

Payments for Environmental Services and Contested Neoliberalisation in Developing Countries: A Case Study from Vietnam

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Forest and water protection once relied primarily on regulatory means to achieve conservation ends, but an explosion of market-based and neoliberal approaches to environmental policy now depend instead on the creation and harnessing of financial instruments to value environmental goods and provide the funding needed for their preservation. Payments for environmental services (PES), which provides incentives for soil, water and forest conservation from users of services to those who provide them, is one of the most well-known of these approaches. However, many challenges remain with PES as a policy approach, and this paper explores how PES schemes have been implemented in practice in developing countries, how well they fit with descriptions of neoliberal environmental governance, and how these policies are being shaped by rural actors to make them more favorable to social, cultural or economic priorities in local areas. The paper shows that seemingly neoliberal policies like PES are actually a mix of both market economic incentives and regulatory approaches, and thus should not be labeled solely “neoliberal” per se. Further, much of this variegation in PES policy has resulted from active engagement of rural actors in shaping the parameters of what parts of neoliberal policy are acceptable, and what are not, and data from a Vietnam case study emphasize this point. Finally, the paper shows how key goals of neoliberal approaches, namely efficiency and conditionality, are often actually the weakest components of PES schemes, in Vietnam and elsewhere, particularly when they clash with local concerns over equity, which should pose a rethinking of how to understand PES success. The article concludes that PES plans should not be considered exclusively neoliberal per se, as they may in fact strengthen both state regulation and local participation and involvement in rural environmental management at the same time.

Highlights:

Keywords: payments for environmental services, forestry, markets, neoliberalism, conservation, ecosystem services

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1. Introduction

Environmental protection measures once relied primarily on state-led regulatory means to achieve conservation ends, but an explosion of new policies now depend instead on decentralized, often privatized, approaches to valuing environmental goods and providing the capital needed for their preservation. Often labeled as “neoliberal” or “market-based” forms of environmental governance, these policies range widely in focus and scope, but share in common a goal of using economic incentives (either for positive environmental services like habitat preservation or for negative environmental externalities like pollution) in the hopes that the market provides a more efficient, less expensive policy outcome. Payments for environmental services (PES), which provides funding from users of ecosystem services to those who provide them, is one of the more prominent and widespread of these market-based policies.

While PES as a conservation tool has a long history in rural areas in developed countries, these approaches have only more recently expanded into poorer developing countries of the global South. This expansion has prompted some amount of concern that these rural poor could be unduly harmed by neoliberal market-based policies, which might exclude access to resources or induce unwanted commoditization in communities that are not prepared for such approaches (Kosoy and Corbera, 2010; McAfee, 2012a; Redford and Adams, 2009). On the other hand, rural farmers and other actors in developing countries often have active ability to protest against, influence and otherwise modify policy implementation to better improve local outcomes, and have actively done so for many years, including market-based and neoliberal policies like PES (McAfee and Shapiro-Garza, 2010; Ostrom and Basurto, 2010). Thus, there is an important need to understand how PES schemes have been implemented in practice in developing countries and how well they fit with descriptions of neoliberal environmental governance, and how these policies are being shaped by rural actors to make them more favorable to social, cultural or economic priorities in local areas.

In this paper, data and research from Vietnam, as well as a survey of the literature from other developing countries, is used to identify several key themes in how PES has been implemented and how outcomes have been shaped, paying particular attention to the “contested” nature of neoliberalism. First, the paper briefly reviews the existing research on PES in the global South through examination of how PES instruments have developed, who is involved, how payments are transferred and used, and what the known impacts have been. This review shows that seemingly neoliberal policies like PES are actually a mix of both market economic incentives and regulatory approaches, and thus should not be labeled solely “neoliberal” per se. Secondly, much of this variegation in PES policy has resulted from active engagement of rural actors in shaping the parameters of what parts of neoliberal policy are acceptable, and what are not. Data from both reviews of the existing literature and the Vietnam case study emphasize this point. Thirdly, the paper shows how key goals of neoliberal approaches, namely efficiency and conditionality, are often actually the weakest components of PES

schemes, in Vietnam and elsewhere, particularly when they clash with local concerns over equity, which should pose a rethinking of how to understand PES success. The article concludes that PES plans should not be considered exclusively neoliberal per se, as they may in fact strengthen both state regulation and local participation and involvement in rural environmental management at the same time. That is, not only are PES schemes not clearly neoliberal, but active community and government involvement has strongly influenced this outcome. Given this, more attention should be paid to moving PES studies towards acknowledging the contingent and often complicated structures and outcomes of so-called neoliberal approaches.

2. Background: Neoliberalism and PES in Rural Areas of the Developing World

Studies of the impact of neoliberal processes on environmental management have rapidly expanded in fields such as geography, anthropology and rural sociology in recent years. David Harvey's identification of neoliberalism as "accumulation by dispossession" is one of the most well-known approaches to this field (Harvey, 2010). In Harvey's view, neoliberalism involves a series of steps, all of which are fundamental for the accumulation of capital in a global system. These include privatization of public goods, whether these are social safety nets or environmental commons; financialization of everything, particularly inasmuch as speculative trading can be facilitated; and a hollowing out of state institutions such that the state becomes a handmaiden for capitalism and the facilitator of increasing income transfers to the very wealthy (Harvey, 2007). Despite this broad definition, some commonalities in the neoliberalism literature specifically related to nature and environmental governance have emerged (Bakker, 2010; Castree, 2010; 2008). So-called "neoliberal natures" have been characterized as "as the increasing management of natural resources and environmental issues through market-oriented arrangements, by off-loading rights and responsibilities to private firms, civil society groups and individual citizens, with state power, in its national and transnational incarnations, providing the rules under which markets operate" (Pellizzoni, 2011, p. 796). This expansion of voluntary, market, private or decentralized approaches to governance has resulted in a series of new environmental policies that have emerged and which have been labeled as broadly 'neoliberal' (Lemos and Agrawal, 2006; Liverman and Vilas, 2006). These include emissions trading programs for pollution (Stavins, 2003); incentive payments to farmers for refraining from use of sensitive lands (NCEE, 2001); wetland mitigation banking (Robertson, 2004); certification schemes for commodities, like sustainable timber or seafood (Cashore et al., 2003; Konefal, 2013); and tradable permits and quotas for commodities such as fish (Mansfield, 2006; McCay, 2004).

At least three main areas of concern can be identified in the neoliberal natures literature. First, there is concern over commodification, namely the expansion of capital into new commodities that were previously unmarketed (like carbon or biodiversity) or into areas that were once considered public goods (such as water) (Brockington and Duffy, 2010; Igoe and Brockington, 2007). Scholars have argued that this commodification has in turn has extended territorialization of control over resources resulting in loss of access, particularly for poorer peoples (Büscher et al., 2012; Corson,

2011; Kosoy and Corbera, 2010). Thus privatization of resources often follows commodification, through alienation and new forms of control of resources, for example through private land tenure rather than commons (Mansfield, 2007a; McAfee, 2012a; 2012b). Finally, capitalization and the ascendance of the private sector has been facilitated by deregulation and retreat of the state as barriers to capital movement (Heynen et al., 2007; Heynen and Robbins, 2005), and a subsequent loss of attention to Keynesian concerns over inequality and redistribution (Fletcher, 2012). Much of this critique of neoliberal environmental policy has been grounded in concerns over the disproportionate impact of neoliberal policies on the poor, namely increased inequality in pursuit of efficiency (Haglund, 2011; Prudham, 2004).

With these concerns as backdrop, in the following sections, this paper looks specifically at PES policies as a form of market-driven environmental governance and surveys the ways in which these may or may not fit the above definitions of neoliberalism; assesses if the outcomes of existing PES policies appear to be resulting in inequality and accumulation as other neoliberal approaches have been accused of; and looks at the ways in which PES may facilitate spaces for local participation and pushback against neoliberalizing tendencies. The paper then later uses specific data from a case study of implementation of PES in Vietnam to further these arguments.

2.2 PES as Neoliberal Environmental Policy?

PES are often pointed to as an example of neoliberal environmental governance par excellence. PES developed from calls by many economists to value non-market goods, following from the work of Pigou and Coase on transaction costs, property rights and externalities; such policies would facilitate market exchange to value scarce resources in an efficient manner (Coase, 1960; van Noordwijk et al., 2012). Interest in the expansion of market mechanisms also dovetailed with attention to ecosystem services, emphasized by reports like the Millennium Ecosystem Assessment, which identified a number of services that were undervalued in national accounts (Gómez-Baggethun et al., 2010; MEA, 2005; Tallis et al., 2008; TEEB, 2009). The goal of using market forces to generate conservation or ecosystem services payments is to “translate external, non-market values of the environment into real financial incentives for local actors to provide such services” (Engel et al., 2008, p. 664). An early definition of PES emphasized that there should be voluntary economic transactions between buyers and sellers of a well-defined environmental service in which some sort of provisioning was offered in exchange for some type of conditional payment (Derissen and Latacz-Lohmann, 2013; Engel et al., 2008; Wunder, 2005). However, subsequent research has shown that this idealized definition is not commonly encountered in the real world, and that there is striking variety in the scale and scope of projects and policies that fall under the PES label (Muradian et al., 2010; Pirard, 2012a; Vatn, 2010). A survey of the range of these manifold PES arrangements is outlined below.

PES schemes have rapidly expanded in size and scope across the global South in the past 15 years, with strong regional trends. Several countries have national PES policies which apply to tens of thousands of participants and have been running for a few years;

the most well known of these are in Costa Rica, Mexico, Ecuador, and China. Newer national-level programs are also emerging in Brazil, South Africa, and Vietnam. The size of these national-scale projects varies widely; Mexico has 2.2 million hectares of land enrolled in its Program of Payments for Environmental Services (PSAB) program (FONAFIFO et al., 2012), while China's Sloping Land Conversion Program has over 12 million ha under contracts (Bennett, 2008; Xu et al., 2006). There are also an increasing number of smaller-scale PES plans, often initiated by donors or conservation organizations, such as for biodiversity or wildlife conservation (Clements et al., 2010; Milne and Niessen, 2009; Sommerville et al., 2010). Overall, Latin America has by far the largest number of PES projects (Balvanera et al., 2012), followed by Asia, and finally Africa with a limited number of PES projects, particularly at national levels (Bennett et al., 2013; Egoh et al., 2012; Ecosystem Marketplace, 2008). By far the most commonly encountered PES schemes in these countries are for watershed management for water flow, quality, or flood control (Stanton et al., 2010). Forest protection for ecosystem services, including water flow, but also encompassing biodiversity conservation and carbon sequestration, comes in a close second (Madsen et al. 2010). Agriculturally-based PES, such as promotion of improved farming, has been included in several large-scale programs, such as the Proambiente program in Brazil (Börner et al., 2007) and the Sloping Land Conversion Program in China (Yin and Zhao, 2012), but attention to services from agricultural landscapes appears less frequently than it does for PES in developed countries.

PES programs are very diverse in terms of users and suppliers, and it is in these definitions that the first questions about whether or not PES is 'neoliberal' can be asked. Because many rural residents of developing countries who might be asked to conserve such ecosystem functions are often relatively poor, PES policies have been promoted as a potential win-win to transfer money from wealthier users of energy, water and food supplies (Rosa et al., 2004); such development-oriented objectives for PES do not closely fit with the more capital-oriented objectives of many neoliberal policies. Further, a great many PES projects have not focused on privatized buyers and sellers per se; indeed, for many large scale national projects, users/buyers are often taxpayers in general. Some of these projects are therefore also not technically voluntary, as they involve mandatory use of general taxes, rents, or user fees on all citizens, thus making PES more akin to regulatory approaches than a true market mechanism (Wunder et al., 2008). Many donor-supported PES projects also involve the transfer of funding and resources to service providers and do not involve direct 'users' of these services at all. Thus, in the vast majority of existing PES schemes in developing countries, there remain significant roles for national and subnational governmental intermediaries, in addition to donors and NGOs, which is not an outcome typically associated with 'neoliberal' policies (Vatn, 2010).

Suppliers also range widely, including those that are truly voluntary, as is the case in Costa Rica where land-owners volunteer for the Pago por Servicios Ambientales project (Steed, 2007). There are as well more compulsory PES approaches, where all residents in a given area are required to undertake some conservation action in return for support, as is the case in the Sloping Land Conversion Program in China (Bennett, 2008). There

is also variation in the type of people who enroll as suppliers of services. In some places lack of property rights and tenure has been a barrier to participation (Bremer et al., 2014), while in other schemes suppliers of PES do not necessarily have to have firm property rights, or even individual ones. For example, there are cases of PES being implemented on public lands and with communities who do not yet have secure land titles, although these do present special challenges (Mahanty et al., 2013). Overall the literature does seem to emphasize however that particularly in cases of voluntary PES, larger and wealthier landowners tend to be the ones with higher rates of participation (Zbinden and Lee, 2005). Poorer households in general appear to be less active in PES, due to higher transaction costs, less labor, less capital and less capacity, among other reasons (Dougill et al., 2012; Hegde and Bull, 2011; Jindal et al., 2012; Landell-Mills and Porras, 2002; Pokorny et al., 2012). This has led some national PES programs to use more explicitly social or environmental targeting criteria for PES participation, such as in Costa Rica where gaps indigenous communities and female landowners are now favored (Porras et al., 2013).

The payments themselves that are used in many PES project range in both size and kind (Adhikari and Boag, 2013; Pattanayak et al., 2010). Overall, there are very few instances of direct market mechanisms that set variable prices for PES schemes in developing countries (Fletcher and Breitling, 2012; McElwee, 2012; Pirard, 2012a; Prasetyo et al., 2009; Shapiro-Garza, 2013a). Instead, most PES payments in the global South are determined by local or national laws, and in this we see an additional departure from orthodox neoliberalism (Adhikari and Boag, 2013; Ferraro et al., 2012; Gómez-Baggethun and Barton, 2013). As evidenced in Table 1, many national-level PES policies require central government transfers, or other forms of state support, to make payments to participating households; sources for such central government transfers include fuel taxes and obligatory water and energy fees. Many payment levels are set somewhat arbitrarily in developing country PES programs, often dependent on academic studies of opportunity costs or willingness to pay; hydrological flows; or other criteria (Balvanera et al., 2012; Porras et al., 2013). There are only a handful of PES projects in developing countries that use actual market mechanisms, like auctions, used to set PES pricing (Ajayi et al., 2012; Jindal et al., 2013), unlike many developed countries where they are more common.

Table 1. Examples of Payment Types and Levels Across Developing Country PES Experiences

There have been few studies that have tried to compare the relative lessons and successes from different types and forms of PES payments, so this is still an area of ongoing research (Adhikari and Agrawal, 2013; Mahanty et al., 2013; Mayrand and Paquin, 2005; Tacconi et al., 2013). Total payments in individual case studies have ranged on the order of a few dollars per household per year to as much as thousands of dollars, often dependent on land size (FONAFIFO et al., 2012; Mahanty et al., 2013). There are also many cases of PES being paid to communities rather than households, but there is no clear evidence that one method is better than another (Reynolds, 2012; Tacconi et al., 2013). There are also PES projects that do not make use of cash

payments for participation, but rather provide other types of compensation and rewards (van Noordwijk and Leimona, 2010). Agroforestry inputs, tree seedlings, and technical extension are common incentives in non-cash PES plans, and such support for often non-capitalist subsistence production is another departure from orthodox neoliberal policy. Additional so-called co-benefits are an important part of PES as well, such as the development of social capital and psychological benefits from participation (Asquith et al., 2008; Garbach et al., 2012; Greiner and Stanley, 2013; Nkhata and Mosimane, 2012; van Noordwijk and Leimona, 2010). There is increasing recognition that only paying attention to pricing mechanisms for ecosystem services in the absence of cultural and social factors is inadequate, and co-benefits, as opposed to only cash payments, may be one way to shape PES towards local norms (Muradian et al., 2013; Van Hecken and Bastiaensen, 2010; Vatn, 2010).

2.3 Outcomes of PES: Inequality, Privatization and Accumulation, or Not?

Regardless of whether or not we consider PES as truly 'neoliberal' or not, to what degree have PES schemes been able to avoid the negative outcomes associated with neoliberal policy, such as increasing inequality and accumulation of land by the wealthier through alienation and privatization? The literature on outcomes of PES in developing countries is mixed, which accounts for the fact that early enthusiasm for PES as a win-win for conservation and development has given way to more realistic expectations. Recent work shows PES are expensive to set up (Uchida et al., 2005) and have high transaction costs (Alston et al., 2013); conflicts over the societal value of ecosystem services are often hard to resolve (Clements et al., 2010; Kari and Korhonen-Kurki, 2013); and PES projects simply may fail to reach people responsible for degradation of environmental services (Brouwer et al., 2011; Minang and van Noordwijk, 2012). These and other issues have raised questions about whether PES is being promoted too heavily as a solution to what are very disparate conservation problems (Muradian et al., 2013).

On the question of income accumulation and inequality that may result from market-based conservation policy, there is not yet a systematic understanding of the factors that influence active participation in PES, including eligibility, desire, and ability, which might help explain uneven participation outcomes (Arriagada et al., 2009; Gong et al., 2010; Melo et al., 2013; Pagiola et al., 2005). Many case studies have primarily looked at whether individual PES payments covered opportunity costs for participants (such as in foregone agricultural production) and have not directly addressed inequality issues (Bulte et al., 2008; de Koning et al., 2011; Gauvin et al., 2009; Gross-Camp et al., 2012; Mahanty et al., 2013; Pagiola et al., 2010; 2008). Increases in household income without reported income stratification are reported in some comparative studies where households have received payments (Tacconi et al., 2013), while in other cases, benefits have been mixed. A number of PES projects have reported low participation rates and consequently unequal benefit distribution (Adhikari, 2009; Clements et al., 2013; Schomers and Matzdorf, 2013). PES benefits were often captured by better off households, larger landowners, or well-connected industries (Börner et al., 2010; Corbera and Brown, 2010; Lansing, 2013; Zbinden and Lee, 2005). In some studies, net negative results, such as restrictions on forest use (e.g. no fuelwood collection) and

declining household food security and income, have been documented (Beymer-Farris and Bassett, 2012; Ibarra et al., 2011; Liang and Mol, 2013; Osborne, 2011), as well as community conflict between PES receivers and non-receivers (Rodríguez de Francisco et al., 2013; Tacconi et al., 2013). Yang et al. (2013) report that households in China's Sloping Land Conversion Program faced forest restrictions and crop losses to wildlife that were not compensated for sufficiently by the overall size of payments in many cases. In one analysis of Mexico's PES programs, (Osborne, 2013) notes that mapping and privatization of once-commonly held ejidos was observed, but how much of this privatization was attributable to PES projects alone and how much to overall trends towards privatization is not clear.

A final question concerns how local participants have been able to avoid negative outcomes of inequality and accumulation through their active shaping of PES implementation; in other words, how originally neoliberal goals may have been shaped by local actors to fit with local objectives and concerns (Higgins et al., 2012). The evidence on this from developing countries is incomplete, but some case studies do show that active involvement, particularly from peasant and indigenous communities and organizations, have succeeded in shaping PES programs toward social objectives (Shapiro-Garza, 2013b). The importance of intermediaries in facilitating access to PES schemes has been noted (Bosselmann and Lund, 2013; Pham et al., 2010) and they may also play important roles in enabling communities to retain voice and input into policy implementation. Key areas where beneficiaries have been able to shape PES implementation include in the spatial scope of such projects (e.g. lobbying for expanded coverage of PES programs (Shapiro-Garza, 2013a) or forest carbon project participation (Reynolds, 2012); in the size and timing of payments (Narloch et al., 2011; Pirard, 2012b); in the types of payments that will be acceptable, including shifting some PES schemes away from cash payments to more socially acceptable ideas of compensation, rewards and incentives (Gross-Camp et al., 2012; Swallow et al., 2007); and in using PES participation to leverage other social goods, such as more secure land tenure (Osborne, 2011).

3. PES in Vietnam as a Case Study

PES has rapidly gained popularity as an environmental governance strategy in Vietnam in the past decade. First introduced by several small donor-supported projects in the mid 2000s (Minh et al., 2008), these approaches promoted the idea that upland forest communities could be paid to protect watersheds for downstream water users. Beginning in 2004, the national Ministry of Agriculture and Rural Development (MARD) led a process to design and formulate an official PES policy for Vietnam, including a detailed review of international PES experiences (for example, a visit to Vietnam by officials from Costa Rica's well-known program was sponsored as part of this process). The Prime Minister approved Decision No. 380 QD-TTG in 2008, titled "On The Pilot Policy On Forest Environment Service Charge Payment," and PES was also included as part of a Biodiversity Law that passed in 2008. These decisions set up two PES pilot projects, in Lam Dong and Son La provinces in the south and north of the country respectively, on a two-year basis, to be replicated elsewhere in the future if successful.

In Lam Dong province, the pilot primarily linked hydropower plants and water users in other provinces, such as in urban areas of southern Vietnam, to households living in an upland watershed, while the Son La pilot linked hydropower companies of the northern mountains to communities and households in that watershed. As in other countries, PES was proposed as a win-win solution for a myriad of conservation challenges, including deforestation, the need for increased participation of local people in forest protection, concerns over headwater and downstream water supplies, and biodiversity generally (McElwee, 2012) (see Figure 1).

The two state-sponsored pilots were considered to be successes in their brief trial run, and in late 2010, a new national policy was passed, titled Decision 99 ND-CP, “On the Policy for Payment for Forest Environmental Services,” which is in the process of being implemented nationwide (MARD, 2010). The decree indicates that some PES fees will be mandatory, and that required buyers will include hydropower companies, water companies, industrial facilities that use water, tourist companies, and others to be determined. Both direct user to seller contracts and indirect ones between sellers and intermediaries are allowed; in indirect cases, payments will go to a Forest Protection and Development Fund to be set up in each province and payments will be transmitted via these provincial funds to recipients. The expressed hope for Decree 99 is that it will enable the funding of forest conservation activities without the need for central government transfers; an official in charge of forest administration noted in a meeting in late 2011 that MARD hopes to only supply around 25% of the budget for forest management to lower level state entities (national parks, forest reserves, logging companies, etc) in the future, and the remaining 75% of budgets will have to be raised by these local organs through creative means like PES, entrance fees, or other approaches (personal communication, Nguyen Ba Ngai, 2011). A number of donor-funded smaller-scale PES and PES-type projects (at least 13 in 2014) also are currently operating in individual provinces, usually involving donor financial transfers rather than true user-funded PES (Pham, et al. 2013).

3.1 Methods

Since 2011, the authors have been carrying out research in several of the provinces that have PES or PES-like programs, including the two initial pilot provinces of Lam Dong and Son La. From 2011-2014, we have been regularly visited the two initial PES pilot sites and carrying out a mixed methods approach to collecting social and environmental data (Figure 2). In this article we discuss our work in Lam Dong and Son La primarily, where we chose two districts in which PES has been carried out, selected 5 villages that have been involved, and interviewed a total of 151 households (representing some 600+ individuals) in these selected villages in fall 2011, with follow-up qualitative interviews in 2013 and 2014 (see Table 2).¹ The standardized survey assessed local livelihoods, patterns of income and expenditures, agricultural characteristics, type and scale of land holdings and tenure regimes, and role that

¹ Households were selected at random from a village census; households are usually the main units making land-use and livelihood decisions, and this project has used the standard Vietnamese government definition of households.

natural resource use played in the household. We also assessed levels of participation in PES and how PES income was used within the household through focus groups with smaller numbers of local residents in each village, including forest users, women, and poor households.

We additionally conducted interviews with government officials and policymakers in each field site to gather information on the development of general forest policies as well as local PES implementation including the Provincial Funds for the collection of PES money; management staff of two protected areas (Bi Duop in Lam Dong and Copia in Son La); officials of companies paying environmental service fees, such as hydropower companies, water supply companies and tourism companies; and NGOs and civil society organizations involved in PES. In total more than 50 stakeholder interviews were carried out.

3.2 Implementation of the PES Pilot Projects

The two PES pilot provinces now have several years of data on implementation; users have already been assessed payment fees, and service providing households have been paid several times. In both sites, provincial officials decided to focus on hydrological services and soil protection, although some attention was also paid to amenity values of forests. Other environmental services, like biodiversity, were judged to be too difficult to compensate directly and would be implied co-benefits from preservation of forest cover. Local ecosystem services were assessed by hired consultants from a USAID-funded project in Lam Dong; one study used the Soil and Water Assessment Tool (SWAT) model developed in the US to estimate the approximate costs of soil erosion and water runoff in deforested lands upstream from a hydroelectric plant, while an economist conducted a willingness to pay study among water users in urban areas of Ho Chi Minh City (ARBCP, 2009). From these two reports, a fee structure for both areas was suggested and adopted by MARD officials: buyers were to be assessed 20 VND/kWh (US\$0.0013/kWh) generated from hydroelectric plants and 40VND/m³ (US\$0.0025/m³) from water consumed in participating urban areas. (These uniform rates were later adopted for all of the country in Decree 99). Tourism companies depending on some sort of environmental service were also to be assessed 1-2% of their total related revenues.

Buyers of environmental services were identified in both sites: in the Lam Dong pilot area, the downstream Water Supply Company of Ho Chi Minh City (SAWACO) and the water supply company of Bien Hoa City; two hydropower plants (Da Nhim, capacity of 160 MW, and Dai Ninh, capacity of 300 MW); and five state-owned tourism companies using forest environmental services to generate revenue (e.g. trekking companies, waterfall tours) were identified as dependent on ecosystem services for their economic operations. In Son La province, the payees included the massive Hoa Binh hydroelectric system (capacity 1,900 MW) that supplies electricity to much of northern Vietnam, as well as a much smaller hydropower system (Suoi Sap, capacity 14 MW) and several water supply companies. All of these entities were required to pay into a new Provincial Forest Protection Fund managed by local agricultural departments. So far, fees

collected totaled nearly \$5 million US in Lam Dong for the first 2 years of the pilot and nearly \$3 million US in Son La (see Table 3). The large majority of the fees have come from the hydropower plants, with urban water user fees a much smaller contribution. Tourism revenue has been practically negligible, with only a few dollars assessed to a few companies based on 1% of ticket prices, usually around \$1 per visit to lakes or forested areas around Dalat city in Lam Dong province. Most companies that have paid PES fees have stated that they will be passing their additional costs onto their customers by raising the price of electricity or water.

Table 3. Fees collected in two pilot PES project provinces, 2009-2010

3.3 Participation in the Pilots

In both sites, the majority of local “service suppliers” who are participants are rural agricultural households who are generally ethnic minorities, although each pilot has a rather different implementation structure due to differences in land tenure arrangements in the two sites. In Lam Dong province, most forests remain under state control and so this province selected local households who sign protection contracts with forest owners (the state). Individual households agree to participate by patrolling state forest land and signing agreements that they will not engage in deforestation. A total of approximately 8,000 households have participated in these contracts since the beginning of the pilot in Lam Dong. Targeting of individual households and communities was done by the state forest institutions, based on broad provincial criteria of prioritizing poorer households and ethnic minorities. For example, the Bi Duop National Park selected communities on the southern boundary of its border to participate, and then let local community leaders designate which households should be selected for PES contracts, based on labor availability, income status and enthusiasm for participation. Land tenure was not an issue in selection for participation, since all the land under PES contracts still belongs to Bi Duop National Park.

In Son La, most forests were allocated/privatized to households and communities in the 1990s, and only small areas of forest remain under direct state control. Therefore, in this province forest owning households contract directly to the PES provincial fund, which has increased transaction costs considerably. 52,000 forest owners have been paid from PES funds in Son La, of which 45,000 were individual households, 6,000 were communities or group of households, and 1,000 were other organizations (army groups, etc). Participation largely has depended on awareness of the PES program among these land-owning communities; the ability of provincial and district officials to enroll people in these pilots; and in some cases where community leaders decided to enroll community forests, some households reported that they had had no choice whether to participate or not.

Not all households in eligible PES areas have participated in the program, however. In Lam Dong, because selection of eligible households was made by state forest owner or local community leaders, many of the PES contracts went only to those households that had previously participated in other forest planting and protection programs with

local authorities, dating back to the early 1990s, leaving out those who were not already connected. Slightly less than a quarter of our sample had reported not taking part in protection projects (see table 4), and discussions with authorities confirmed that in most communities, between 10-30% of people were not taking part in PES. When asked what the reasons were for not having participated, most common reason given was that the household had not been asked to participate by local authorities or by community members, either due to a lack of a PES project nearby, or else the PES roster was already “full”. During focus groups, we were able to elaborate further on these findings. Some of those who were not participating in the PES project in Lam Dong included older households who had insufficient labor to regularly patrol forests; female headed households that had no male laborers, since forest protection was seen as a male job; and households that were away from the area at certain times of the year while doing migrant labor, as they were considered unable to devote sufficient time for forest protection. In Son La, poorer households with insufficient funds to reforest land and newly separated young households who did not own forest land were most often excluded from PES projects.

Table 4. Reasons for not participating in PES

3.3 Contestation and Alteration of the PES Pilots

Despite the national policy that required a fixed level of assessed PES fees for service buyers (namely 20 VND/kWh generated from hydroelectric plants and 40VND/m³ from water companies), a national attempt to set similarly fixed levels of PES payments to service providers was strongly protested by households in both sites, which succeeded in changing this policy. Decree 99 originally attempted to institute a tiered system of PES payments which would be dependent on forest type and protection status; the law stated that “The average payment per 1 ha of forest is determined by: the amount of revenue collected from payers of a particular services, after subtracting the management cost ... divided by the total area of each type of forest of forest owners participating in supplying such services, times the Coefficient K corresponding to the forest area of each type of forest of the forest owners entitled to payment” (MARD 2010). “Coefficient K” was an attempt to set some levels of conditionality on the PES payments by linking them to broad categories of ecological type of forest (known as K1), function of forest (for production, protection or special use) (K2), origin of forest (planted or natural) (K3), and type of forest protection (K4) (ranging from difficult to easy) (Pham et al., 2013). However, using multiple K coefficients led to complicated calculations for local officials, as well as disparities in total payments for different households. For Son La province, in the first year of the pilot, lands classified as “natural” protection forest were assigned a coefficient (k=1), which meant that around US\$7 per ha per year would be paid, while plantation forest under protection would be (k=0.9), equivalent to US\$6.3 per ha per year, natural production forest would be (k=0.6) with payment around US\$4.2 per ha per year, and plantation forest under active production would be assigned (k=0.5), or US\$3 per ha per year.

Local households protested when they received these different payments, as they did not understand why they might have gotten less money than a neighbor for having invested the same amount of time and labor in protection. Households emphasized their work in PES, particularly in Lam Dong, was based on labor: they primarily went out to their contracted forest areas on set time schedules, walking around forest edges once every week or two in most cases, and they often described their actions not in terms of “protection” but in terms of “effort”. Just as jobs of similar “effort” were paid similar wages in the open labor market, households in PES projects wanted equal payments for similar labor. The unequal payments in the first year of the program resulted in resentment and even vandalism toward those who were benefiting (To et al., 2012).

The protests resulted in authorities scrapping the tiered approach. Subsequently, in Lam Dong, payment rates were calculated in a simple fashion based on dividing the total PES funds received each year by the number of participating households. In 2010, this amounted to around 280,000 VND (US\$13)/ha in payment, and in 2011 it was 400,000 VND/ha (US\$19/ha). In Son La, the forest department decided that only one K-coefficient was to be used, with a uniform payment of around US\$ 6.8 per ha/yr. These uniform payments now mean that every PES provider will get the exact same *level* of payment for participating.

However, households do still get different total *amounts* of payments because the contracts are based on total hectares protected. Participating households in Lam Dong are contracted to protect between 10-30 ha per household on average (although these households do not have land tenure rights to this land), while Son La households are generally land owners with secure tenure but very small holdings (under 5 ha/household on average, or in community forests, small areas of less than 20 ha total). In Lam Dong, most cases PES payments have been directed at individual households while in Son La both individual households and whole communities received payments (55% of survey households participated as individual households, while the rest reported having participated as part of a group). Table 5 shows the size of the payments varies significantly between the study sites. The average participating household in Lam Dong in our survey had received 8,919,307 VND (US\$425)/yr while in Son La it was only 120,092 VND (US\$ 7)/yr. Payments in Lam Dong were significantly larger for two reasons. One, the provincial level of payment was much higher, and two, households were often contracted to protect larger amounts of forest. In Son La, payments were much smaller and were made for protection of usually less than 15 ha. Son La also provided more community-based PES payments, which were often spent on community infrastructure, like supplies for classrooms, leading to lower payments to households.

Table 5. Average size of PES Payment Received per Household in 2011 (HH)

In addition to influencing the base rate of payments, households also strongly influenced when and how the payments were made, although this had been somewhat less successful and only in one of the two sites. Households and communities had stressed during the pilot phase that PES payments needed to be both regular and dependable, which were considered even more important than the total amount of

payments. In Lam Dong, households had requested that PES payments come quarterly on set dates, noting that these were more convenient as they often came at times of the year when cash was desperately needed, such as in fall at the start of the school year and in January before the start of the Lunar New Year. In several villages, the forest owners (such as the national park management board) had been late with distributing payments, and this had caused trouble for some households that had needed the money to pay off the debts at a certain time. In Son La the most common payment was only once a year, which households said was not that important, because the total amount of the payment was so low in most cases that it did not make sense to distribute it in multiple tranches: “It’s barely enough to buy snacks and ramen”, complained one older woman in a Son La focus group.

3.4 Outcomes of the Pilots

Officials and donors involved in the pilot projects have declared PES to be a success on both environmental and social fronts; for example, USAID, which sponsored the Lam Dong pilot, has claimed that PES is responsible for a 15% reduction in poverty and a 50% reduction in environment violations in the province, though it is not clear how these figures were derived (Winrock, 2011). From our own survey work, however, we cannot draw strong conclusions regarding how the new forest payments will serve to alter forest management for participating households and communities. Fully 25% of households in our survey reported having done nothing differently in terms of land use after having received PES funds (Table 6). For the other households that reported active land use management, most indicated that they primarily monitored forests on a weekly, biweekly or even monthly basis for forest fires, but did little else to protect forests under their PES contracts, particularly in Son La. The very low size of payments in Son La was likely a contributing factor to the less active changes in forest protection activities.

Table 6. Changes in forest practices made after receiving PES payments

Perhaps because the project had required little in the way of costs, participants had generally positive things to say about their participation in forest protection projects. Of the participants in PES projects, 76% reported positive benefits: 60% of households reported general environmental benefits, like water and flood prevention, while 40% reported the main benefit was the cash payments. Other reasons given in focus groups for being approving of PES included better access to other non-timber products, increased access to timber, receiving access land rights to land; increased voice and participation; and more friendly neighbor relations. The remaining 24% of households in the survey reported having negative experiences with PES forest protection projects. Of these households, most felt the labor requirements for protection were too onerous, while several thought PES caused conflicts between neighbors and communities.

4. Discussion: Variegation in PES in Vietnam and Globally

As noted in the previous section, PES schemes have tended to have wide variation in implementation and outcomes, and this variegation calls into question whether or not

PES should be considered broadly neoliberal. The Vietnam case study confirms this point, and also highlights the challenges in meeting in particular the goals of efficiency and conditionality, two hallmarks of the market approach, as we discuss below.

4.1 Local influences on PES: Distributional and Procedural Equity

The Vietnam case points out that local influences on PES often revolve around perceptions of equity, which has been a topic of considerable interest in the broader PES literature (Corbera et al., 2007b; Mahanty et al., 2013; Martin et al., 2013; van Noordwijk and Leimona, 2010). For example, McDermott et al. (2013) identify distributive, procedural and contextual equity as important concepts, indicating that participants will judge PES on how well benefits are shared (distributive equity), how participatory the development of PES was (procedural equity) and the power relations and capabilities between actors (contextual equity). In Vietnam, the households in the two pilot sites clearly shared ideas of distributional equity in that they successfully protested the application of K coefficients, which had resulted in uneven payment rates for different types of land. The local sentiment was that equal effort should receive equal payment; other studies in Vietnam have noted similarly strong feelings toward equal benefit sharing (Petheram and Campbell, 2010). These preferences for egalitarian payments have also been noted in many other PES sites outside of Vietnam as well, where “perceptions of unfairness can undermine the effectiveness even of incentives that provide apparent net benefits” (Sommerville et al., 2010, p. 1263).

Yet preferences for equality were primarily confined to equality of payments within the PES participating households and communities, as in both sites, there were households who were not selected to participate in PES projects (particularly those who were not already connected into forest protection programs) and this resulted in inequality in access. For example, in one focus group in Bon Dung village in Lam Dong, non-participants noted that in their minds, “PES is not fair because not everyone can take part. People are picked [to participate] according to who they are related to or their relations with the village head,” as one respondent stated. This mirrors concerns in other PES settings that equity might be achieved among participants, but not in comparison with non-participants (Clements et al., 2010; García-Amado et al., 2011). This problem highlights the fact that communities are not homogenous, and the divisions that characterize them will play out in resource control and access as well; this can lead to some leaders or more connected households making PES commitments which others do not share (Milne and Adams, 2012).

The outcomes of problems with distributional equity could be seen in Lam Dong in particular, where focus group respondents said that there were cases of non-participants clearing forests out of spite “because people are mad that they haven’t received PES money. If they see fires or deforestation they also don’t want to report it to the authorities because they aren’t taking part in PES”, as one middle-aged woman noted. The exclusion of some households in both PES sites in Vietnam was largely a function of historical factors (past participation in forest protection projects or having received land in the past from forest allocation) combined with concerns that PES participation would impose labor costs that some households could not bear. These

concerns remind us that historical configurations of access, participation and property influence the social relations that govern how PES will be locally effective (Corbera et al., 2007a, p. 588; Pascual et al., 2010, p. 1238).

Procedural justice was also less well achieved in Vietnam, as local service providers were not involved in the policy making process, particularly in the development of Decision 380 and Decree 99. Further, participation in both sites was only nominally voluntary, with some households complaining that they had been coerced into being involved, especially in Son La where contracts to communities were more common. In other sites in Vietnam where donors had tried to establish PES projects, lack of awareness and capacity of what PES even was common, even among forest officials (Simelton et al., 2013). Such problems with true participation in the development of PES from the start are common in the literature; for example, many forest carbon projects, even those that claim to place a high priority on procedural justice, do not meet even basic requirements for participation (Suiseeya and Caplow, 2013). Corbera et al. (2007b) for example note that over three-quarters of the households they interviewed in four PES project sites in Latin America had never been consulted in the process of implementation, let alone participated as full stakeholders. Further, participation in procedural equity should not just involve sellers. In Vietnam, there was no mechanism for either the sellers or buyers to reflect their feedback and comments to the PES pilots; in one interview, one buyer (a vice president at a hydropower company) had a number of suggestions on better ways to assess water pricing that would more accurately reflect the local situation, but he said he had no opportunity to offer this feedback.

5.2. Impacts on Efficiency and Conditionality

Efficiency and conditionality have been primary goals of the market-oriented approach to PES from the start (Landell-Mills, 2002). Efficiency refers to the idea that conservation outputs should be maximized while costs of the conservation are minimized, thereby reaching a Pareto outcome, and markets are presumed to do this more efficiently than regulations that apply to everyone (Engel et al., 2008). Conditionality refers to the idea that the ecosystem service needs to have actually been provided, otherwise the compensation/payment will not be provided (Engel et al., 2008). The potential tradeoffs among efficiency and other social concerns like equity have long been a concern for PES (McAfee, 2012b; Pascual et al., 2010).

In the Vietnam case, these efficiency goals were not being met by the PES project for a number of reasons. First, for many households that were interviewed, there was little understanding about how the PES approach to forest management was any different from previous policies. Only 34% of survey respondents reported that they had heard the term PES, while the rest had not or did not know. Of those who had heard of PES, half thought it was a government program for forest protection. Only a handful of respondents knew that it was a program that primarily received payments from environmental service users. Because households received their payment brought to them via local government officials, they simply assumed the PES money was a state subsidy program, like many others they were familiar with (for example, the state provides free education and health care cards to any ethnic minority). PES payments

were often seen as yet another of these state charity-type programs, which made it difficult to understand the idea of conditionality. As a result, many participants treated PES as a government entitlement fund and not a conditional environmental fund.

Further, because the enforcement and checking of PES contracts had been rather loose, most households felt that they were not restricted from continuing existing land use practices, including, for example, collecting fuelwood and other forest products, or clearing small fields for agriculture. The lack of linkages between PES contracts and payments and requirements to change land use practices is seen in the fact that 25% of participating households accepted PES payments yet did nothing differently. This shows a clear inefficiency in program design from an economic standpoint. Yet when the pilots attempted to develop tiered pricing so that different service providers were compensated according to their actions, local level actors perceived this as unequal and unjust. Equal benefit sharing, rooted in social and cultural norms, thus may challenge attempts to impose efficiency and conditionality, and too much focus on economic efficiency may aggravate local equity concerns.

5.3. Is PES in Vietnam Neoliberal?

The PES projects in Vietnam share many similarities with other PES approaches in the global South. The pilots have largely been state-led interventions, with a top-down involvement of state ministries and departments, rather than the market, such as in the specifications for the exact rates to be charged for water and electricity, as well as naming the buyers/payees who were mandated to participate (all of whom were state-owned or invested enterprises, like public utilities). Local governments have been clearly placed to act as middleman in managing PES payments and distribution between buyers and sellers, which has actually resulted in an expansion of state forest bureaucracies at provincial levels. The two pilot provinces had actually hired new state employees to run and disburse the payment funds. Even in other areas where donors were implementing smaller PES pilots, they also required involvement of the state and other intermediaries (Pham et al., 2010). This strong role of the state calls into question the idea that neoliberal policies always result in a rollback of state services.

Although this may be a result of Vietnam's long previously socialist history, there is little capitalist penetration into new sectors facilitated by PES; nearly all money in PES is being moved around from development aid agencies (which subsidize many PES projects) and individual consumers through state-owned companies to other state intermediaries and households, and there is almost no role for private capital in this system. One representative of a state forest farm that was receiving PES credits interviewed in December 2011 noted that PES is primarily about "taking [money] from the right pocket of the government and putting it in the left pocket". Indeed, in descriptions of the PES projects from the Vietnam government, the words 'market' never occur; rather, PES are described as transactional fees, which implies regulatory approaches (GIZ/MARD, 2012).

Commoditization has also been incomplete. In all cases, households did not see themselves as “selling” actual goods or commodities, but rather were being paid to provide a labor service (such as patrolling forests, reporting forest fires, or reducing fuelwood use). This seems to push back against fears that PES will always result on “commodity fetishism” (Kosoy and Corbera, 2010). While there is no doubt that some highly commodified ecosystem services in commercial markets can exist (such as in international carbon markets) that can result in financialization and accumulation (Bumpus, 2011; Bumpus and Liverman, 2008; Corbera et al., 2007a; Corbera and Brown, 2010), these are not inevitable outcomes, as commodification can be a tricky process, particularly given problems with scale and valuation in PES (Bakker, 2005; McAfee, 2012a, p. 114).

Finally, neoliberal directions do not always result in homogenizing policies. In Vietnam, we see that despite a single national PES policy, the two pilot sites were operating very differently. In Lam Dong, the PES project served primarily as a labor compensation scheme, while in Son La the program was more targeted at investment in community forest protection. This difference was largely the result of long-standing historical factors, as in the Lam Dong site, participating communities did not have firm land tenure, which limited some of their ability to control land use practices. Further variation between the two sites could be seen in the radically different size of PES payments in each province, despite a common nation-wide price for PES user fees.

6. Conclusions: Is PES Neoliberal in General?

To conclude: are PES schemes accurately described as ‘neoliberal’? Arguments over PES being neoliberal (Matulis, 2013) versus only quasi-neoliberal (Fletcher and Breitling, 2012) versus not neoliberal at all show no signs of abating. This article has sided with scholars who have argued that PES policies in most cases are not true markets (Muradian et al., 2013; Vatn, 2010), and thus we should pay more attention to their particularities and outcomes rather than broadly characterizing them as ‘neoliberal’ (Corbera et al., 2009; McAfee and Shapiro-Garza, 2010; Muradian et al., 2013; Shapiro-Garza, 2013a). The key takeaway is that there is strong variation in PES schemes and that we need better ways to conceptualise them other than neoliberal or not (Muradian et al., 2010; Pirard, 2012b).

On each of the main outcomes associated with neoliberal environmental policy – namely commodification, privatization, and retreat of the state – there is a huge range of variation from different PES projects. For example, on one side of a continuum of “role of the state” we have high involvement, ranging from China and Vietnam’s experience of strong centralized command and control policy development involving the state as buyer, seller and manager (Kolinjivadi and Sunderland, 2012; Liang and Mol, 2013). On the other hand, there are some PES schemes which involve only minimal state interference, and primarily engage private actors who buy some well-defined environmental service (Arias et al., 2011; Blackman and Woodward, 2010). And in the middle of these two poles, many other PES may be more accurately described as a “hybrid model of governance, blending market principles with existing regulatory

frameworks” (Higgins and Lockie, 2002; Wynne-Jones, 2013, p. 78). Similarly, on the question of privatization and commodification, there are high capital PES projects, such as carbon reforestation that may require thousands of dollars per ha for afforestation, auditing and monitoring (Corbera and Brown, 2010), to very low capital requirements, as was seen in Vietnam, where monitoring of forests required only an investment of labor but no capital from households, and very little sense of commodities for sale.

Indeed, the failure to establish uniform market mechanisms in PES may be one of the most interesting and unexpected outcomes of these policies (Fletcher and Breitling, 2012). Consequently, the market-provided efficiency that was an original hallmark of PES is proving difficult to harness. There are many examples of “low additionality, low commodification, indirect schemes that have been considered inefficient” (García-Amado et al., 2011, p. 2366) but which are operating with some success and local buy-in, such as Clements et al. (2010); Kosoy et al., (2008); Van Hecken et al. (2013) and case studies in (Muradian and Rival, 2013). Precisely because PES have been unable to establish true markets, should this not lessen the appeal of using only efficiency as a criterion of success? This would suggest a move away from Coasean approaches to PES and more careful looks at other factors, such as on social influences and creation of institutions for PES, as the institutional forms that are best for the different social PES challenges (like equity, conditionality and additionality) remain an important but understudied part of the PES literature (Legrand et al., 2013; Martin et al., 2013; Muradian and Rival, 2013; 2012, p. 93; Tacconi, 2012).

Neoliberal schemes can clearly both extend some market forces (albeit incomplete) as well as provide spaces for contestation; neither are homogenizing processes. In other words, “attempts to neo-liberalise nature are contingent on the existing values and practices of those who are the ultimate targets of governing” (Higgins et al., 2012, p. 384). As Mansfield has noted with regard to fisheries, a policy often defined as neoliberal “might be both a tool of dispossession and a tool for challenging dispossession” (Mansfield, 2007b, p. 496). The successful transformation of some aspects of PES, namely equity in payments in Vietnam, or a focus on peasant and indigenous development goals in Mexico (McAfee and Shapiro-Garza, 2010), lends credence to the idea that these policies can indeed open up new spaces for participation and negotiation over rights. Such outcomes are not surprising, given that many authors have noted the widely variable results of other neoliberal policies (Mansfield, 2004; Peck and Tickell, 2002). Additional studies on these important local transformations and contestations of PES are surely needed.

Yet just because markets are not a functional part of most PES plans does not necessarily make them more benign, however. As Milne and Adams have noted, “the significance of the PES policy model lies in the political and social effects of its design and implementation, not in its functioning as a market per se” (Milne and Adams, 2012, p. 136). Treating PES as political projects involving hybrid forms of governance reminds us these projects are “embedded in complex institutional and ecological contexts” (Muradian and Rival, 2012, p. 97). PES studies therefore need to focus on understanding relevant socio-institutional contexts, particularly notions of fairness and justice, as relative understandings of equity and efficiency among both users and

providers of environmental services can influence support for PES plans and their ultimate outcomes. In other words, future PES plans face many challenges, and researchers need to pay more attention to these by moving away from overly simplistic analysis of 'neoliberal natures' and instead offering analysis of how and where PES is more successful than other policies, and when PES is inappropriate and contested. Additionally, paying attention to the contingent nature of PES policies, particularly where they can be adaptive and more flexible, such in response to provider and user demands, will be another important future area of research.

Acknowledgements

The authors would like to acknowledge the financial support of the National Science Foundation Geography and Regional Science Division grant #11028793: "Downscaling REDD policies in developing countries: Assessing the impact of carbon payments on household decision-making and vulnerability to climate change in Vietnam". The Vietnam team is also supported by a USAID Partnerships for Enhanced Engagement in Research grant: "Research and capacity building on REDD+, livelihoods, and vulnerability in Vietnam: developing tools for social analysis of development planning". The Economy and Environment Program for Southeast Asia (EEPSEA) also provided a grant to Vietnamese collaborators for fieldwork on PES issues in 2011. The assistance of Mr. Dao Minh Truong, Mr. Le Toan, and Ms. Ha Thi Thu Hue of the Center for Natural Resources and Environmental Studies, and of Ms. Ha Tu Anh of Tropenbos International Vietnam, is gratefully acknowledged. Support in the field sites of Lam Dong was given by Mr. Le Hung of Bi Duop National Park and Mr. Le Tham of the Lam Dong Province Forest Fund, and in Son La of the support of Mr. Thuan, Mr. Hung and Mr. Le Manh Thang of the Son La Department of Forest Administration is gratefully acknowledged.

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Table 1. Examples of Payment Types and Levels Across Developing Country PES Experiences

Country	Name of Program	Scope	Ecosystem service provided	Buyers/sellers	Payment Levels	Market-based?
Costa Rica	Pago por Servicios Ambientales (PSA)	~900,000 ha	Forest cover	B: Gov't S: Landowning smallholders; indigeneous communities; legal entities	~ US\$64 to 80/ha for forest protection; ~US\$200-300/ha for reforestation	No: funded primarily by fuel tax surcharge and donors; a few private transactions with hydropower companies
Mexico	Program of Payments for Environmental Services (PSAB)	2.5 mill ha	Primarily degraded watershed	B: Govt (state forest agency) S: Landholders (ind & ejido)	US\$27-36/ha	No: funded by national water fees, central transfers and donors
Ecuador	Socio Bosque	525,000 ha	Forest cover; high altitude grasslands	B: Govt S: Rural HH or communities	US \$30 and below/ha	No: funded by central govt transfers
China	"Grain for Green"/Sloping Land Conversion Program	12 million ha	Sloping cropland conversion to forest	B: Govt S: Rural HH	US\$ 20-40 equiv/ha, up to max of \$600/ha in watersheds	No : funded by central govt transfers

Vietnam	Payments for Forest Environmental Services	~ 1 million ha	Forest cover	B: State-owned electricity, water and tourism companies S: Smallholders, government landowners	US \$30 and below/ha	No: funded by mandatory payment levels on public water and energy use
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Sources: (Corbera, Kosoy, & Tuna, 2007b; de Koning et al., 2011; FONAFIFO, CONAFOR, Ministry of Environment, 2012; Porras, Barton, Chacón-Cascante, & Miranda, 2013; Wunder, Engel, & Pagiola, 2008; Yin & Zhao, 2012)

Table 2. Comparison of Two Pilot PES Provinces in Vietnam

Indicator	Lam Dong Province (South)	Son La Province (North)
Dominant forest type	Pine forest, deciduous broadleaved forest	Mixed coniferous-broadleaved forest on limestone, with significant bamboo
% Forest Cover (Natural)	54%	35%
% Forest Cover (Plantation)	4%	2%
Deforestation /afforestation rates, 2000-2005	-4.8%	+3.3%
Ethnic composition	22% ethnic minority (Koho, Chil, Mnong)	83% ethnic minority (Thai, Hmong, Tay, Dao)
Poverty rates	32%	53%
Total HH receiving PES payments	~8,000	~52,000
Land tenure situation	3% of forest estate held by HH & communities	~80% of forest estate held by HH, user groups & communities

Source: Provincial statistics and interviews, 2011-2012.

Table 3. Fees collected in two pilot PES project provinces, 2009-2010

Payer	Total payment	Rates based on	% of total fund for province
Lam Dong, 2009-2010 (Southern Vietnam): 516,800 hectares of forest under PES			
Dai Ninh and Da Nhim Hydropower plants	4.6 million US (96 billion VND)	20 VND/kWh produced (US\$0.0013/kWh)	89%
Water supply companies of Ho Chi Minh and Bien Hoa cities	519,000 US (10.9 billion VND)	40 VND/m³ supplied (US\$0.0025/m³)	10%
5 Tourism companies	28 US (0.6 million VND)	1% of profits	Less than 1%
Total	4.6 million USD (98.6 billion VND) paid to 13 state forest owners which transfer around 80% to ~8,000 households on yearly contracts		
Son La, 2009-2010 (Northern Vietnam): 397,000 ha of forest under PES			
Hoa Binh and Suoi Sap Hydroelectric companies	2.9 million US (62 billion VND)	20 VND/kWh produced(US\$0.0013/kWh)	99%
Water supply company of Son La city	1,600 US (34 million VND)	40 VND/m³ (US\$0.0025/m³)	1%
Total	2.9 million USD (62.3 billion VND) transferred to 52,000 forest owners (HH and communities)		

Source: Provincial interviews, 2011. 1 USD = 21,000 Vietnam Dong (VND) at time of research.

Table 4. Reasons for participating in PES projects

Reason	Lam Dong (n=39)	Son La (n=29)
To manage forests better for long term benefits	44%	62%
To get payments	72%	14%
Feeling personal responsibility	33%	21%
Participating to get new information and experience	15%	72%
Gain access to land rights	2%	0%
To improve social relations	2%	0%
Forced to participate	0%	24%

Source: HH survey, 2011. Only households participating in PES answered this question in the survey

Table 5. Reasons Given For Not Having Participated in PES

	Lam Dong (n=74)	Son La (n=76)
Not being invited or selected to take part	23	4
No local forest patrol groups in this area	1	4
Want to participate but need more info	0	1
No financial conditions to participate	1	0
Do not think protection will have any results	0	1
Don't see any direct household benefits from participation	0	1
No labor to participate	0	2
Worried about forest restrictions	0	0

(Source: Field survey, 2011)

Table 6. Average size of Forest Protection Payment Received per Household (HH)

	Lam Dong	Son La
Average amount of forest payment per HH	8,919,307 VND (US\$425)	120,092 VND (US\$7)
Minimum payment per HH	0	0
Maximum payment per HH	39,200,000	2,700,000
Average area of protected forest under PES contracts per HH	37.2 ha	14.5 ha
Minimum area under PES per HH	2 ha	.10 ha
Maximum area under PES per HH	74 ha	43 ha

(Source: Field survey, 2011)

Table 7. Changes in forest practices made after receiving PES payments

	Lam Dong	Son La
No changes in personal forest practices	23%	31%
Stopped land conversion	0%	3%
Stopped logging	15%	21%
Stopped fuelwood collecting	2%	31%
Replanting/regeneration	3%	10%
Preventing others from using forest	66%	41%
Preventing forest fires by others	73%	62%
Other	18%	7%

(Source: Field survey, 2011)