social impacts are not explicitly considered. They report that PES design did not include redistributive goals and that there is no evidence that the project has substantially improved the Chaina landowners' livelihood; the impact of PES should be a matter of future research (Borda et al., 2010)

The third PES scheme is called Regional Integrated Silvopastoral Ecosystem Management Project (RISEMP), implemented in the watershed of La Vieja River in the early 2000s (see GEF, 2002). Here PES seeks to encourage a shift from unsustainable agricultural practices to sustainable silvopastoral practices (Pagiola et al., 2004; WorldBank, 2008). According to Pagiola et al. (2004), the Global Environmental Fund project pays land users to provide global environmental services (that is, carbon sequestration and biodiversity protection), so that the additional income stream, provided for two years, makes the transition towards silvopastoral

management privately profitable. Regarding socioeconomic impacts, Pagiola et al. (2005) explain that the project is expected to increase farm labour use in the project areas by 8–13%. Regarding environmental impacts, Zapata et al. (2007) report important improvements in degraded pastures and better forest patches connectivity as a positive element for biodiversity and for carbon sequestration.

The fourth project consists of a public PES, starting from the late 1990s onwards. The Conservation Incentive for Forests (Certificado de Incentivo Forestal-CIF-c) and for Forest Plantation (CIF-r) are payments given to landowners based on the conservation of natural forest and on the establishment of forest plantations, respectively. Blanco (2009) explains that there was little political commitment for the CIF-c in comparison to CIF-r, as the latter was getting all the funds available for the whole CIF program.

Despite the importance given to these projects in national policy discourse, they all have in common that the monitoring of socioeconomic impacts is missing or relegated to the conviction of 'making PES work'. This is remarkable, especially because the first evidence from similar projects in the region shows negative impacts precisely for the poorest families' livelihood security (Osborne, 2011, 2013; Rodríguez-de-Francisco et al., 2013).

Amidst an explosive rise in international funding for PES policy implementation projects by multilateral agencies, and in the context of the above early PES projects and its legal inclusion in the national development plan, the Ministry of Environment, UAESPNN, WWF, The Nature Conservancy (TNC) and Conservation International (CI), organised, in Cartagena de Indias, the National Conference on Environmental Services in February 2007 (Taller Nacional de Servicios Ambientales). Juan Lozano, Minister of Environment at that time, explained prior to the workshop that:

> There are important opportunities for different rural communities to sell environmental services ... therefore it is necessary to establish a new agenda in which environmental conservation efforts are economically recognised... Here we have the most important PES experts and the world's most renowned organizations, willing to help

> us design these compensation projects and to join with Colombia so we conserve our natural resources (MinAmbiente, 2007:1).

Lozano further enlightened that the government's interest, in PES is to:

> carry an environmental management that promotes sustainable development, and which is based on the adequate articulation of the economic, social and environmental dimensions ... (Lozano, in Ortega, 2008:5). [27]

The aim of this workshop was to promote implementation of the National PES Strategy, so international experts were brought to present the major benefits of PES. Besides the presentation of mainly international ('successful') experiences, the workshop centred on defining the types of environmental services that should be prioritised by the National PES Strategy, and how to devise the institutional arrangement (that is public, private, and public-private partnerships) best suited to implementing the national strategy. The expert community also discussed payment mechanisms and scales (at the national level, regional funds, or direct payment from environmental authorities), the support system that different national environmental institutions should provide for PES, as well as how to overcome any bottlenecks when implementing the National PES Strategy.

The crafting of the National PES strategy was finalised in 2008. According to the Ministry of Environment, the strategy's overall goal was to facilitate and guide implementation of PES under any kind of institutional arrangement throughout Colombia, and to establish PES as a tool to meet the objectives of environmental and social policy associated with the conservation and restoration of natural ecosystems (MinAmbiente, 2008). Among its specific objectives, the National PES Strategy states that it will support implementation and knowledge generation regarding PES, as a conservation strategy for natural resources and environmental services, coordinate all the different international plans and economic support for conservation, promote coordination among environmental authorities, local private sector, NGOs and other organizations around PES, while improving quality of life for the most vulnerable communities settled in

[27] All translations from Spanish are by the authors.

areas of conservation and restoration of natural resources and environmental services (MinAmbiente, 2008).

In an interview, Juan Lozano, explained that:

> Colombia wants to be the front-runner in the region with respect to PES, as the Government recognises PES' importance in conservation and for those who might benefit from conservation (MinAmbiente, 2007:1).

Next to these developments, the explicit inclusion of PES in president Uribe's national development plans (Law 1151 of 2007) and its implicit inclusion in president Santo's programme (Law 1450 of 2011) are also important landmarks on the PES consolidation map in Colombia. Finally in 2013, Decree 953 established that Departments and Municipalities have the obligation to invest no less than 1% of their regular income to purchase land or pay for environmental services in zones that are important for water supply to local water supply systems.

2.4.2. PES-speak

> Watershed environmental services are like your mobile phone service, if you don't pay for it you cannot make a call (World Bank staff, pers. comm., September 2006).

After the publication of the National PES Strategy in 2008, Agreement 116 mapped out different PES projects in Colombia, identifying 35 on-going PES initiatives (MinAmbiente 2009). Out of this latter set, 13 initiatives received support as pilot projects for the National PES Strategy (Arango-Moreno and Fandiño-Orozco, 2011). Even though tangible results in the Colombian field were still lacking, all officials who were interviewed explained their profound faith in adopting the new policy. PES, they argued, proposes a logical solution that addresses the need for conserving the environmental services required to sustain economic growth while fostering poverty alleviation. For example, as a staff member of the Ministry of Environment explained:

> This solution addresses the environmental public sector's deficit in developing nations, where economic funding is made available to conserve our natural heritage without excluding rural communities

> from economic development (Ministry of Environment staff, pers. comm., December 2011).

However, more than belief alone in the workings of PES, state officials and national NGO staff also expressed more strategic and instrumental arguments. It appeared that one of the main elements explaining PES introduction in Colombian institutes was the influence by development banks and international NGOs in pushing, and sometimes pressuring, the adoption of these instruments. They knew perfectly well that funding would be made available only when PES jargon was explicitly included in the project proposals. Speaking the same language as the international PES epistemic community and aligning to the model's social and technical policy components and messages is therefore crucial. One staff member of the Ministry of Environment expressed it in the following way:

> The way in which development and conservation projects are financed, nowadays, requires the inclusion of certain catchwords that bring your proposal into line with certain global trends. Currently, this global axiom is largely set around climate change and economic instruments for conservation – so, paying or getting discounts for conservation. Developed countries paying for carbon sequestered in forest in developing countries, regional and local water users paying local upstream landowners for conservation, and so forth (Ministry of Environment staff, pers. comm., December 2011).

Incentives and power structures, including funding and promotion opportunities, in state institutions and development agencies, indeed, pressure their staff to express themselves, their jobs and their programs and proposals through PES DevSpeak (or Development Speak, metaphor for Orwell's 1984 NewSpeak (see also Ferguson, 1990; Mosse, 2004). PES-speak enables communication and agreement within the epistemic community and understanding of environmental problems through the prevailing policy model of market environmentalism, while pressuring its replication. Despite the fact that the officials and professionals interviewed do not simply absorb PES but through human agency 'strategically use PES discourses', this does not take away the nature of alignment through these discourses. PES-speak presents a language to 'commensurate and glue' heterogeneous actors and diverse institutional, socio-natural worlds in order to have them speak of the same type of reductionist needs and

problems and the same type of reductionist intervention solutions. Interviewees were often not aware of the fact that their responses – largely leaning on 'rational, objective solutions', 'good governance', 'most efficient resource use', and so forth – neglected all local particularities of the Colombian cases they were supposed to talk about. Solutions were 'on the shelf' before local problems and solutions were known and taken seriously. They also neglected all references to unequal power relationships, those among local groups in PES projects, and those among PES funders, experts, officials and local farmers.

The de-politization of institutional effects and the (conscious or unconscious) failure to recognize complexity make it possible to imagine conservation as a rationally plannable economic/engineering process, to seek global solutions based on globalised concepts and expert tools. It enables envisioning environmental projects as neutral efforts to socially engineer 'objectively best' watershed management plans for all local situations, according to the lessons of 'best practices' – no matter how great local diversity and power differentials may be. Characteristically, during the interviews, not only the problems regarding local environmental degradation, water scarcity, rights and property and poverty were viewed in market environmentalist terms, so were the supposed remedies: valuation, intervention and standardization – based on global, uniform expert models, cut loose from contexts.

Some of the same (ex)colleagues, who in the years 2002-2006 were profoundly sceptical about PES and its one-dimensional rationality, are now working on the PES implementation projects that they themselves have formulated. When asked about the environmental impacts of PES, interviewees referred to the great amount of scientific literature analysing PES experiences all over the world. For instance, a Conservation International staff member, referring to no other field evidence than the (to be expected) PES results and the (conceptual) discussions within the aforementioned ad-hoc group on economic incentives, argued that:

> besides PES, the country has ample experience with implementing economic incentives for conservation and these experiences represent valuable knowledge that can be used to foresee PES environmental impacts (CI staff, pers. comm., February 2012).

A staff member of the Ministry of Environment, similarly, repeated the international success discourses related to precisely those projects that have most lacked on-the-ground monitoring regarding the impacts of PES:

> There is sound environmental knowledge about PES' positive impacts on conservation, a fact that is explained by many scientific publications analysing this topic – the PES projects in Chaina and Cauca Valley in Colombia, the Pimampiro PES in Ecuador– these are some examples. Another indication is the international support that global organizations such as UNEP, FAO and many international NGOs are giving to this innovative solution (Ministry of Environment staff, pers. comm., December 2011).

Regarding, social impacts, interviewees highlighted the benefit incomes that conservation payments mean for environmental service providers, while some stressed that for this to happen, PES first requires the establishment of local institutions that can re-create market-based or market-like interaction (for example, Water User Associations as organised environmental services demanders). But when asking about the issues that are characteristically outside the PES model's domain, such as food security, cultural impacts and the skewed distribution of access to natural resources along class, gender and ethnic lines, all interviewees pointed out that relevant evidence is still to be discovered. Nevertheless, they explained that, despite lack of evidence at the moment, they were confident about the outcomes of such evaluation. As a staff member of the NGO Patrimonio Natural commented:

> This is a specific point in the pilots receiving support from the Agreement 116, as this is still on-going research (Patrimonio Natural staff, pers. comm., March 2012).

In a similar way, regarding the analysis of the PES schemes' impact on power differentials among natural resources stakeholders, and how this might influence and extend social inequality because of PES introduction, all of the interviewees (while highlighting the issue's 'obvious importance') mentioned that this topic is not yet included in PES analysis so far. As a CI staff member explained, with a sense of mixed enthusiasm and embarrassment that this theme, so far, had not crossed his organization's mind:

> I believe that such a topic is of special importance in the Colombian and developing nations' context as it addresses the very differences and differentiation that exist among natural resource users. It can be explanatory of much of the inequality that we see in the rural areas. This is a topic that has to be addressed if we want to make PES a better tool. (CI staff, pers. comm., February 2012).

2.5. Discussion

Even before consolidating and examining local Colombian experiences and gaining in-house national knowledge on the social impacts of PES on the poorest members of society, PES has been uncritically elevated to a National Strategy for conservation. The creation of a PES policy model in Colombia is based on several assumptions that have importantly contributed to this rather uncritical adoption, thus conforming to an international trend. Rather than presenting an exhaustive list, this chapter focuses on two of these assumptions:

First, environmental management interventions are understood as merely technical projects, quite distant from political interventions. Indeed, a careful revision of the seminal work on economic incentives in Colombia (Hernández-Pérez, 2000), the summary of the Taller de Servicios Ambientales (Ortega, 2008), the National PES Strategy (MinAmbiente, 2008), the methodological guide for the implementation of PES (MinAmbiente, 2012) and related reports (Arango-Moreno and Fandiño-Orozco, 2011), all present conservation and market environmentalist interventions as just technical and rather mechanical endeavours. Little or no reference is made to key issues such as distribution of and access to natural resources, or how market-based or market-like conservation necessarily implies new ways of conceiving and introducing property rights, new means of control over natural resources, and a fundamentally different vision of nature-society relationships. These conservation policies and projects inevitably have transformative effects over socio-natural landscapes and power relations (Boelens et al., 2013; Himley, 2009; Robbins, 2004; West, 2006) whereby different actors strategically use their power to advance their own agendas. In this sense, little is said about how market conservation might block or constrain the livelihoods of the poor. Instead, PES is viewed as an instrument that can enable rural

life by providing the income that rural families need in order to stay in the rural areas (Appleton, 2008:43), as all natural resource users are supposed to be uniformly responding to economic incentives.

This brings us to the second assumption: A commonality in all the national projects and policy documents reviewed for this chapter, as well as in nearly all interviews, is that the PES policy network understands PES-based social impacts strictly within the PES conceptual framework itself, and not with respect to the multi-dimensional character of social reality and the politics that drive this reality. PES rationality assumes the creation of extra income opportunities for the poor so, if new income sources are created, PES is deemed socially and economically successful. There is no explicit analysis of how PES might create trade-offs with respect to rural livelihoods or forms of peasant conservation. Related to this is the fact that PES, in order to function, needs particular social institutions and norms to be in place or else these (market environmentalist) institutions need to be introduced as the new way of governing the local context. If these institutions that allow for PES operationality are set in place and strengthened, PES is deemed as successful. It is thereby curious (to put it mildly) to see that no analysis is done in order to examine PES' impacts on those institutions that (often for very long) have been functioning outside the PES or market environmental model. 'Success' seems to be entirely skewed and geared towards confirming and conforming to the model. For instance, PES' problematic impact on non-commoditised resources and relationships (Boelens et al., 2013) that make up local agricultural production, peasant organizations and cultural institutions tend to be entirely side-lined.

In the global South and in the Andean region, approaches based on universal expert thinking commonly seek to impose a blanket overriding economic rationality and monetary value to govern water and the environment (Goldman, 1997; Jensen-Newby, 2010; Moore, 1989; Sachs, 1993). The resource's scarcity 'creates' economic values. In their offices, neoliberal planners and PES system experts have not been able to understand the reason for grassroots protests: they feel that peasant communities in Andean watersheds are unable to act 'rationally' or 'democratically' and therefore fail to adapt to the universal model. However, as several studies have shown (Boelens et al., 2013; Golte and de la Cadena, 1986; Mayer, 2002) there are already multiple ways to

'compensate and retribute environmental services' in Andean communities and watersheds, based on, for instance, reciprocal working relationships. But, local ways to manage and set value on water are not seen or judged in their own right (or even on the basis of water use efficiency or marginal returns) but in terms of the experts' ideal universal model. They tend to be viewed as obstacles for modern water control, to be removed in order to pave the way towards water modernisation by 'rational' actors.

Evidence such as findings based on Colombian experiences bear witness to the fact that in the global South and in the Andean region, mainstream expert resources and conservation interventions may have learned little from errors of the past and may easily overlook the complexities and context-based opportunities of the present. Some examples of such disregard by PES interventions for complexity are illustrated by Boelens (2013) and Bury et al. (2013) for Peru, Granda (2005) and Rodríguez-de-Francisco et al. (2013) for Ecuador, Jourdain et al. (2009) for Vietnam, Milne and Adams (2012) for Cambodia, and Osborne (2011, 2013) for Mexico. Time and again, modernising expert institutes renew their belief in an imaginary, universal, expert-planned model of 'modern water management' that could control the irregularities, correct the incapacities, and subdue the stubbornness of Andean nature and peoples. The firm wish to morally decide about what is good and what is wrong in resource management science and practice seems to be based not only on the wish to establish the universal substance, values and norms in the field of water expertise, but also on their need to legitimise the position of the experts community itself. Whenever seen as neutral and apolitical, their knowledge and truth claims can legitimise wide-ranging political decision-making and shape water policies and agendas.

PES scientists and professionals create and aim to install and proliferate their own reality. This does not imply, however, that mainstream water or market environmentalist experts can be portrayed simply as 'wicked persons who mislead actual reality'. On the contrary, they are subjects of and subject to the same game. Where Foucault argued that the process of 'subjectification' and self-disciplining leads to people's incapability to have an independent handle on the reach of their own thinking and acting, Anders would rather point at how the state of technology and scientific model-making – and people's institutional embeddedness – make our

moral imagination 'lag behind' and restrain the capacity to give a balanced moral opinion:

> Whether people really grasp what is happening first and foremost depends on the moral situation they are in. Property relations, labour divisions, thought-imposition, political violence, and so forth, determine such a situation. These issues mean that we are indifferent or actually worry about the things that are fundamental to us (Anders, in Notenboom, 1979:15).

Indeed, the capacity of experts to devise representativeness heuristics and understand what they are preaching is strongly related to the webs of power and technology they are part of.[28] Foucault stresses the power-truth contents of (among others, expert) knowledge, Anders, the distance between experts' knowledge and their creative capacity to imagine the consequences of their technological interventions. And indeed, the discursive construction of conservation intervention's political neutrality certainly obscures an expert's capacity to see both the power relations and the human suffering or well-being enhanced by particular policy tools, methods and technologies.

2.6. Conclusion

Modern PES policies promise to accelerate 'progress' through planned development and guarantee control over the state of nature through advanced science; material wealth and effective governance through markets. The idea is that local imperfections and inefficiencies will disappear as people realise the effectiveness of the rational, modern expertocracies' capacity to foster watershed conservation and water management development needs.

This set of market environmentalist notions, rather than relying on actual, on-the-ground impacts, is taken up by national organisations because of fierce promotion by international donors, thus becoming increasingly

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[28] Complementarily, Conca (2006) explains, for the case of water expert networks, that the influence of these networks is not only based on technical expert and rationalist understanding of water problems but also on water diplomacy.

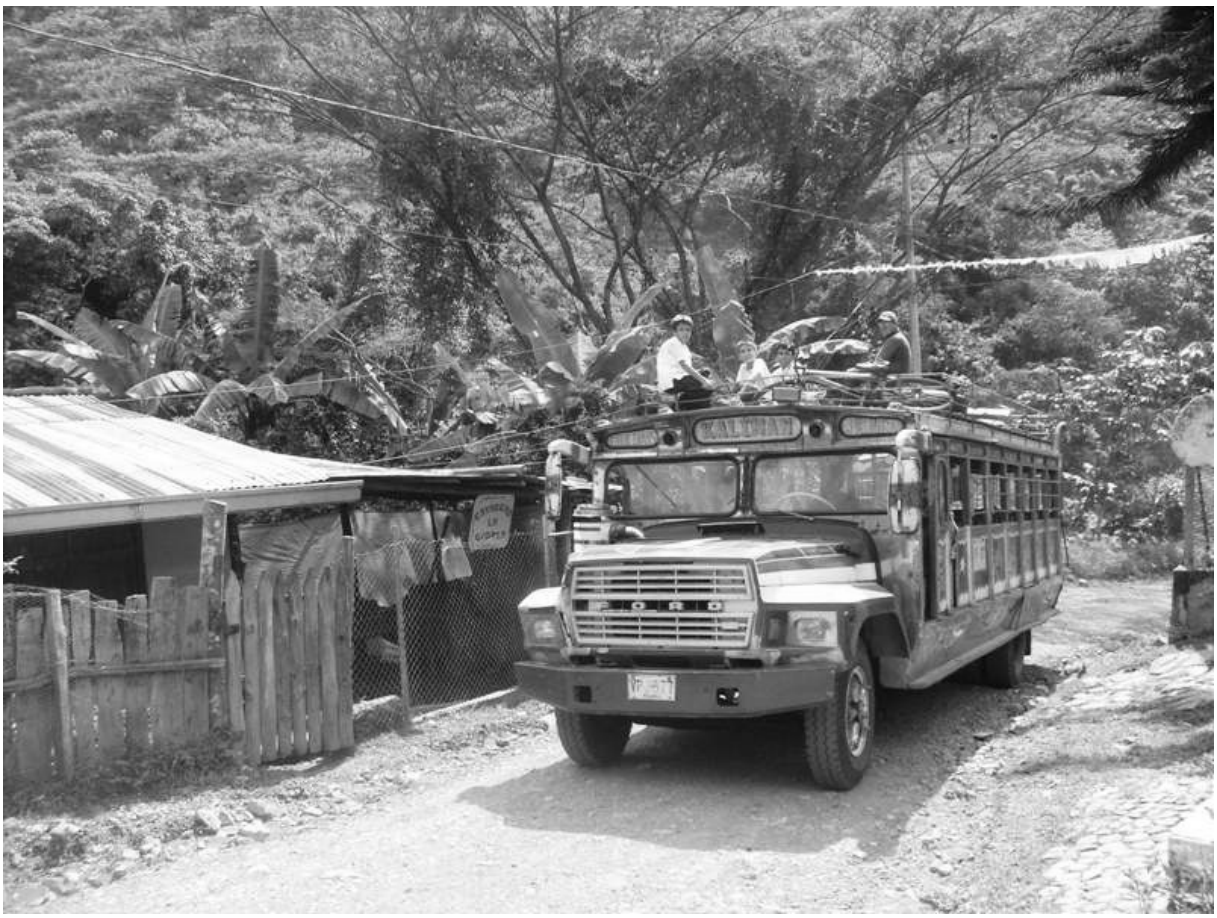
popular and powerful. The popularity of PES, as shown in this chapter, is not only based on the strong influence of international donors towards PES adoption and the general disenchantment with the conventional command-and-control approach, but is also shaped by the discursive power of the rapidly growing, subjectifiying PES-speak. PES-Speak argues that nature cannot be acknowledged by natural resource managers and policy makers if it does not have a currency sign; only commodified nature is 'visible'.[29] But its popularity is also based on the fact that aligning to PES allows national institutes and their researchers to secure funding for projects, secure their jobs and relate their organisations and name to so-called successful implementations – success that provides credentials for better networking, new project tenders and jobs.

Denial of connections between power and knowledge and the hidden moralism of 'good natural resource governance' and 'rational resource use', coupled with the status of being a representative of scientific reason, makes the expert into a powerful political actor who, behind the mask of neutrality, supports (often unconsciously, by not clearly grasping PES' social impacts) the justification of far-reaching reforms and interventions.

More than a criticism of PES, this chapter is foremost a critique of the uncritical adoption of PES, a criticism that calls for far more profound, contextualised and power-critical studies on PES social impacts. Next to understanding how scientific policy rationality and institutional development conditions support uncritical PES implementation, reinforce PES-speak and generate indifference towards 'the field', this also requires an on-the-ground understanding of how PES influences multi-layered socio-natural realities and affects, in particular, marginalised communities and families.

[29] 'Making nature visible' is the lemma of the UNEP's Economics of Ecosystems and Biodiversity programme (TEEB).

Chapter 3. Payments for environmental services and changing control over natural resources: public and private sector roles in conservation of the Nima watershed, Colombia



Chiva (Bus) passing through Caluce in the Nima watershed.
Source: Valencia, 2011

Based on: Rodríguez-de-Francisco, J.C., Budds, J., under revision. Payments for environmental services and changing control over natural resources: public and private sector roles in conservation of the Nima watershed, Colombia. *Ecological Economics*.

> In former times the *chivas* [buses] used to come down the road loaded with agricultural produce to be taken to market in Palmira. Nowadays it is the other way around, most of the people [from the upper valley] buy produce in Palmira (Bus driver from Tenjo, pers. comm. August, 2011).

3.1. Introduction

Payments for Environmental Services (PES) are schemes in which landowners deemed to be 'providers' of environmental services are compensated, in cash or in kind, by the 'users' of such services. In low and middle income countries, PES are increasingly viewed as an effective way to reconcile development and conservation objectives by promoting 'conservation for development' rather than 'conservation versus development', as environmental service providers may receive benefits or income from environmental service users (Gómez-Baggethun and Ruiz-Pérez, 2011). In Latin America in particular, PES is an emerging tool for watershed conservation that is becoming increasingly supported by both the state and certain water users. However, while such schemes (and analyses of them) tend to concentrate on the pursuit of such conservation objectives, it is also important to consider how PES initiatives implemented at the watershed level may change the nature of water use, allocation and control among water users.

Existing research on the economic and social functioning of PES schemes has primarily focused on: i) identifying the optimal economic and institutional conditions for their implementation (Engel et al., 2008; Smith et al., 2006; Wunder, 2005; Wunder, 2008a); ii) characterising environmental services and assessing the effectiveness of PES initiatives (Pattanayak et al., 2011; Quintero et al., 2009; Wunder, 2007); iii) identifying their contributions to income generation (Grieg-Gran et al., 2005; Landell-Mills and Porras, 2002; Pagiola et al., 2005; Rosa et al., 2003); and iv) establishing a working definition that captures the varied forms of payment schemes that have been implemented (Muradian et al., 2010; Swallow et al., 2009; Wunder, 2005, 2012). Writing from an environmental economics perspective, Wunder (2012) argues that in order for a conservation project to be defined as a PES scheme, payments to environmental service providers must be conditional on the adoption of

particular measures that are deemed conducive to the conservation of the ecosystem service in question. From an ecological economics perspective, Muradian et al. adopt a broader definition by stating that payments for environmental services (PES) constitute:

> Transfers of resources between social actors, [with the] aim [of] creat[ing] incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources (2010:1205).

In this way, the latter authors move beyond the economic transaction to acknowledge the multi-dimensional character of the social contexts (e.g. institutional settings and cultural practices) in which PES schemes are introduced.

At the same time, a growing number of critical social scientists have expressed scepticism over the environmental, social and cultural implications of 'selling nature to save it' (McAfee, 1999) (see e.g., Büscher, 2012; Büscher et al., 2012; Kosoy and Corbera, 2010; McAfee and Shapiro, 2010; Robertson, 2004). An important element of such criticism has been attention to the politics and power relations through which nature becomes governed and how the ensuing modes of environmental governance produce new socio-ecological arrangements (see e.g., Himley, 2009; Milne and Adams, 2012). A fundamental element is thus acknowledgement of the deeply social and political nature of the landscapes and resources in question, which is frequently disregarded in analyses of PES schemes (see e.g., Echavarría, 2003). In relation to water, these social and political dimensions include the role that water itself plays in water governance and social struggles (Bakker, 2003; Budds, 2009; Perreault, 2006), the framing of narratives regarding water availability (Bakker, 2007; Kaika, 2003) and the pursuit of wider interests through control over water (Budds, 2013; Ekers and Loftus, 2008; Swyngedouw, 2009).

This chapter draws on a qualitative case study of one of the longest established and most renowned watershed initiatives that is described as a PES scheme in Colombia: that implemented in the Nima River within the Cauca Valley since 1992. Under this initiative, several large scale private water users (a sugarcane growers association, a water utility, a hydroelectric power company and a cardboard company) and state

agencies (the regional public environmental office, the municipality and the departmental [regional] government) have collectively paid private landowners upstream to implement ecosystem conservation measures in order to enhance water flows, stabilize discharge during the rainy and dry seasons and reduce seasonal water scarcity (Blanco et al., 2005; Echavarría, 2002; Goldman-Benner et al., 2012). The chapter examines the organisation and framing of the PES initiative, its intersection with existing water users – particularly community water supply systems[30] in the upper watershed, and the relationship between private water users and state agencies in implementing the PES scheme.

The chapter is organised as follows. Section 3.2 sets out the theoretical framework used to analyse PES. Section 3.3 describes the Nima watershed, the PES scheme and the field research methods. Section 3.4 outlines the research results, which are discussed in section 3.5. Section 3.6 presents the conclusions.

3.2. Theoretical notions for analysing the Nima case study

While much existing literature around the theory and practice of PES has focused on the rationale of the concept and its practical implementation and effectiveness (Goldman-Benner et al., 2012; Wunder, 2005, 2012), a political ecology perspective is helpful for approaching the analysis of PES initiatives and outcomes because it draws attention to the social relations and dynamics that are implicated in environmental change and policy initiatives.

A fundamental insight from the political ecology tradition is that nature is not given, but socially constructed, that is, conceptualised and framed in particular ways (Demeritt, 1998; Robertson, 2006), and socially produced, that is, shaped materially by human practices to a greater or lesser extent (Castree and Braun, 2001). While natural resources and ecosystem services are commonly taken for granted in analyses of PES, it is important to pay attention to how these are understood, valued and

[30] Community water supply systems (hereafter simply community water systems) are self-organised and autonomous water supply systems that communities construct and run entirely independently, primarily for drinking water.

represented among different social actors. For example, while PES designers may regard water as an industrial input that should be rationalised among different users, rural communities may view water as a common good that plays an important role in cultural heritage, ritual practices and social identity (Kosoy and Corbera, 2010; Martínez-Alier, 2002; Rodríguez-de-Francisco et al., 2013; Sullivan, 2009a). These different representations of water are significant because they underpin specific discourses and responses. For instance, approaching water scarcity as a purely physical phenomenon may disregard the ways in which it is assessed and represented, as well as social and political factors which may contribute to its causes. Acting on the existence of scarcity without interrogating its framing and drivers risks privileging technical solutions, such as infrastructure to secure the supply of water or the transfer of water management from the state to the private sector, and underestimating the need to improve allocation, management and governance (Bakker, 2000; Kaika, 2003; Linton, 2010; UNDP, 2006). In this way, it is not only control over resources that is important, but the ways in which power relations are embedded in discursive constructions of nature, the social production of nature and in the various responses that are proposed and implemented, and the social and ecological outcomes that ensue from these (Demeritt, 1998; van der Ploeg, 2008).

In drawing attention to social relations and dynamics, a political ecology perspective suggests that environmental management (tools for manipulating nature) and governance (decision-making processes for nature) are not neutral and pragmatic endeavours aimed at a 'greater good', but rather practices that are shaped by and reflect vested interests (Bakker, 2003; Bridge and Perreault, 2009; Bryant and Bailey, 1997; Ekers and Loftus, 2008; Robbins, 2004; Swyngedouw, 1997). The key questions that emerge are: who is using the resources at stake, under which regimes are they being managed, how are such regimes justified and enacted, what changes do they cause to social structures and landscapes, and who stands to benefit, and lose out, from these? In this way, it is important to consider how natural resource management and conservation initiatives may constitute (material and discursive) struggles between different social actors seeking to gain control over resources (Bakker, 2003; Budds, 2009; Ekers and Loftus, 2008; Swyngedouw, 2004), and with transformative effects over natural resources and

landscapes (Boelens and Vos, 2012; Dryzek, 1997; Himley, 2009; Stott and Sullivan, 2008).

A final insight from political ecology is that nature's characteristics and agency play an important role in social relations. PES schemes require environmental services to be defined and treated as tradable commodities (McAfee and Shapiro, 2010). While this may be feasible at the abstract theoretical level, in practice it overlooks that not all types of nature lend themselves to the application of such dynamics (Bakker, 2003, 2010). For instance, Bakker (2003) has convincingly outlined water's 'uncooperativeness' in relation to privatization, by virtue of its physical properties and symbolic meanings. Environmental services present similar issues as they are difficult to evidence and measure, scientific knowledge regarding their functioning, boundaries and scales is not always comprehensive, and cause-effect relationships are difficult to establish with different ecological contexts (Landell-Mills and Porras, 2001). Indeed, the current debate on what are precisely the defining characteristics of PES is illustrative of these difficulties (see Goldman-Benner et al., 2012; Muradian et al., 2010; Swallow et al., 2009; Wunder, 2005, 2012).

In this way, a political ecology perspective brought to bear on an analysis of PES initiatives would focus attention on how they represent ecosystems and their functioning (Robertson, 2004), how they define goals and objectives for conservation (McAfee and Shapiro, 2010), how they regard environmental service providers and incorporate their participation (Milne and Adams, 2012; Muradian et al., 2010; Rodríguez-de-Francisco et al., 2013), and how they measure and interpret outcomes (Robertson, 2004). The aim of this chapter is to contribute empirical evidence to show how a PES initiative for watershed conservation defines and enacts conservation priorities and activities, and how it consequently modified the social relations of control over land and water between social actors and between the upstream and downstream parts of the watershed, focusing in particular on the roles of large private sector water users, state agencies and rural communities.

3.3. Case study context and methods

3.3.1. The Nima watershed

The Nima watershed is located on the south-eastern side of Valle del Cauca Department[31], and in the western foothills of the Colombian central Andean rift (see figure 3-1). The area covers approximately 16,739 hectares, of which 12,120 hectares are hilly and 4,619 hectares are flat (Cinara, 2011).

The Nima watershed is the main water source for the city of Palmira (350,000 inhabitants). The watershed supplies both Palmira's urban water utility (managed by a private company, Acuaviva[32]), and several community water supply systems in its rural areas (serving approximately 4,200 inhabitants) (Cinara, 2011).

The Nima River provides irrigation water for 6,900 hectares of sugarcane, which constitutes the main agricultural crop in the valley, and is concentrated on the floodplain (very little land on the slopes of the valley is cultivated). It also supplies the valley's main industrial user, a major sugar processing company, Ingenio Manuelita. In addition, the river contains two hydroelectric power plants owned by EPSA (CVC, 2011). According to the 2008 register of the Cauca Valley Regional Autonomous Corporation (CVC)[33], water demand in the Nima River is divided as follows: 56% for sugarcane production, 39% for drinking water, 3.9% for other agricultural production (e.g., coffee, fruit), 0.5% for livestock (poultry, cattle), and 0.4% for industrial use (CVC, 2009).

Land cover in the Nima watershed comprises 56% natural forest, 32% grassland and 10% exotic tree plantations (i.e. pine and eucalyptus) (CVC, 2011). In 1982 natural forest accounted for just 16%, and its current increase is due to the enforcement of command-and-control

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[31] Colombia is a republic which is divided administratively into thirty-two Departments and a Capital District. Departments are further divided into municipalities.

[32] Acuaviva is owned by the municipality of Palmira (40%); the French transnational water company Lyonnaise des Eaux (48%) which is the operating partner; and other private investors from the region (12%) (Pérez-Rincón, 2005).

[33] The public environmental office of the Cauca Valley Department.

instruments to curb deforestation, and the purchase of land for conservation by the municipality of Palmira and the CVC (CVC, 2011). There has also been an increase in the area under exotic tree plantations in the upper part of the watershed from 39 hectares in 1982 to 1,281 hectares in 2008 (CVC, 2011). These plantations belong to Smurfit Kappa Cartón de Colombia (hereafter Cartón de Colombia), the association of water users for the Nima river (Asurnima) and some private landowners (Castellanos, 2005)

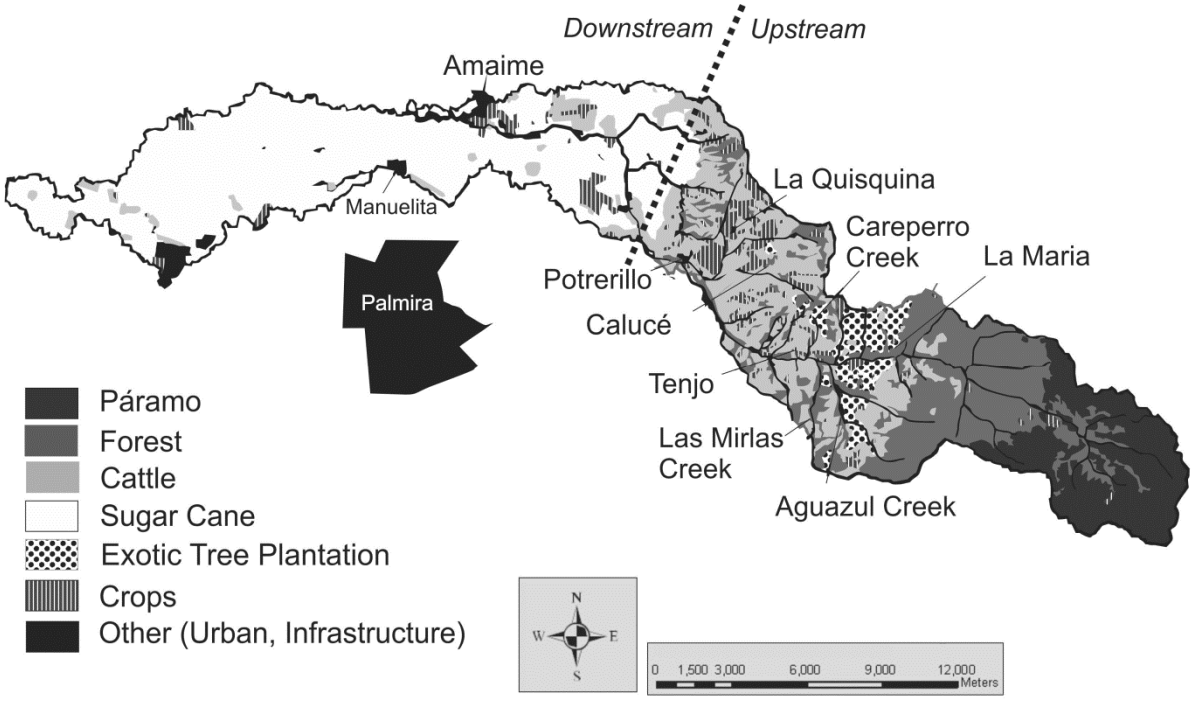

Figure 3-1 Nima watershed
Source: Adapted from Asocaña (2010)

Land distribution in the municipality of Palmira is heavily skewed as large landowners constitute 7.8% of the total but own 87.4% of the land, while small landowners comprise 76.9% of the total yet own only 7.9% of the land (CCP, 2010). The majority of the land in the floodplain is owned by sugarcane producers, who are classified as large landowners (CCP, 2010). In contrast, 64% of the agricultural landholdings in the watershed are of less than 3 hectares in size, and are predominantly owned by peasant farmers concentrated in the localities of La Quisquina, Tenjo and Calucé, who mainly produce coffee, plantain, bananas, and subsistence crops (e.g., maize, beans and papayas). (Castellanos, 2005).

3.3.2. Environmental service payers in the Nima PES scheme

There are two groups of payers for environmental watershed services in the Nima watershed: Asurnima and Pronima (See figure 3-2).

Asurnima is the 'Asociación de Usuarios de Aguas del Río Nima' [Water Users Association of the Nima River]. It comprises 62 agricultural producers, mainly sugarcane growers from the lower part of the watershed. In recent years, Acuaviva also became a member of Asurnima. Both the sugar processing company, Ingenio Manuelita, and the Association of Sugarcane Growers (Asocaña) provide technical and legal support to Asurnima. In addition to the mandatory water fee charged to all water users in the Cauca Valley by the CVC (in accordance with Decree 155 of 2004), the members of Asurnima pay a voluntary, annual contribution of USD 2.32 per litre per second (l/s) of water assigned to them. The voluntarily fees are managed by the Association's Board of Directors and invested through Asurnima.[34]

The aim of the voluntary payments is to fund conservation activities in the upstream part of the Nima watershed in order to enhance water seasonal flows, stabilize discharge during the rainy and dry seasons, and reduce water scarcity. The activities include measures to protect water sources, such as tree enclosures around springs and vegetation buffer zones on riverbanks, and reforestation with native species (Balvanera et al., 2012; Blanco et al., 2005; Echavarría, 2002).

In theory, the funding of these conservation activities is the responsibility of the CVC by means of the mandatory water fees that all water users pay. However, these fees were not earmarked for such activities, and have been used for other purposes such as staff salaries, or invested in different geographical areas than the watershed where they have been raised (Echavarría, 2002). This pressure on funds was also the result of a diminishing state budget contribution to regional environmental offices (Rodríguez-Becerra, 2009).

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[34] For more information on the background of Asurnima, see Blanco et al. (2005); Cinara (2011) and Echavarría (2002).

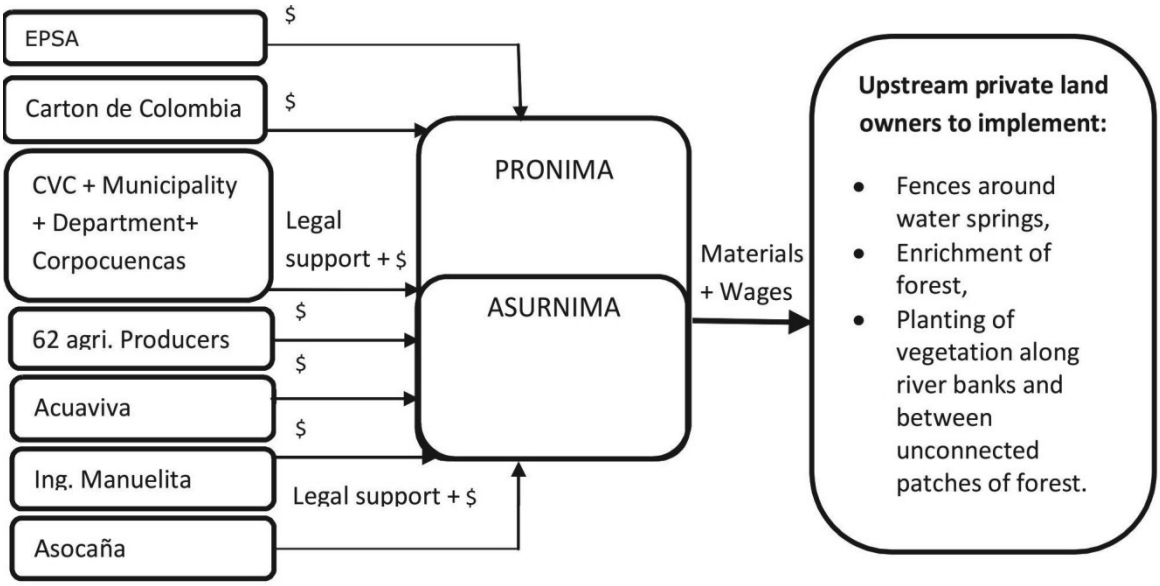

Figure 3-2 Actors and institutions in the Nima PES scheme
Source: Adapted from Cinara (2011)

Pronima is the 'Comité de Protección del Río Nima' [Committee for the Protection of the Nima Watershed]. It is formed by the CVC, the municipality of Palmira, the Government of the Cauca Valley Department, Cartón de Colombia, EPSA, the national parks service, and an NGO, Corpocuencas.[35] The state agencies belonging to Pronima focused initially on buying land upstream located in strategic areas for the provision of water to Palmira, with the funds that by law (Law 99 of 1993; Art 111) municipalities and departmental governments have to reserve and invest for such purpose. This land purchase was increased by Cartón de Colombia, which bought 1,360 hectares for the establishment of forest plantations in the watershed. In addition to land purchases, all members provide voluntary funding for conservation activities, which are managed by the board of members of Pronima.

The CVC provides both Asurnima and Pronima with institutional, legal and technical support, and regulates the relationship between environmental service payers and providers in the Nima watershed and its wider jurisdiction in the Cauca Valley.

[35] For more information on the background of Pronima, see Cinara (2011) and CVC (2011).

3.3.3. Environmental service providers in the Nima PES scheme

Asurnima and Pronima pay private landowners to implement measures to protect water sources on their land, facilitated by the CVC. Such measures include fences and tree enclosures around springs and watercourses, reforestation and the connection of forest patches. The environmental service providers implement the measures themselves, and receive the materials and payment for their labour. This means that they receive a one-off payment (covering materials and labour) that is neither related to the size of the land put under conservation measures nor received on a regular basis, thus making the structure of payments different to many other PES schemes.

The provision of cash and materials by the environmental service buyers is supposed to act as an incentive for landowners, as it exceeds what is required by law (Decree 1449 of 1977; Decree 2811 of 1974) in mandating the protection of streams and springs on private land. While this PES scheme entails payments that are conditional on the implementation of measures to protect water sources, they do not depend on additional and/or longer-term measures, such as taking land out of agricultural production.

The specific design and execution of these measures to protect water sources are defined and negotiated with each landowner individually. However, as neither Asurnima nor Pronima include participation from environmental service providers in the watershed on their boards, there is no opportunity for environmental service providers to influence the nature and implementation of these conservation measures at a higher level (Cinara, 2011).

3.3.4. Methods applied in the Nima case study

This research adopted a predominantly qualitative approach to produce primary data, supported by secondary data and documentation. The field research was carried out in the middle-lower part of the Nima River, where the PES scheme for watershed services was implemented in 2000-2001. Fieldwork was carried out during August and November 2011, in the rural localities of Calucé, Tenjo and La María (23 field visits of one to five days) and in the cities of Palmira and Cali.

Fieldwork included 44 semi-structured interviews with participating and non-participating ES providers, ES payers (e.g., Asurnima), and associated state and non-governmental institutions connected with this scheme (e.g. CVC). First, two semi-structured interviews were carried out with Asurnima, and three with CVC and Pronima. These interviews helped understand the water issues from the perspective of the institutions paying for the environmental services.

Accompanied by a field guide (who was formerly in charge of coordinating some of the water source protection measures as part of this PES initiative), interviews were undertaken with 10 out of approximately 25 participating ES providers in the above-mentioned districts. The questions related to opinions and experiences around participating in the PES initiative and around watershed conservation more generally.

Also interviewed were 12 non-participating ES providers. They were asked about the reasons for not joining the initiative, their own measures for watershed conservation, and their experiences around conservation. Interviews were used rather than a survey to obtain more in-depth understanding of perspectives and experiences, such as around water conflicts, rather than quantitative and representative data on a pre-defined set of parameters.

Next, interviews were conducted with representatives and users of the community water systems in the rural localities of Tenjo (supplying 89 households; two interviews with representatives and four with users), Calucé (supplying approximately 50 households; three interviews with representatives and five with users, plus two focus groups with five representatives and 10 water users, and an additional interview from each of two community water systems in the area), and San Emigdio (interview with one representative). The questions in these interviews referred to water management, environmental management practices, opinions around the PES initiative, and incidences of water conflicts.

Thereafter, interviews were sought with private companies in the watershed, however only two were granted (with Acuaviva and Cartón de Colombia) in addition to those with the executive director of Asurnima. These interviews focused on participation in conservation measures in the area, relations with the communities and the companies' own environmental impacts on water resources.

Various conversations were also held with staff from the CVC, the Research and Development Institute for Water Supply, Environmental Sanitation and Water Resources Conservation (CINARA), and the Geography Department at the University of Valle, in order to gather information on previous research conducted in the watershed, as well as to triangulate other information collected in the field.

Qualitative data methods were strengthened by the collection of secondary data in the form of official and private reports, datasets and other documentation from organizations that carried out natural resource, social and economic studies in this area.

All interviews were recorded where consent was given, and these were then transcribed and coded. Where consent was withheld (in 15 interviews), notes were taken and similarly coded. Coding was done with reference to opinions on PES and water conflicts among actors, which were further categorised into state, private, non-governmental and community sectors. Such categorization captures the different level of resources at the command of each category of actor and therefore reflects the asymmetries of power among groups and their influence on decision-making. Therefore those with more land and water were categorised as more powerful, as were those who had a seat on the various conservation committees in the Nima watershed. Categories were also defined relating to public or private conservation management. The conclusions are based on the basis of trends identified in the data collected.

3.4. Results

The PES scheme has fostered the increased participation of the private sector in conservation in the Nima watershed, complementing existing public initiatives. The visible result of this involvement is that forest cover in the upper part of the watershed has increased more than threefold over 25 years (from 1,946 hectares in 1982 to 6,775 hectares in 2008) (CVC, 2011). It should be noted that most of this is in forest cover related to the purchasing of land by the Municipality and the CVC. This conservation success has been widely promoted in corporate media campaigns, including those of Asocaña (2011) and Cartón de Colombia (SKCC, 2011).

However, this increase in natural forest cover has occurred in parallel with environmental impacts caused by the same large scale water users that are paying for environmental services, both in the upper part of the watershed and also downstream. Moreover, despite the negative effects of these impacts on other water users and local ecologies, they do not feature in company media campaigns that extol their commitment to PES, and are possibly less closely monitored by the environmental authorities as a result (Cinara, 2011).

One case in the upstream area is the peasant community of Tenjo, which is concerned that Cartón de Colombia's exotic tree plantations (for wood pulp) are located too close to the water intake points of their community water system, thus reducing the flow of water that they are able to capture. One representative explained that:

> Initially they were taking water from the Careperro creek, but due to a diminishing water flow, which they attributed to the young pine plantations around this micro-watershed, the community water system had to be supplemented with water from Las Mirlas creek (pers. comm. November 2011).

The community also opposes the intensive use of herbicides during the initial phase of the plantations, due to their possible effects on water quality, and expressed concern that clear-felling, which the company is using in some other areas to harvest timber, might be increasing water turbidity and creating risks of landslides that could potentially affect their water system. However, these issues and the tension over them are not acknowledged by the Pronima committee.

A case of downstream impacts are those produced by the sugarcane growers and sugarcane processing plant. These parties fund upstream conservation activities, yet are criticised for the intensive use of water, heavy use of agro-chemicals, discharge of polluted effluent and air pollution in their production sites, which give rise to environmental impacts further downstream (Pérez-Rincón and Alvárez-Roa, 2009; WWF, 2005).

A representative of the CVC and two researchers from Cinara highlighted three elements that may explain why so much emphasis is placed on land management in the upstream areas, compared with relatively little attention to the environmental impacts that these large scale water users

produce both upstream and downstream. First, they argue that water management in the Cauca Valley and in the Nima watershed is mainly predicated on securing water supply rather than on reducing water demand, which represents a supply-driven approach. This results in a water deficit that is understood as an issue of insufficient water supply rather than the result of excessive water demand, which is mostly related to sugarcane growing and processing (CVC, 2010). Indeed, a representative of the CVC acknowledged that:

> Water scarcity relates more to distribution and demand rather than to extreme changes in the flow of the river (CVC representative, pers. comm. October 2011).

Second, according to them, this approach supports the companies' re-framing of the delimitation of the Nima watershed, whereby they sought to recast it as a watershed that starts at the principal water provision areas and finishes at the water intake points. This reframing reflects their greater concern with upstream conservation than with containing their environmental impacts downstream, and 'conveniently ignores' therefore the downstream large-scale water extraction and contamination by the powerful companies.

Third, according to the researchers from Cinara, the situation is very politically charged, as the CVC increasingly depends on finance from the private sector to support its role. One researcher stated:

> The more the CVC depends on private money and the closer it gets to private companies to mediate and coordinate actions, the more it loses its capacity to act independently of them (Cinara researcher. pers. comm. October 2011).

The implication is that increasing private sector involvement weakens the CVC's capacity to exercise control and surveillance over the environmental impacts of these commercial entities who are increasingly contributing to the funding of conservation initiatives.

With regard to the spaces of participation, there are no direct routes through which communities can influence the design or implementation of the conservation measures undertaken by Asurnima and Pronima. Similarly, there are no channels for raising complaints about the practices of Pronima's members or for addressing the impacts or conflicts that arise

as a result. However, Colombian law, through the 2010 National Integrated Water Resource Management policy, mandates the definition of watershed management-conservation plans in every main watershed. For the case of the Nima watershed, this was planned together with those for the Amaime watershed; however, the results have not yet been released. Several ES providers mentioned that the level of community participation from the Nima watershed was very low because most of the meetings were held in distant locations, and when they did participate in workshops, they were never notified of the outcomes or the activities to be executed.

3.5. Discussion

The Nima case shows that the growing use of PES for watershed conservation, as well as the increased participation of large scale private water users as co-funders of the scheme alongside state environmental authorities, shaped how conservation was defined, prioritised and implemented, and fostered increasing private sector control over water resources.

In particular, the PES scheme comprised conservation measures that were very selective in what they entailed and where they were implemented, and disregarded the contradiction between the promotion of conservation upstream and the concomitant lack of attention to the environmental impacts of the large scale water users both upstream and downstream. Proponents and payers of watershed conservation thus only regarded those areas that are important for water production as important for conservation, thus limiting investments to activities and areas that would secure the provision of water. This reflects the stance of the World Bank (2011), which considers conservation to be efficient when it focuses on areas deemed *worth* conserving. However, definitions of what is worth conserving are extremely subjective, and this case shows how such definitions are strongly influenced by more powerful political and economic actors who value the conservation of the *upstream* water resources that benefit them, yet disregard their own impacts on water throughout the basin - both upstream and especially *downstream* - and ignore and

marginalise the contestations and tensions arising with communities who also rely on the same water resources[36].

Furthermore, the justification for setting up the PES initiative was to enhance water flows, stabilize discharge during the rainy and dry seasons and reduce water seasonal scarcity. Yet, the large scale water users paying for the environmental service framed seasonal water scarcity as a result of upstream deforestation, which in turn was deemed to cause insufficient natural supply in the basin, simultaneously ignoring how their own growing demand and use of water may also contribute to or exacerbate such shortages (see also Bakker, 2000; Budds, 2004). Framing the problem as one of diminishing supply served as a justification to focus efforts on water control via the conservation of the upstream water-producing areas in order to secure and restore existing flows of water, thereby overlooking not only the companies' impacts on other parts of the watershed, but also the livelihoods of the inhabitants of the conservation area in the upper watershed (see also Rodríguez-de-Francisco et al. (2013) on a PES scheme in Pimampiro, Ecuador). This vision of what needs to be conserved is strongly shaped and promoted by the companies' own interests, supported by their financial contribution to the PES initiative.

With regard to the capacity of the public environmental offices to regulate environmental service buyers, this study suggests that a key cause of the contradictions that arose in relation to conservation in the PES scheme was the fact that the public institutions involved were weak (for a case with strong public governance see, Perrot-Maître, 2006), because the position of the state institution to ensure overall environmental regulation was weakened by its dependence on private funding (see also Cinara, 2011). The CVC was once upheld as an emblematic example of public environmental management, but its perspective and programs have now become heavily shaped by the private partners who contribute to its budget in the face of a diminishing state fiscal contribution, and it has been dogged by allegations of patron-client relationships and corruption (Galvis, 2011; Semana, 2009; Valencia, 2011).

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[36] See also Broderick (2007), Pérez-Rincón and Alvárez-Roa (2009) and Urrego (2008).

In the case of Nima, the intersection of PES with existing competition over water, the principal effect of an increased private sector involvement in conservation through PES does not relate to resource reallocation (dispossession) but rather to their strong influence over upstream land use and conservation priorities, both material (securing water sources and flows) and discursive (blaming upstream deforestation for water shortages and promoting a responsible conservation image).[37]

Furthermore, and supporting the findings of Bakker (2003), Martínez-Tuna et al. (2007) and Muradian (2013), the introduction of PES does not always mean that in practice environmental services are commodified or that there is a (competitive) market for them. In this case its management is shaped by an increasing participation of interested private sector actors in funding and implementing environmental management, which is exacerbated by the weakened position of the CVC. This, in turn, enabled large scale economic actors to shape upstream conservation activities through PES in ways that allowed them to gain greater control over water sources and resources, marginalising the needs of other stakeholders in the process. In this way, similar to arguments made by Kosoy and Corbera (2010) and Muradian et al. (2010), this study suggests that attempts to define PES by simply identifying the technical criteria that constitute the mechanism miss the point because it is not so much the functioning of the principles that configure the outcomes, but rather the power relations that are embedded in such schemes. Technical definitions of the criteria that constitute PES ignore how the design and implementation of natural resource management and conservation initiatives are framed and shaped by power relations, and are of limited use in explaining how such initiatives rework ecological conditions and livelihood arrangements (Himley, 2009; Milne and Adams, 2012; Robertson, 2006).

[37] See also Pérez-Rincón (2004) on a PES scheme in the neighbouring watershed of the Bolo River also in the Cauca Valley.

3.6. Conclusion

The assessment of the Nima PES watershed PES initiative suggests that this scheme does not pursue a neutral conservation goal, but one that is defined by the watershed's large scale commercial water users and that constitutes a means through which these actors are able to control water provision to maintain and increase their capital accumulation. This happens both in a real – or material – sense: through the conservation measures that are put in place and change land use upstream (e.g., fencing off springs and enriching forest patches) and in a representational – or discursive – sense: through the way in which conservation needs are defined (i.e., as a response to upstream deforestation) and promoted as beneficial, even though in practice water resources are becoming degraded and control over them is shifting in favour of these major users.

This occurs within the context of an institutional shift in public environmental organizations, in which conservation efforts are increasingly directed towards parts of nature or the landscape that are deemed worth conserving, but where the underlying motive is to protect and maintain (or increase) a particular capitalist company-driven type of economic development. This suggests that PES schemes are not neutral or technical, but inherently political in their design, objectives and implementation. It also means that PES have the potential to produce a particular set of social relations that enable accumulation, leading to contradictory and unequal outcomes.

Finally, what this study also demonstrates is that the powerful framing of PES as a win-win mechanism for promoting conservation and local development both overlooks the complexities of local resource use and management, and can easily be co-opted by its participants and funders to pursue control over resources under the guise of conservation. Therefore, it is argued here that with regards to PES - regardless of their technical definition as conditional commercial transactions or as simple transfers of resources among social actors - it is important to interrogate how these mechanisms are represented, designed and implemented, and to look beyond official discourses of conservation success to examine how they reshape resource use and livelihoods, and to analyse who stands to benefit and who is likely to lose out through such changes.

Intermezzo

After studying the influence of power in the establishment of the Colombian PES national strategy and in the setting up and operation of the PES scheme in the Nima watershed, research now moves to Ecuador. Chapter 4 presents the analysis of 'the world acclaimed' Nueva America PES scheme, located in the Pisque river watershed in the municipality of Pimampiro. Chapter 5 presents the analysis on the Chamachán PES scheme, which is also located in the Pimampiro municipality but in the Chamachán watershed. Information about the history of this municipality is presented complementarily across the following two cases.

Chapter 4. Payment for environmental services and unequal resource control in Pimampiro, Ecuador

Mariano Acosta parish in Pimampiro.
Source: Rodríguez-de-Francisco, 2010.

Based on: Rodríguez-de-Francisco, J.C., Budds, J., Boelens, R., 2013. Payment for environmental services and unequal resource control in Pimampiro, Ecuador. *Society and Natural Resources* 26, 1217-1233

4.1. Introduction

Environmental services (or ecosystem services) can be defined as the benefits that people obtain from ecosystems. The Millennium Ecosystem Assessment (2005) estimated that many of the world's ecosystems are undergoing degradation, and recommend the greater use of economic instruments and market-based approaches to effectively manage and conserve environmental services.

In this way, payments for environmental services (PES) are deemed to be able to curb environmental service degradation by creating a market for conservation that internalises environmental costs and benefits in production and consumption decisions (e.g., Bishop, 2010). Some scholars and institutions have proposed PES as a 'win-win' mechanism for fostering ecosystem conservation and, if designed appropriately, for pursuing poverty alleviation in developing countries (see e.g., Duncan, 2006; Pagiola et al., 2005; Wunder, 2008b). This is based on the assumption that low-income groups are often stewards of environmental services that are in demand by other users (such as fresh water for urban utilities), but are under increasing pressure to degrade their territories in order to maintain their livelihoods (e.g., Pagiola et al., 2005). It is argued that PES could address these situations by augmenting or replacing existing income sources (e.g., Wunder, 2005).

The implications of PES for poor groups in developing countries are being subjected to increased academic and policy scrutiny (e.g., Grieg-Gran et al., 2005; Landell-Mills and Porras, 2002; Lee and Mahanty, 2007). Several previous studies focus on the practical functioning and economic effectiveness of such schemes, their institutional arrangements, and their potential benefits for poor communities across various natural resources, rural landscapes and geographical contexts (Porras et al., 2008; Rosa et al., 2003; Wunder, 2008b; Zilberman et al., 2008). Moreover, increasing attention is being paid to the political dimensions of PES schemes, with a view to producing less superficial and more critical assessments of how they work in practice (e.g., Büscher, 2012; Kosoy and Corbera, 2010; McAfee, 2012; McAfee and Shapiro, 2010; Milne and Adams, 2012). For example, Engel et al. note how PES "are not created in a vacuum but subject to the push and pull of many interest groups" (Engel et al., 2008:688), while Milne and Adams (2012) identify three problematic assumptions of PES schemes that are inherently political: portraying

'communities' as homogenous entities; simplifying traditional resource practices and rights; and presuming free choice among local people.

The aim of this chapter is to contribute to the critical analysis of PES schemes by exploring how vested interests have shaped the design, implementation and outcomes of a scheme for conserving watershed services in the Pisque watershed, Pimampiro municipality, Ecuador. It examines the effectiveness and consequences of this scheme for the peasant community, Nueva América, which is paid for managing its land to secure the environmental service. In doing so, relations are examined both between external actors and members of the peasant community, as well as those among peasant landowners in Nueva América, in order to assess how the implementation of the PES scheme intersects with the historical context and modifies social relations and ecosystem management. The study aims are thus: (1) to examine the interests and discursive framings that are at play in producing and sustaining the PES scheme; (2) to analyse the effects of PES on social relations, organisation, and resource access; and (3) to provide critical insights into PES as a tool for watershed management.

Following this introduction, Section 4.2. discusses the concept of PES, locating it in a theoretical framework based on political ecology in order to explore the power relations embedded in natural resource management and development interventions. Section 4.3. describes the Pimampiro region and the PES scheme, and presents the methods employed in the empirical research. Section 4.4. presents and discusses the multiple ways in which the PES scheme in Pimampiro is shaped by vested interests, and how it has changed social relations and access to resources in Nueva América. It concludes by reflecting on the implications of PES as a strategy for livelihood enhancement and watershed management in developing countries.

4.2. PES: concept, rationale, and power relations

The concept of PES posits that landowners are stewards of environmental services, for which beneficiaries may be willing to pay for their continued provision. PES is an approach to environmental management and conservation that attaches an economic value to the provision of environmental services, which is compensated through voluntary

payments, in cash or in kind (e.g. Duncan, 2006; Wunder, 2005). Proponents of PES argue that these schemes will foster resource conservation as long as environmental service users are prepared to pay adequate compensation to secure services, and environmental service providers are incentivised to continue generating these services in return for compensation, rather than pursue other income-generating activities that might degrade them (e.g., FAO, 2011; Pagiola et al., 2005). In this way, PES schemes seek to create mechanisms to enable bargaining and transactions between environmental service users and providers that are in both parties' interests; in other words, internalizing what would otherwise be an externality (Pagiola, 2008; Wunder, 2008b).

The concept of PES has attracted much attention for its potential application in addressing the pressing issues of ecosystem conservation and poverty alleviation in developing countries (e.g., Duncan, 2006; FAO, 2011; UNEP/IUCN, 2007). Much of this attention is based on the premise that poor, and mostly rural, groups often inhabit crucial ecosystems, and that payments (especially in cash) for safeguarding ecosystems and environmental services can form important sources of income that may improve their livelihood strategies (FAO, 2007; Grieg-Gran et al., 2005).

Several analyses have examined the social and development implications of PES projects.[38] Some authors have stressed the need to ensure that any benefits from PES are equitably distributed among low-income groups (Rosa et al., 2003), that compensation replaces or improves income earned from previous land uses (Farley et al., 2011), and that institutional arrangements are put in place to ensure these benefits accrue in practice (Grieg-Gran et al., 2005; Vatn, 2010). These concerns around equity have led to a consideration of the broader benefits of PES schemes beyond monetary payments: to the security of land tenure (although this sometimes is a prerequisite for participation); improved internal organization; enhancement of social capital; and more effective natural resource management (Lee and Mahanty, 2007; Muradian et al., 2010; Rosa et al., 2003; Wunder, 2008b).

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[38] For example, Büscher 2012; Landell-Mills and Porras 2002; Lee and Mahanty 2007; McAfee and Shapiro 2010; Milne and Adams 2012; Muradian et al. 2010; Porras et al. 2008; Rosa et al. 2003; Zilberman et al. 2008).

Nevertheless, much literature has treated PES as a technical-economic intervention whose effectiveness depends on the adequacy of project design, nature of implementation, institutional capacity building, and economic calculation and planning. What is missing from many of these analyses are the ways in which social relations and dynamics between stakeholders - and especially between poor rural communities providing environmental services and the downstream users or third parties using them - shape the design, implementation and outcomes of such projects.

As mentioned in the previous chapters, these aspects are starting to be addressed by critical scholars, in particular political ecologists (e.g., McAfee, 2012; McAfee and Shapiro, 2010; Milne and Adams, 2012). One of the key tenets of political ecology is that a failure to consider the power relations embedded in processes of environmental change leads to superficial – that is, decontextualized, dehistoricized and depoliticised - assessments that seek to explain outcomes as the result of policy design and implementation, rather than as a reflection of unequal control and decision-making (e.g., Robbins, 2004). A key advance made by political ecology has thus been to reposition natural resources management as an inherently political endeavour, as opposed to a set of neutral, pragmatic and technical-economic approaches to improving resource management, which better explains why poor groups are frequently disadvantaged by policy processes (e.g., Blaikie et al., 1987). While early actor-oriented approaches sought to uncover the vested interests of the different stakeholders involved, through both material actions as well as discursive framings, and over wider spatial and temporal scales (e.g., Bryant and Bailey, 1997), more recent scholarship has turned to the role of power relations in shaping economic development and environmental change, with greater emphasis on how power produces, and is embedded in, new socio-ecological arrangements (e.g., Robbins, 2004).

These insights have been brought to bear on several aspects of PES. Some authors have drawn on debates around the neoliberalisation of nature and environmental governance to explain how PES commodify natural resources for capital accumulation and lead to uneven social outcomes (e.g., Büscher, 2012; McAfee, 2012). McAfee and Shapiro (2010) explain how PES schemes are supported by apolitical framings of natural resource management and environmental science, which neglect or disregard context-specific complexities, unruly actors, unequal

distribution of economic and political power, and existing property rights regimes. In their empirical study of PES schemes in Cambodia, Milne and Adams (2012) question the assumptions that community participation is necessarily voluntary or reflects community choice. They found that NGO facilitators imposed 'Western' notions of free choice and representation onto communities that were structured by quite different customary institutions and social organization, and thereby overlooked issues of persuasion and coercion in 'agreements' obtained from community members. They also observed that environmental service buyers and implementers tended to define the nature they wanted to conserve as something that is untouched by human hands. Such an understanding neglects the idea that ecosystems constitute working landscapes (Rosa et al., 2003), 'ecosocial systems' (McAfee and Shapiro, 2010) or cultural landscapes, in which environmental services are co-produced by biophysical and social processes (Budds and Zwarteveen, 2012). Regarding ecosystems as natural environments is problematic for environmental service providers because it potentially disregards the ways in which rural communities, including peasants, may enhance natural resource stocks and conserve ecosystems (Budds and Zwarteveen, 2012; van der Ploeg, 2008).

This chapter builds on this literature by exploring the social dynamics and implications of the watershed services scheme in Pimampiro, Ecuador. In addition to relations *between* different actors – especially (upstream) providers of environmental services and (downstream) payers for environmental services - in the watershed, particular emphasis is placed on examining the effects of the scheme on relations *among* actors within the community that provides the ES. Adopting a political ecology approach, this chapter starts from the premise that, similar to other market-oriented natural resource management regimes, PES is promoted by particular social groups in certain ways in order to align with specific interests and objectives. In this way, rather than approaching the PES scheme as a neutral policy initiative aimed at improving watershed management, protecting the water source of the drinking water utility, and increasing the incomes of upstream peasant landowners, this chapter asks: why and how the scheme was introduced, how it intersects with the local context, social relations and existing practices, and, who is favoured and disadvantaged by its operation? In this way, this chapter interrogates the assumption that PES schemes can simply be imposed on existing

communities for significant benefits without changing their internal and external social relations and their resource management practices.

4.3. Watershed PES in Pimampiro, Ecuador

Most PES projects in the Andean region originated as small scale projects supported by NGOs, local government and international funding agencies, and most are for water and carbon related environmental services (Stanton et al., 2010).

The Pimampiro PES scheme focuses on watershed environmental services originating in the highland territory of Nueva América, a peasant community located in the parish of Mariano Acosta within the municipality of Pimampiro. The municipality of Pimampiro covers an area of 443 square kilometres, ranging from an altitude of 1,400 to 4,000 meters above sea level. The parish of Mariano Acosta covers an area of 134 square kilometres in the upper part of the municipality, at an altitude of between 2,080 and 4,000 meters above sea level. 60% of Mariano Acosta's population identify themselves as indigenous (mainly Kichwa Karanki), and 40% as *mestizo* (mixed Hispanic-indigenous) (GMP, 2010). As a result of historical struggles over land in the region, most Kichwa Karanki people live in the highlands, *mestizos* are concentrated in the middle and lower altitudes of the municipality, while black communities are located in the lower Andean valleys of the Chota river (Preston, 1990). Agriculture is the main economic activity of the rural and urban population of Mariano Acosta (GMP, 2010). Within Mariano Acosta, the community of Nueva América is located in the highest parts, at an altitude of between 2,900 and 3,600 meters above sea level in the Palaurco river catchment (Figure 4-1) (Echavarría et al., 2004). Nueva América also forms part of the buffer zone of the Cayambe–Coca ecological reserve (Idem).

4.3.1. Research methods applied in the Nueva America study

The empirical research presented in this chapter was carried out in Pimampiro municipality and the Nueva América peasant community from March to September 2010. Literature and archival reviews were conducted throughout 2009. During fieldwork, the aim of the study was presented to

participants as an investigation into the functioning of the PES scheme and its implications for watershed conservation and peasant livelihoods in the Nueva América community.

The fieldwork entailed in-depth qualitative research that sought to document and analyse the experiences and perspectives of the peasant farmers living in the community where the PES scheme had been implemented. Semi-structured interviews formed the principal research method, and were used to collect information and opinions regarding the Nueva América community, the negotiation and implementation process of the PES scheme, participation and non-participation in the scheme, and stances towards conservation and its implications. Eleven semi-structured interviews were conducted with members of institutions that have a stake in the use of watershed environmental services (Pimampiro water utility, municipal irrigation board[39], organizations implementing the PES scheme, municipal environmental unit), and 15 were conducted with peasant landholders who did and did not participate in the PES scheme (ten and five interviews, respectively). This sample comprises all the farmers contacted for interviews during fieldwork, and it is representative as it captures the opinions of more than half the members of Nueva América (of both sexes, and with various land size allocations, income generating activities, perspectives vis-à-vis the PES scheme, and either resident or non-resident in the community). Interviews in Nueva América were carried out individually, and in situ (in homes or on farms).

In addition to interviews, one focus group meeting was carried out with peasant landholders to discuss the PES scheme, and to try to unravel the social dynamics around it. This was done after a community meeting at which most of the community members were present. During this focus group meeting, opinions about the PES scheme and the development of projects within the community were discussed.

Observational techniques were also used in order to gain insights into relations among Nueva América families, and between them and other stakeholders in order to understand how issues around the PES scheme and conservation were presented and contested. These included

[39] The Pimampiro Irrigation Board is a private water user association of 480 members whose irrigated fields are located in the vicinity of Pimampiro main urban centre.

attendance at local meetings and assemblies, as well as taking part in day-to-day activities such as farming, collective labour (*mingas*) and community celebrations.

The qualitative data methods were complemented by the collection of secondary data from public institutes (e.g., census records, water concession registrations), universities (e.g., geographical information), farmers federations (e.g., historical records), local government offices (e.g., PES participants and land use patterns in Nueva América), and NGOs that had worked on the Pimampiro case (e.g., research reports on Nueva América and Mariano Acosta).

Following initial data analysis, preliminary results were presented and discussed at three meetings. The first was held with members of the Nueva América community, representatives from the Indigenous and Peasant Union of Mariano Acosta, and the Imbabura Indigenous Federation. The second and third were held with the *Corporación para el Desarrollo de los Recursos Naturales* [Ecuadorian Corporation for Development and Natural Resources] (Cederena) and the Municipality of Pimampiro, respectively. These meetings served to validate some of the findings, identify discrepancies, tensions and gaps.

4.3.2. The Nueva América Community

The community of Nueva América[40] acquired land as the result of a long historical struggle. The first part of this struggle was against the owner of the Santa Rosa estate (*hacienda*), who controlled most of the land, including the highlands, in Pimampiro at the turn of the twentieth century. Landless farm labourers (*huasipungueros*) [41] from neighbouring estates moved to what is now Mariano Acosta, where they resisted expulsion in order to get legal rights over communal land in 1922. Up to this point, Nueva América was not yet inhabited. The second part of the struggle

[40] The official title of the community is Nueva América Association for Agriculture and Livestock.

[41] *Huasipungeros* provided labour in return for the right to cultivate a share of the owner's land.

started in 1957, when a group of indigenous people from various parishes moved to Nueva América in search of land. Initially expelled by the people from the Guanupamba community, in 1984, 27 families managed to obtain official control of what is now territory of the Nueva América community (Dauriac, 2005; Dulong, 2005). This territory was granted as communal land, but internally each family took a plot of land, which it managed and worked individually in addition to working the communal land through collective labour (*minga*). Unequal participation in *mingas* led to resentment among some families and resulted in the sub-division of the communal land into individual plots in 1997. The size of the additional sub-divided plots was determined by the amount of work that each family had contributed to the *mingas* and what each one could afford.

Resentment later resurfaced when a group of families with forested land wanted to obtain a loan in the name of the community to clear areas of forest for conversion to pasture. They were opposed by other families, many of whom had already cleared their land and thus did not support a loan being taken out by the community as a whole (Dulong, 2005). Although the loan application did not ultimately proceed, the division among the two groups festered and then flared up during further disagreements over the implementation of several environmental projects.

At present, the formal institutional arrangement of the Nueva América community is based on the Communes Law and the Cooperatives Law. The former legally recognises rural settlements and communities, while the latter enables them to acquire land for agriculture, and restricts its use or transfer beyond the community. The community is officially organised as an Association, headed by a general assembly (*Cabildo*)[42] and governed by a set of rules, which, inter alia, prescribe the stewardship and preservation of the landscape, biodiversity and natural resources of the community.

[42] The Cabildo comprises five members: President, vice-president, treasurer, trustee and secretary.

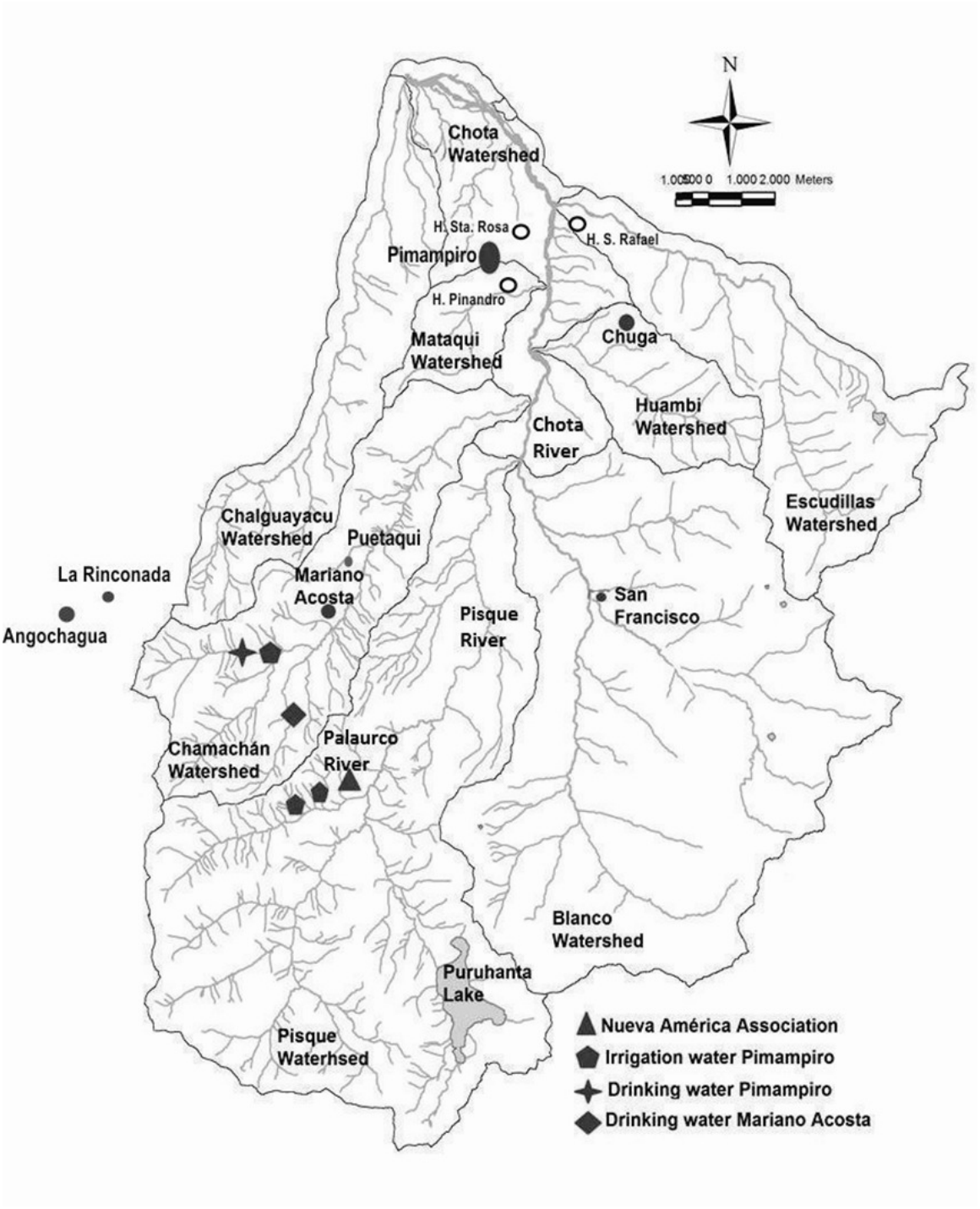

Figure 4-1 Watersheds of the Pimampiro region
Source: Avellaneda and Villafuerte (2008)

The community currently comprises 27 peasant landholders with private land titles and different sizes of landholding.[43] The community currently owns 638 hectares of land: 167 hectares comprise high Andean grassland (*páramo*) and 390 hectares are covered by forest, both of which are located in higher-altitude and remote areas; while in the lower-altitude areas 75 hectares are dedicated to agriculture and livestock, and 6 hectares are considered degraded (Yaguache, 2004). The agricultural land is mainly used as pasture, and to produce potatoes, beans, and other local Andean vegetables.

4.3.3. The PES scheme for watershed services in Pimampiro

The PES scheme was motivated by an interest in improving water supply to the town of Pimampiro following a long drought in 1999. It was implemented between 2000 and 2001, and is one of the earliest known PES initiatives in South America. The aim of the scheme is to protect the water source of Pimampiro's Municipal Water and Sewage Company by conserving the Nueva América forest in the headwaters of the watershed, where a new canalisation[44] project had been recently constructed. The canalisation greatly increased water supply to Pimampiro and facilitated the introduction of PES (Porras et al., 2008; Yaguache, 2004). Wunder and Albán (2008) state that this PES scheme was designed with the aim of improving only the environmental services that were in demand, and not with the intention of enhancing regional development or reducing poverty.

Twenty out of the 27 households from Nueva América, owning a total of 488 hectares of land, participate in the PES scheme. They are paid in cash to secure the regulation of the quantity and quality of water (Yaguache, 2004), in exchange for maintaining existing vegetation cover (forest, *páramo*), for not felling trees,[45] and for allowing natural regeneration

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[43] There are 9 large landholders (>20 hectares), 11 medium landholders (10-20 hectares) and 7 small landholders (<10 hectares).

[44] This canalisation project brings the waters from the Pisque, through the Nueva America Canal, to the Pimampiro Canal.

[45] For timber, light cutting for domestic use is permitted.

(Quintero et al., 2009). The payments are funded by fees collected from the utility's 1350 customers, who pay a 20% surcharge on their monthly water bill. The fees go into a water fund managed by the municipality, which transfers the payments to the participants of the PES scheme (Echavarría et al., 2004:23). The rates paid are: US$6 per hectare per year for 'disturbed forest or *páramo*'; US$8 per hectare per year for 'mature secondary forest'; and US$12 per hectare per year for 'primary forest or undisturbed *páramo*' (Wunder and Albán, 2008). Former agricultural land can also be included in the scheme, but only if agroforestry, partial pasture reforestation or land conservation measures are implemented (Yaguache, 2004). The potential income that landowners can earn thus depends on the area of land that they own and the type of land cover present.

The PES scheme formed part of a wider environmental management plan in Nueva América (Yaguache, 2004), which was developed successively by two NGOs: the *Desarrollo Forestal Comunitario* [Communal Forest Development] (DFC) and the Cederena, between 1994 and 1997, funded by the Inter-American Foundation and the Food and Agriculture Organization (Echavarría et al., 2004). The management plan aimed to develop alternatives to agriculture on the community's forest and *páramo* land, comprising: restoration of cleared forest and degraded land, agroforestry systems to produce fruit and firewood, commercialization of forest medicinal plants and orchids, agricultural micro-credit, and ecotourism using a mountain hut and trails[46] (Dulong, 2005).

In order to create the PES, two contracts were signed. The first was a contract between the municipality and the Nueva América Association, setting out the terms and conditions of the scheme. The second was a contract between the municipality and each participating family, stipulating payment amounts, the frequency of the payments and the responsibilities of environmental service providers. Whether they agreed to participate in the PES or not, it is important to note that all members of the Nueva América community are subject to the provisions of Ecuador's Forestry Law (Law 74, 1981), which prohibits the conversion of watershed

[46] Currently, only the PES scheme, the agro-forestry scheme and the mountain hut are in operation. Their management is dominated by the community's most influential family.

vegetation (forest, bushes, *páramo*) into farmland and the extraction of timber for commercial purposes. Under this law, farmers wanting to clear vegetation on their land (possible up to a maximum of 20%) have to apply for a permit from the Ministry of the Environment, which is an expensive and protracted process. Therefore, the PES scheme operates in addition to the provisions of the Forestry Law, yet with the key distinction that its regulations were seldom *enforced* prior to the introduction of the PES scheme (Wunder and Albán, 2008:690), but significantly *applied* and *sanctioned* thereafter. As explained further below, farmers' decisions to participate in the PES scheme were influenced by several factors that go beyond free choice, including increased state command-and-control practices to sustain its conservation objectives such as the greater enforcement of the Forestry Law.

4.4. Social relations and vested interests shaping the design, implementation and outcomes of the PES scheme

4.4.1. Negotiation and design

In theory, participation in the PES scheme was voluntary. Yet, 11 of 15 interviewees (6 participants and 5 non-participants) indicated that the Municipality sought to coerce peasant landholders into joining the scheme. For example:

> The people from the municipality told us during negotiations over the project that the environmental service was a voluntary thing, yet they reminded us that if we did not join, the municipality could enforce control and punishments under the Forestry Law or make a decree that declares our land a municipal reserve, and also that they will hire more forest rangers to monitor us (Nueva América peasant landholder, pers. comm., May 2010).

The authority of the municipality to declare certain areas as important for conservation, thereby restricting agriculture in these zones, thus played a role in pressurizing some peasant landholders into agreeing to participate in the PES scheme.

The sub-division of communal land in 1997 had led to different land sizes among Nueva América community members. This resulted in one family

group (nine members, a third of the community population) owning approximately 50% of the land. Both the size of this landholding, and the fact that most of it comprised forest land in the upper part of Nueva América, implied that the potential advantages of PES for this group were significant, as the payments were higher for forested land, and they were hardly using the land anyway. The interests of these family members played an important role in the process of negotiation over the PES scheme. In order to pass the scheme, and under the Communes Law, the Municipality required agreement from half plus one of the community members. The family that owned half of the land thus sought to secure the necessary level of agreement from at least a quarter of the other landholders. Dauriac (2005) explains that this was mainly achieved by the president of the Association at the time of the negotiation, who was a member of this influential family. He purposefully failed to properly debrief the other members about the terms of the scheme so that they were not fully aware of what they were committing themselves to. This was mentioned by two community members in the interviews:

> At the time of the introduction of the PES initiative, people in the Association had a very different understanding of what it actually meant, and this was because of an intentional lack of communication between the former president and the members of the association (Nueva América peasant landholder, pers. comm., May 2010).
>
> During the preparation of the project, the president manipulated information and procedures to favour PES introduction in Nueva América (Nueva América peasant landholder, pers. comm., June 2010).

This research thus suggests that the introduction of the Pimampiro PES scheme was the outcome of coercion by the Municipality as well as persuasion and manipulation on the part of the largest family, who had the most to gain from the scheme.

4.4.2. Implementation and outcomes

In terms of income, the amounts that different participants receive for providing the environmental service vary greatly. While the average

payment to landholders is US$252 per year (Wunder and Albán, 2008), these range from just US$15 to US$841 per year. Echavarría et al. (2004) acknowledge that the sums paid to the PES participants in Nueva América are the result of political negotiation rather than hydrological or valuation analysis. Indeed, one of the key questions during the design of the scheme was how much each landowner should be paid per hectare (Yaguache 2004). While the opportunity cost of livestock production was calculated at US$42 per hectare per year (Idem), due to pressure from the municipality and Cederena, the payment for conservation was set at a maximum of just US$12 per hectare per year, and only for the highest category ('primary forest or undisturbed *páramo*'). As one community member comments:

> The environmental services are not very attractive to the community, because you get so little if you have small plots, and the municipality takes control over your land (Nueva América peasant landholder, pers. comm., June 2010).

While almost all participants in the scheme indicated that payments were too low, support for the scheme was strongly related to the participants' land size and the type of land cover and use, which in turn determined both the level of payments and the degree of control exerted by the municipality.

As mentioned above, the group of nine landholders (comprising Nueva América's largest and most influential family) that was most in favour of PES owns large areas of land that are mostly covered by primary forest and *páramo*, thus attracting the highest payment rates under the scheme. Due to their elevation, remoteness, steep gradient and the provisions of the Forestry Law, they are not used intensively. One member of this group indicated that:

> PES represents for us a considerable income, something is also better than nothing (Nueva América peasant landholder, pers. comm., May 2010).

Based on four interviews with this family[47] it has been established that almost all of these landowners have income sources outside the PES scheme area (such as in construction), implying that they receive payments for not doing anything significantly different than what they did before the scheme was introduced.

A second group of around 11 community members own medium-sized landholdings that comprise a mix of forest and cleared land. Based on four interviews, this study found that they were opposed to the PES scheme on the basis that the income from working their land (e.g., growing beans) would be much greater than the payments that they would receive for conservation under the PES scheme. Nevertheless, they agreed to participate in the scheme because they did not want to receive fines for working their land. This is because it has become very difficult to continue farming land that is *not* included in the PES scheme in the same way as before the implementation of the scheme. The reason for this is that areas of land left fallow – which had hitherto been part of a traditional land rotation cycle within each farmer's landholding – are now classified by the municipality as land undergoing *regeneration*, and, as such, as land that can potentially enter conservation, as if it were originally 'undisturbed'. Importantly, because of this re-classification, this land then becomes subject to the Forestry Law and PES clearance restrictions.[48] This means that cutting weeds and bushes that have grown during the fallow period now required permission from the municipality, as it was deemed to be land being 'put back' into agricultural production, as if it were not already part of the production cycle. If permission is not sought or granted, fines are applied. Importantly, this practice has serious potential to lead to land degradation as peasant landholders are now deterred from leaving land fallow as they have traditionally done. As one such landholder -referring to parts of his fields outside the PES area- stated:

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[47] Wealth is extremely relative in the Ecuadorian context: These large property owners are still peasant farmers, yet proportionally much better off than their neighbours.

[48] In this case, land use restrictions do not emanate solely from PES but also from the Forestry Law. However, as we explained in this chapter, the PES scheme has been accompanied by the increased enforcement of the Forestry Law.

> We now try to maintain land cleared in order to avoid problems with the municipality, normally by putting cattle there or clearing more often (Nueva América peasant landholder, pers. comm., May 2010).

A third group of seven peasant landholders own smaller plots of land that were mostly already cleared and used for agriculture before the introduction of the scheme. They do not participate in PES. Nevertheless, based on five interviews, it is found that these landholders are significantly and adversely affected by the PES scheme, in particular from the restrictions on using fallow land outlined above. While Wunder and Albán (2008) assert that the implementation of the PES scheme has not resulted in farmers moving to (and degrading) areas outside the scheme's boundaries, this research found that smallholders have both engaged in continuous production in order not to leave their land fallow, and have increasingly left their land in Nueva América to farm outside the conservation area, often on a sharecropping basis. For example:

> Working the land in Nueva América is forbidden, so we have to work as sharecroppers more and more (Nueva América peasant landholder, pers. comm., May 2010).[49]

While it might be argued that the shift of land degradation from inside to outside the conservation area is desirable, it is not just the ecosystem and its environmental services that are at stake, but the livelihoods, traditions and cohesion of the community (cf. van der Ploeg, 2008). Smallholders are not only abandoning land in Nueva América to sharecrop elsewhere due to the land use situation, but also because of the loss of collective labour (*minga*) that out-migration has produced. This collective labour used to underpin the viability of peasant farming within the community. In the interviews, the families practicing agriculture on cleared land expressed resentment that the municipality is increasingly dictating and controlling land management, in the interests of conservation and with little regard for their livelihoods, traditional practices or identities (see also Büscher, 2012). As one farmer stated:

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[49] The sharecropping arrangement consists of land provided by one party, inputs provided by the other party, joint labour and equal division of the produce. This is also an strategy to access irrigation water (See Raben, 2007)

> We are peasants and we don't want to live from the rents of conservation (Nueva América peasant landholder, pers. comm., October 2010).

In terms of the scheme's effects on social relations within the Nueva América community, this research found the Association to be internally divided. This conflictive situation existed before but was worsened under the PES scheme. This concurs with field observations by Echavarría et al. (2004) and Grieg-Gran et al. (2005), who explain that community organization had deteriorated since the introduction of the PES scheme. Indeed, during fieldwork, the Ministry of Agriculture carried out a workshop to strengthen what it regarded as an 'institutionally debilitated peasant association' (Ministry of Agriculture representative, pers. comm., March 2010). While it cannot be said that the PES scheme is the sole or primary cause of the deterioration in the community's social capital (as prior to PES there were already conflicts that had weakened the community's cohesion), it is also evident that it has not enhanced community organization either but has exacerbated existing tensions.

In addition to land, water is also a contested resource under the PES scheme. In Pimampiro, irrigation has been an exclusive privilege of large estates since the nineteenth century. These estates are now mainly dedicated to commercial agriculture (Preston, 1990). Through the Pimampiro irrigation board, of which they are members, they control access to water. Peasant landholders in Nueva América have been unable to obtain water concessions, since these are already fully allocated to estates and other users downstream. Since the implementation of the PES scheme, community members have increased their demands for water concessions on the basis that they are now helping to secure the flow of water in the upper basin, but to date their claims have been unsuccessful. Moreover, rather than enabling a more equitable distribution of water concessions, the PES scheme has instead institutionalised existing inequalities in access to water (Rodríguez-de-Francisco and Boelens, 2012). The municipality uses the discourse of fostering conservation in the upper basin as a means to maintain the existing water concessions of downstream commercial farmers, while curtailing productive activities and water use among smallholders in the upper basin.

There is also significant inequality between water concession holders belonging to the irrigation board: 5% of families (large producers) control

42% of the water concessions (of which estates control 25%), while 95% (medium and small producers) possess 58% (with smallholders with less than two hectares having, on average, just 0.14% of the total flow concession) (Avellaneda and Villafuerte 2008).

In this way, this study contends that the PES scheme reinforces unequal resource allocations and social power structures. As one community member put it:

> Instead of receiving so little money we would be more than happy if we could use the water we save, instead of Pimampiro taking it all, so we could have at least two crops a year. After all, the water comes from our territory (Nueva América peasant landholder, pers. comm., August, 2010).

If PES initiatives have the effect of limiting communities' access to natural resources (whereby the poorest members are affected in particular), or rendering these existing modes of access insecure or susceptible to dispossession, then this has the potential to further destabilize already precarious resource bases – in terms of both natural resources and environmental services – and further contribute to socio-economic marginalisation (see also Rosa et al., 2003).

4.5. Conclusion

This chapter has demonstrated the importance of scrutinizing social relations, differences and dynamics in order to understand the evolution and outcomes of a PES project. A fundamental problem with simply internalizing externalities is that it does not sufficiently consider the importance of existing contexts and institutions, or how PES schemes are shaped by divergent interests and discourses around conservation. This chapter has argued that PES schemes are not neutral initiatives based on economic logic and rational-technical intervention, but are configured by vested interests, with the potential to exacerbate social differences within communities, reproduce inequalities in access to resources and environmental services, and undermine existing livelihoods and practices.

While acknowledging that the Pimampiro case is based on a community where not all members have joined the scheme, this study has shown how

non-participants are also adversely affected by its implementation, and thus these findings deserve important attention and critical consideration. A further key reason for this is because this PES experience – one of the first in South America – has received much policy and scholarly attention, most of which has been very positive, and has contributed to its portrayal as a frame of reference for PES (FAO, 2011; Wunder and Albán, 2008). This chapter has challenged this perspective, especially by considering the effects of the scheme in wider terms than just the average income that participants receive.

The study shows that it is not just the social power relations *between* different actors within a PES scheme – especially ES providers and payers - that are important, but also those *among and within* communities, which are often regarded as homogenous. These findings concur with Milne and Adams (2012) that PES projects are thoroughly political and require examination as politicised phenomena. However, such politicisation does not just stem from the assumptions of 'external' actors implementing them, but also from within the communities themselves. In Pimampiro, these differences are apparent in both the implementation and outcomes of the PES scheme. Peasant farmers with larger landholdings favoured and promoted participation in the scheme, but the outcomes have been divergent for different farmers: while owners of large areas of forest have received payments for doing nothing new, those with cleared agricultural land have faced increasing restrictions, even if they did not join the scheme. These changing dynamics within the community, resulting from the different sizes of landholding and the valuation of land cover under the PES scheme, as well as the more vigorous enforcement of the Forestry Law, have coincided with the domination of decision making in Nueva América by those who earn more from PES than by the community's traditional livelihoods.

This study also demonstrates the potential of PES schemes to reinforce unequal resource allocation. In Nueva América, this occurred both through the very different outcomes for larger and smaller landholders, as well as the community's inability to access new water concessions despite their role in conserving water flows. Such inequalities highlight the importance of considering the historical trajectories of existing livelihood practices, social relations and resource allocation among communities incorporated into PES schemes. Indeed, this analysis also shows how the Pimampiro

PES scheme reinforced command-and-control Forestry Law rules while generating new land use restrictions and changing the economic value of the land for both production and conservation. This especially affected local peasant farmers with smaller areas of cleared land used for agriculture, whose livelihoods were subjugated to the interests of downstream users in instigating watershed management practices that would secure water provision. These restrictions placed on fallow land not only pressured farmers to continuously cultivate (and potentially degrade) their land, but also reduced the pool of reciprocal labour as peasant smallholders increasingly sought sharecropping opportunities outside the conservation area. In Pimampiro, this arose because PES designers and implementers defined and ratified what was important for conservation (i.e., forest, *páramo*) and what was not (i.e., working landscapes) as defined by the Forestry Law. This meant that 'undisturbed' land cover became envisaged as the functional component of the watershed that was important for the provision of environmental services, while disregarding peasant practices that also conserved land, such as leaving land fallow during the rotation cycle of production.

While many assessments of PES schemes centre on the outcomes for conservation (such as Wunder and Albán (2008), who emphasise on containing deforestation, rather than securing peasant livelihoods), this study argues that it is paramount to consider the effects on local working landscapes, resource control and distribution, especially where PES is (if only partially) promoted on the basis of their potential to reduce poverty. Analyses thus need to consider existing natural resource allocations and land management practices and how these will be reshaped by PES schemes. In this respect, this case study supports the conclusion that PES, because it reinforces existing property rights and social structures, cannot redress unequal natural resource distribution. On the contrary, as shown here, PES has the potential to contribute to parallel forms of social and ecological degradation as the main conservation objective is pursued. At present, many such PES schemes simply treat communities as blank canvases ripe for the introduction of new property rights and market mechanisms to supposedly improve land management and livelihoods, without considering existing historical contexts, social relations, forms of organisation or land management practices.

Chapter 5. Payment for environmental services and power in the Chamachán watershed, Ecuador

Minga on the terrains of the Guagalá Association.
Source: Rodríguez-de-Francisco, 2010.

Based on: Rodríguez-de-Francisco, J.C., Boelens, R., under revision. Payment for environmental services and power in the Chamachán watershed, Ecuador. *Human Organization*.

5.1. Introduction

Proponents of PES explain the need to introduce PES as they promise to be more efficient and effective than traditional command-and-control strategies to conservation (Pagiola et al., 2005). Its recurrence in state policies and development intervention discourse is explained by its appeal in generating environmental protection while simultaneously reducing poverty (Pagiola 2007). PES appeal is also built upon its relative autonomy from bureaucratic administration and public spending, fitting neatly into the principles and claims of dominant (neo)liberal policy approaches. This pricing of nature's resources and services, assigning and re-assigning property rights to them, and trading these goods and services as commodities (Liverman, 2004:734) is then positioned as the ideal way to make resource-use efficient and reduce environmental degradation.

The fierce promotion of PES rationality and project implementation is counteracted by substantial case research and examination of policy discourse. Based on theoretical bodies that critically scrutinize the basic foundations and postulates of neoliberalism in relation to vulnerable population groups (Baud, 2007; Foucault, 2008; Harvey, 2005; Klein, 2007; van der Ploeg, 2007) and processes of neoliberalising nature (e.g., Bakker, 2010; Budds, 2009; Büscher et al., 2012; Fletcher, 2010; McCarthy and Prudham, 2004; Zoomers, 2002), these studies review empirical evidence on PES implications (e.g., Isch and Gentes, 2006; Rodríguez-de-Francisco et al., 2013). Many of these studies unravel phenomena whereby the blossoming of green markets is related to the transfer of conservation costs to the poor and benefits to the powerful (Martínez-Alier, 2002; McAfee, 1999). Commonly, this is linked to the occurrence of 'green grabbing' (Vidal, 2008) whereby green credentials are wielded to justify seizing community land and water resources (Fairhead et al., 2012).

Some of these studies examine watershed PES schemes. While these schemes are implemented at the watershed or catchment scale, design and negotiation occur at multi-scalar levels; for instance, connecting local service providers with private, government and non-governmental actors operating at national/global levels (Rosa et al., 2003). Their heterogeneity in terms of economic, political and cultural backgrounds triggers a dynamic power play in PES implementation processes. Several of these

studies have considered power structures and tactics in relation to conservation projects (Kosoy et al., 2008; Kosoy et al., 2007). Some have focused on the exclusionary results of conservation project strategies (Lee and Mahanty, 2007). Others have examined the inclusionary politics and discursive practices of conservation schemes, integrating (or 'adversely incorporating') local producers in a commoditised natural resource management environment (Milne and Adams, 2012). These analyses have contributed to understanding how power dynamics are not just 'external' to communities and their power-heterogeneous members, but in capillary ways profoundly intervene in, and entwine within, community realities. Several of these case studies feature environmental conflict and power imbalances among agents involved in PES, from global to local levels; they manifest problematic impacts by PES on environmental communities. The studies done so far highlight that there is a need for critical analysis and better understanding of contextual power dynamics and historical struggles over natural resources among groups of stakeholders who provide and demand environmental services, as a necessary step to more thoroughly comprehend possible PES project impacts.

This chapter uses the power cube (Gaventa, 2006) as a framework for analysing how power dynamics played out around a PES project in the Chamachán watershed, in the northern Andean highlands of Ecuador. This project is a neighbouring scheme of the Nueva América PES project analysed in the previous chapter. It aims to conserve the ecosystems inhabited mostly by indigenous communities that provide drinking and irrigation water to several water users in the municipality of Pimampiro. The PES scheme was proposed and financed by municipal and provincial governments and by foreign aid support.

This chapter examines historical struggles over natural resources with respect to PES decision-making arenas as 'visible', 'invisible' and 'hidden' power. It first briefly outlines the power analytical framework used to examine the Chamachán PES project in Ecuador. Thereafter, it introduces the methods used to gather and analyse information on the case study. Next, a historical description of the natural resource conflict is presented in order to understand the context in which PES was introduced. Subsequently, the chapter examines the implementation process of the scheme. Finally, findings and conclusions are presented.

5.2. Multiple forms, spaces and levels of power: conceptual notes

By placing ecological distribution and management issues exclusively in the realm of nature, natural resource management strategies and policies are naturalised and the policy debate becomes depoliticised and decontextualised – largely devoid of considerations regarding power relations, politics and culture. Ecological distribution issues, however, are intrinsically mediated by power dynamics determining access to, and control over, natural resources (Martínez-Alier, 2002). [50]

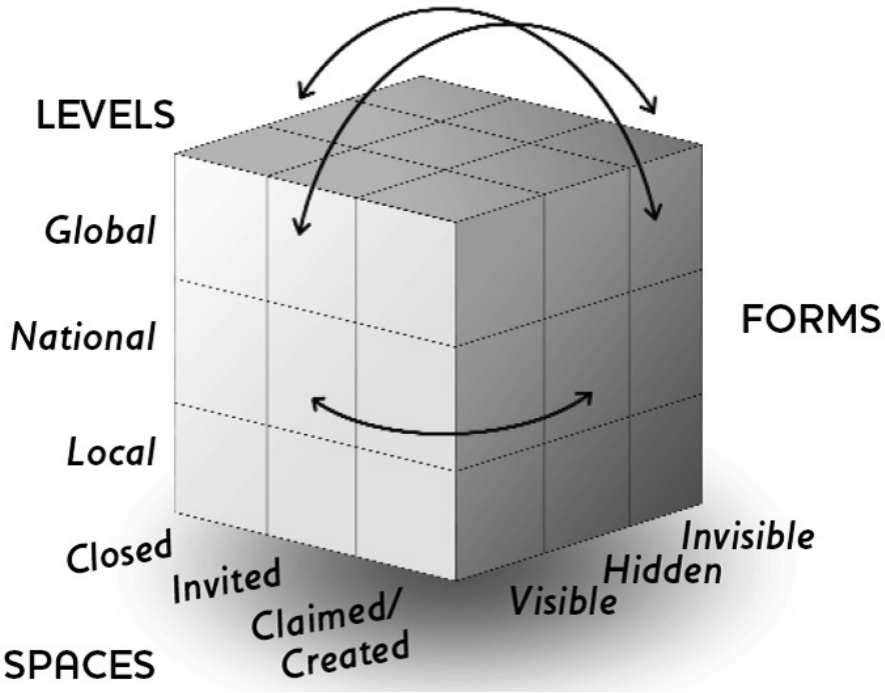

Figure 5-1 The power cube
Source: Gaventa (2006)

In general terms, as the introductory chapter of this thesis briefly has outlined, power is a relational means inducing the capacity or potentiality to make or to receive change, or to resist it (Foucault, 1977, 1980; Lukes, 2005). Power, according to Lukes (2005), is defined in three different forms. The first form, *visible power*, focuses on how conflict between interests is dealt with in public spaces, through observable decision-making, as revealed in the political arena by the formal rules, institutions

[50] See also Bebbington et al., 2010; Bury, 2008; McCarthy and Prudham, 2004

and authorities that are mobilised by political actor groups. Here, power consists of relatively 'openly' mobilising the means to defeat opponents' preferences (Gaventa, 2006; Lorenzi, 2006), e.g., by bringing economic and political resources such as votes, jobs, influence, etc., to the bargaining game, and strategically positioning these resources through, among others, personal efficacy, political experience, and organizational strength (Gaventa, 1980:15).

Lukes' second form of power relates to the strategic ability to set the agenda and define which actors and topics will be gathered around the negotiation table. Concealed ways of setting the rules of the game, including the "mobilisation of bias" (Bachrach and Baratz, 1970), are fundamental here to defining who is included and excluded (Gaventa, 2006). This is called *hidden power*, and is used by:

> ... vested interests to maintain their power and privilege by creating barriers to participation, by excluding key issues from the public arena, or by controlling politics 'backstage'. They may occur not only within political processes, but in organizational and other group contexts as well, such as workplaces, NGOs or community-based organizations (IDS, 2010:11).

Here, power involves decision-making in political arenas, "but also non-decisions: decisions that result in suppressing or thwarting challenges to the values or interests of the decision maker" (Bachrach and Baratz, 1970:43-44).

This may undermine protests and claims for change or leave them un-expressed. Examples include the threat of sanctions (from intimidation to co-optation), or the invocation of an existing bias of the political system (e.g., precedents, rules or procedures) to remove a threatening demand. This may include manipulative use of meaning and symbols, such as calling opponents 'backward', 'troublemakers' or 'terrorists' (Gaventa, 1980). Other processes of non-decision making may include "decision-less decisions", a process originating from institutional inaction, and the "rule of anticipation" where less powerful actors decide not to make a demand anticipating further reprisals from the powerful actor (Gaventa, 1980).

The third power form, *invisible power*, relates to normalising power as in Foucault's capillary power (1975, 1991), where the internalisation of morals, social norms and ethical standards creates subjects that exercise

control over themselves and each other. This power is not exercised centrally by the powerful but involves the less powerful:

> By shaping their perceptions, cognitions and preferences in such a way that they accept their role in the existing order of things, either because they can see or imagine no alternative to it, or because they see it as natural and unchangeable, or because they value it as divinely ordained and beneficial (Lukes, 2005:28).

While normalising power is often 'subject-less', not belonging to any particular actor, but interweaving both dominant and subordinated together in a normalising web that deepens and reinforces the status quo (Foucault, 1975), it may also take 'agent-centred' forms. Hereby, dominant groups shape or influence the beliefs and desires of others, securing their compliance (Lukes, 2005), or in foucauldian terms, they engage in governmentality projects by organizing different technologies of power to "conduct the conduct" of the dominated (Foucault, 1991).

Government-rationality produces new forms of knowledge and concepts that "contribute to the 'government' of new domains of regulation and intervention; for example, ecosystems and the boundaries between nature and society are rearranged so that "previously untapped areas are being opened in the interests of capitalisation and chances for commercial exploitation" (Lemke, 2001:8).

In addition, Gaventa (2006) argues that Lukes' three *forms* of power may be understood in relation to how *spaces* of engagement are created, and the *levels* at which these forms of power operate (e.g., from local to global). To visualize these appearances of power he links them in the power cube (Figure 5-1). Consequently, forms, spaces and levels of power can be understood as separate but interrelated dimensions.

Levels of power can be defined in various manners, e.g., global/national/local, and spaces are seen as "opportunities, moments and channels where citizens can act to potentially affect policies, discourses, decisions and relationships that affect their lives and interests" (Gaventa 2006:26). Such spaces of participation are not 'out there' but socially constructed, their contents and boundaries influenced by power relations (Cornwall 2002 cited by Gaventa, 2005).

Spaces can be categorised as follows: (i) closed spaces, where boundaries of participation are (intended to be) fixed and decisions are made by groups of actors behind closed doors (Gaventa 2006); (ii) Invited spaces "into which people (as users, citizens or beneficiaries) are invited to participate by various kinds of authorities, be they government, supranational agencies or non-governmental organizations" (Cornwall 2002 cited by Gaventa, 2006:26); and finally, iii) there are the "spaces which are claimed by less powerful actors from or against the power holders, or created autonomously by them" (Ibid:27).

These spaces are shaped through the diverse outcomes of people's mobilisations, federations and other meeting opportunities for shared action (e.g., Boelens and Doornbos, 2001; Hoogesteger, 2012).

Forms, levels and spaces of power dynamically interact with and affect each other. Both dominant and subordinated groups often aim to connect different levels of action, work simultaneously through (or open/close) various spaces to foster their interests, and combine diverse forms of power. Their ability to do so shapes the arenas, contents and (fluctuating) outcomes of power struggles in practice.

5.3. A power analysis of the Chamachán watershed PES

This case study is set up as ethnographic research with the communities involved in the Chamachán PES, in Mariano Acosta Parish, Pimampiro Municipality, Ecuador. Fieldwork was carried out throughout the year 2010. Semi-structured interviews and participatory observation were the principal data collection methods, including in total 34 individual interviews with community members, project implementers and environmental service users and non-users. Interviews were held with 11 of the 18 participating private owners in Chamachán, one Municipality professional, one Proderena (an EU funded programme managed by the Ministry of Environment) professional, one Irrigation Board professional, two political leaders from Mariano Acosta and two professionals of AVSF-CICDA (Agronomes et Vétérinaires sans Frontiers), two members of UCICMA (Mariano Acosta Indigenous and Peasants Union). Moreover, 10 members of the Guagalá Association (environmental service providers but not participating in PES) were interviewed during participation in eight community working days. Also interviewed were four non-participating

members of the Puetaqui and Mariano Acosta villages. In addition, two focus group meetings were organised with the members of the Guagalá association during the lunch break of two minga sessions in which where PES implementation and participation was discussed.

During this research, special focus was put on analysing decision-making concerning the PES project: in which ways were decisions taken (forms of power), who were involved and in what types of arenas (spaces of power) and in which places or echelons of decision-making (levels of power)? The power spaces analysis focused specifically on closed and open spaces to understand top-down dynamics, and on claimed spaces to understand bottom-up dynamics. With respect to levels of power, the analysis took into consideration how PES stems from global-level policies and discourses while being implemented at national and local levels. Additionally, there was analysis of the intersections of forms, spaces and levels of power by identifying how people are affected by the decisions taken.

Regarding information analysis, all interview data were categorised according to the decision-making features of PES. The research analysed the frequency of common answers and contradictions among them, aiming also to scrutinize differences in responses. The validity of the results was tested by presenting them in a feedback workshop organised with the Chamachán and neighbouring communities, NGO members (AVSF-CICDA) and the Imbabura indigenous federation. Feedback was also organised with PES implementing institutes, in two separate meetings with staff from the Proderena programme and Pimampiro municipality.

5.4. The Chamachán watershed PES

5.4.1. Resource struggles in the area

Pimampiro has a total population of 6,300 urban and 11,000 rural inhabitants, distributed over its territory of 44,200 hectares (See also chapter 4). The municipality of Pimampiro spreads over four main watersheds: Escudillas, Blanco, Pisque and Chamachán (Avellaneda and Villafuerte, 2008) (see figure 4-1). The Chamachán micro watershed is located between 1,700 and 3,700 meters above sea level (Guerrero, 2010), with an area of 2,310 hectares, divided into 645 hectares of *páramos,* and 1,665 of primary and secondary forests. This watershed is

located in the Mariano Acosta Parish. This large parish (13,400 hectares) has a population of 1,900 (60% self-defined as indigenous Karanki, the rest as *mestizos*), whose principal livelihood is agriculture (GMP, 2010).

The indigenous communities now inhabiting Mariano Acosta arrived in 1905 from the neighbouring parishes of Angochagua and La Rinconada. They moved there in search of land that enabled them to escape their status as semi-serfs (*huasipungueros*) in the neighbouring haciendas. When they arrived, this land (owned and controlled by Santa Rosa Hacienda) was not being used. Indigenous acquisition cost tough struggles in the highlands and a lengthy court dispute with the hacienda owner. In 1926, the court ruled in favour of the communities. This decision to entitle the land in Mariano Acosta to indigenous families marked the area's agricultural reactivation – Spanish conquerors had expelled the Chapi indigenous community four centuries earlier (see Theisen and Costales, 1969). However, the court's decision regarded land only, as water remained under hacienda control. In this respect, the landlord continued to rule the Pimampiro Canal, originally constructed by the Chapi in the 16th Century (Mothes, 1987) to bring water from the Mariano Acosta highlands to the lowlands in the vicinity of Pimampiro's main urban centre (see figure 5-1).

In 1930, this agricultural development also brought demographic growth. Migrants from Colombia and northern Ecuador bought land from the indigenous people in forested lands, close to San Nicolás Hacienda, southwest of Pimampiro (Preston, 1990). Until then, agricultural production was very low, compared to cattle herding activities. Most livestock was kept in the páramos, following traditional herding practices. However, the newcomers' arrival brought more fields under cultivation in the lower areas of Mariano and therefore the labour force shifted more towards agriculture. The long distance and time requirements meant that most cattle were brought down from the *páramos* and kept close to residences (Dulong, 2005).

At that time, dominant white-mestizo people regarded the highlands (where indigenous communities lived) as marginal and remote, seeing only the value of timber there. For example, a Colombian businessman who bought Pinandro Hacienda in Pimampiro in 1945 explains in his autobiography, *The King of Wood* (Restrepo-Jaramillo, 1958), how much of his wealth was achieved by his ingenuity, logging the forgotten

highlands of Pimampiro where, according to him, the backward indigenous lived. He sold these forests to lay the railroad networks that supported Ecuador's economic development.

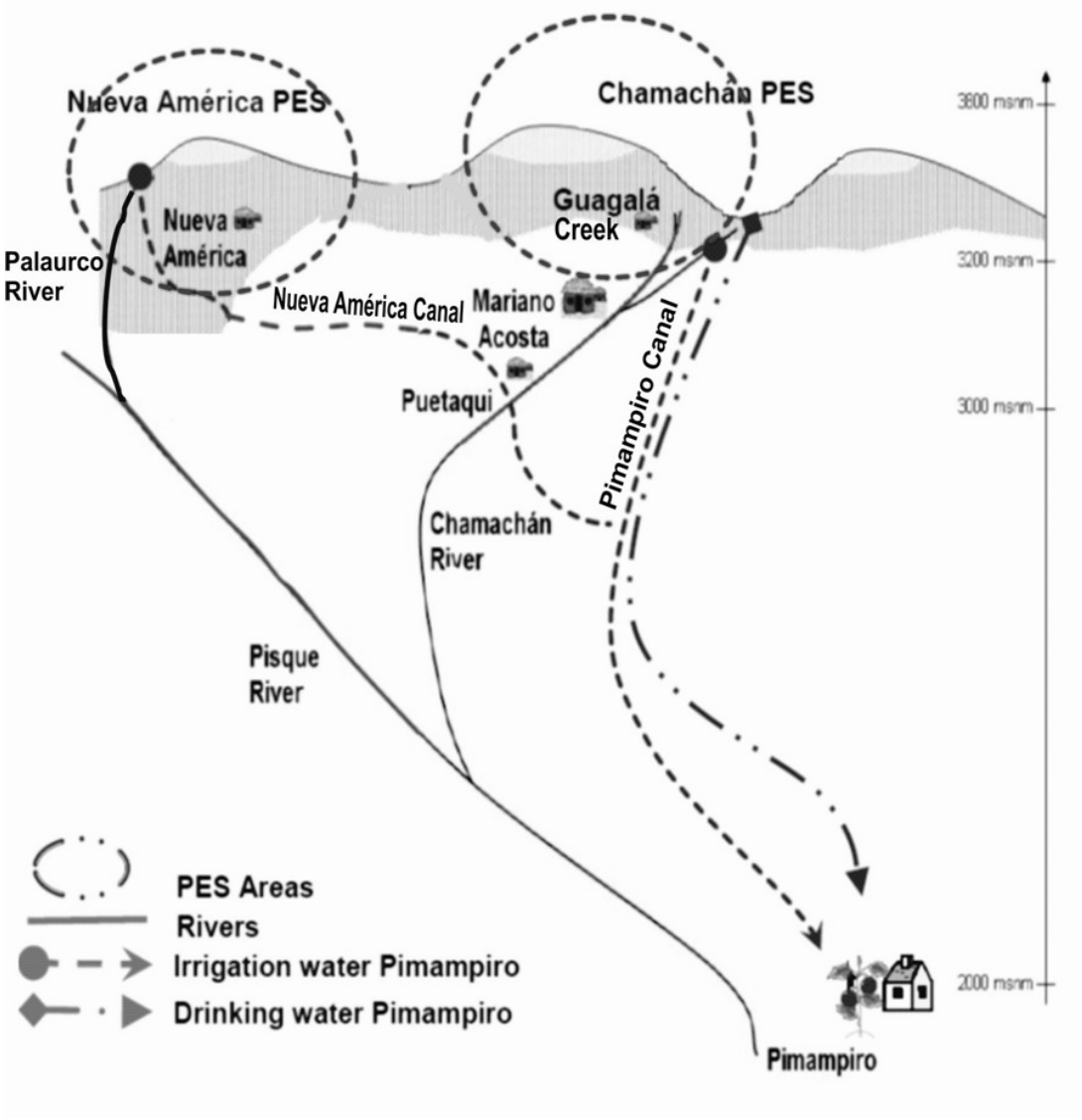

Figure 5-2 PES schemes and water network in Pimampiro (Sketch)
Source: Adapted from Dauriac (2005)

In 1946, the owner of Santa Rosa Hacienda, Alonso Tobar, died and the properties were distributed among several interest groups. One part remained under control of the Tobar Family and partially rented to Humberto Román, a Pimampiro entrepreneur with many, varied economic resources. Another part was sold to two rich families who then started what nowadays is the Pimampiro irrigation board (Preston, 1990). Later,

the neighbouring hacienda, Pinandro (see figure 4-1), was also sold to several white-mestizos who bought the land in order to rent it out. These changes in property ownership oriented production on former hacienda land more towards commercial farming, and drove former hacienda workers searching for newly arable land in the mountainous areas of Pimampiro (Preston, 1990).

Such changes in land tenure and hydraulic infrastructure downstream triggered what Dulong (2005) calls the "race for water titling". In this race, the Pimampiro water board with the support of the Pimampiro municipality tried to monopolise most highlands water sources in order to provide drinking water for downstream consumption and for intensive agricultural production in the lowlands. Pimampiro municipality brought a lawsuit to appropriate several water source concessions in the Mariano area but, just then, the court ruled in favour of the people of Mariano and Puetaqui. This race for water coincided with droughts in Mariano Acosta, triggering a series of claims from both indigenous and mestizo families requesting redistribution of and access to irrigation water (CESA, 1998).

In 1980, Pimampiro was officially recognised as a municipality, and despite heavy resistance by the people of Mariano Acosta, Mariano was annexed to the new municipality (CESA, 1998). Soon thereafter, Pimampiro acquired via CNRH (National Water Resources Board) three water concessions in Puetaqui and several others in the upper part of Chamachán for drinking and irrigation water, without prior consent from the communities upstream. In this way, via the State administration, they won the titles that they failed to get via the court (Dulong, 2005). Now with political control over Mariano Acosta, in 1990, Pimampiro started building the Nueva América Canal, to transfer water from the Pisque River to the Pimampiro Canal. The idea was to use this new concession from the Pisque River to supply 24-hour drinking water in Pimampiro. However, it was soon detected that the Pisque's water was not suitable for human consumption "as it has very high mineral contents" (EMAPA-P professional, pers. comm., June 2010). Therefore, the municipal water company decided to swap their Pisque River water concession with the Irrigation Board in exchange for use of water from the Chamachán River for drinking water supply (Dauriac, 2005) (see figure 4-1 and 5-2).

This also gave rise to the first PES scheme in the area, described in chapter 4, the Nueva America PES project (Wunder and Alban 2008). The

Nueva America PES project (see chapter 4), which was implemented in Mariano Acosta between 2001 and 2002 to improve water supply to Pimampiro, by paying PES participants in Nueva América a compensation of up to one dollar per hectare per month for protecting woodlands and páramos along the Palaurco River (Wunder and Alban 2008). Ironically, because of the swap in concessions, Pimampiro inhabitants pay Nueva America upstream farmers for environmental services, the farmers must conserve their forests for this purpose, *but the water conserved does not go to these Pimampiro drinking water users, but to the Irrigation Board farmers*. At the same time, drinking water in Pimampiro originates in another, hydrologically separate, watershed: Chamachán. Service providers here, however, are not paid by Pimampiro water users (who use the environmental services) because the latter are already paying Nueva América for the services. As such examples reveal, PES reality is Kafkaesque, and theory and practice tend to diverge profoundly.

In sum, the backdrop of these PES projects is shaped by a long history of struggles for land and water in the area. In most conflicts, water has been a key resource flowing toward the powerful. In what is nowadays the Pimampiro municipality, political and economic power shifted from hacienda owners to the mestizo middle class. By contrast, peasant / indigenous peoples have been impoverished (Preston 1990). Today in Pimampiro, the highlands are home to families engaged in subsistence farming, while below agrarian entrepreneurs practice commercial agriculture (CESA, 1998). These days, both social groups are combined as (unequal) 'partners' and entwined in the 'neoliberalisation of nature', triggered in Pimampiro, among other factors, by market mechanisms established to conserve water.

5.4.2. The Chamachán PES

The Chamachán River provides the drinking water, and part of the irrigation water, for the municipality of Pimampiro. The PES project on this river pays landowners in the upper Chamachán basin for conserving forests that regulate water quantity and quality. The water from Chamachán flows down to Pimampiro to be used chiefly by the water utility and the Irrigation Board of Pimampiro (see figure 5-2).

Having land title is a prerequisite to join the PES scheme. In this case, therefore, conservation payments target 18 private landowners with a total of 303 hectares of forests. These owners get paid a maximum of one dollar per hectare a month.[51] Besides these private landowners there are several other non-participating peasant families in the PES area, a group of 16 owners who have control over 497 hectares[52] adjacent to Guagalá Creek (see figure 5-2). The latter organised as the Guagalá Association. This collective, formed 30 years ago by a group of indigenous peasant families from Puetaqui, has no formal land titles and therefore was unable to participate in the PES.[53] Land is communal property, whereby each member has an individual plot which is worked individually by each family and by collective labour parties (*mingas)*, and through mutual support exchanges among association members.

The Municipality of Pimampiro and the Proderena programme are the Chamachán PES project intermediaries and implementers. However, again, this project (widely claimed as another of Pimampiro's successful PES experiences), strongly deviates from PES theory (as do the others): it has no environmental-service-paying users, as drinking water users already pay an extra fee to conserve the Nueva America ecosystems. Therefore, the project relies on start-up capital provided by the European Union via the Proderena programme, the Province of Imbabura and Birdlife Ecuador[54], among others. Guerrero (2010) mentions that, as a consequence, in order to guarantee this project's economic sustainability, it is necessary to charge irrigation water users for watershed services. This, however, has not yet happened.

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[51] This is similar to the twin PES project in the neighbouring community of Nueva America.

[52] Of this area, 244 hectares is páramo, 235 hectares native forest, and 8 hectares farmland.

[53] The association founders say that historically they were given land titles over this area but because, in those days, there was sufficient land available in Puetaqui, they left the land in Chamachán untouched and the documents were lost.

[54] The idea of their contribution is that the protection of highland natural ecosystems is beneficial for avifauna.

5.4.3. The implementation process

The global green discourse calls for more 'room' to conserve areas important for environmental service provision by implementing PES to deal with subsistence farmers who would threaten these areas (World Bank 2005), while intensifying modern agriculture elsewhere (Didde, 2012). Following this line of thought, a Proderena professional explained that:

> They [the peasants of Mariano] always talk about their potatoes and other tubers (*mellocos*), but you don't see significant land use in these environmentally important areas ... PES makes them realize other, more important values of nature (Proderena staff, pers. comm., July 2010).

This argumentation is also replicated in the field by some environmental service providers:

> Now we have realised that it is important to conserve and to set a good example and therefore we receive conservation payments and work elsewhere (Chamachán PES landholder, pers.com., June 2010).

According to the Municipality of Pimampiro, the success of the neighbouring PES scheme in Nueva America made them want to replicate this experience to secure "the hydrological importance of its highland forest and páramos" (Municipality staff, pers. comm., May 2010). The fact that the Nueva America experience received strong global, national and regional support and attention made it useful to recommend other projects. Proderena prepared the program and it was soon approved for EU funding; the subsequent preparation and public discussion processes in the area took two years and the Chamachán PES project was implemented with the same PES fees as those of the Nueva America PES scheme (a maximum of $12 USD/hectare/year).

Guerrero (2010) explains the process and contents of these discussion meetings, to which communities of Mariano Acosta were invited from 2006 onwards. These meetings explained the functioning of this new approach to conservation, the experiences of the Nueva America PES, the overall importance of conservation, the environmental law and PES contracts and implications to the people in Mariano Acosta. Since it dealt with a new

conservation discourse and intervention concept, with new incentives and moral concepts, project implementers realised that much effort was needed to discursively introduce the new rationality at the initial project stages. Farmers were approached in training sessions, as rational actors and individual utility maximisers who strategically calculate costs and benefits to further their personal interests. The PES project was there to generate the right economic incentive structures. Trainers and project staff showed deep faith in their PES postulates and strategy and worked to include local families in their modern way of thinking, explaining the need in terms of progress, development, and the assumption that whenever the incentives are right, private motives of profit maximisation will automatically make water conservation and use as efficient as possible.

But more than just trusting in the workings of discursive, *invisible power* and the effects of its morals and norms, project implementers used other techniques as well. One socialisation meeting (July 2007) featured a presentation about the Nueva America PES by one of its beneficiaries, explaining not only the benefits but also the duties and punishments of PES. In another public discussion meeting (September 2007) the environmental laws (i.e. responsibilities, duties and fines) for high-altitude Andean forest were explained in great detail by a staff member from the Ministry of Environment. During this meeting, for example, it was explained that the project will have, as in Nueva America, forest rangers hired by the projects to better patrol and more strictly control people's forest activities in the area. A Proderena staff member explained that during this process:

> It became very clear how environmental service suppliers were not aware of any or had very little knowledge about environmental laws; but this deficiency was corrected during the public discussion process, creating environmental awareness and understanding of the implications of deforestation and of not following environmental law (Proderena staff, pers. comm., July 2010).

In this same interview, she mentioned that:

> The public meetings were very intense; it was not easy to change peasants' mental concepts, since the project's potential beneficiaries often think that the objective of external interventions is to seize their mountains and pastures. This has always been their fear; with

> this innovative project we are offering them solutions, making sure that they won't clear forests or extend their cropland areas, so this actually helps them (Idem).

During a public meeting organised in October 2007, upstream farmers firmly argued for an item on the meeting's agenda to discuss how the PES project could be adapted to their local reality. They suggested increasing PES rates to account for loss of income in the area, re-distributing the water saved by their conservation practices and implementing productive alternatives. Although the project implementers promised to take these interests into consideration and see what could be done to implement them, ultimately nothing was done with these suggestions. According to the Municipality this was because:

> It would be inequitable to increase PES rates for some and not for the rest, or to change any other conditions that are already established in the neighbouring PES system. We only want to give compensation and not pay the entire opportunity cost per hectare. Conservation of Pimampiro's water sources and biodiversity is the end and the means that enable us to bring welfare to the communities (Municipality staff, pers. comm., August 2010).

Regarding water redistribution, the Municipality and Proderena argued that "it is beyond our scope to change anything regarding existing water concessions" (Proderena staff, pers. comm., July 2010)

As for upstream farmers' demand of support for alternative production opportunities, they mentioned that the PES scheme had its own, established components and that adding production diversification projects to it was not included in the design.

However, not all the elements of the conservation project were openly communicated, and some clearly belonged to a more hidden agenda. For example, during implementation, the municipality decided to issue a municipal decree to turn the land controlled by the Guagalá Association into a municipal nature reserve for water catchment and regulation. This decision was based on the 'illegality' of their occupation, as their members did not have individual land titles to prove legal possession of these lands.

5.5. PES conservation in the eyes of Chamachán's peasants

During fieldwork, all respondents – both participants and those not participating in PES – agreed on the need to conserve the area, and how important this was for them and for Pimampiro. As one of the farmer leaders explained characteristically, referring to the land as a place for livelihood generation and as a cultural space in which they are rooted and to which their ancestors belong:

> If it were not for us and our ancestors, nowadays, there wouldn't be a single tree standing in these mountains ... conservation for us peasants has been also a way of working with the land (Chamachán peasant landholder, pers. comm., June 2010).

Conservation, for most of the Chamachán peasant families, goes beyond just economic incentives and values, and PES rules. They are also critical of other components of the PES scheme. Regarding resource distribution, half of the participating and all non-participating members mentioned that they consider that most water is concentrated for Pimampiro's use; they feel this is unfair, as they cannot use the water for irrigation when the dry season is longer than expected. Furthermore, several participating members questioned PES conservation in terms of enforcement by the threat of legal force, making them decide to join the scheme. As one PES participant said:

> Environmental law is making it difficult to earn a livelihood by working the land and, since we need anything that we can get, we decided to join PES (Chamachán peasant landholder, pers. comm., August 2010).

Another participant similarly stated:

> Nowadays it is forbidden to be a farmer in these mountains, and even if we don't want to be conservation rent-collectors, we need to at least get this income (Chamachán peasant landholder, pers. comm., August 2010).

Regarding PES rates, all participating members stated that they disagreed with the PES rates and would like to see them increased. As one farmer mentioned:

> With the payment that I receive, I can only buy two Coca-Colas a month and I deserve more than that (Chamachán peasant landholder, pers. comm., August 2010).

Also, non-participants mentioned that, although they are scared of possible penalties for working the land and nearby forest areas, they cannot afford not to work them, because otherwise they wouldn't be able to provide food and income for their families. One of the small-holders said that:

> Pimampiro has already stolen our water and now, with laws and miserly payments for conservation, they want to control the land and forest that we in former days simply used (Chamachán peasant landholder, pers. comm., August 2010).

Furthermore, while interviewing members of the Guagalá Association, one striking finding was that they were not officially notified about the on-going initiative to transform their land into a 'municipal nature reserve for water catchment and regulation'. Learning about this initiative by coincidence, their response was to work their land even more and to re-build the old shelter close to Guagalá Creek, in order to show productive use of these lands. When this was discussed with a staff member from the municipality, the latter responded:

> This association is illegally occupying this land. Because of their status as illegal squatters, they should not be even considered for PES as they are now; they should not be rewarded (Municipality staff, pers. comm., August 2010).

For the above reasons and despite much criticism by even the PES participants, finally, in December 2007, the contracts for conservation were approved and signed. During the interviews, one additional powerful argument for participating in PES was brought forward. Villagers, travelling up and down the catchment while making their living, had often faced problems with the dirt road from Mariano Acosta to Chamachán. Two months before the meeting took place in which the contracts were signed, the Municipality made continued road building conditional upon high participation of landowners in PES, or else construction would stop. The municipality defended their PES power play by stating that:

> There is a clear relationship between construction of transport infrastructure and the danger of deforestation. We as the Municipality have to provide such infrastructure but, by ensuring PES participation, we also ensure conservation (Municipality staff, pers. comm., August 2010).

5.6. Discussion

Global advocates of market conservation are calling for "thinking globally and acting locally". As part of their discourse, PES policies and schemes are increasingly being exported by international organizations to developing countries, and also to local societies in which livelihood and production relationships are largely based on non-commodified exchange (Gómez-Baggethun et al., 2010). This process of trickling down global ideas into local projects entails social interaction teamed with power dynamics among international organizations, national governments, local NGOs and land managers.

The Chamachán PES is a replica of the widely acclaimed Nueva America PES in Pimampiro, a project that has been put forward as a model for small municipalities interested in protecting their watersheds.[55] Therefore, it has influenced various PES replicas in Ecuador and in Latin America. Similar to what Sullivan (2009a) argues, the modernising, global impetus of market conservation that searches to restructure rural landscapes has characterised local peasants, such as those in Mariano Acosta, as poor, marginal and environmentally problematic. For the peasants, the only option is to refrain from their backward environmentally-faulty livelihoods and start selling nature in order to save it (McAfee, 1999). Many of these newly labelled 'local environmental providers' understand and enact their new role by 'self-correcting' behaviour, in order to become an example of modern, market-based conservation farmers for the rest of their communities. This also matches the views of PES implementing agents who are part of the same normalising web. Rather than seeing rural

[55] Despite the fact that in this project conservation fees by drinking water users are being paid to landholders in an area that hydrologically does not provide water for their human consumption.

landscapes as humanly co-produced environments, national and regional PES implementers see rural landscapes as humanly destroyed environments that need to be intervened. Their view of rural landscapes is driven by their interest to adopt new, modernistic, market-based conservation strategies that mirror Western science. This simultaneously makes their projects eligible for future funds from the global North, by modernising locals and helping conservation.

The previous paragraph describes what can be referred to as invisible or inclusionary power, operating from global to national and local levels and vice versa, entwining human and non-human resources in a market-environmental conservation network through norms and morals of proper behaviour and good governance. PES implementation, however, is also influenced by hidden forms of power. PES can extend, for example, into already existing command-and-control instruments, which are often already in place but not always enforced by environmental authorities. The implementation of PES is thus often accompanied by reinforcement of top-down regulatory instruments. In the case of the Chamachán PES, the relation between PES and punitive, top-down instruments was particularly stressed during the public meetings (i.e., invited spaces). Connecting PES with already existing command-and-control instruments triggers the 'anticipation rule' of potential PES providers; in anticipation of possible future punishments, they will choose to participate 'voluntarily' in the PES schemes, even though they might not agree with the conditions attached (such as PES rates). The results thus show that power wielded in decision making can fiercely push potential environmental providers to accept PES, rather than involving them voluntarily (Corbera et al., 2007; Fairhead et al., 2012; Milne and Adams, 2012), or giving them a real option to reject it (Muradian et al., 2010). A further example of hidden power is the handling of criticism raised by local peasants. The unequal distribution of water at the municipal level as well as the comparatively cheap prices paid for conserving this 'rich nature' (1 dollar/hectare of forest/páramos a month) were, for example, points of severe criticism by the local peasants in the Chamachán PES. PES implementers tried to resolve this criticism by pretending to seriously analyse the possibilities of adapting the PES design accordingly. This was proclaimed despite the fact that the implementers had already decided on the payment rates, in a closed space, and also knew about the legal impossibility or unwillingness to redistribute water.

Power is also exercised in a visible form. In the Chamachán case, for example, participation in PES was forced onto the peasants by threatening to stop building the road connecting Chamachán with Mariano Acosta. A further threat to the peasants of the Guagalá Association was to possibly designate their lands as a nature reserve area in connection with PES. Implementing such a natural reserve area on peasants' land can indeed be analysed as an example of potential green grabbing (Fairhead et al., 2012) or commons enclosure (Sullivan, 2009a).

5.7. Conclusion

PES schemes are generally presented as economic instruments where peasants can choose to participate voluntarily. In addition, PES rationality and instruments are portrayed as generating the necessary incentives (the carrot) to materialise their own, universal interests while simultaneously following environmental legislation (the stick). This chapter highlights that what is presented as a tasty, imported carrot might also prove to be an imported stick. Here, they pretend that a stick is a carrot by normalising *invisible power*. Furthermore, this chapter also shows that even if some peasants do not want to take the carrot offered to them, as they prefer to grow their own food and take care of nature in their own way, the carrot is just pushed on them by using visible and hidden power. Such power analysis shows that what is presented as a politically-void, universal conservation and development tool, in fact, obscures the interests, values and power of those who most benefit from it.

Chapter 6. General Conclusions

Harvesting sugarcane downstream
Source: Pantoja, 2010.

> PES ... may be a double-edged sword for people living in newly priced service providing landscapes, especially in the global south. Continuing a long history of displacement for environmental conservation, food-producing practices and cultures may be restructured and constrained in the process of shifting from direct production for subsistence and livelihoods to producing environmental service oriented landscapes. And finally, those numerate in the labyrinthine abstractions accompanying the creation of new ecological commodities and markets – accountants, brokers, bankers and assisting ecological scientists – become the expert mediators and managers of monetary value for both (Sullivan, 2009b).

6.1. Introduction

As described at the start of this thesis, in recent years there has been a marked expansion of market-oriented conservation projects worldwide as well as in Andean watersheds that have come to be labelled as 'watershed PES'. In watershed PES, upstream peasants and communities are paid by different water users residing downstream to conserve or enhance the state of ecosystems that provide watershed environmental services downstream. For upstream peasant communities involved in PES, this has meant an increased level of negotiations and interactions with a wide range of downstream water users and conservation agencies. Despite the booming and recurrence of PES in Andean countries and its anchoring in national policies, there is, however, an enormous lack of attention to real-life impacts and monitoring practices that should provide insight into the social, cultural and political results of PES on the ground. Directly related to this is the fact that there is no clear understanding of how power dynamics influence social relations and the terms of exchange in watershed PES schemes: the implications that the power dynamics have on peasant control of and access to natural resources remain unclear.

The thesis, thus, aims to address the question:

> How do power relations influence the promotion of PES as a policy model and the crafting and operation of PES (-like) projects, and how in turn do these influence natural resource management and

control by PES-targeted peasant communities, in the Andean regions of Colombia and Ecuador?

This question has been studied using several sub-questions, which are now revisited to show comparative findings:

- Why and how has the PES model received strong support as a key conservation and development policy instrument in Colombia?
- How do power relations influence the design, implementation and operation of PES (-like) schemes in the Pimampiro and Chamachán watersheds in Ecuador and in the Nima watershed in Colombia?
- How do PES (-like) schemes influence social relations, organization, and resource access of communities living in the watersheds targeted by these schemes?

In this final chapter I will answer the main research question by answering the research questions. First, I start by revisiting sub-research questions two and three. Subsequently I will deal with sub-research question one. Then I move to present the implications that this research comprises. Finally, I present the concluding remarks.

6.2. Power in PES(-like) schemes and its influences on peasants

Watershed PES is presented as a transparent mechanism where conditional payments for the provisioning of watershed environmental services are given to voluntary service providers. The argument that underlies the design and implementation of this market environmentalist policy mechanism is that upstream land managers have not been able to integrate the value of environmental service conservation into their decision making regarding land use. Therefore, payments from downstream environmental service users are installed to internalize environmental externalities; such payments provide economic incentives for the provision of watershed environmental services. According to the Coasean assumption, such internalization is possible if 'up-streamers' and 'down-streamers' negotiate voluntarily to create a market(-like) exchange for environmental services. The results of such negotiations are thought to be beneficial for 'up-streamers' who are supposed to gain from this voluntary exchange in various ways, for example, (i) by being able to

participate in conservation and watershed management in their own land and territories, (ii) by securing a periodical income that compensates their opportunity costs; (iii) by strengthening property rights for land in cases where land tenure is not legalised; (iv) by strengthening community organisation as PES is assumed to foster collective action and improve existing community institutions; (v) by providing the means to strengthen the peasant's natural resource base and (vi) by thus serving as a means to alleviate poverty. 'Down-streamers' are also supposed to benefit from this exchange, by direct participation in the management and the improvement of environmental services perceived crucial by them and society overall.

In contrast with the general arguments of market environmentalism sketched above, and specifically those promoting PES, this thesis has shown that there are several issues that besmirch the neatness of such arguments and which tend to be profoundly problematic for peasant families and their livelihoods. Some of the problems that were most commonly manifested in this research are outlined below.

Neglect of economic and political power asymmetries. To assume that every agent in a watershed is equal and that these agents come as equals to define a participatory watershed management scheme for conservation that internalises externalities, as Coase supposes, is to deny several aspects of social reality. As shown in the cases of Nima, Pimampiro and Chamachán, such assumption denies that there are pernicious economic and political power asymmetries among actors in a watershed and that these power asymmetries put powerful agents in a better position to define to their benefit the terms of exchange in PES schemes. It also denies, as shown in all cases of this thesis, that there are extreme differences with respect to access to and control of natural resources among environmental buyers and sellers. This asymmetry makes that both the design and the implementation of PES schemes in Colombia and Ecuador contribute not only to strengthening the status quo but also to deepening the process of social and economic differentiation.

Reinforcement of downstream control and reduction of upstream autonomy. The above mentioned problem, of PES schemes that confirm the status quo by reinforcing existing property rights and social structures, also implies that PES cannot redress unequal natural resource distribution, as was shown in Nima and Pimampiro. This inequality is also

manifested importantly, among others, via the imposition of upstream land use restrictions by downstream water users and implementers through PES and regulatory instruments. This limitation of land use upstream does not mean outright dispossession of upstream lands, but constitutes in itself a reduction of the autonomy of upstream farmers to manage their natural resource base and is the extension of upstream control by downstream water users and implementers in the name of conservation. This practice, under the banner of conservation, is perceived by many poor upstream communities and families as an extension of structural encroachment that, throughout history, powerful actors have strategized in order to get control over and access to their natural resources. Such inequalities highlight the importance of considering the historical trajectories of existing livelihood practices and resource allocation processes among upstream communities and environmental services users downstream, in relation to the conceptual analysis and the material-institutional design and implementation of PES.

The presumption of free choice to participate in PES schemes. As this thesis has clearly illustrated, in all case studies PES schemes are set up not to replace but on top of command-and-control regulation, the reinforcement of which is strengthened with PES implementation. In Nima, Pimampiro and Chamachán, this made peasant farmers decide to participate in PES, on the basis of their fear to be sanctioned. Pressure to participate in PES also comes from PES scheme implementers in the sense of blackmailing for PES participation or in the sense of PES negotiations being more like imposed criteria on peasant communities rather than spaces where PES can be shaped by their own interests and perspectives. The illustration of the Pronima committee where upstream communities are not represented or the case of Pimampiro where PES fees are imposed on upstream communities illustrate how these dynamics of power occur within the setting up of a PES scheme.

Environmental problems are defined according to vested interests. Environmental problems, or environmental negative externalities, are commonly constructed as responsive to particular definitions or framings of environmental change. This may disregard the social and political factors that contribute to their causes. Therefore, acting on the existence of environmental problems without interrogating its framing and drivers, risks privileging technical solutions and underestimating the need to

improve allocation, management and governance. For example, the case of Nima shows how PES intervention was based on the framing that water scarcity would be cause particularly by upstream deforestation, rather than acknowledging the high and increasing demand by downstream, powerful sugar cane users, which produced a constructed water scarcity.

The power to define what nature is. The case of Nima, Pimampiro and Chamachán show how powerful environmental service buyers and intermediaries impose the nature they want to buy or see conserved, defining nature only in relation to the functional components of the watershed that are important for the provision of environmental services (while disregarding alternative peasant practices that conserve socionatural ecosystems in diverse ways). For example, implementers of the Nueva America PES scheme supported the idea that watershed environmental services were only to be provided by 'undisturbed' ecosystems and designed PES rules in a manner that crowds out peasant land use.

Forcing the 'neatness' of PES logic into the 'messiness' of the empirical reality influences, as shown below, the social relations, organisation, and resource access of communities living in the watersheds targeted by these schemes.

Traditional land use practices are undermined. PES in combination with command-control policies may often undermine traditional farming practices. In Nueva America the traditional land rotation cycle was blocked by conservation interventions. This land use restriction enforced through PES implementation has the potential to lead to land degradation as peasant landholders are now deterred from leaving land fallow as they have traditionally done. The members of the Floresta Guagalá in Chamachán, in response to the threat of being evicted from their lands by the Municipality's designation of their terrains as a protected area, were driven to use their land more intensively in order to show productive land use.

Conservation becomes selective and contradictory. The growing involvement of private agents in PES watershed conservation marks a shift towards a conservation that is defined, prioritised and implemented in the interest of those funding conservation rather than on a socially concerned conservation. The result of such a shift, as this thesis shows, is

that PES conservation becomes selective and contradictory, especially in the context of weak public governance. It is selective, as the Nima case shows, because investors only limit their investments to activities and areas considered important for the provision of water, that is, water as a resource for their own economic activities. It is contradictory, as it disregards the environmental impacts on water throughout the basin (both upstream and downstream) and ignores and side-lines the contestations and tensions with peasant communities upstream.

Communities' organisation compete with or is overtaken by PES. PES schemes, as shown in Pimampiro, may also weaken upstream community institutions. In particular, PES institutions compete with or overtake existing communal institutions. In the case of the Nueva America association's assembly the division between PES supporters and the rest of the association's members created strong contradictions that, together with past quarrels, weakened the participation and institutional position of PES non-supporters and permitted the imposition of the PES group on the association's decision making and in the management of communal projects. When, while despite the pressures some upstream peasants decided not to join PES, this thesis shows how these non-participants were also adversely affected by its implementation (see chapter 4 and 5). This is evidenced in PES reducing the pool of local reciprocal labour, collective action and mutual support, as peasant smallholders are forced to increasingly seek livelihood opportunities outside PES conservation areas.

Communities are portrayed as homogenous groups. Upstream communities rather than conforming monolithic, homogenous groups, consist of collectives with different interests and characteristics that are organised to enhance and facilitate their own livelihoods practices. This means, as shown in the case of Pimampiro, that its members commonly do not share the same perspective regarding PES scheme design and implementation and that its impacts are differently felt by its members. In Pimampiro, peasants with small landholdings (who had to give up farming on most of their lands while receiving very low payments) did not want to participate in PES while large landholders with forested land (who simply could 'cash for doing something they were doing before') were keen to participate in PES.

A narrow, mono-dimensional attitude towards conservation gets reinforced in multi-dimensional NRM realities. With PES, a new reasoning is introduced in conservation; people conserve forest areas because it pays off. This (partial or complete) commoditisation of nature, natural resource management and of the ways of imagining socionature, prioritises a relationship of humans with nature only in economic terms, like the heading picture in chapter one of this thesis. Under this perspective exchange values are prioritised over a whole range of other (use and even non-use) values and forced on to people with other worldviews that consider a wide, diverse array of natural resource management dimensions. Andean communities, moreover, have shown other, context-rooted forms of conservation and water control collaboration that compensate 'environmental services' but without monetary payments. This way, PES weakens the richness and creativity of context-specific conservation attitudes and water control cultures and imposes a one-dimensional attitude towards conservation.

The results therefore highlight that PES schemes as natural resource management interventions, rather than a set of neutral, rational and technical-economic interventions, are a political endeavour mediated by power relations defining and authorising access to and control of natural resources. Such control then simplifies social and environmental complexity in the co-production of environmental services, and with that it threatens reciprocity structures, context-embedded natural resource control and delicate water territories, cultures and livelihoods upstream, in favour of capital accumulation downstream.

6.3. Power in PES policy making

The above mentioned pitfalls and contradictions that accompany PES introduction in Colombia and Ecuador brings the question to the fore of why and how the PES model has received such strong support as a key conservation and development policy instrument? This nearly blind support has not diminished despite the problematic social outcomes of existing PES(-like) schemes.

The results presented in this thesis point to several elements that arguably make the social fallacies of PES invisible to the eyes of PES supporters:

Power is invisible to apolitical science supporting conservation. Understanding the causes and solutions to environmental degradation only in technical terms leads, as chapters 1 to 5 show, to a depoliticisation and decontextualisation of natural resource management strategies and policies. As a consequence, PES schemes are largely devoid of considerations regarding social and power relations, politics, history and culture. The responses of such a depoliticised science are necessarily apolitical and rather than tackling the root causes of environmental degradation and how these are shaped by particular interests, they set out to solve the symptoms of environmental degradation.

Depoliticisation and indifference. The disregard for connections between power and conservation knowledge, and the hidden moralism that is embedded in PES concepts regarding 'good natural resource governance' and 'rational resource use', coupled with the status of being a representative of scientific reason, make PES experts into powerful political actors. Actors who, behind the mask of neutrality, support (often unconsciously, by not clearly grasping PES' social impacts in-the-field) the justification of far-reaching reforms and interventions. Simultaneously, depoliticisation creates a particular instrumental reality where project interventions follow a planned linear logic and where experts and policymakers –to be 'objective and neutral' need to keep 'scientific distance' from the people on the ground. As outcomes are already presupposed and 'known', this created (virtual) reality generates indifference toward on-the-ground existing realities and diverse 'alternative realities'. The results of this thesis also highlight the lack of accountability of PES implementers with respect to the 'unexpected' outcomes of their interventions.

The enforcement to align conservation to the terms of the PES-Speak network. Development banks and international NGOs, as the cases of Colombia and Ecuador manifest, influence the rapid growth and proliferation of PES. They make funding to developing nations and local NGOs conditional on the explicit inclusion of PES jargon in national legislation and in project proposals. In public institutes and development agencies, the possibility of obtaining project funds importantly determines the future of scientists and policy makers in terms of institutional and labour stability and promotion opportunities. This creates, as chapter 2 shows, a pressure for national organisations to increasingly express

environmental issues in narrow economic and market-environmentalist terms or what we have called 'PES-Speak'. Expressing environmental issues only in terms of the PES-Speak constitutes in itself its depoliticisation, and requires that its causes, solutions and outcomes are understood and devised in a similar manner. The Colombian case shows how PES-Speak organises reality and how subjects (members of the network) should interpret it and act upon it.

The expansion of neoliberal governmentality and neoliberal conservation. The rapid expansion of market environmentalism through for example PES policies and projects shows how neoliberalism is not only a powerful economic project, but also a deep ideological project that extends and induces a market rationality in all aspects of social life, even in conservation. This ideology or "new art of government" called neoliberal governmentality sees markets as the only way to guarantee conservation which, in turn, would guarantee capitalist economic growth and the well-being of the population. In relation to neoliberal conservation, its discursive framing portrays economic growth and consumption as reconcilable with environmental conservation, and as an imminent escape route from poverty for those living in areas of environmental importance. This is presented as an unavoidable moral choice for society. Chapter 5 ilustrated how critics and non-participants in PES schemes are portrayed as backward and in opposition to human and economic development but also to conservation.

The construction of success. The PES model in Colombia has been mainstreamed on the basis of a success that was claimed right from the outset. Thereby, rather than looking at local Colombian reality in terms of actual conservation problems and solutions, it consolidated this success by means of its alignment within the international PES network. This PES-Speak network links local, national and international actors in a common discursive policy framework. The success of PES policy formulation and implementation depends on how experts and agencies are able to tie other actors and their interests to their market environmentalist project rationality. The case studies in Colombia and Ecuador show how the conception of success appears to be entirely skewed and geared towards confirming and conforming to the model. For example, the Pimampiro case has shown how success in PES was related to the implementation of a PES supportive institutional background, like having arranged a group of

environmental services buyers and a group of sellers mutually connected through a legally binding contract. However, this study also makes clear how PES constructed a Kafkaesque connection between environmental service sellers in Nueva America and drinking water users in the main urban centre of Pimampiro. This thesis reveals how the water from Nueva America does not serve Pimampiro's water utility as there is no hydrological connection between drinking water users downstream and Nueva America, and the water from Nueva America is not suitable for human consumption. Moreover, as the Nima case shows, the construction of a PES environment that would fit the rationality of PES principles in empirical reality is very selective, conserving what is worth conserving for buyers, while disregarding the contradiction between the promotion of conservation upstream and the concomitant lack of attention to the environmental impacts of the large scale water users both upstream and downstream.

The mainstreaming of the PES model is embedded in a process of change in a way in which, rather than acknowledging the impacts of markets on the environment, the market is regarded as the solution to solve environmental degradation. Despite the apparently different political discourses that the governments of Colombia and Ecuador have, the Colombian being opposed to the Ecuadorian 'citizens' revolution', in practice PES-Speak is the mediating instance for PES implementation. Through PES-Speak and the construction of its own success by discursive tools and political-material imposition of projects, market environmentalism becomes part of local political economies. The spread of neoliberalism into PES conservation is based on particular epistemic networks: that understand environmental issues as a-political, disregarding the power and competing interests of social actors; that analyse situations at face-value not from a historical perspective; that therefore present environmental problems and solutions as non-contextualised or not pertaining to particular places but to all places. And above all this PES-Speak network is not committed to seeing its empirical outcomes beyond the criteria of success as established by its own discourse, as the outcomes are already foreseen from the outset.

The forms in which power become manifest in PES, as shown in this thesis, are visible, hidden and invisible. Visible power was evidenced, in the forms of direct pressure to participate in what is considered a

voluntary conservation tool. Among other illustrations PES participation was imposed as a precondition to continue a road construction in Chamachán. Examples of hidden power present how environmental problems and solutions are constructed by powerful actors; how upstream communities in Nima were excluded from co-deciding on PES rules, or how information was manipulated by community leaders interested in PES in Pimampiro. Invisible power refers to how market ideologies are, in subtle ways and presented as morally necessary and socially important, induced in peasants, officials and researchers involved in conservation and development projects. One of the most challenging tasks of this research has been to identify in myself and in the empirical reality of the research participants those instances in which capillary power worked to induce peasants into PES. Although, I think I have advanced the understanding of how commensuration of, and resistance to, "PES rationality" has been working within myself, I believe that a more profound understanding of how capillary power seduces peasants, deserves prolonged observation, and investigation, in order to capture the workings of this face of power.

Furthermore, peasants are not powerless and passive, docile receivers of market environmentalism projects as PES. They also contest the introduction of PES schemes, in defending their autonomy to manage their natural resource base many peasant families and communities refuse PES schemes. For example, peasants also strategically link their claims to peasant and indigenous networks for the defence of their rights. In Pimampiro, a number of Nueva America farmers connected strategically to the Ucicma and to the FICI in order to contest PES. This shows that PES policy networks do certainly not have hegemonic power.

6.4. Research implications

This thesis shows that empirical reality is importantly informed by power relations and that conservation interventions in this context should be understood, rather than as a set of neutral and technical-economic interventions, as a political endeavour.

Analysing PES from a political ecology perspective allows us to understand that PES is a political environmental intervention, where a neoliberal ideology attempts to embed environmental services by changing the way nature is perceived by different cultures and societies in the world. This,

concomitantly, provides powerful political and economic actors with even greater power to define nature. This does, however, not always mean that there is *per se* privatisation, commercialisation and commodification of environmental services, as these processes are limited by particular environmental service characteristics as well as social contestation (See chapter 3). Nevertheless, as shown in the three case studies, the control that PES brings on upstream ecosystems refers to a particular form of neoliberal conservation in that it is geared towards the capital accumulation by the most powerful, and this has transformative effects over how peasants manage, access and control the resource base on which their livelihoods depend.

This bring me to suggest, that belief in the beneficial outcome of PES-based on its institutional and conceptual design models (through simply identifying the technical criteria that constitute the mechanism) misses the point because it is not just the functioning of PES principles that configure the outcomes, but equally the power relations that are embedded in PES schemes. For example, as the cases of Nima and Pimampiro showed, the definition of environmental issues and PES fees is determined by the economic and political power of agents rather than by technical definitions. Therefore, technical definitions of the criteria that constitute PES ignore how the design and implementation of natural resource management and conservation initiatives are framed and shaped by power relations, and are of limited use in explaining how such initiatives rework ecological conditions and livelihood arrangements.

This does not imply that research should not concentrate on scrutinizing also the principles and criteria of PES imaginary frameworks and models. As this study has shown, the concepts, even when imaginary, have great discursive and material force in socioeconomic and political practice. PES aims to create a world after its own.

Tackling power relations' influence on PES from a political ecology perspective requires an epistemological and methodological position that puts emphasis on the impacts for the less powerful people who are addressed in PES projects. The qualitative research methods used here together with the context-based, historical and empirical approach, enabled to compare the findings of this thesis with past research in the same Colombian and Ecuadorian localities. This has shown the implications and impacts of PES on the ground, as experienced by the

PES-affected peasants. This thesis shows that the divergent results of those earlier investigations stem from an epistemic stand that, through its methodological approach, locates researcher and research participants in two different and distanced spheres.

Another reason explaining the divergent results between the results of this research and a-political research done earlier, is that earlier research was more concerned with "making PES work", putting PES in the focus of research. This thesis, in contrast, puts communities and their members in the research focus. Whether by asking different questions from previous research , or by not taking for granted established environmental crisis explanations, or by understanding the vested interests of the agents explaining environmental degradation, this research gained insight into power relations in relation to environmental management and specifically in the context of watershed PES schemes. This approach, rather than being worried about making PES work, enabled me to focus deeply and analyse, through a qualitative approach, the 'turns and twists' that PES might generate in the localities where it is implemented.

6.5. Development and practical implications

Gaining insight into how power relations influence the design and implementation of PES policies and projects could, first, help peasant and indigenous communities to make informed decisions about their participation in PES programmes. Until now peasant and indigenous communities often have to decide whether to participate in PES or not without any background information, or the information provided by just the PES promoting and implementing agents. In this sense, this thesis will bring to the fore empirical findings that can help communities to make informed decisions.

At the same time, as shown in this thesis, this study shows that by definition PES cannot promote justice in contexts of existing injustice. When power relations are disregarded, therefore, PES works implicitly and almost "by design" in order to legitimise the concentration of water and land rights in the hands of few powerful actors. This was shown, for example, in the case of Nima, Nueva America and Chamachán. In this respect, this thesis supports the conclusion that PES reinforces existing

property rights and the status quo, and cannot redress unequal natural resource distribution.

For practitioners seeking to support the capacities and capabilities of the poor and marginalised population groups through improved rural development conditions and practices, this research provides important findings that result from critically analysing the framing of environmental services, the links between knowledge and power and PES formulation and implementation. This enhances the understanding of natural resource management as inherently political, and contests the depoliticisation of environmental sciences, natural resource management and conservation.

This thesis is not a criticism on conservation *per se* but through empirical research provides a critique of conservation that is socially and, sometimes, environmentally degrading. The outcomes of this research, therefore, can serve conservation with a sense of environmental justice. A conservation, that rather than jeopardizing peasants' natural resource (i.e. land, water) rights security, aims at dismantling structural pressures on sustainable use by poor natural resource users. This can only be done by considering existing historical contexts, social and power relations, forms of organization and sustainable land management practices and internal and external pressures on them (for example, pressures emanating from agricultural prices, land pressures, development practices.).

Environmentally just conservation means also safeguarding environmental and water resource public organisations. So they are not dependant on private funding, and therefore, less likely to falling prey to different political- and economic-vested interests. This, I have clearly shown in the case of Nima, where public conservation offices are hollowed out by budgets cuts, thus complicating their control mandate on private companies funding PES.

Power relations may generate PES schemes that do not compensate environmental service providers' opportunity costs. In response to this, there has been a call to get the economics right in PES and propend to guarantee real incentives for conservation and promote poverty reduction. However, if rural development is the goal, it would not be fair to pay for opportunity costs that reflect unequal exchange terms for agricultural production. Rather this thesis findings supports the need to ensure peasant natural resource rights.

The evidence from my case studies show, however, how in everyday project and policy practice, PES is linked to the modernizing, global impetus that searches to restructure rural landscapes characterising local peasants, such as those in the case studies presented in this thesis, as problematic for conservation. In the "Debate on the future of food production", organised in Wageningen University in December 2012, a crucial remark echoed the discourse of Jason Clay, the vice-president of the WWF. In this debate it was mentioned that strategic choices had to be made in order to be able to meet the food requirements of a planet with 9 billion people. Part of these choices, as argued by some of the lecturers that participated in this debate, was to work closer with modern agriculture to make it even more productive while remaking inefficient agriculturalists, located in ecosystem of strategic importance, into sellers of environmental services. Under this discourse, PES plays the role of 'making the value of nature visible' to peasants and becomes a way to include peasants in conservation by rewarding them. It appears, by following this reasoning, that their only option is to refrain from their backward environmentally-faulty livelihoods and join the market environmentalism crusade.

Nevertheless, this thesis argues in an opposite direction. Conservation should then, rather than tackling the "weak link" in the political economy chain of environmental-change drivers, focus on those global to local influences that create distortion at the field level with respect to sustainable natural resource management.[56] This might be a far stretch, to those that do not incorporate politics into the analysis of environmental crisis, but a vital one for society and environmental justice.

6.6. Future studies

This study has provided empirical elements to understand power relations in PES conservation, and how these relate to PES social impacts. However,

[56] In fact as I am writing the concluding chapter of this PhD thesis, there is an epic farmers' strike developing in Colombia regarding national agricultural policies by the government and how these have increased the squeeze on agricultural production. (For more information see http://www.commondreams.org/headline/2013/08/25).

and in relation to the limitation of this study, it is important to engage specifically in understanding how PES schemes affects the on-farm production through a close analysis of peasant production systems.

The thesis shows that PES schemes are not brought into social blank canvases, this is also true for water policy contexts. Therefore, it is critical to analyse how PES interacts with other water, land and agricultural policies and to understand, in the light of this study, the opportunities or threats that for peasants that these policy interactions generate.

6.7. Final remark

PES produces winners and losers. If environmental interventions are treated solely as technical interventions, ignoring power relations, history and distributional issues, the winners will be those few who always win - politically and economically powerful agents who throughout history have dominated, at the expense of the poor, their property rights and their access to land and water. Therefore, if the political dimensions of PES are not considered, the losers will be those many who have nothing but all to lose, as their resources become controlled by neoliberal conservation and the non-commodified relations of exchange that helped them to live are weakened.

As already emphasized, this thesis does not want to criticise conservation initiatives per se –but criticises conservation schemes and watershed management plans- that are socially, and sometimes environmentally degrading. The work here presented should thus be considered as a departing point for conservation with a sense of environmental justice. A conservation aims at dismantling structural pressures on sustainable land use by poor natural resource users, and supports smallholders livelihoods without jeopardizing the security of peasants' natural resource rights. This can only be done by considering existing historical contexts, social and power relations, and internal and external pressures on them (i.e. pressures emanating from the political economy imposed on developing nations, agricultural prices, land pressures, development practices, etc.). Thus, development and conservation in general and watershed management in particular cannot centre on giving the poor money to keep them alive, but rather on giving them the tools that peasants themselves consider important for their development.

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Summary

During the last decade, the market environmentalist policy model of Payment for Environmental Services (PES) has become a widely promoted and implemented conservation and development tool, around the world as well as in the Andean countries Colombia and Ecuador. For upstream peasant indigenous communities in the Andes, the great expansion of this policy model has meant an increased level of negotiations and interactions with a wide range of downstream water users and conservation agencies. However, despite its current popularity and recurrence in Andean policies and conservation projects in many schemes being or already developed, the socio-economic, cultural and political impacts of PES intervention schemes are commonly not monitored and largely unknown. Initial evidence, however, shows problematic social impacts, in particular for the most marginalised groups of local societies. A major problem is that there is not a clear understanding of how power dynamics influence the terms of exchange in watershed PES schemes, and the implications that these dynamics have for peasant indigenous control of, and access to, natural resources.

The main research question of this thesis is:

> How do power relations influence the promotion of PES as a policy model and the crafting and operation of PES (-like) projects, and how in turn do these influence natural resource management and control by PES-targeted peasant communities, in the Andean regions of Colombia and Ecuador?

The sub-research questions operationalising the main research question are:

- Why and how has the PES model received strong support as a key conservation and development policy instrument in Colombia?
- How do power relations influence the design, implementation and operation of PES (-like) schemes in the Pimampiro and Chamachán watersheds in Ecuador and in the Nima watershed in Colombia?
- How do PES (-like) schemes influence social relations, organization, and resource access of communities living in the watersheds targeted by these schemes?

Political ecology has been used as the theoretical framework for analysis in this thesis, as it focuses on the use of power to explain the access to environmental resources and services. Complementarily it studies the use of power to decide about procedures for decision making in environmental issues (Martínez-Alier, 2010).

Drawing on qualitative analyses, I study the influence of power on the inclusion of PES in the legal/institutional framework of Colombia, but also on several PES schemes, in Colombia and in Ecuador, that in national policy papers and international scientific articles are widely acclaimed as successful examples of market environmentalist interventions. The focus of the study is on watershed Payment for Environmental Services (watershed PES) scheme. This research was done in 2011 in a PES scheme in the Nima watershed in Colombia, and in 2010 in two PES schemes in the municipality of Pimampiro in Ecuador.

As an illustration of the proliferation of the PES policy model in national conservation policies, the second chapter analyses the background and development of the PES National Strategy in Colombia. Based on previous scientific work on the analysis of market utopian discourses and powerful policy models, this chapter reconstructs the process of developing the National PES Strategy issued in 2008, that culminated with the legal inclusion of PES in several laws and decrees (i.e. Decree 953 of 2013). The analysis shows how that even before consolidating and examining local Colombian experiences and gaining in-house national knowledge on the social impacts of PES on the poorest members of society, PES has been uncritically elevated to a National Strategy for conservation. It appears that PES adoption is driven by policy-makers' dissatisfaction with command-and-control instruments, but more importantly, by the 'reality-indifference' induced by market-environmentalist models, the discursive power and alignment properties of the 'PES-speak epistemic network', and financial and political pressures by international banks and environmental NGOs.

The third chapter, "Payments for environmental services and changing control over natural resources: public and private sector roles in conservation of the Nima watershed, Colombia", analyses a PES scheme financed by a public-private-partnership. A number of companies - including a water utility company, a hydroelectric company, a cardboard company and a water user association of sugar cane growers – plus

several governmental organisations, pay for the implementation and maintenance of fences around water springs, the enrichment of forest patches close to springs, the planting of vegetation along river banks and between unconnected patches of forest in order to reduce seasonal water shortages and erosion. This article illustrates how PES often entails very selective interpretations of 'nature conservation' by the buyers of environmental services. Here, their own, commercial interests appear to be the driving forces for conceptualizing 'nature' and 'conservation'. Furthermore, this chapter shows how the neoliberalisation of nature does not necessarily occur through the commodification of environmental services but through the increased intervention of downstream private water users in conservation, which reinforces their control over nature and its modes of management and extraction upstream.

The fourth chapter, "Payment for environmental services and unequal resource control in Pimampiro, Ecuador", engages with the analysis of a privately-financed PES scheme. In this case clients of the water utility of Pimampiro pay an extra percentage on their water fee to the Nueva America Association in order to enhance the watershed environmental services provided by the forests and páramos in this region in the northern Andes of Ecuador. This chapter shows how the PES scheme reinforces existing social differences, erodes community organisation, undermines traditional farming practices, and perpetuates inequalities in resource access in the 'working landscape' inhabited by the upstream peasant community.

The fifth chapter, "Payment for environmental services and power in the Chamachán watershed, Ecuador", examines the public-financed PES scheme in the Chamachán watershed, a PES scheme that is also located in the jurisdiction of the Pimampiro municipality, Ecuador. Here, payment is given to private owners in the higher part of the Chamachán watershed for conserving forests and changing land use, which is considered to increase the provision of watershed environmental service to different water users downstream. This chapter shows how specific forms, spaces and levels of power influenced PES negotiation resulting in a design and implementation that disregarded and expanded unequal access to water and reinforced land-use restrictions for environmental service providers.

In conclusion, these analyses show how power with respect to PES schemes design and implementation is wielded and deployed in several

ways. In the policy contexts, power refers to the language in which environmental problems are framed and referred to, and how PES-speak is the discursive practice that anyone "needs to think, talk and materialize" if, among others, researchers, policy-makers, peasants, want to be heard, and become successful in the world of conservation and development. PES-speak also provides the dominant frame of reference according to which PES scheme impacts are to be assessed and interpreted by the members of its epistemic network. Therefore, this network defines the appropriate knowledge to tackle the environmental problems that it has framed, while disregarding alternative worldviews and existing practices of conservation, water use and collective action in Andean highland communities.

In the PES scheme context, power is wielded in a fashion that entails visible force, pressures and influences to upstream communities in order to participate in PES, but also in the way in which influential environmental service buyers and project implementers define the nature to be conserved and the imposition of the terms and criteria for buying and selling environmental services. Hidden forms of power, as this study shows, range from covered ways of resorting to command-and-control legislation operating under the umbrella of 'participatory and voluntary PES implementation' in the highlands, and the renewed and concealed manners of its reinforcement. Also, hidden power refers to processes of negotiation that claim to be inclusive but are mainly 'informative', as the most important decisions regarding PES had been already decided a priory to involving highland communities. Additionally, hidden power refers to how conservation is presented as societally beneficial, when indeed, it is guided by the intention of securing the watershed environmental services that secure capital accumulation by dominant environmental service buyers, while disregarding the environmental impacts that these same buyers have in other areas of the watershed. Invisible power refers to how market environmentalism is more than just an economic process but a code of conduct subtly induced into members of society, who are to follow PES rationality in order to become 'modern' farmers and change agents. They are (self-) corrected in order to deploy 'good governance' and join 'rational development' and 'progress'. In relation to conservation, this invisible power (consciously but often unconsciously) serves to secure the capital accumulation of the most economic powerful agents.

The cases show how the impacts of these forms of power influencing PES schemes are variegated, but for the poorest they appear to work toward the deeper entrenching of the status quo, which in most cases implies confirmation and extension of unequal access and rights to natural resources.

Samenvatting

Gedurende het laatste decennium is de belangstelling voor het beleidsmodel 'Payment for Environmental Services' (PES, Betaling voor Milieudiensten) bij nationale overheden, niet-gouvernementele instanties, beleidsinstituten voor ontwikkelingssamenwerking en internationale financieringsorganisaties sterk toegenomen. PES heeft zich ontwikkeld tot een veel gebruikt beleids- en interventie-instrument voor het beheer en behoud van natuurlijke hulpbronnen in de hele wereld. Zo ook in Colombia en Ecuador. Voor inheemse gemeenschappen en kleine-boerendorpen in de bovenstroomse gebieden van de Andesvalleien betekent de uitbreiding van dit beleidsmodel een sterke toename van de onderhandelingen en interacties met benedenstroomse watergebruikers alsmede met de lokale waterschappen. Niettegenstaande de grote populariteit onder beleidsmakers en financiers, en de veelvuldige implementatie van PES als ontwikkelingsmodel gericht op het beheer van natuurlijke hulpbronnen in de Andes, worden de sociaal-economische, culturele en politieke effecten van PES interventiemaatregelen zelden geëvalueerd. De laatste zijn dan ook grotendeels onbekend, en dat terwijl uit eerste onderzoeken blijkt dat met name voor de meest gemarginaliseerde bevolkingsgroepen de implementatie van PES problematische sociale gevolgen kan hebben. Er is een groot gebrek aan inzicht in de invloed van bestaande machtsverhoudingen op de onderlinge onderhandelingsposities binnen de PES-projecten, en de implicaties van deze dynamiek voor de kleine en inheemse boeren en hun toegang tot, en controle over, natuurlijke hulpbronnen.

De onderzoeksvraag van mijn PhD dissertatie luidt als volgt:

Hoe beïnvloeden machtsverhoudingen de promotie, implementatie en werking van PES als beleidsmodel binnen projecten in the Andes-regio's van Colombia en Ecuador, en op welke manier hebben deze machtsverhoudingen invloed op het beheer en gebruik van natuurlijke hulpbronnen door de lokale boerengemeenschappen?

De deelvragen zijn:

- Waarom heeft het PES-model krachtige steun ontvangen als kern-beleidsinstrument binnen het natuur- en ontwikkelingsbeleid van Colombia, en op welke manier uit dit zich?

- Hoe beïnvloeden machtsrelaties het ontwerp, de implementatie en de werking van PES-projecten in de stroomgebieden van Pimamiro en Chamachán in Ecuador, en in het Nima stroomgebied in Colombia?
- Op welke manier beïnvloeden PES-projecten de onderlinge sociale relaties, de organisatie en de toegang tot natuurlijke hulpbronnen van de lokale gemeenschappen die aanwezig zijn in de PES-projectgebieden?

Politieke Ecologie wordt gebruikt als theoretisch kader bij de analyses in dit proefschrift, omdat het zich richt op het uiteen zetten van machtsrelaties en machtsgebruik bij het verkrijgen van toegang tot natuurlijke hulpbronnen. De Politieke Ecologie analyseert eveneens het gebruik van macht binnen besluitvormingsprocessen in milieuaangelegenheden (Martínez-Alier, 2010).

De dissertatie, gebaseerd op kwalitatieve analyse, bestudeert onder andere de invloed van macht op de totstandkoming van het institutionele PES-beleid in Colombia. Tevens richt de studie zich op de totstandkoming van verschillende PES-projecten in Colombia en Ecuador - projecten die in nationale beleidsdocumenten en internationale wetenschappelijke artikelen alom geprezen worden als succesvolle voorbeelden van natuur-ontwikkelingsinterventies, stoelend op vrije-markt principes. De focus van het onderzoek richt zich op de implementatie van 'watershed PES' (PES in stroomgebieden). Veldwerk voor het onderzoek vond plaats in een PES project in het Nima stroomgebied in Colombia in 2011, en in twee PES projecten in de gemeente Pimampiro in Ecuador in 2010.

Hoofdstuk 2 geeft een beeld van de achtergrond en ontwikkeling van het PES model als nationale strategie in Colombia, ter illustratie van de groeiende populariteit van het PES beleidsmodel. Gebaseerd op eerder wetenschappelijk onderzoek met betrekking tot de analyse van de rol van de markt binnen beleidsmodellen reconstrueert dit hoofdstuk het ontwikkelingsproces van de Nationale PES Strategie, in 2008. Deze leidde tot het formeel opnemen van PES in verschillende wetten en besluiten (i.e. Besluit 953 van 2013). De analyse laat zien hoe nog vóór er sprake was van enig onderzoek naar, en evaluatie van, de sociale gevolgen van PES implementatie voor de lokale Colombiaanse bevolking, PES al kritiekloos verheven werd tot een nationale strategie voor natuurbehoud. Oorzaken van deze beleidsadoptie zijn de ontevredenheid onder

beleidsmakers m.b.t. bureaucratisch-gestuurde regelgeving, maar vooral: de 'realiteits-onverschilligheid' onder beleidsbepalers welke sterk gevoed wordt door markt-gefundeerde beleidsmodellen voor natuurbeheer; de discursieve macht en 'stroomlijning' die uitgaat van het 'PES-Speak epistemische netwerk'[57]; en de financiële en politieke druk uitgeoefend door internationale banken en milieu-NGO's .

Het derde hoofdstuk, "PES en beheer(s)veranderingen aangaande natuurlijke hulpbronnen: de rol van de publieke en private sector bij het beheer van het Nima stroomgebied, Colombia", analyseert een PES project gefinancierd door een 'public-private-partnership'. Een aantal water-afnemende bedrijven - waaronder een waterleidingbedrijf, een hydro-elektriciteitscentrale, een kartonfabriek en een vereniging van suikerriettelers - plus verschillende gouvernementele organisaties, betalen voor het plaatsen en onderhoud van hekken en bomen rond waterbronnen, en voor het aanplanten van vegetatie langs rivieroevers en tussen niet-verbonden stukken bos, om watertekorten en erosie te verminderen. Het hoofdstuk illustreert hoe PES vaak samen gaat met zeer selectieve interpretaties door de afnemers van de zogenoemde milieudiensten over wat 'natuurbescherming' in zou moeten houden. Hun eigen, commerciële belangen blijken richtinggevend te zijn. Het hoofdstuk laat ook zien hoe de 'neoliberalisering van de natuur' niet noodzakelijkerwijs ontstaat door de commercialisering (het marktwaar worden) van milieudiensten maar eveneens door de toenemende tussenkomst van benedenstroomse private watergebruiks-bedrijven in conserveringsbeleid. Hun interventie versterkt hun controle over de natuur en de wijze van beheer en extractie bovenstrooms.

In hoofdstuk 4, "PES en ongelijke machtsverhoudingen in Pimampiro, Ecuador" wordt een privaat-gefinancierde PES-regeling geanalyseerd. Klanten van het waterleidingbedrijf van Pimampiro betalen een percentage van hun waterbelasting aan de Nueva America Association ter compensatie van de van de milieubeheersdiensten die worden geleverd door deze gemeenschap. Deze associatie beheert de bossen en 'páramos' in een bovenstrooms deel van Pimampiro, in de noordelijke Andes van Ecuador. Het hoofdstuk toont aan hoe de PES regeling de bestaande

[57] PES-Speak, verwijzing naar Orwell's Newspeak (Nieuwspraak, Dunktaal, in 1984

sociale verschillen versterkt, de gemeenschapsorganisatie doet afbrokkelen, traditionele landbouwpraktijken ondermijnt en ongelijke toegang tot natuurlijke hulpbronnen bestendigt in de bovenstroomse boerengemeenschap.

Het vijfde hoofdstuk, "PES en macht in de Chamachán vallei, Ecuador", onderzoekt een publiek-gefinancierd PES-project in het Chamachán stroomgebied, een PES-regeling die net als de voorgaande van kracht is in de jurisdictie van de Pimampiro gemeente, Ecuador. Hier worden de betalingen gedaan aan privé-eigenaren in de hogere delen van het Chamachán stroomgebied, voor het behoud van bossen en een verbeterd landgebruik. Het wordt beschouwd als het verrichten van milieudiensten voor benedenstroomse watergebruikers die een grotere waterstroom zouden verkrijgen. Dit hoofdstuk laat zien hoe specifieke machts-vormen, -ruimtes en –niveaus invloed hebben op PES onderhandelingen en hoe ze resulteren in een projectontwerp dat ongelijke toegang tot water ontkent en tegelijkertijd versterkt, terwijl het de bovenstroomse gemeenschap grotere landgebruiksbeperkingen oplegt.

De dissertatie geeft inzicht in hoe machtsvormen zich op verschillende manieren manifesteren in en via het ontwerp en de uitvoering van PES-projecten. In de context van beleid manifesteert macht zich onder andere via de conceptualisering van milieuproblemen, de wijze waarop 'problemen en oplossingen' geformuleerd worden en hoe er aan deze gerefereerd wordt. PES-Speak is hierbij de discursieve praktijk welke eenieder "behoort te denken, te spreken, te realiseren" indien onderzoekers , beleidsmakers, boeren, gehoord en succesvol willen worden in de natuurbeheer- en ontwikkelingswereld. PES-Speak vormt ook het dominante referentiekader voor de interpretatie en evaluatie van de impact van PES-projecten zoals uitgevoerd door de deelnemers van het PES-epistemische netwerk. Dit netwerk bepaalt de geëigende kennis om de milieuproblemen, zoals ze die zelf heeft gedefinieerd, op te lossen. Het epistemischenetwerk negeert hierbij veelal alternatieve milieuvisies en bestaande lokale vormen van beheer, waterregelgeving en collectieve actie in de Andes berggemeenschappen.

In PES-projecten manifesteert macht zich in zichtbare structuren en via zichtbare druk en invloeden uitgeoefend om bovenstroomse gemeenschappen koste wat het kost deel te laten nemen in PES, maar evenzeer uit het zich in de manier waarop invloedrijke

milieudienstafnemers en project uitvoerders 'de natuur definiëren' en de criteria opleggen op basis waarvan milieudiensten gekocht en verkocht worden. De dissertatie laat zien hoe verborgen machtsvormen hierin belangrijk zijn, gaande van verholen praktijken om overheidsregulering op te leggen onder het mom van 'participatieve en vrijwillige PES-uitvoering' in de hooglanden, tot vormen van gemaskeerde druk om de nieuwe PES-normen op krachtige wijze door te voeren. Verborgen machtsvormen komen ook tot uiting in de onderhandelingsprocessen die beweren inclusief en participatief te zijn terwijl ze in feite slechts informatief zijn omdat de belangrijkste besluiten al genomen zijn, voorafgaand aan de bespreking met de hooglandgemeenschappen. Daarnaast manifesteren verborgen machtsvormen zich in de wijze waarop natuurbescherming gepresenteerd wordt als alom voordelig terwijl, in de feitelijke praktijk, het veiligstellen van kapitaalaccumulatie door welvarende milieudienstafnemers meestal het belangrijkste doel is en tegelijkertijd de negatieve impact op het milieu door de activiteiten van deze afnemers in andere delen van het stroomgebied verdoezeld wordt. Daarnaast zijn er ook onzichtbare machtsvormen aanwezig. Deze refereren bijvoorbeeld aan het feit dat markt-gestuurd milieubeheer in de Andes meer dan alleen een economisch proces is maar tevens een gedragscode behelst die op subtiele wijze wordt opgelegd aan (en geïnternaliseerd door) de mensen. De laatsten worden geacht 'PES rationaliteit' te volgen om 'moderne' boeren en actoren te worden. Via (zelf)correctie worden ze geacht deel te nemen en te gehoorzamen aan 'goed bestuur' en 'rationale ontwikkeling en vooruitgang'. Met betrekking tot milieubescherming dienen deze onzichtbare machtsvormen (bewust of onbewust) veelal het doel van kapitaalaccumulatie door de economisch sterkste actoren.

De case studie analyses laten zien hoe de invloed van deze machtsvormen op PES-projecten gevarieerd is, maar tegelijkertijd blijken ze voor de armste groepen meestal negatief te werken en de status quo te bestendigen. In de meeste gevallen wordt de sociale differentiatie en de ongelijke toegang tot natuurlijke hulpbronnen bevestigd en zelfs uitgebreid.

Resumen

Durante la última década, el modelo de política asociado con el ambientalismo de mercado denominado pago por servicios ambientales (PSA) se ha convertido en un modelo de desarrollo y conservación ampliamente promovido e implementado en todo el mundo, y también en países andinos como Colombia y Ecuador. Para las comunidades indígenas campesinas que viven en las partes altas de las cuencas andinas, la gran expansión del PSA ha significado un incremento en las interacciones y negociaciones con usuarios de agua cuenca abajo y agencias de conservación. Sin embargo, a pesar de su gran popularidad como herramienta de conservación y como política pública, los impactos socio-económicos, culturales y políticos de los PSA comúnmente no han sido monitoreados y en gran parte permanecen aun desconocidos. La evidencia inicial, sin embargo, devela impactos sociales problemáticos, en particular para los grupos más marginados de estas comunidades de montaña. Así mismo no se tiene un conocimiento profundo de cómo las dinámicas de poder influyen en la determinación de los términos de intercambio dentro de las transacciones de PSA y las implicaciones que esto tiene con respecto al control y acceso a los recursos naturales por parte de comunidades indígenas y campesinas.

De esta forma, la pregunta principal que guía esta tesis es:

Cómo las relaciones de poder influyen en la promoción de PSA como un modelo de política, el diseño y la operación de proyectos PSA, y cómo a su vez estos proyectos influyen el manejo y control de los recursos naturales por parte de las comunidades involucradas en PSA en la región Andina en Colombia y Ecuador?

Las sub-preguntas que vuelven operativa la pregunta principal de investigación son:

- Por qué y cómo es que el modelo PSA ha recibido tan apoyo, no solo como un instrumento de conservación sino también como instrumento de desarrollo en Colombia?
- Cómo las dinámicas de poder influyen en el diseño, la implementación y la operación de PSA en las cuencas de Pimampiro y Chamachán en Ecuador y la cuenca del Nima en Colombia?

- Cómo los esquemas PSA influencian las relaciones sociales, la organización y el acceso a recursos naturales de las comunidades que viven cuenca arriba donde se implementan estos esquemas?

La ecología política es el marco teórico utilizado para el análisis en esta tesis, ya que se centra en el uso de poder para explicar el acceso a recursos y servicios ambientales. Complementariamente, este marco teórico estudia el uso de poder en los procesos de toma de decisiones con respecto a conflictos ecológicos (Martínez-Alier, 2010).

Con base en investigación cualitativa, se estudia la influencia del poder en la inclusión de PSA en el marco legal de Colombia, pero también en varios esquemas PSA en Colombia y Ecuador. Estos esquemas son generalmente ilustrados en la literatura científica como casos exitosos de la implementación del ambientalismo de mercado. El foco de este estudio es en PSA en cuencas hídricas. La investigación fue realizada en 2011 en la cuenca del Rio Nima en Colombia, y en 2010 la investigación se realizó en dos esquemas PSA en la municipalidad de Pimampiro, Ecuador.

Como un ejemplo de la rápida proliferación de PSA dentro de las políticas públicas de varios países Andinos, el segundo capítulo analiza este proceso dentro de la política nacional colombiana. Con base en trabajos de la investigación utópica acerca de los discursos del libre mercado, este capítulo reconstruye el proceso que llevó a que en 2008 se publicara la estrategia Nacional de PSA en Colombia, y que posteriormente concluyó con la inclusión de PSA en varias leyes y decretos (i.e. Decreto 953 de 2013). El análisis muestra que antes de observar profundamente las experiencias existentes en Colombia y consolidar un conocimiento nacional en el tema, y en especial con respecto a los impactos de estos esquemas sobre los pobres rurales, el modelo de PSA fue simplemente adoptado como parte de la estrategia nacional de conservación. Al parecer esta adopción fue influenciada por la baja efectividad de los instrumentos de comando y control, pero de manera más determinante, por la indiferencia hacia la realidad inducida por los modelos del ambientalismo de mercado, el poder discursivo y de alineación de la red epistémica del PSA-Lengua, y adicionalmente por las presiones financieras y políticas de bancos internacionales de desarrollo y grandes ONGs ambientalistas.

El tercer capítulo, analiza un esquema PSA público-privado. En este caso varias empresas - incluyendo una empresa de servicios públicos de agua,

una compañía hidroeléctrica, una compañía de cartón y una asociación de usuarios de agua de cultivadores de caña de azúcar – además de varias organizaciones gubernamentales, paga por la implementación y mantenimiento de cercas alrededor de manantiales y cursos hídricos, también por establecimiento de parches de enriquecimiento de bosque cerca de manantiales, con el fin de reducir la escasez de agua estacional. Este capítulo ilustra cómo en los esquemas PSA a menudo la conservación se entiende de manera muy selectiva por parte de aquellos compradores de servicios ambientales. Además, este trabajo demuestra cómo la neoliberalización de la naturaleza no necesariamente ocurre a través de la mercantilización de los servicios ambientales sino a través de la creciente intervención en conservación por parte de corporaciones poderosas que dependen del agua. Y que a su vez esta participación en conservación les permite reforzar el control que estas ya tienen (en virtud de concesiones, permisos, etc.) sobre recursos naturales claves como el agua, y en contra vía de formas de gestión comunitaria de los recursos naturales en las partes altas de las cuencas.

El cuarto capítulo se involucra con el análisis de un esquema PSA privado. En este caso los clientes de la empresa de agua de Pimampiro pagan un porcentaje adicional sobre la cuota de agua a algunos de los miembros de la Asociación Nueva América. Esto con el fin de mejorar los servicios ambientales de la cuenca proporcionados por los bosques y páramos. Este artículo muestra cómo el PSA refuerza las diferencias sociales existentes, erosiona la organización comunitaria, socava las prácticas agrícolas tradicionales en la parte alta y perpetúa las desigualdades entre la parte alta y la parte baja en el acceso a los recursos naturales.

El quinto capítulo examina un esquema PSA público en la cuenca del Rio Chamachán. Este PSA también se encuentra ubicado en la jurisdicción del municipio de Pimampiro, Ecuador. Aquí, el pago se da a los propietarios privados en la parte alta de la cuenca del Chamachán para la conservación de bosques. Este capítulo muestra cómo el poder determina, en diferentes formas, espacios y niveles, las negociaciones para definir los pagos, responsabilidades y beneficios dentro del esquema PSA. Dando lugar a un diseño e implementación que ignoran y amplian la desigualdad en el acceso al agua y refuerzan las restricciones de uso de la tierra para los campesinos en las partes altas de la cuenca.

En conclusión, el análisis presentado en esta tesis muestra cómo el poder es ejercido y desplegado en varias formas para influir sobre el diseño y operación de los esquemas PSA. En el contexto de la política, el poder se refiere a la lengua en la que los problemas ambientales son enmarcados y analizados, y cómo la PSA-Lengua es la forma discursiva en que alguien (entre otros, investigadores, hacedores de política, campesinos) "necesita pensar, hablar y actuar" si se quiere ser escuchado y ser exitoso en el mundo de la conservación y el desarrollo. La PSA-Lengua también proporciona el marco de referencia dominante según la cual los impactos de los esquemas PSA son evaluados e interpretados por los miembros de su red epistémica. Por lo tanto, esta red define cual es el conocimiento adecuado para abordar los problemas ambientales que han sido anteriormente enmarcados por la PSA-Lengua. De esta forma, se ignoran cosmovisiones alternativas de manejo de los recursos naturales, prácticas existentes de conservación, uso y acción colectiva en las comunidades cuenca arriba en los Andes.

En el contexto de los esquemas PSA, el poder es ejercido de una manera que implica poder visible, presiones e influencias a las comunidades aguas arriba con el fin de que participen en PSA, pero también en la manera en que los compradores e implementadores de estos esquemas definen la naturaleza a ser conservada. Las formas ocultas de poder, como este estudio muestra, varían desde cómo se recurre a la legislación de comando y control bajo formas de implementación que se anuncian como "participativas y voluntarias". El poder oculto, también se refiere a los procesos de negociación que pretenden ser inclusivos, pero son principalmente 'informativos', ya que muchas veces las decisiones más importantes con respecto a PSA son previamente definidas antes de involucrar a las comunidades de las zonas altas. Además, el poder oculto se refiere a cómo la conservación se presenta como beneficiosa para la sociedad en general, cuando de hecho, la conservación promovida por los PSA es selectiva, ya que tiende a asegurar los servicios hídricos que garantizan los insumos para la acumulación capitalista cuenca abajo, mientras que ignora los impactos ambientales y sociales que las mismas empresas, que pagan por la conservación, generan en otras partes de la misma cuenca. El poder invisible se refiere a cómo el ambientalismo de mercado, más que un proceso económico es un código de conducta inducido sutilmente en los miembros de la sociedad, dictando la necesidad de seguir la racionalidad de PSA para poder convertirse en agricultores

'modernos' y agentes de cambio. Esto cambios (auto)corrigen al individuo en búsqueda de un 'desarrollo racional' y un 'progreso'. En lo referente a la conservación, este poder invisible (conscientemente pero a menudo inconscientemente) sirve para garantizar la acumulación de capital de los agentes económicos más poderosos.

Los casos abordados en esta tesis muestran cómo los impactos de estas dinámicas de poder en los esquemas de PSA son divergentes, pero tienden a consolidar el status quo en cuanto al acceso y control desigual de los recursos naturales.

Curriculum Vitae

Jean Carlo Rodríguez de Francisco was born in Bogotá, Colombia on February 9, 1974. After graduating from high school (Colegio Calasanz) he studied economics at Pontificia Universidad Javeriana where he graduated in 2003. Thereafter, he worked as a junior researcher at Humboldt Research Institute. In 2006 he got a scholarship from the Alßan Programme (European Commision) to enroll in the Master programme Environmental Science at Wageningen University. He did his master thesis at the Environmental Economics and Natural Resources Group (ENR), and his internship at the Landbouw Economisch Instituut. He extended his student time for a year by working as a student assisant for the ENR, the Environmental System Analysis Group and taking part in the Wageningen University Student Council. He graduated with a major in environmental economics and a minor in environmental policy in 2009. In the same year of his graduation, he won a PhD scholarship from the Concertación project and started working on his PhD with the Water Resources Management Group at Wageningen University. He is now looking for ways to further develop his research career.

List of publications

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WASS Training and Supervision Plan

Jean Carlo Rodíguez de Francisco

Wageningen School of Social Sciences (WASS)

Completed Training and Supervision Plan

Name of the activity	Department/ Institute	Year	ECTS (1=28 hrs)
Project related competences			
Research Proposal and TSP Writing	IWE-WUR	2009	3
Qualitative data analysis for development research	CERES	2009	1
A practical course on methodology of fieldwork	CERES	2009	2
Sociology of farming and rural life (RSO 30806)	WUR	2009	6
Irrigation and Development (IWE 30806)	WUR	2009	6
'Presentation at the workshop for a project proposal preparation for the Ecosystems Services for Poverty Alleviation (ESPA) programme'	Open University	2011	2
'Injusticia hídrica y pagos por servicios ambientales: Mirando detrás del telón en Pimampiro, Ecuador'	Water Justice, CBC-WU-UCP	2011	2
PhD Course: Social sciences for natural resource management	University of Copenhagen	2011	6
'Revisiting the Successes of Payment for Environmental Services in the Andes: Evidences from Water Management Practice in Pimampiro'	Nature Inc, International Institute of Social Studies	2011	2
'Pagos por servicios ambientales, campesinos y poder en los Andes: Cuenca del Rio Nima'	Universidad del Valle Cali, Colombia	2012	2
'Pagos por servicios ambientales, campesinos y poder en Colombia'	Friends of the earth-, Colombia	2012	2

Name of the activity	Department/ Institute	Year	ECTS (1=28 hrs)
'Payment for environmental services and water control'	SOAS, ZEF, WUR, DIE.	2012	2
General research related competences			
CERES Orientation	CERES	2009	5
PhD Course: Scientific Publishing	WASS	2011	0.3
Last Stretch of the PhD Programme	WASS	2013	0
Career related competences/personal development			
Presentation tutorials	CERES	2009	5.5
Qualitative Data Analysis with Atlas.ti: Hands on practical	Total	2012	1
Total			47.8

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