

Do intermediary institutions promote inclusiveness in PES programs? The case of Costa Rica

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Abstract

Despite dual environmental and social policy objectives, it has been observed that a focus on efficiency in programs of payments for environmental services (PES) tends to exclude small land-owners due to relatively high and largely scale-independent transaction costs. This study seeks to contribute knowledge on the role of local intermediaries in PES programs and how they may bring the reality of PES closer to the dual objective. This is done through an investigation of three non-profit organizations that act as intermediaries in the Costa Rican PES program; an NGO, a producer cooperative, and a county agricultural centre. Based on interviews, household surveys, and reviews of PES contracts, the study examines differences in the inclusion of small-holders in the PES program between the three organizations and focus on understanding the underlying reasons for any observed differences. The results reveal that the cooperative and the agricultural centre are more inclusive of small-holders than the NGO. The ability to include small-holders is influenced by the organizations' level of running operational costs, but also by their pre-existing portfolio of activities and relationships with landowners, as well as the land development history of the local area. Finally, the role of intermediaries is highly influenced by the framing of their working conditions by the PES buyer. This study thus shows the importance of considering the factors that condition the role of intermediaries in securing inclusive and low-cost provision of ES.

Keywords: Payments for environmental services; intermediaries; inclusiveness; Costa Rica

1. Introduction

Payments for Environmental Services (PES) are supported and implemented in the developing world by multilateral development agencies, bilateral donor agencies, and environmental NGOs (e.g. Engel et al., 2008). Though recent studies have pointed to room for improvements, e.g. in contract design, PES is being promoted as an efficient approach to conservation that may also alleviate poverty through payments that compensate the (often poor) providers of environmental services (ES) for conserving the environment that renders the services of interest to buyers (Bulte et al., 2008; Mahanty et al., 2011). PES has so far most often been used to incentivize the provision of ES from on-farm areas through direct payments to private farmers (e.g. Pattanayak et al., 2010; Pagiola et al., 2005, Zbinden and Lee, 2005).

The promise of PES to deliver both environmental protection and poverty alleviation has implied that donors and policy makers have seen a large potential for PES in developing countries, where severe poverty often co-exists with biological diversity (Fisher and Christopher, 2007). In practice, however, the promise of PES to deliver poverty alleviation hinges upon the ability of ES buyers to make poor sellers eligible to participate and of poor sellers being able and willing to participate (Pagiola et al., 2005). This has proven a larger challenge than expected. In the context of on-farm service provision, the poorest service providers (farmers) are often constrained by having small land holdings. Small land holdings are associated with high opportunity costs for PES, as the owners use all their land for productive purposes. Further, as many of the transactions involved in setting up a PES contract are independent of the area, whereas the payment is typically positively associated with the area, small landowners will be less inclined to see PES as an attractive opportunity. Similarly, buyers of PES will perceive the relative high transaction costs incurred from including small landowners as a disincentive to target these. In relation to this, PES schemes often have requirements that bias against small-holders, such as minimum areas and formal land titles (Vinqvist, 2012). This bias is often a result of poor and small landowners not being able to lobby for their case during the development of PES schemes (Grieg-Gran et al., 2005). *De facto* exclusion from decision-making processes is just one aspect of the lack of access to information channels of poor people and small landowners in rural areas. The lack of access to information also adversely influences their participation in PES schemes, as the awareness of the program and contact with PES institutions increase participation rates (Landell-Mills and Porras, 2002).

Thus, it seems the participation of small landowners is hindered as a consequence of difficulties of buyers to reach poor potential sellers, of poor sellers being unable to meet the participation requirements of buyers (eligibility), and of disincentives on behalf of poor sellers to participate. Outreach to poor potential sellers could be facilitated through program awareness raising by intermediaries, such as local institutions that have knowledge of local conditions and experience with similar activities, for instance cooperatives, local NGOs, local government offices and customary authorities. Eligibility barriers can likewise be overcome through active choice, e.g. waiving of demands for minimum areas, substituting requirements for formal land titles with that of certified possessions, and supplementing pure conservation with agroforestry contracts that allow for continued production on the contracted land area. These solutions are all in place in the Costa Rican program PSA (*Pagos de Servicios Ambientales*, PES in Spanish), deemed one of the most advanced national PES programs in the developing world. With these remedies in place, it seems small landowners should be able to participate in PES programs. Several studies, however, report a bias towards large landowners and a low participation of small landowners (Pagiola et al., 2005; Zbinden and Lee, 2005; Sanchez-Azofeifa et al., 2007; Porras, 2010). In Costa Rica, several types of intermediaries are facilitating a variety of PES contracts to different landowners, such as companies and private farmers and, as we shall demonstrate, with quite different outcomes in terms of who they target. This indicates that, in the context of a national PES program, the choice of intermediary, and the conditions under which these operate, are important to the poverty alleviation potential of PES.

This study seeks to improve the understanding of the role of intermediaries in PES schemes and shed light on the factors and circumstances that condition intermediaries' ability and willingness to target small landowners. This is done through an investigation of three second level intermediary organizations in the Costa Rican PSA program. The investigation rests on mainly three legs, a review of all PES contracts in the period 2005 to 2009 with emphasis on contracts signed with individual, private landowners, an assessment of each organization and its role in the local area, and a survey of PES participating and non-participating landowners in the areas covered by the three organizations.

We begin with an overview of the literature on the role of intermediaries in PES schemes and the generic conditioning factors for their facilitation of PES participation among poor ES sellers and small landowners. This is followed by a short description of the development and current arrangement of the Costa Rican PSA program including the use of local institutions as intermediaries, and an introduction to the three local organizations taking part in the investigation. Subsequently, we describe the data collection and field work carried out during a period of two years. This is followed by a presentation and discussion of the results of the three legged investigation. We conclude with further discussion of the key findings drawing in experiences from other studies, and finally outline the policy implications of the study for the development of PES schemes that emphasize inclusiveness.

2. Background

Intermediaries have been given some attention in the literature on PES, usually as part of a wider discussion of the role of organizations and institutions in development and delivery of PES. Their varied functions and roles include setting up the initial ES market and transferring payments from users to providers of ES (Vatn, 2010; Asquith et al., 2008), mediating and arbitrating among different parties involved in PES schemes (Thuy et al., 2010), building trust between different stakeholders (Perrot-Maître, 2006), and reducing transaction costs, e.g. through automaticity of payments (Kemkes et al., 2010). Ensuring inclusiveness in PES schemes, in the sense of including poor ES sellers, is another role of intermediaries that has been given some attention (Cobrero and Brown, 2008; Thuy et al., 2010, Bracer et al., 2007). A number of generic conditioning factors for the role of intermediaries in this regard have been proposed, and these will be shortly described and discussed here.

In general, the literature points to the trade-off between efficiency and fulfilment of so-called secondary objectives of PES, such as poverty alleviation and, as a prerequisite for that, inclusion of the rural poor (Mayrand and Paquin, 2004; Corbera et al., 2007). Intermediaries are seen as a means to modify and alleviate this trade-off, and thereby enable fulfilment of environmental objectives at low cost, without compromising the social objectives of PES. The factors believed to condition the ability of intermediaries to take on this role are related to the degree to which sellers pursue information rents and to the drivers of transaction costs of PES.

Information rents arise as a consequence of asymmetrical information between buyers and sellers, in that sellers may signal high opportunity costs in order to negotiate a higher price for delivering the ES. Information rents can be brought down by application of auction systems or, alternatively, by acquiring more information about sellers that can inform the elaboration and application of discreet payment schemes (i.e. not flat rate payments) (Ferraro, 2008). Both of these solutions, however, tend to drive up transaction costs (Vatn, 2010).

Transaction costs are the costs “used to define, establish, maintain and transfer property rights” (McCann et al., 2005, p. 530). These may be affected by the specificity of the ES and the willingness of buyers to accept uncertainties (Rørstad et al., 2007). First, the specificity of the ES will affect transaction costs through costs for verification of its delivery (verification of additionality and conditionality) upon payment. Specificity refers to the properties of the ES in the sense of the costs of its empirical verification, i.e. if a buyer pays for a proxy for the ES such as ‘ha of forested land’, costs for verification will, in all likelihood, be lower than if it is ‘ha of forested land with at least five individuals of tree species X’. Second, and related, the willingness of the intermediary, and ultimately the buyer, to accept uncertainties in relation to the verification of the delivery of the ES will keep transaction costs down by allowing intermediaries to choose a proxy for the ES that can be verified at low costs, and lower the intensity of verification of delivery, e.g. only verify in a randomly drawn sample of the population of sellers. Third, and finally, frequency of transaction is expected to lower transaction costs, i.e. allowing the intermediary to standardize certain elements of the procedures and realize economies of scale in the handling of transactions. In case these drivers are associated with the inclusion of poor sellers, intermediaries will have an incentive to exclude them under conditions of a buyer’s market where the intermediary can choose the easiest sellers to serve, or will not be able to serve them under conditions where buyers will not accept the transaction costs they would incur.

Apart from transaction costs and economic incentives inherent to the PES scheme and types of sellers, intermediaries may also be more or less disposed to serve poor sellers on the basis of factors specific to their organization. First, an intermediary organization may be able to piggy-back PES on already existing services offered to landowners, thereby reducing transaction costs. As a consequence, intermediaries will be inclined to offer PES contracts to landowners that are already targeted in their existing provision of services. Accordingly, we would expect the pattern of PES targeting to differ between a tree-growers’ association and a coffee cooperative. Further, intermediaries’ PES targeting may differ in response to differences in their values and interests. Organizations that operate on the basis of a value of reducing rural poverty may be more inclined, and have developed an organizational structure more conducive, to inclusiveness of poor and small-holder farmers, which may result in a more inclusive PES targeting when they piggy-back PES on their existing practices. On the contrary, organizations that have been established to serve the private economic interests of their membership, e.g. a cooperative, may be less inclined to include ES sellers that would incur high transaction costs. Finally, organizations with a focus on environmental protection may promote higher standards in relation to verification of the additionality of ES provision,

thereby increasing transaction costs and, potentially, excluding smaller ES providers on grounds of costs.

In sum, the inclusiveness of intermediaries is likely to be affected by a number of factors that shape the transaction costs of PES establishment and management and the incentives facing intermediaries. These relate to the buyers' willingness to accept uncertainty in ES delivery and to pay sellers information rents. Further, the specific pattern of inclusiveness will be affected by idiosyncratic factors related to intermediaries that affect their ability to lower transaction costs by piggy-backing PES delivery on to existing practices, and by the values and interests inherent to the intermediary organizations that affect their willingness to incur costs in order to be inclusive.

3. The PSA program and intermediaries

Costa Rica experienced high deforestation rates during the second half of the 20th century up until the early 2000's, when the national forest cover began to increase (Global Forest Resource Assessment, FAO, 2010). This change is often attributed to the PSA program; called one of the conservation success stories of the last decade (Daniels et al., 2010; Pagiola, 2008). Following two decades of tax credits for reforestation activities, the PSA program started in 1997 with a formal recognition of four environmental services: mitigation of greenhouse gases, protection of watersheds and hydrological services, biodiversity conservation, and provision of natural scenic beauty (Forest Law no. 7575). Since then, landowners have been paid to provide these services through a set of payment instruments, which currently consist of five main modalities as described in Table 1. Each year, funds available for each modality and criteria for prioritization of applicants are published in an executive decree.

Table 1. The five main modalities and the payment levels in the Costa Rican PSA program.

Modality	Payments in 2011	Notes
Reforestation	980 USD/ha over 5 years	Remnant of earlier forestry subsidies. The payment increases to 1470 USD if certain native species are used exclusively.
Conservation	320 – 400 USD/ha over 5 years	The largest modality. Includes protection of water resources and protection in conservation gaps, both of which receive higher payments.
Regeneration	205 – 320 USD/ha over 5 years	Includes regeneration in former pastures, in areas designated forest production, and in CDM areas. The latter receives the high payment.
Agroforestry	1.3 USD/tree, over 3 years	Also applied for small reforestation projects <2 ha. A sub-modality treats coffee agroforests exclusively. The payment increase to 1.95 USD if certain native species are used exclusively.
Forest management	250 USD/ha over 5 years	Among the original modalities, but was abandoned in 2002 after pressure from environmental groups. Re-opened in 2010.

The PSA program is managed by FONAFIFO¹, a semiautonomous agency attached to the Ministry of Environment, Energy and Telecommunications. FONAFIFO is a primary intermediary and redistributes funds from various ES buyers as payments to participating landowners, the ES sellers, subject to a contract in which rights to the ES are handed over to FONAFIFO. Funding sources are international, e.g. a World Bank loan and GEF grants, as well as national, including a 3.5% fuel tax and agreements with hydropower companies and a brewery concerning payments for watershed protection (FONAFIFO, 2010). Certified forest engineers, either independent or employed by a local institution approved by FONAFIFO, facilitates the contractual arrangement between landowners and FONAFIFO. This setup aims to reduce FONAFIFO's program costs, which until 2008 was held below 10% of total program funds according to law (Decree no. 33205). Today, FONAFIFO negotiates its costs with each funding institution and may allocate as much as 21 % of the funds from the fuel tax to cover transaction costs (Decree no. 34761). Forest engineers and intermediary institutions may charge up to 18% of the PES payment for their services, but often demand less, especially for the forest conservation modality that has a low-cost application procedure. Thus, total transaction costs may reach as much as 35% in the case of fuel tax funds.

Every year, FONAFIFO allocates modality quotas to each intermediary institution based on previous performance and the total resources available (ONF, pers. com., 2010). The quotas ensure the organizations a limited number of ha and trees that can be contracted on a non-competitive basis. Applications from the organizations for additional areas or trees are subject to competition with independent forest engineers and possibly other intermediary organizations. The demand for PES contracts by far exceeds the available program resources (Pagiola et al., 2005) and contracts are generally signed on a 'first come, first served'-basis², though contingent on a number of prioritization criteria. The prioritization is predominantly based on forest conservation needs, e.g. location within a biological corridor or water catchment area. In order to improve the socio-economic status of poorly developed rural areas, districts with a social development index (SDI³) in the lowest 40 % is given priority in the conservation modality. However, the prioritization of SDI areas is only minor, e.g. landowners with previous contracts have higher prioritization *ceteris paribus* (Decree no. 36516), possibly due to the lower transaction costs of renewing an expired contract than signing a contract with a new landowner.

3.1. Secondary intermediaries

In 2009, there were eighteen secondary intermediaries under the PSA program, consisting mainly of cooperatives, municipal agricultural centers, and environmental non-governmental organizations such as forestry organizations. According to FONAFIFO's database, more than

¹ National Forestry Financing Fund

² Previously, long lines of people hired by forest engineers and intermediary organizations would assemble at FONAFIFOs offices before and during the application period, as any person was allowed to deliver a maximum of five applications and contracts were given to those first in line. Amendments to the PSA regulations in 2010 changed this procedure. Now, any number of applications can be handed in, but only after agreement with FONAFIFO and still on a first come, first served basis.

³ The Social Development Index (0-100%) ranks all districts based on indicators for educational, health and social standards, with 100% given to the highest scoring district.

every second PES contract⁴ signed between 2005 and 2009 was facilitated by a secondary intermediary. In some cantons it was up to 90% of all contracts. The remaining contracts were facilitated by independent forest engineers.

The intermediary organizations facilitate all phases of the application and implementation process, including sorting out legal documents such as land titles. As such, they assist landowners in overcoming the bureaucracy of the application procedures, thereby removing a barrier for participation among people with limited capacity to undertake the legal paperwork. Their services include writing and filing the pre-application and subsequently the main application, conducting an often elaborate field study on the property of the applicant, attending any notifications from FONAFIFO related to the application or contract, making sure the contract obligations are met, annually monitoring the progress on the farm, and facilitating payments from FONAFIFO to landowners. The intermediaries' costs related to these activities are covered by a fee of maximum 18% of the PES payment, i.e. their fee is directly related to the size of the PES project. The larger organizations have forest engineers among their staff, while smaller organizations hire a forest engineer for each project, often paying a fixed percentage of the PSA payment

3.2 The investigated secondary intermediaries

The three intermediaries investigated in this study are an environmental NGO, a large coffee and sugar cane cooperative, and a county agricultural centre. As such, they represent three of the most common types of intermediaries. All of them are important facilitators in terms of number of contracts and share of total contracts in their areas. The three institutions are described in the following section.

The environmental NGO

The NGO was established in 1989 as a fidei commission, or trust fund, based on patrimonial funds from the Costa Rican government and seed funding from USAID. The original objective was to arrest deforestation in protected areas, but the NGO soon took on a broader scope of combining forest conservation with local development and production of timber and environmental services. It participated actively in the development of the 1996 Forestry Law as well as the PSA program. The organization has a large capacity of forest management planning, and today has more than 550 clients with an average farm size of 70 ha. Beside the forestry related services, which include PES activities and timber futures market, the NGO receives its main funding from the interests of the patrimonial trust fund. The NGO is one of the largest intermediaries in the PSA program and continues to play an important role in the evolution of the program, not least through a membership of the board of FONAFIFO held by the NGO's president.

The NGO's PES office is located in the Sarapiquí canton, one of the largest in Costa Rica covering more than 2,100 km² (Fig. 1). Though the area of influence goes beyond the canton, the majority of the PES contracts facilitated by the NGO are given to landowners in Sarapiquí. The main land uses are pasture, forest plantations and a variety of agricultural

⁴ 2307 of 4400 unique contracts, excluding contracts with indigenous communities

systems, e.g. pineapple, banana and cardamom production. Besides forestry and agriculture, the canton also generates substantial income from hydropower production as well as from tourists who are attracted by a number of nature reserves and a national park. Except a minor area, the entire canton is included in PES priority areas, mainly within the biological corridor priority, but a large share of the canton is covered by several priority types (see inserted map in Fig. 1).

The cooperative

The cooperative was established in 1962 by 391 coffee farmers. Today, the cooperative is the largest in Costa Rica with more than 10,000 coffee and sugar cane producing members. The cooperative is the main employer in the canton capital San Isidro, and its portfolio of activities includes processing, marketing and export of sugar cane and coffee, a savings and credit institution with more than 15,000 clients, an agro-supply store, two super markets, and a gas station. The cooperative provides agricultural extension services and medical services to member families, as well as a variety of minor activities aimed at local development and social welfare. It is the largest PES intermediary in the south of Costa Rica and facilitates contracts to members as well as non-members. Recent activities within the PSA program include a Clean Development Mechanism project implemented by the cooperative in collaboration with FONAFIFO and funded primarily by the World Bank Bio-Carbon Fund.

The cooperative is located in the Perez Zeledon canton, where most of the PES contracts are also facilitated. The canton covers an area of approximately 1,900 km² with forest reserves and national parks bordering and intersecting the northern and western parts of the canton. The central and southern parts of the canton mainly consist of agriculture, cattle farming, coffee and sugar, as well as urban areas. San Isidro is the most populated city of southern Costa Rica and a center for agricultural produce and trade. Contrary to most other cantons, only roughly half of Perez Zeledon is included in PES priority areas and much of this is SDI areas, which are prioritized much less than other priority types.

The county agricultural centre

The majority of the cantons in Costa Rica have a Centro Agrícola Cantonal (CAC) or county agricultural center. The CACs were established by a 1969 law (no. 4521) that provided the legal platform for rural populations to form non-governmental organizations. The agricultural centers consist of a board of locally elected, non-governmental members and a general assembly formed by local agriculturalists. The investigated CAC has around 800 associates who primarily use the center to buy a license to sell their produce at the local market. In addition to the sale of market licenses, the CAC's income stems from the facilitation of PES contracts, the organization of an annual agricultural fair, and sale of organic fertilizers and seedlings. The CAC has previously been involved in local reforestation projects in collaboration with GEF and bilateral donors.

The agricultural center is located in Dota, but CAC also facilitates PES contracts to landowners in the neighboring canton of Terrazu. Both cantons are located in the Talamanca mountain range, see Fig. 1. Many of the center's associates are coffee farmers, who are also

members of a local coffee cooperative. Along with pastoralists, the coffee farmers dominate the agricultural areas. All of Dota is a PES priority area, predominantly within the protected areas and biological corridor priority types, while large parts of Terrazu are inside water catchment and SDI priority areas.

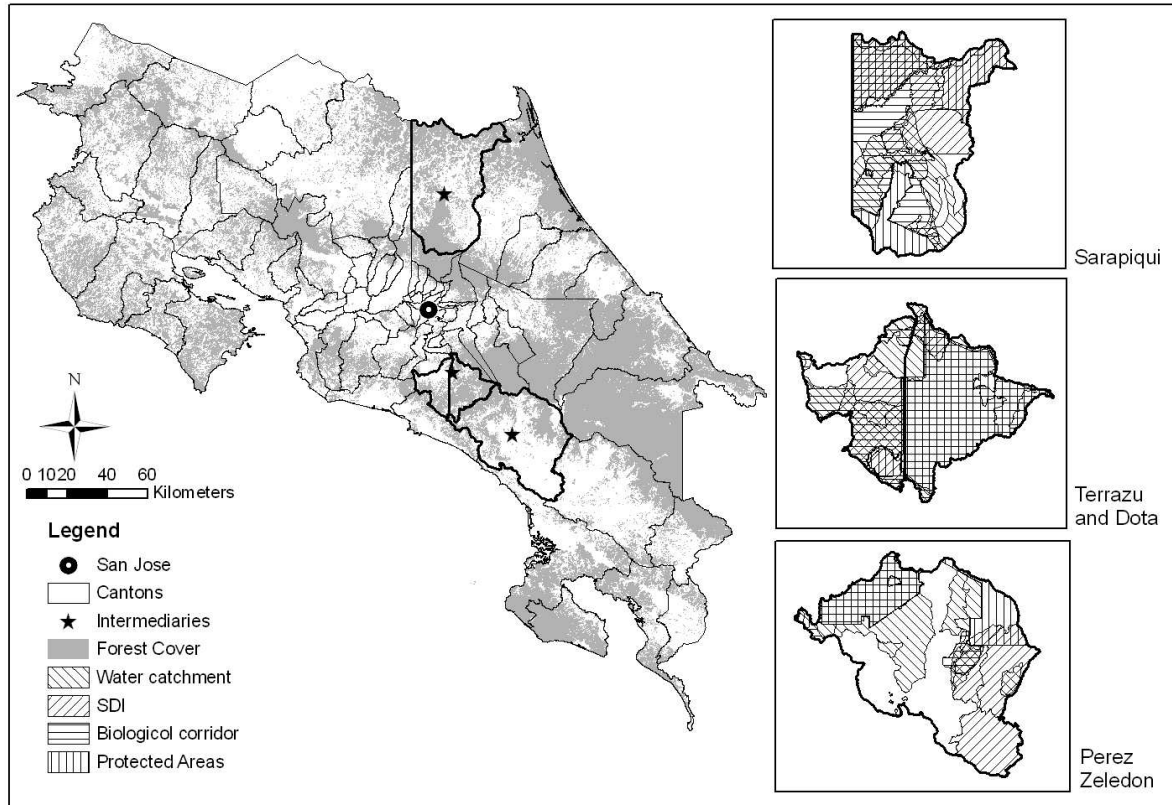


Figure 1 Map of Costa Rica with forest areas marked with grey. The small inserted maps show the PES forest conservation priority areas in 2009 in the primary cantons of the three investigated intermediaries. Only four of seven location specific priority types are found in the four cantons. The small maps are not in the same scale.

4. Data collection

A database of all PES contracts in the period 2005 to 2009, provided by FONAFIFO's central office, was reviewed in order to examine the contracts at national level as well as those facilitated by each of the intermediary organizations. The database was cleaned for replicates of identical entries. Furthermore, contracts given to indigenous communities, often involving as much as 1,000 ha of forest, were excluded as they affect average contract sizes disproportionately and none of the three organizations have facilitated these contracts. The contracts were reviewed for type of modality, size of projects, amount of payments, and size of the farms involved. Approximately half of the contracts are given to private firms and organizations. In order to examine if the organizations differ in their propensity to sign contracts with either individual landowners or firms and organizations, possibly an outcome of a targeting approach, a sub-database consisting of only contracts with private, individual landowners was also reviewed. Contracts appeared in several entries if the PES area intersected more than one cadastre of the farm. In these cases, the farm areas were summed

and the contract area and payment only accounted for once. The calculation of farm areas, not to be confused with PES areas, was done by aggregating the areas of all cadastres belonging to one farm. However, the farm may consist of more cadastres than those under PES contracts, implying an underestimation of farm size. This bias is, in all likelihood, higher for company owned farms than for privately owned farms, as companies often own multiple plots in various districts.

A household survey was carried out in late 2010 and early 2011 with PES participants and non-participants in the cantons of the three organizations. The PES participants were randomly drawn from lists provided by the organizations, of private, individual contract holders. A team of five trained enumerators carried out the structured interviews at the place of residence of the landowners. The survey included household characteristics, land holdings and uses, assets and income generating activities, and PES details. Furthermore, perceptions about the intermediary organization and plans for future PES projects were also elicited. In order to compare PES participants with non-participants, the neighbors of the PES farmers were included in the survey. For PES participants that lived in urban centers, rather than on their farms, an urban-dwelling neighbor with rural landholdings was interviewed. In the cases where PES participants resided in larger cities in other cantons, e.g. in the capital of San Jose, it proved difficult to identify a neighbor, which resulted in a slightly lower number of observations in the control group for this area. Besides a single case in Dota, this was exclusively a problem encountered in Sarapiquí. The number of interviewed PES participants and non-participants was 63 and 47 in Dota, 44 and 31 in Perez Zeledon, and 43 and 27 in Sarapiquí.

Information regarding the three organizations was gathered during multiple visits to each of the three areas in the period 2010 – 2011. Semi-structured interviews were carried out with operational and administrative staff members, the chief PES administrator, and, in the case of the CAC, also the chairman of the board. Detailed descriptions of the working processes and labor inputs by different staff members throughout the contract facilitation and monitoring of contract compliance were obtained in the interviews. The PES activities generally follow the PSA regulations, but there are some differences between the three organizations. The staff labor inputs have been aggregated in five phases common for all organizations, for administrative staff and the forest engineer. The latter conducts an on-farm technical study, the monitoring activities as well as oversees the implementation. Annual budgets from the PES offices were obtained from the cooperative and NGO, while the CAC only kept a rough account of posterior expenditures and income. The information in the annual budgets and account is mainly used to estimate salaries at different staff levels in each organization.

5. Results and discussion

5.1 Modalities and contract sizes – who gets what where

The inclusiveness of the three types of intermediaries is investigated through a review of PES contracts facilitated by them. Fig. 2 shows the percentage share of contracts and payment amounts for the four main modalities for each organization and Costa Rica as a whole. The NGO stands out by having a higher share of forest conservation contracts than the country

average, whereas contracts for SAF, reforestation, and regeneration represent a minor share. In contrast to this, SAF contracts comprise around half of the total contracts facilitated by the agricultural center (CAC) and the cooperative (Coop). Conservation contracts make up the other half in the case of the CAC, while the cooperative has sizeable shares of reforestation contracts and, as the only intermediary, regeneration contracts (5 %). These differences may partly be explained by the location of PES priority areas (cf. Fig. 1). The high priority areas, e.g. the protected areas and biological corridors, are covering much larger parts of the areas around the NGO and the CAC compared with the canton in which the cooperative is located. The share of PES funds within different modalities follows the same pattern as the contracts. However, as SAF projects are generally small-scale, generating smaller payments, the share of total PES payments in this modality is low, even for the CAC and the cooperative. At national level, the vast majority of PES funds are allocated to forest conservation contracts, followed by reforestation.

Table 2 provides an overview of the contracts and total payments facilitated by the three organizations. The CAC, though being one of the most active agricultural centers in the PSA program, has relatively few contracts. The NGO is by far the largest intermediary in terms of total payments, although it handles fewer contracts than the cooperative. This is a result of the large share of conservation projects and a larger average project area. More than half of the contracts facilitated by the NGO are given to companies and associations, while the agricultural center and the cooperative mainly provide contracts to private, individual landowners. At national level, just over 40% of the contracts are given to companies and associations.

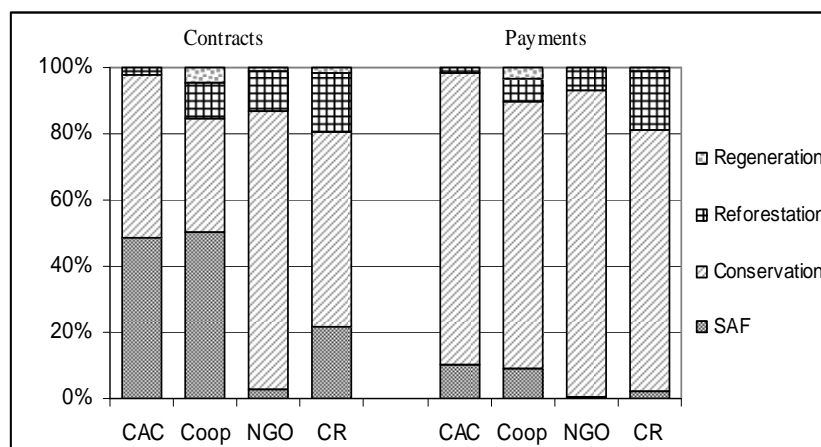


Figure 2. Percentage share of contracts and payments in different modalities for the three organizations and Costa Rica (CR). All contract holders.

Table 2. Contracts and payments facilitated by each intermediary organization between 2005 and 2009

	Total Contracts	non-individual	Total payments USD
CAC	84	14	\$809,462
COOP	499	89	\$3,500,479
NGO	338	181	\$8,203,411
CR	4,400	1,888	\$87,066,755

The share of land size classes in the main modality, forest conservation, gives a better insight into the size of land owned by PES participants in each organization. Fig. 3 shows the percentage share of different farm size classes, based on the total size of cadastres being fully or partly included in a PES contract as reported in the FONAFIFO database. The NGO is very similar to the country average regarding the share of contracts belonging to landowners in different size classes, as well as the sizes of contracts (based on the corresponding share of total payments). The small landowners (less than 30 ha) comprise around 18% for both, while large landowners (more than 100 ha) take up more than 40% of the contracts. Around one third of the contracts facilitated by the agricultural center and the cooperative are made with small landowners, while less than 20% are made with large landowners. The share of total forest conservation payments targeting small landowners is 8% for the cooperative that have the highest share of payments to this group, while the share at national level is below 3%. Areas of less than 50 ha are given a small priority in the conservation modality, but there is also a minimum requirement of 2 ha of continuous forest cover, which excludes many of the smallest landowners. The average contracted forest conservation area is 82 ha.

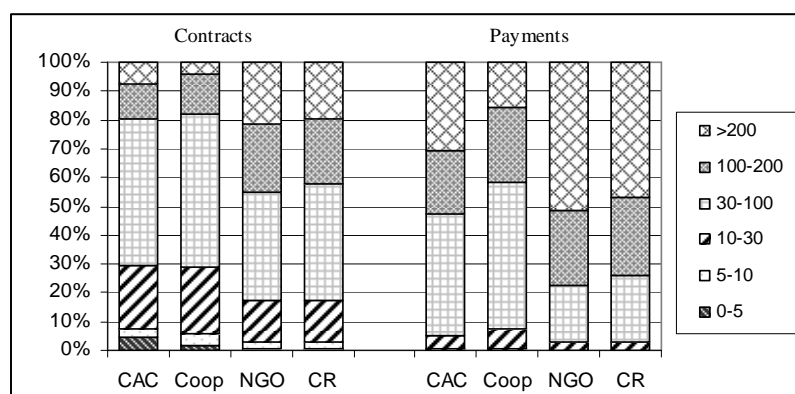


Figure 3. Land size class distribution for conservation contracts and payments including all contract holders. CAC = County Agricultural Center, Coop = Cooperative, CR = Costa Rica

Contrary to the conservation contracts, SAF contracts are mainly targeted small landowners, with more than 65% of all contracts held by landowners with 10 ha or less (Fig. 4). Many SAF contracts involve live fences on pastoral lands or shaded coffee, which are two of the main land uses in the cantons of the CAC and the cooperative, often carried out by smallholders. This explains the large share of SAF contracts given to small landowners in these areas. Furthermore, more than half of the SAF payments facilitated by the cooperative are distributed to landowners in the smallest farm size class (< 5 ha). The majority of the cooperative's coffee members are also found in this size class. The NGO, on the other hand, is located in a canton dominated by forestry, pasture and large agricultural production systems such as pineapple, which are less obvious candidates for SAF projects. However, as noted above the SAF modality includes trees planted in live fences and windbreaks, and as such does not specifically target the intercropping systems practiced by smallholders.

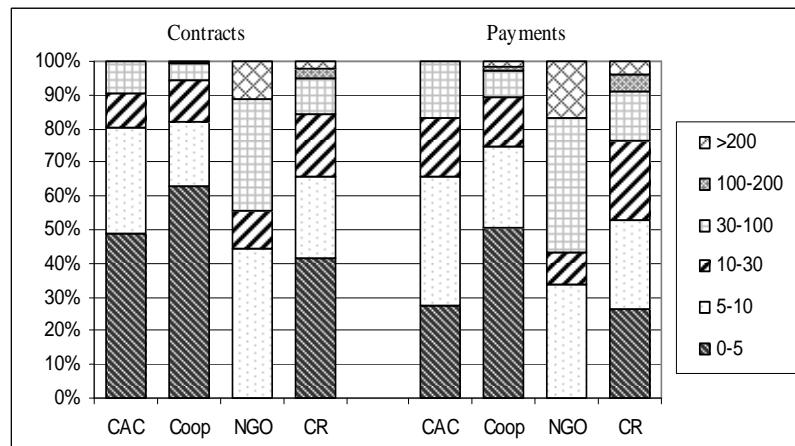


Figure 4 Land size class distribution for SAF contracts and payments including private individuals, companies and associations.

5.2 Household characteristics

Data from the household surveys allows us to approach a better understanding of whether the observed differences in landholdings of PES participants in the three areas are caused by differences in landholding patterns between the areas and/or differences in the targeting by the intermediaries. Table 3 gives an overview of farm sizes and land uses as well as some household characteristics of PES participants and their non-participating neighbors in the three areas. The comparison indicates that PES participants are not drawn randomly from the farmers in the areas, i.e. targeting or self-selection into PES can be detected. PES participants generally have larger farms; statistically significant in Sarapiquí⁵, Perez Zeledon, and overall ($p < 0.05$). The problem of finding neighbors to PES participants with land in Sarapiquí but living in other cantons may have exacerbated the difference, but even locally residing participants had land sizes several times larger than non-participant on average. In all three areas, PES participants also had larger share of primary forest and more land per working family member. The latter is important, as the land-labor ratio will be decisive for opportunity costs for setting aside land for conservation. Small households with more land will, *ceteris paribus*, have lower opportunity costs in the context of a less-than-perfect labor market. As expected, more PES participants have formal land titles; the remaining landowners either have certified land possession, the minimum requirement for PES participation, or no titles. Households with income from their land, including forests, are expected to be less inclined to participate in PES due to higher opportunity costs. Similarly, we expect households with income from non-farm activities, such as formal employment and own business, to be more likely to participate as part of their labor is tied up elsewhere and they may be more inclined to buy, rather than produce, food. The results, however, do not reveal this pattern, and in the case of households with only farm-income, the opposite is found. Arriagada et al. (2009) report similar results and argue that non-farm income is driving the decision not to participate as the time needed to apply and maintain PES contract

⁵ The large landholdings among PES participant in Sarapiquí, especially compared with non-participants in the same area, are influenced by the fact that many landowners did not live on their farm or in the canton, while most of the surveyed neighbors did. Landowners living in e.g. San Jose, tend to be wealthier and have larger landholdings. However, among the landowners who live in the area, the difference is still significant.

obligations reduces the time for non-farm work. In our case, this pattern could be explained by the intermediaries' targeting or attraction of active farmers.

Table 3. Farm size, land uses and selected household characteristics of PES participants and their non-participating neighbors from each of the three areas. The number of interviewed landowners is shown in brackets.

Variable	CAC – Dota		Cooperative – Perez Zeledon		NGO – Sarapiqui	
	PES (63)	Non-PES (47)	PES (44)	Non-PES (31)	PES (43 ^b)	Non-PES (27)
Land size, ha	58.9 (92.9)	40.5 (78.4)	47.1 (58.0)	20.9 (26.2)	153.7 (180)	22.3 (26.4)
% prim. Forest	41.0 (39.6)	16.7 (32.6)	37.2 (40.8)	29.9 (40.3)	64.7 (29.4)	34.4 (35.1)
% sec. forest ^a	3.48 (13.1)	40.5 (41.0)	23.0 (35.9)	36.9 (31.0)	9.92 (20.2)	18.5 (26.7)
% Pasture	4.36 (9.27)	17.5 (26.7)	8.44 (21.0)	11.7 (15.1)	18.0 (22.6)	22.1 (29.7)
% AFS & agri.	49.0 (45.1)	18.7 (32.3)	28.2 (34.4)	18.2 (25.4)	2.42 (9.13)	18.8 (33.5)
% Others	2.16 (7.83)	4.50 (19.5)	0.74 (4.90)	3.23 (18.0)	1.73 (6.64)	6.26 (17.7)
Ha/person	18.6 (30.7)	12.2 (25.0)	21.7 (38.0)	5.12 (5.87)	73.7 (60.7)	6.89 (11.7)
Land titles, d	0.90 (0.30)	0.68 (0.47)	1.00 (0.00)	0.61 (0.50)	0.98 (0.15)	0.81 (0.40)
Income, d:						
Far	0.83 (0.38)	0.49 (0.51)	0.70 (0.46)	0.74 (0.44)	0.51 (0.51)	0.63 (0.49)
Only farm	0.60 (0.49)	0.06 (0.25)	0.41 (0.50)	0.13 (0.34)	0.23 (0.43)	0.04 (0.19)
Non-farm	0.40 (0.49)	0.94 (0.25)	0.59 (0.50)	0.87 (0.34)	0.77 (0.43)	0.96 (0.19)
Only non-farm	0.17 (0.38)	0.51 (0.51)	0.29 (0.46)	0.26 (0.44)	0.49 (0.51)	0.37 (0.49)

^aSecondary forests include areas under natural regeneration, such as former pastures. Others include permanent scrub lands and temporary fallow land.

^bThree outliers, PES landowners with more than 500 ha, have been excluded from the Sarapiqui sample.

5.3 Targeting and eligibility

Concerning differences in the targeting between the three organizations, the results show that PES participants in the NGO area generally have the largest landholdings and the largest percentage of areas under primary forest among the three. Further, they also have far less area under agriculture and agroforestry than participants in the two other areas, whereas the share of agriculture and agroforestry among non-participants is similar for the three areas. Recalling that the NGO operates in an area dominated by forestry, and that both the CAC and the cooperative operate in coffee growing areas, these differences are, no doubt, related to the differences in land uses between the areas. Yet, the focus of the three organizations, as conditioned by PES being piggy-backed on or embedded in existing activities carried out by the organizations, is also clearly reflected here. The NGO is predisposed to focus on the conservation modality by its historical focus on forest conservation activities. Further, reforestation contracts can be embedded in the forest management plans that the NGO prepares for local landowners. Similarly, the existing agriculturally focused activities of the CAC and the cooperative, and their original aim to organize small-scale farmers, impel them to target smaller farms with a different land-use composition.

Accordingly, the likelihood of a landowner participating in the PES program is shaped by how the properties of his land use combines with the possibilities facing the intermediary organization (and independent forest engineers) operating in his area. This again is shaped by FONAFIFO's framing of the PES program and, thus, the incentives facing the intermediary organizations.

First, the landowner must have a land use/cover composition that makes him eligible to sell ES according to FONAFIFO's zonation of PES priority areas. A landowner must have forested areas of minimum 2 ha located within the priority areas for conservation in order to apply for conservation payments; the biggest modality capturing more than three quarters of total funding in 2005-2009. A landowner with no forest can apply for SAF, reforestation and regeneration contracts contingent on a number of criteria. The main requirement for SAF is the location of the land in an area suitable for agricultural purposes according to a national land use classification scheme. The accepted classes (I through VI) cover most of the non-forested areas. In the case of reforestation and forest regeneration, the main criteria is a location near water resources (Forest Law 7575, Art. 33) and in areas with high productive potential or previously used for pasture, preferably within Kyoto areas that are entitled to additional carbon credit payments⁶.

Second, the presence of an intermediary organization facilitating PES activities is important, as landowners that are members of an organization have a larger chance of being offered a PES contract. There are at least three reasons for this. First, the organizations access PES quotas from FONAFIFO that they then offer to the landowners. Second, applications for SAF contracts facilitated by organizations have priority over contracts from independent forest engineers (Decree no. 36516). Third, local organizations are the principal promoters of the PSA program. All our three case intermediaries have, after a brief period following the initiation of the PES program, limited their efforts of raising program awareness to landowners within their existing networks. This implies that membership or being part of a network involving the organization, which is determined by congruence between a landowner's land uses and farming activities and the type of intermediary organization found in a given area, is decisive for de facto eligibility of landowners.

5.4 Contract facilitation performance

The observed tendency of intermediaries to embed PES in existing activities is strengthened by FONAFIFO's policy of setting the intermediaries' fee to a maximum of 18% of the total PES payments, as this gives intermediaries an incentive to target larger contracts and/or reduce the costs needed to set up a contract. The former can be done by targeting larger farmers or focusing on the modalities that favor larger areas, e.g. conservation. The latter can be done by targeting existing farmers and embedding PES in existing activities, and also by seeking to reduce costs for setting up a contract through ensuring efficient work processes. In the following we will take a look at how the three organizations perform in relation to the efficiency of their PES work by looking at salary levels and time consumption in different work components when setting up a conservation contract.

Table 4 shows the average number of minutes used by either the forest engineer (FE) or administrative staff including managers in different stages of a conservation contract. The FE's work includes both field work and desk work. Most of the desk work can be done by either the FE or the administrative personnel. While it has been possible to separate the time consumption by the FE and others, it has not been possible to separate the time used by either

⁶ For complete information on criteria see Executive Decree no. 36516-MINAET and references therein.

the manager or secretary, though the latter carries out most of the work. The contract facilitation has been divided into five components. The preliminary phase includes possible visits to the farm as well as meetings before the actual pre-application process begins. The pre-application component consists of document review, possibly a farm survey, and filing a pre-application form. This is followed by the main application, including an on-farm technical study. The fourth component is the elaboration of contracts and implementation of the project, which cover the first year and includes at least one visit to the farm and a report to FONAFIFO. The last component is comprised of the annual farm visit, reporting, and disbursements of PES funds, repeated over a period of four years. Administrative tasks, such as archiving and database management, are included in phases 2 to 5. The salary levels are estimated based on total salary expenditures excluding day hiring, divided by the number of people among the permanent staff.

Table 4. Average time consumption in minutes per contract by either administrative employees or forest engineers in different phases of a forest conservation contract. Transportation time and possible time for acquisition of land titles is not included.

Components	CAC		Cooperative		NGO	
	Admin ^a	FE	Admin.	FE	Admin.	FE
1. Preliminary phase	15	0	15	15	20	360
2. Pre-application	190	90	40	35	90	240
3. Main application, incl. study	45	555	35	555	380	660
4. Contract and implementation	280	120	80	350	115	420
5. Annual tasks, from 2nd year	175	105	130	120	30	420
Wage levels, CR colones/hour	2,145 ^b		3,125		4,230	

^aAdmin = administrative staff and field assistants. FE = Forest engineer.

^bBased only on the salaries of the administrative staff. The FE receives a fixed 8% of the PES payment from each contract.

Table 4 indicates that the CAC and the cooperative use similar amounts of time in each component, but the administrative personnel at the CAC takes a larger share of the work. This is likely a result of the FE being paid a fixed 8 % of the PES payment, thereby giving the FE an incentive to delegate as much work as possible to the permanent staff at the CAC. Contrary, in both the cooperative and the NGO, the FE is part of the permanent staff, carries out a larger share of the desk work, and spends more time than the administrative staff in almost all components. The NGO spends more time in all five components, mainly due to more farm visits. Already in the preliminary phase, the NGO visits the potential applicant's farm in order to verify his eligibility, while the cooperative and the CAC suffice with a short questions and answers session at this early stage. Each farm visit, as well as some of the subsequent reporting tasks, requires more time by the NGO as the PES areas are larger compared with those managed by the CAC or cooperative, and sometimes geographically divided. However, as the only organization, the NGO uses a field assistant to carry out large parts of the actual technical study, thereby reducing the time spent by the FE. In terms of salary, the CAC has the lowest level, but this is partly due to the fixed salary of 8 % of the PES payment to the FE, which is not accounted for in the CAC's budget. The NGO has the highest salary levels.

Though the figures in Table 4 are rough estimates, they reflect differences in the work processes and cost levels of the three organizations. In a situation characterized by high competition between intermediaries, we would expect cost levels to be more aligned. The observed differences indicate, however, that the three organizations have felt free (from competitive pressure) to maintain their own standards. For the CAC and the cooperative this is a consequence of their dominance. They facilitate 75 and 90 % of all PES contracts in their respective areas and face limited competition from the independent forest engineers; a result of their central role in farmers' networks, their close relationship with their existing clientele, and the possibilities of embedding PES activities in existing service provision activities. This is true for the NGO as well. However, less than half of the PES contracts in the Sarapiquí canton are facilitated by the NGO. The higher general cost level of the NGO, in spite of the competition, could be explained by the history of the organization (high professional level – technical forest management) and the interests generated by the trust fund that cover up to half of the NGO's budget. The higher costs may also be the reason for the NGO to have introduced a policy of not offering the smaller and, therefore, costly SAF modality. Thus, there seems to be a trade-off between high standards of monitoring (time spend on farm visits) and salary levels and inclusiveness in PES projects.

6. Concluding discussion

6.1 Summary of results

Intermediaries are seen as a means to deliver PES efficiently and to ensure inclusiveness by reaching the poor. Our study has not focused on validating this claim, but rather on investigating the factors that condition the inclusiveness of intermediaries when delivering PES through an investigation of three second level intermediary organizations in the Costa Rican PSA program. Our results show that choice of intermediary matters to inclusiveness, because intermediaries differ in ways that influence PES targeting. However, our results also show that the framing of intermediaries' working conditions by the PES buyer influences their targeting and inclusiveness.

First, our analysis of the contracts and total payments facilitated by the three organizations showed clear differences in landholdings of PES participants in the three areas. This could be caused by differences in landholding patterns between the areas and/or differences in the targeting by the intermediaries. Data from the household surveys of PES participants and their non-participating neighbors in the three areas indicated targeting or self-selection into PES. PES participants generally had larger farms, a larger share of forest, and more land per working family member. Further, PES participants were active farmers, a result of intermediaries' targeting or attraction of active farmers through their existing networks of clients.

The household survey also showed differences in the targeting between the three organizations. The NGO primarily facilitates contracts to large forest owners, while PES participants in the cooperative and the CAC have large shares of their land under agriculture or agroforestry systems. These differences appear consistent with the role of the respective

organizations prior to PES indicating that PES is piggy-backed on existing activities. The intermediary organizations in the Costa Rican PSA system face an incentive to do so, because the PSA regulation stipulates a maximum service fee tied to the size of the PES contract, rather than to the actual costs of setting up and monitoring the contract. FONAFIFO's zonation of PES priority areas also influences targeting, as it delimits what contract modalities the organizations can offer within their area of operation. This is a limiting factor mainly for the cooperative that is situated in an area only partially included in forest conservation priority areas.

6.2 Inclusiveness

Particular emphasis has been given to intermediaries when pro-poor payments or inclusiveness are investigated (e.g. Bracer et al., 2007; Petheram and Campbell, 2010). Inclusiveness is also a goal in the Costa Rican PSA program, where landowners in areas with low socio-economic status are given priority. However, Porras (2010) found that this was ineffective in assuring targeting of small-holders, partly because the social development index is measured on district level and there is no further requirement to target the poorest landowners within the districts. Participation of small holders is also hindered by the earlier exclusion of IDA⁷ farms, i.e. farms that have been acquired through the agrarian reform. These farms, counting more than 75.000 smallholders often located in areas with low SDI, have only had access to the PSA program since 2003 and only with a written permission from the Institute of Agrarian Development (IDA, 2010; Miranda et al., 2006). The use of local organizations as secondary intermediaries, their preferential status through the allocation of PES project quotas, and their previous facilitation of group contracts, i.e. an umbrella contract shared by several small landowners, are seen as other means to increase participation of small land owners (Morse, 2007). The group contracts were abandoned in 2002 due to problems of coordination and defaulting among farmers (Porras, 2010).

The role of local intermediaries in PES has not been investigated in detail. Intermediaries' poor performance or unanticipated targeting has been explained by lack of information, poor understanding of the institutional options, and limited decision making power (Bracer et al. 2007; Thuy et al., 2010). However, as this study has shown, the type and characteristics of local intermediaries are decisive for the targeting and level of inclusiveness. Access to information is an important factor for participation in PES schemes (Zbinden and Lee, 2005; Mullan and Kontoleon, 2009), perhaps especially so for the Costa Rican PSA program where program regulations and criteria for participation change annually (Vignola and Aymerich, 2011). In this regard, local intermediaries are important information hubs, but tend to keep this information within their existing networks. Similar preferential status of landowners affiliated with strong organizations is found in Europe, where forest owners' associations play important roles in creating awareness about and supporting their members in obtaining subsidies for afforestation activities.

⁷ The Institute of Agrarian Development, and earlier the Institute of Land and Colonization, has been administering the agrarian reform since 1961, giving land to landless families often originating from urban areas.

Inclusiveness of certain landowners only is also the outcome when local intermediaries piggy-back PES facilitation on pre-existing extension services and activities to keep costs at a minimum. The consequence of using local intermediaries to improve cost efficiency in PES schemes may therefore reinforce existing inequalities in access to resources rather than promote general inclusiveness; a notion also made by Pascual et al. (2010). The tendency for local intermediaries to piggyback PES on existing activities may also be due to other reasons than costs. As shown in this study, the original purpose for which a local institution was established conditions its portfolio of activities, as well as its network creation, and therefore influences targeting of PES. The targeting of certain landowners by each of the intermediaries may also be interpreted as the organizations' seeking to service their clients and thereby promote their own relevance and legitimacy, much in line with the political economy of institutions (North, 1990). This is supported by the observations made during fieldwork that several intermediary organizations actively seek to influence the development of the PSA regulations. Therefore, Swallow et al. (2007) call for institutions in payment mechanisms that are purpose-built in order to include social groups that are outside the networks of existing local institutions.

6.3 Policy implications

Our study shows that the anticipated role of intermediaries in minimizing transaction costs and being able and willing to identify and target poor smallholders is conditioned upon a number of factors. First, intermediaries are efficient because they are already present in a locality and have existing activities and networks there. These, in turn, condition their targeting. Secondly, the performance of intermediaries is strongly influenced by the framing of their role in delivering PES as stipulated by the PES policy framework or directly from the buyer. In the Costa Rican case, a set of policies and decrees regulate the role of FONAFIFO and the secondary intermediaries, such as the forest law and frequently published amendments and the annually updated PSA regulation with criteria for prioritized payments, dominant focus on forest conservation, fixed service fees etc. This political and legal framework, which is the result of active choices made by the 'buyer' (arguably politicians in this case), influences targeting. These choices could be different. In Nicaragua, for instance, the donor behind a small-scale PES project stipulated an upper limit on the area that each seller could include in the program with an aim to include more and smaller sellers (Vinqvist, 2012). Finally, the role of intermediaries is conditioned by their values. The original founding purpose, mission, and values of intermediaries often continue to influence their targeting approach. In our study, this is exemplified by the cooperative and the CAC that were both established with the aim of organizing small land owners and aiding their market participation, which is reflected in their choice of balancing the costs of small PES projects with the profits of larger projects.

The labels NGO, cooperative, local government etc. mean little. Rather, in order to understand the role of local intermediaries in administering PES programs, including their likely degree of inclusiveness, it is important to look at the areas in which the organizations operate, the purpose for which they were established, the networks of farmers and other landowners affiliated with the organizations, and their preexisting functions which may

enable achievement of cost efficiency through embedding of PES activities. These conditioning factors should be acknowledged and considered when PES contract facilitation is outsourced to local organizations, both in the case of specific environmental and social objectives.

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