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The role of State Forest Enterprises in the payments for Forest Environmental Services Programme in Vietnam

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Abstract

To promote pro-poor payments for environmental services, it is necessary to identify institutional options that reduce transaction costs and organisational problems associated with establishing and maintaining contracts with small-scale environmental service providers. This study examined the dual functionality of state forest enterprises (SFEs) in the implementation of the Payments for Forest Environmental Services (PFES) Program in Vietnam. We considered whether SFEs' involvement in the programme could reduce transaction costs and organisational problems. Data were collected from Tu Ly SFE in Hoa Binh province, northern Vietnam and from implementing agencies at various institutional levels. A survey of households participating in the SFE loan programme, and two stakeholder workshops were executed in 2014. The results revealed that Tu Ly SFE plays an important role in the livelihood of many farmers. A SWOT analysis exhibited SFEs' advantage over other state agencies in implementing national forest management programmes as there are fewer parties involved with greater autonomy and outreach in the district. This study proposes the acknowledgment of SFEs as environmental service providers in their own forestlands and to use SFEs as intermediaries in the Payments for Forest Environmental Services Programme activities.

Keywords: environmental services, intermediaries, services providers, transaction costs

1 Introduction

Payments for environmental services (PES) schemes have been implemented in different forms to encourage watershed protection, forest protection, erosion control, climate regulation and biodiversity conservation worldwide. PES focuses on bringing together service providers and users where providers are paid to maintain or improve environmental outcomes. There is an increasing interest in private investments, especially in developed countries such as the United States, Australia and France, based on Coasean economics (Coase, 1960), where transaction costs are assumed to be low, property rights are clearly defined, enforcement agencies are well funded, and an external monitoring system is credible (Clements *et al.*, 2010). In developing countries, government-funded PES plays a major role (Ecosystem Marketplace, 2008; Scherr & Bennett, 2011; Qi, 2014). Unfortunately, these countries have often unclear land ownership, weak law enforcement, and government agencies have poor capacity and little political support.

With the inception of the Rewarding Upland Poor for Environmental Services (RUPES) (CIFOR, 2013) and the Reducing Emissions from Deforestation and

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Forest Degradation (REDD+) programmes (Zhu *et al.*, 2010), PES schemes are on the rise in developing countries, especially in Asia. Vietnam leads Southeast Asia in PES with a programme supported by the government under the decree issued in 2010 on the Payments for Forest Environmental Services Program (hereafter, PFES programme) (Government of Vietnam, 2010). Households, individuals, village communities, and organisations working in protection forests, special-use forests, and production forests (those that supply environmental services) are eligible for payments. While environmental benefits can be generated from production forests (Kile *et al.*, 1998; Nambiar, 1999), in practice, PES programmes are often mixed with the Government of Vietnam's effort to promote plantation of fast-growing tree species (e.g. *Acacia mangium, A. auriculiformis*) as came up from the Five Million Hectare Reforestation Program, known as Programme 661 (Government of Vietnam, 1998).

The PFES programme in Vietnam involves both high transaction costs (Liss, 2008; Thuy *et al.*, 2013) and operational costs due to the centralised management system (Phuc *et al.*, 2012) and many contracts with small-scale environmental service providers. Transaction costs of institutions are the costs incurred when targeting, negotiating, contracting, executing and implementing forest management contracts, and for activities such as monitoring and coordinating tasks related to the management and use of forest resources. Effective PFES implementation requires substantial coordination between several government agencies in Vietnam. To promote sustainable PFES, it is necessary to identify institutional options that reduce transaction costs and organisational problems.

To date, limited research is available regarding innovative ways in reducing transaction costs of PES programmes. Therefore, we examined the potential role of the re-vamped SFEs in managing some aspects of Vietnam's PFES programme. We explored the dual functionality of SFEs (1) as environmental service providers in their own forest lands and (2) as intermediaries in PFES programme activities outside their areas of administration. As providers, they can offer environmental services such as (1) watershed protection, (2) forest protection by off-setting pressure on primary or old growth forests, (3) carbon sequestration, (4) water quality control, (5) degraded land rehabilitation, and (6) landscape enhancement (Fuhrer, 2000; Shelton *et al.*, 2001; Lamb et. al., 2005; de Groot & van der Meer, 2010). Potential goods from plantation forests are (1) sustainable source of renewable energy and industrial raw materials, (2) non-timber forest products (NTFPs), and (3) local employment (Shelton *et al.*, 2001). As intermediaries, SFEs can serve as implementing agencies for contracting, directing, monitoring and evaluating government forest programmes. We reviewed existing policies, while considering the feasibility of the proposed arrangement, and acknowledging the perceptions of the stakeholders. We accounted for the shortcomings of SFEs without a lengthy repetition of the details which can be found in the many reports on the processes of forestry reforms (Nguyen *et al.*, 2010). From a scholarly perspective, we contributed to current research on transaction costs (e.g., Liss, 2008; Sikor & Tan, 2011; Sommerville *et al.*, 2011; Phuc *et al.*, 2012), which largely addressed implementation issues, particularly with regard to individual farmer contracts. While this paper focuses on the challenges it faces from the perspective of transaction cost and the overall institutional set up for PES programme implementation, it also acknowledges the fact that plantations as a form of land use do not always correspond with sustainable forest management, especially in relation to heavy loss of biodiversity it may cause (McElwee, 2009; Šálek & Sloup, 2012; Šálek & Výlupek, 2012).

State Forest Enterprises in Vietnam

SFEs have played an important role in the forestry sector in Vietnam. After the country's independence from French colonial rule, 6.3 million hectares of forest were managed by SFEs from 1954 until 1986 (MARD, 2001 as cited by Sikor & Tan, 2011). SFEs were mandated to protect forests and manage silviculture. However, SFEs were criticised for ignoring their role in forest protection and for prioritising optimisation of timber production to meet the increasing demand for forest products (Sikor, 1998; de Jong *et al.*, 2006; Tan *et al.*, 2008; Nguyen *et al.*, 2014). In 1987, when the *Doi Moi* economic reform was launched with the goal of creating a socialist-oriented market economy, the budget for SFEs from the central government were gradually reduced with less centralised control of the forestry sector (Artemiev, 2003). The reforms did not provide sufficient incentives to develop sustainable and commercial forestry (ibid.). Consequently, Vietnam faced a continuing decline in area under forest cover until the mid-1990s (Nguyen *et al.*, 2010).

Since 1991, forest management policies and practices in Vietnam have substantially changed. A state-run system has evolved into a new system that included households and communities as actors in forest and land management (1991 Law on Forest Protection and Develop-

ment). Over the following years, numerous decrees, decisions and guidelines were promulgated regarding the reallocation of land and the devolution of land use rights to private organisations and households (e.g., 1992 Decree No. 327-CT: National forest protection programme 327; 1994 Decree 02/CP: Allocation of forestry land to organisations, households and individuals for stable and long term use for forestry purposes; 1995 Decree No. 1-CP: Regulations on the allotment of land by State-owned businesses for agricultural production, forestry and aquaculture). SFEs' authority was limited over natural forests, which contract farmers for the management and protection (1993 Law on Land). In 1998, the government launched Programme 661 (Decision 661/QD-TTg: Afforestation of five million hectares of forest). SFEs participated in the programme under the category of large forest owners. The programme provided a continuing source of government cash flow to SFEs that own protection forest (EASRD, 2005). SFEs played the role of implementing government agencies (intermediaries) by contracting, directing, monitoring and evaluating contract fulfilments with household beneficiaries of forestland in their areas. At the same time, SFEs were assigned responsibility for achieving the programme's objective of planting production forests in their own land in two phases (1998–2000 and 2001–2005), via preferential loans. In 2004, through Decree No. 200/2004/ND-CP: Rearrangement and innovation of forest enterprises, SFEs became fully autonomous commercial enterprises, while SFEs managing the more protected forests were transformed into Protection Forest Management Boards (hereafter, PFMBs).

To date, SFEs manage 15 % of Vietnam's natural forest and 17 % of its production forest, a substantial portion of the reported 13.36 million ha of forest cover in the country (MARD, 2012). The policies allowed SFEs to manage government projects, such as Program 661, by entering into contracts with farmers to plant and protect new forests or to plant production forests.

2 Conceptual framework and methodology

2.1 Conceptual framework

From literature we considered four criteria essential in ensuring long-term success of a PES program: (i) acceptability, (ii) impact, (iii) costs, and (iv) financial sustainability of PES schemes (Fig. 1).

Acceptability – PES programs can be formulated to account for the different motivations of service providers and service users. On the one hand, PES schemes must generate revenue which is necessary for service providers to ensure they implement and maintain sustainable forest management or land use changes that will, in turn, produce environmental services (Nguyen *et al.*, 2013). Acceptability of the terms and transaction costs (monetary and non-monetary) of participating in PES schemes must be addressed (Falconer, 2000; Mettepenningen *et al.*, 2009). If incentives are not acceptable, potential service providers are likely to ignore them in their private decision making, leading to environmentally sub-optimal land use decisions. Among others, payments must account for the opportunity costs of the service providers. Pricing and other income generating opportunities are important in the design of PES programs, especially when service providers must modify their livelihood strategies or change their methods of production. On the other hand, payments should be within the capacity of the service users and set at a fair level (Kronenberg & Hubacek, 2013). High transaction costs can influence price setting (Vatn, 2010). The issue of transaction costs concerns to how costly it is to coordinate PES.

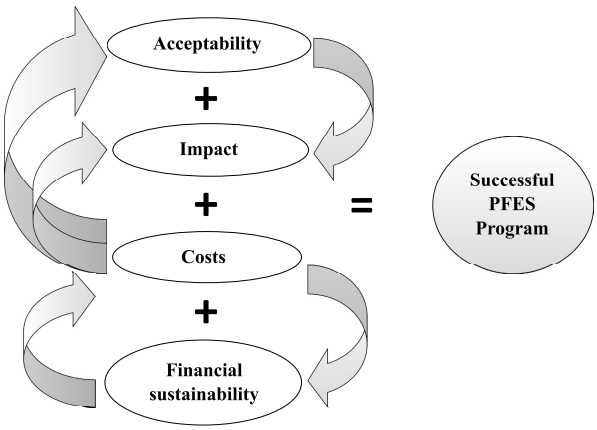

Fig. 1: *Key criteria for a successful Payments for Forest Environmental Services Programme (PFES).*
Source: Own depiction.

Impact – In developing countries, PES schemes are often designed to achieve both environmental and poverty reduction objectives (Tallis *et al.*, 2008; Gauvin *et al.*, 2010; Dunn, 2011) but this can be challenging (Zilberman *et al.*, 2008). Some authors have tried to link the benefits of PES to poor service providers (Bulte *et al.*, 2008; Wunder, 2008; Zilberman *et al.*, 2008; Milder *et al.*, 2010). Poor farmers can benefit from PES (Pagiola *et al.*, 2005) if they can provide the services at low cost and if the labour requirement is reasonable (Scherr *et al.*, 2006).

Costs – This criterion refers to the costs that government incurs due to the implementation of the PFES programme. These costs may need partially or fully

be financed by taxpayer's money be it of a domestic or foreign source. It is therefore important to review whether a PFES programme is effective given its cost. The targeting, negotiating, contracting, and monitoring costs of PES schemes can be substantial in many contracts with small-scale service providers (FAO, 2007; Sommerville *et al.*, 2011). Strategic use of intermediaries can improve coordination, while reducing monitoring and transaction costs (Dunn, 2011). Agencies (such as SFEs) may have the capacity to reduce coordination costs when there are interdependencies (Vatn, 2010). Given the extensive geographic distribution of forests, a variety of organisations and persons may be involved in monitoring efforts. Consequently, the mandate given to these agencies, their capacity (funding, skills and experience of personnel, organisational design), and the way in which they interact (institutional structures and arrangements) will determine the success of the system (FAO, 2001).

Financial sustainability – Financial sustainability requires that revenues are sufficient to cover the ongoing costs of a PES programme (Mayrand & Paquin, 2004). Revenues can come from taxes, user fees, state subsidies, and grants from international organisations. If PES users accrue large benefits, such as in the case of hydropower operators benefitting from wise management of land and water resources in upstream areas, they will have an incentive to participate in a PES programme (Arias *et al.*, 2011). Pagiola *et al.* (2005) note that the financial sustainability of a PES scheme ensures the stability of income for environmental service providers. In some contexts, government financed PES may be the only option.

2.2 Research methodology

To understand the organisational strengths and weaknesses of SFEs, and how these correspond with their potential roles as environmental service providers, we look at how various actors, including key government agencies at different administrative levels, NGOs, international donor representatives, and farming households participating in the program, perceive and view the role of SFEs. Complementing this key stakeholders analysis, we also examined: (1) the policy and legal framework of SFEs in Vietnam; (2) pilot studies of PFES implementation in Lam Dong and Son La provinces; and (3) Tu Ly SFE's involvement in PFES pilot programmes in Hoa Binh province in northern Vietnam. We further examined the operational procedures of the Tu Ly SFE and its access to resources with a SWOT analysis. We reviewed the policy and legal frameworks of SFEs in Vietnam to determine if the new organisational and institutional frameworks are conducive for SFEs to participate in and mediate PFES projects. The pilot PFES in Lam Dong and Son La provided a basis for discussion. The PFES scheme in Lam Dong was implemented through SFEs, while the pilot study in Son La involved communities and households (Tan, 2011; Phuc *et al.*, 2012; Thuy *et al.*, 2013; Bac *et al.*, 2014).

Our empirical data are based on (i) interviews with Tu Ly SFE employees ($n = 4$), (ii) interviews with civil servants from implementing agencies at various institutional levels ($n = 16$), (iii) a survey of households participating in the SFE loan programme ($n = 14$), and (iv) the outcomes of two stakeholder workshops held in Hanoi and Ho Chi Minh in 2014. We also interviewed key stakeholders at the provincial and district levels ($n = 14$) to find out more about the implementation process and the stakeholders' roles in implementing the program. We used semi-structured questions in our quantitative household survey, with which we gathered information on the costs and benefits of joining the Tu Ly SFE loan programme. We also interviewed individuals paid by the enterprise to plant and manage forest parcels.

3 Results

3.1 Tu Ly SFE in Da Bac district, Vietnam

Tu Ly SFE was established in 1978 with operations on 4,612 hectares of sloping lands. Like all SFEs in Vietnam, Tu Ly SFE began as a provincial government programme. Its operations included the management of a private *Acacia* plantation forest and management of government projects, such as Program 661 in 1998. Tu Ly SFE offered two types of contracts under the government projects to the households in the area. Type 1 contracts were agreements for planting, tending and protection of new forest. In return, the households had access to the government subsidy (i.e., cash), firewood for consumption, NTFPs (e.g., herbs, bamboo shoots), and adult timber products (e.g., bamboo, *Acacia*). Type 2 contracts were for planting, tending and protection of production forest in the SFE own forest. After 7 years, households were allowed to harvest and sell adult timber. Via Type 2 contracts households managed 10 % of the SFE own forest. Tu Ly SFE provided non-collateral loans to households under the said contract, with annual interest rates, ranging from 5.4 % to 8 % in 2000.

After the restructuring of SFEs in 2004 (Decree No. 200/2004/ND-CP), Tu Ly SFE found itself operating as a subsidiary of Hoa Binh Forestry One Member Limited

Table 1: *Household characteristics of respondents under wage labour and Type 2 contracts with Tu Ly SFE.*

Household characteristics	*Unit*	*(i) Wage labour contracts (n=6)*	*(ii) Type 2 contracts (n=5)*	*(iii) Type 2 contracts plus wage labour contracts (n=3)*
1. Average size of household	People	5	4	3
2. Average literacy rate	%	88.0	86.0	83.0
3. Agriculture as primary source of income of household head	Household	6	3	2
4. Farming as source of income	Household	6	1	1
5. Livestock as source of income	Household	3	1	1
6. Bamboo and NTFP collection as source of income	Household	1	3	1
7. Non-agriculture wage or business as source of income	Household	2	3	0
8. Recipients of government aid	Household	3	1	2
9. Access to livelihood trainings	Household	1	1	2
10. Owns red book for forest land	Household	3	0	0
11. Average contracted forest area	ha	–	2.06	1.77
12. Average loan taken with SFE	1,000 VND	–	9,000	23,000
13. Man-days per year hired	man-day	32.5	–	83.3
14. Income from SFE employment	%	26.0	–	40.0
15. Economic situation improved from SFE employment	%	66.7	–	66.7
16. Received training from SFE	%	16.7	60.0	33.3

Note: 1 USD = 20,800 VND; Source: Own data

Company, and at the same time as a district PFMB protecting 1,000 ha of forest for the government. As district PFMB, they continued to receive payment from the government for planting and protecting the forest through Type 1 contracts with farmers in the area. As a commercial enterprise, Tu Ly SFE also managed 1,000 hectares of production forest. The 90 % of this land was managed directly by the enterprise, with hired local farmers to plant and maintain the SFE forest. For the remaining 10 %, Tu Ly SFE continued offering Type 2 contracts and provided non-collateral loans to the households for the purchase of forest plantation inputs. The households can apply for a maximum of US$ 500 per hectare, per year, with end-of-term payment after seven years, when farmers are allowed to harvest the plantation forest. Between 2000 and 2010, Tu Ly SFE had Type 2 contracts with 73 households to manage 314 hectares of SFE's forest.

To date, they only have 15 Type 2 contracts with households in Da Bac. Since 2011, the contracts included loan interest rates as high as 16 %, twice the value of the loans they offered in 2000 under the government projects. One of the changes and challenges in the implementation of Decree No. 200/2004/ND-CP is the reduced availability of SFE funds and loans (EASRD, 2005). Tu Ly SFE was able to continue operating dependent on the Hoa Binh Forestry One Member Limited Company, which funded their operations through loans from the Bank for Investment Development of Vietnam (at 8.4 % interest), the Vietnam Forest Corporation (at 9.6 % interest), and from their own revenues. The main concerns of the enterprise are the high interest rates and the more stringent lending criteria recently imposed by the banks, making access to financing difficult. The burden of high interest rates has been passed on to the contracts with the farmers, making it difficult for the SFE to recruit more farmers to agree to the conditions of the Type 2 contracts.

3.2 Households participating in forest management in Da Bac

We explored the perspectives and experiences of farmers participating in forest management through the Tu Ly SFE to shed light on the impact of PES. We summarised the household characteristics and forest activities of groups representing three models of SFE involvement with local residents: (i) households hired by Tu Ly SFE to establish and manage the forest (i.e., wage labour contracts), (ii) households under Type 2 contracts with Tu Ly SFE to plant forests (i.e., forest plantation contracts), and (iii) households having both Type 2 contract and wage labour (Table 1). In 2013, Tu Ly SFE hired 321 people on wage labour contracts (i) for 14,200 person-days for land preparation, digging holes, planting, and tending new forest plantations. Farmers were paid, on average, US$ 6 per day.

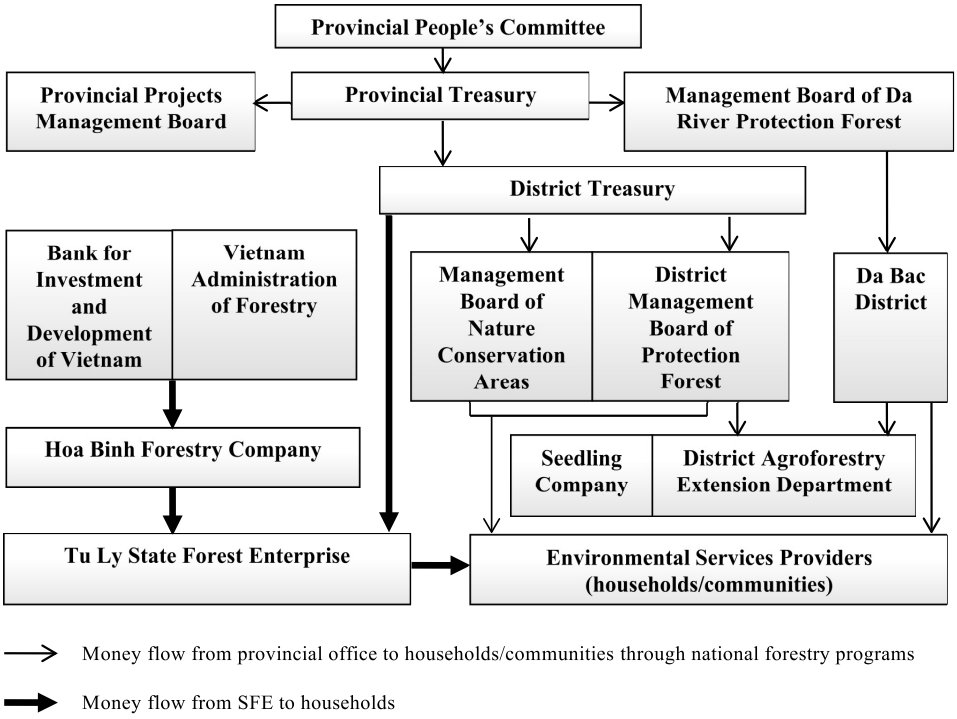

Fig. 2: *Money flow from the province to households and communities managing forest in Da Bac district, Hoa Binh province.*

Majority of the respondents rely on agriculture for their source of income. Most households with Type 2 contracts (ii) also rely on NFTPs for income. For those with Type 2 contracts (ii and iii), average contracted forestland is 2 ha. Those with combination of Type 2 contracts and wage labour (iii) have bigger loans with Ty Ly SFE. 67 % of households interviewed revealed that employment from Tu Ly SFE improved their economic situation (Table 1). Those hired (i and iii) also reported an increase in their income.

All of the respondents gained knowledge in forest plantation and protection during their employment. Although Tu Ly SFE does not provide formal training to their contract farmers, they provide technical guidance as needed. According to Dunn (2011), exposure to these kinds of activities can develop long-term behavioural change among households and individuals toward environmental issues such as slash and burn, illegal logging and land degradation. In a PES experiment in Thua Thien Hue province in Central Vietnam in 2003 (Bui & Hong, 2006), training and interaction with technical experts enhanced the environmental awareness of participating households.

3.3 Management structure and money flow of forest programme in Da Bac

The Vietnam Forest Protection and Development Fund (VNFF) was established in 2008 (Decision No. 114/2008/QD-BNN) to enable the forest sector to meet the demand for environmental services and to increase revenues through PFES. The Fund supports the PFES programme in Vietnam and is expected to raise US$ 2 billion by 2020 (FAO, 2009). According to the VNFF agency, hydropower contributes 98 % of total PFES payments.

The main threats to the PFES programme in Vietnam are the high transaction costs, at provincial- and district-levels, which reduce the net funds available for households and communities with Type 1 and Type 2 contracts to manage the forest, as revealed in the implementation of Program 661 and the money flow of the programme funds. Figure 2 shows the flow of funds received by farmers who adopt management schemes designed to protect the forest in Da Bac district. Funds of Program 661 were channelled through its provincial offices to three district management boards and community levels. The authorities involved in the implementation and monitoring that constitute the web of commands include: the Agroforestry Planning Department, Forestry

Table 2: *A comparison of some variables affecting transaction cost of managing Program 661 by Tu Ly SFE and the Protection Forest Management Board.*

Independent variables affecting transaction costs	*Tu Ly SFE*	*Management Board of Da river Protection Forest*
Number of communes served	9	11
Start-up variables		
Staff involved in implementation planning	4	10
Staff involved in programme dissemination	3	2
Implementation variables		
Staff involved in monthly and annual meetings	7	10
Aggregated man-day spent on meetings	501	618
Staff involved in contract signing and disbursement	1	4
Staff involved in monitoring and enforcement	1	4

Source: Own data, key informant interviews in 2012.

Department, Forest Protection Department, Department of Agriculture and Rural Development, Department of Natural Resources and Environment, and the People's Committee at different levels. Since the Management Board of Da River Protection Forest implemented the program across all districts in the Da River Reservoir catchment area, funds came directly from the provincial treasury, while Management Board of Nature Conservation Areas and Management Board of Protection Forest received funds from the district treasury. All three management boards were responsible for transferring government subsidies to households and communities as payment for their forest management activities. Funds were also used to hire technical experts and pay seedling suppliers. Needless to say, administrative and transaction costs escalate when more parties are involved. Reducing administrative and organisational costs, stemming from the heterogeneity and quantity of public authorities, will reduce the costs and enhance the financial sustainability of the PFES programme.

Funds provided to households under Tu Ly SFE contracts follow a different channel (shown in Fig. 2). For government programmes, Tu Ly SFE received funds directly from the District Treasury. For enterprise contracts, the funds are discharged via Hoa Binh Forestry One Member Limited Company to Tu Ly SFE, and then to the households. No other authorities receive funds from the company. With fewer actors, and experienced staff, Tu Ly SFE's administrative and operating costs are perceived to be less as revealed in the interviews with key stakeholders. According to Vatn (2010), experience (i.e., running systems over years) is expected to reduce transaction costs. A comparison of Tu Ly SFE's transactions with those of the Management Board of Da River Protection Forest in the district under Program 661 funds revealed that Tu Ly SFE used less staff in starting up and implementing the programme (Table 2). Because Tu Ly SFE has a global presence in the district, they disseminate information about forest programmes, monitor forest activities, and conduct other activities more easily. Provincial and district authorities in Hoa Binh acknowledged that SFEs can manage the forest better, and therefore should continue their role in the forest sector. Also, Tu Ly SFE propagates seedlings in their nursery, thereby avoiding the cost of out-sourcing.

At present, the transaction and operation costs of many implementing authorities at all levels substantially reduce the net funds available for households and communities protecting the forest in Vietnam. For instance, Thuy *et al.* (2013) reported that the PFES programme in Son La Province spends most of the 10 % of its revenue from the PFES (decree states that only 10 % of the total revenue from the PFES buyers will be retained for operating costs, including administrative and transaction costs) on checking forest protection performance and disbursing funds to 3,500 households. The programme requires more funding to reach out to all 64,000 forest owners. The costs of monitoring compliance with PFES agreements are also high (Phuc *et al.*, 2012; VNFF, 2013).

4 Discussion

Despite heavy criticism of SFEs, including having paid too little attention to their responsibility for protecting forests (Dang, 2001) and the inability of some to be financially sustainable (EASRD, 2005), the govern-

ment of Vietnam recognised the important role played by these enterprises. Although the practices of SFEs did not fulfil all forest ecosytem services, especially on biodiversity and off-setting pressure on primary or old growth forest, the plantation forests they managed played a vital role in the provision of environmental services, such as watershed protection (Bui & Hong, 2006), when compared to agriculture and other forms of land use. Other environmental services provided by plantation forest such as reduction of soil erosion (hence reduction of sediment silted in rivers and reservoirs, regulation of water resources that provides longer inflow, rehabilitation of degraded land, and carbon sequestration), should be given importance. Thus, continued efforts should be made to reform the organisation and management of these SFEs.

4.1 Criteria for Successful PES Programme

To encourage SFEs in Vietnam to participate in the government's PFES programme as service providers, acceptable regulations, payments and incentives must be carefully considered. Innovative incentives may attract SFEs to adopt sustainable forestry practices. By recruiting SFEs as monitoring agencies of forest activities outside their administrative areas, SFEs will create additional sources of income to boost their financial viability.

4.1.1 Impact and Acceptability of PFES

While considering SFEs as both participants in and agents of the PFES programme in Vietnam, their role in engaging poor families in their areas needs to be considered. Outreach to poor households must take precedence over any special consideration given to those individuals with special connections to SFEs. It is possible that Tu Ly SFE favours some households in the area. Those with Type 2 contracts are hired more often and received bigger loans. Similar issues were raised in the Lam Dong PES pilot study. The impact of PFES on rural poverty alleviation in the pilot study came under scrutiny when households without pre-existing contracts with the SFEs were excluded (Phuc *et al.*, 2012). In their defence, Tu Ly SFE justifies hiring households with contracts to help those households recover the high cost of the loans. The 16 % interest rate has discouraged many farmers in the area from participating in the Tu Ly SFE programme. For the period 2013 to 2014, the enterprise has entered into contracts with only three new households.

Most of the households were open-minded about the potential of forest management as an alternative livelihood, but expressed the need for more land for forest production and better contract terms. In the pilot study in Son La, the small landholdings (on average 2 ha) was one of the reasons households did not gain any significant benefit from PES payments (Phuc *et al.*, 2012).

Households also stated they would be more active in Tu Ly SFE contracts, if they were given interest-free loans. In addition, the current contracts emphasise conservation and protection, which for some, is a disincentive to participate, as there are too few livelihood opportunities with immediate gains. Although the contracts clearly state the responsibilities and benefits of the SFE and the contract farmer, there is no clear statement regarding the use of NFTPs such as honey, herbs, fruits, firewood, and bamboo. Also, tree species selection is highly centralised, with defined management rules, making the terms inflexible. There is consensus that contracts should have attractive terms and conditions, such as reduced or zero interest rates on loans, and provisions for increasing revenue through access to NTFPs.

4.1.2 Cost and financial sustainability

In Vietnam, hydropower companies allocate a portion of their income to an environmental fund as per government directives. Whereas many private PES agreements fail over time, due to inadequate or insecure funding (Landell-Mills & Porras, 2002; Todorova *et al.*, 2013), the Vietnam directives ensure continued sources of funding for PFES in hydropower watershed areas. The PFES value has been pre-determined by the government. Hydropower operators pay 20 Vietnam dong (VND)/kwh (USD 0.001/kwh) while water supply companies pay 40 VND/m^3 (USD 0.002/m^3) and tourist organisations pay 1–2 % of their annual income. Because the programme is a legal instrument, the service users must accept the pre-determined level of payment. The government is currently revising its PFES valuation (Litzenberg, 2013). Lower transaction cost of the programme can result to acceptable payment rates.

4.2 Moving forward with SFEs

Table 3 presents a strengths, weaknesses, opportunities, and threats (SWOT) analysis of SFE as environmental service providers and using them as intermediaries for monitoring activities in a PFES programme.

As revealed in the SWOT study, implementation of PFES was faster and more effective partly because forests were managed by SFEs. Stakeholders of the PFES pilot studies in Vietnam shared similar observation. The PFES pilot study in Lam Dong province began working with SFEs in 2008. Local households with existing contracts (under Program 327 and Program 661)

Table 3: *SWOT analysis of SFEs as environmental service providers and as intermediaries for monitoring activities in the PFES programme.*

Strengths	*Weaknesses*
• Institutional framework based on business principles to be financially viable, but remain as agencies for forest protection under government regulations • Implementation of new guidelines are easily disseminated and enforced • Lower transaction cost due to: – Fewer parties involved in managing and monitoring their forestry programmes – Many years of specialised experience in forest management – Greater autonomy and outreach in the district • Advantage of expertise • Experience in monitoring	• Pressure to become financially independent drive SFEs to be more profitable, with less regard for forest protection. • Selectiveness of SFE contracts and employment, capturing local elites with connections to political power (Sikor and Tan, 2007; Phuc *et al.*, 2012) so they are not that autonome as mentioned as strength • Capital shortages and inadequate financing, due to high interest rates and stringent lending criteria imposed by banks
Opportunities	*Threats*
• Can create opportunities for local-level negotiations and choices regarding forest management contracts that accommodate local needs and livelihoods • Possibility of contracting SFE for monitoring forest activities other than their own land • The institutional arrangements of PFES in Vietnam already consider SFEs as an environmental service provider • Opportunity to secure funds for the sustainability of the company • Revenue from PFES is an interest-free capital for SFEs	• Recurrence of the damaging SFE-era before the reform in 1991. • No clear directive from the government as to how the provinces distribute the funds.

[1] Source: Own depiction

were given PFES contracts. To date, 3,400 households have received payments for their services from SFEs. The successful model in Lam Dong can be attributed partly to working with the 13 state organisations (SFEs and PFMBs) that own and manage most of the forest land in the area. In contrast with Lam Dong, the Son La pilot study is directly involved with local households. Forest area had already been allocated to 50,000 forest owners in the early 2000s (Phuc *et al.*, 2012). The distribution of PFES had been slow and faced high transaction costs. The SFEs and PFMBs in Lam Dong prepared the necessary documents to support the contracts with households. In return, the SFEs and PFMBs were paid to administer the contracts. Winrock International and the Center for International Forestry Research (CIFOR) have stated that monitoring of forest cover and quality is costly for the government (Thuy *et al.*, 2013; Nga, 2014) and local government agencies do not have the capacity and experience to monitor the PFES programme. Transaction costs tend to be high because of the large number of forest owners, the complexity of administrative structures, the limited capacity of public servants, conflicts of interest and week coordination and information sharing between and within government agencies.

The social and economic benefits of Vietnam's SFEs are largely ignored. Efforts are needed to reinvigorate and maximize potential of SFEs, and to realize a structure which includes SFEs' role in reducing transaction cost in PES programmes to rebuild Vietnam's forest.

To improve the financial sustainability of SFEs, innovative partnerships with communities, rather than with many individuals, can reduce transaction costs (Adhikari & Lovett, 2006; Blore *et al.*, 2013). There are success stories of communal forest management in Vietnam, especially where the social composition is

heterogeneous (Sikor & Tan, 2011). It is important to increase local participation in SFE programmes to improve their financial sustainability and increase the benefits provided to local residents. This can be done through attractive terms and conditions of SFE contracts. With the potential of PFES as an interest-free capital source, SFEs can reduce interest rates on loans. The key to attracting poor farmers to participate is the identification of profitable activities. SFEs could work with households to develop alternative forms of agroforestry for adoption in forested areas. Mono-culture needs to be reduced to avoid periods without revenue. Allowing mixed forest plantations in the PFES programme, planting fruit trees with forest trees, and raising animals under forest canopies are examples of incentives for poor farmers to participate in forest management. The government could also encourage participation by studying the feasibility of in-kind payments in PES, such as the provision of materials, training and expertise.

With the devolution of the forest sector in Vietnam and the move towards a market-oriented economy, SFEs are facing financial constraints from the shortage of capital (MARD, 2012). The high interest rates imposed by banks on SFEs have reduced the activities of SFEs and limited the outreach of their forest programmes, which led to the dissolution of some enterprises. There is a need to resolve the difficulties faced by SFEs regarding access to funds and unacceptable contracts. With the proposed role of SFEs as intermediaries in PFES programme activities, payments for the services (e.g., watershed protection) could lift some of the financial burden.

Using SFEs as intermediaries for the PFES programme in Vietnam is not a novel idea. SFEs have carried out these responsibilities in past government programmes. The recruitment of SFEs to monitor forest activities outside their forest lands is logical, given their expertise and experience in collaboration with local farmers. The system has been piloted with positive outcomes, but regulations must be revisited to provide concrete guidelines. The government must issue implementation guidelines to ensure wider outreach of the programme to improve livelihoods. SFEs can achieve impacts by working with many poor households in forested areas. In 2007, more than 20,000 farmers were employed by SFEs to maintain seedling nurseries, plant and prune trees, and maintain forest firewalls (FAO, 2009).

The current discourse on transaction costs should consider the roles of institutional reform and organisational change in ensuring programme success. An effective regulatory and monitoring framework is essential to avoid repeating historical problems with SFEs. To achieve wider distributed impact, regulations regarding the acceptable terms and conditions of SFE contracts are needed to encourage local participation. Considering additional livelihood options (e.g., product development of NTFPs, bee keeping, nursery raising) in the policies is important for poor farmers, due to the long recovery period of capital and gains. In doing so, forest protection and livelihood support can be addressed together. Although the study analysed only one SFE and a modest number of its contractors or employees, results are consistent with previous pilot studies in Vietnam. It showed the strengths and weaknesses of using SFEs as environmental service providers and intermediaries for monitoring activities in the PFES programme.

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