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# Being equitable is not always fair

An assessment of PFES implementation in  
Dien Bien, Vietnam

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Dien Bien, Vietnam

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# Abbreviations

CPC	Commune People Committee
ES	ecosystem services
FGD	focus group discussion
FLA	forest land allocation
FPDF	Forest Protection and Development Fund
HH	household
NTFPs	non-timber forest products
NGO	nongovernmental organization
PES	payments for ecosystem services
PFES	Payments for Forest Environmental Services
VNFF	Vietnam Forest Protection and Development Fund

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# 1 Introduction

Payments for ecosystem services (PES) schemes have been introduced as a way of conserving ecosystems using economic incentives (Wunder 2005; Farley and Costanza 2010). PES has attracted increasing interest from scholars and conservation practitioners (Vatn 2014; Wunder 2015) and hundreds of PES schemes have been implemented worldwide (Kemkes et al. 2010; Schomers and Matzdorf 2013). Numerous studies and reviews of PES exist (e.g. Ferraro and Pattanayak 2006; Kemkes et al. 2010; Pattanayak et al. 2010; Schomers and Matzdorf 2013; Fisher et al. 2014) but “conservation science is only slowly beginning to build a body of evidence on the impact of conservation policies” (Baylis et al. 2015, 1). In particular, there is a need to understand how PES schemes have been implemented in practice in developing countries (McElwee et al. 2014) and their environmental and socioeconomic impacts. “Evidence of why conservation initiatives succeed or fail is essential for designing cost-effective programs and improving the livelihoods of natural resource users.” (Baylis et al. 2015, 1).

PES, as an incentive-based policy instrument, is seen as being cost-efficient and more economically efficient than traditional approaches such as command and control or direct regulations (Pascual et al. 2014). Similarly, its effectiveness in term of ecological outcomes is often considered positive. However, the equity dimension of PES is often overlooked (Adhikari and Agrawal 2013; Pascual et al. 2014; Van Hecken et al. 2015 ) although there is emerging evidence that improves PES outcomes (Sommerville et al. 2010; McDermott et al. 2012; Pascual et al. 2014). Bruner and Reid (2015, 1) highlight the importance of considering non-monetary aspects, such as equity, in PES design, as, “this can allow a given budget to achieve more for conservation and for people’s satisfaction [...]. Conversely, failing to do so can have unintended negative effects on these same objectives.” However, to date, the inclusion of equity aspects in PES design and implementation has not been wellresearched (Martin et al. 2014; He and Sikor 2015) and should be carefully studied in the future (Martin et al. 2014; Pascual et al. 2014).

In Vietnam, the concept of PES has been receiving attention since the early 2000s. The recognition of ecosystem services (ES) is included in Vietnam’s Forest Protection and Development Law 2004 and Biodiversity Law 2008 (Pham et al. 2013). Alongside PES or PES-like piloting efforts by donors and nongovernmental organizations (NGOs), Vietnam’s Government piloted Payments for Forest Environmental Services (PFES) scheme in two provinces, Son La and Lam Dong in 2008 and has scaled-up the program to the national level since 2010. With strong political commitment (Pham et al. 2013), Vietnam became the first country in Southeast Asia to introduce a nationwide PES scheme (Winrock International 2011). There are several reviews of PFES schemes (e.g. Pham et al. 2013; VNFF 2015), but the focus is still on its effectiveness and efficiency; equity considerations in PFES need to be studied more. At the local level, Pham et al. (2014) found that local interpretations of “equity” strongly influenced people’s preferences for PFES approaches.

This study aims to fill this gap. Our research was carried out in Dien Bien province, Vietnam in order to assess local perceptions of equity and to understand how equity was interpreted during the implementation stage of PFES. We examined the process of distribution of PFES benefits (and the costs and risks), the knowledge and level of participation of local people and their perspectives on the principles of equity, in an effort to understand the interlinkages between these factors. Our research question asked how local communities conceptualized equity in this process of PFES benefit-sharing and what influenced their different conceptions of equity or fairness with regard to the effects on PFES outcomes.

Our paper is organized as follows. Background information about the forestry sector in Vietnam and PFES is presented in Section 2, followed by the methodology used in this research in Section 3. Section 4 presents the findings on how equity dimension is embedded in PFES implementation in Dien Bien province and the local perceptions of equity. A discussion of the results is in Section 5 and our conclusions are in Section 6.

# 2 Payments for Forest Environmental Services (PFES) scheme in Vietnam

## 2.1 Brief overview of forestry issues in Vietnam

Forests in Vietnam play an important role in the maintenance of livelihoods for forest-dependent communities. As a high number of local people and forest-dependent communities are poor, forest resources (e.g. timber and NTFPs) serve as a “safety net” (and “poverty trap”) (Sunderlin and Huynh 2005). After five decades of decline in forest cover (Meyfroidt and Lambin 2009; Pham et al. 2012), the Government of Vietnam implemented large-scale reforestation programs and there has been significant increase in forest cover, from 27.8% in 1990 to 41.5% in 2014 (see FSSP 2015). However, the increase of forest cover does not necessarily mean an improvement in forest quality. A large proportion of forested area is composed of degraded natural forests and planted forests. Natural forests have been significantly degraded (see Pham et al. 2012; de Queiroz et al. 2013; FSSP 2015) and biodiversity is highly threatened (de Queiroz et al. 2013). Due to the pressure of economic development there remains a high level of deforestation and degradation (Pham et al. 2012).

Vietnam’s Government vision on the development of the forestry sector was enshrined in the strategy of forestry sector development for the period 2006–2020 (Pham et al. 2012) with a three-pronged target: (i) economic development by diversifying plantations, agroforestry models and timber products; (ii) environmental protection by improvement of forest quantity and quality; and (iii) social development by linking forests to poverty alleviation and job security. However, these targets have been challenged by number of issues. First, after a long period of strict control of State actors on forestry, the wider participation of various economic sectors and private forest management was promoted in the National Forestry Strategy 2006 to 2020 and Forest Protection and Development Law 2004 (Pham et al. 2012). But the forest land allocation (FLA) process has attracted many criticisms (To and Tran 2014). While there are some efforts in forest management to shift from a model of centralized State control to one of private management (Tran n.d.), forest management is still prioritized by State actors. High quality forests are still under the management of government agencies while local people are allocated lower quality forests and their rights over forest and forest land are relatively limited (Nguyen et al. 2008; To and Tran 2014). Furthermore, the process of FLA is incomplete and has been slow in a number of provinces (see Le et al. 2015). Second, there is a lack of sufficient funding in the State budget for the forestry sector. Vietnam’s Government aims to diversify its financial sources for the forestry sector. PFES is seen as major breakthrough, with a contribution of 22–23% of the total forestry sector’s budget (VNFF 2015). Third, the enforcement of forest laws and regulations is challenged by numerous factors including human resources. For instance, the number of forest rangers is limited (e.g. one forest ranger is usually in charge of a forest area of 1000 ha on average); national parks and forest management boards often contract local people to carry out forest patrols (Nguyen et al. 2008; To and Tran 2014).

## 2.2 Implementation of PFES

After numerous efforts by donors and NGOs on PES-like pilot projects, the government PFES program was piloted in two provinces from 2008–2010 and, with the issuance of Decree 99/2010/ND-CP, up-scaled to a nationwide program since 2010 (Pham et al. 2013).

PES can be defined “as voluntary transactions between service user and service providers that are conditional on agreed rules of natural resource management for generating offsite services” (Wunder 2015, 241). Vietnam’s PFES program has some distinctive characteristics that differ from this definition. Decree No. 99/2010/ND-CP defines buyers as water supply companies, hydropower plants, tourism companies and aquaculture businesses (VNFF 2015), and sellers as forest owners

(organizations, households or individuals) with forests allocated or leased by the State for stable and permanent use for forestry purposes. Participation is mandatory, as buyers and sellers are identified by law and must take part in the program. Government sets the level of payment, and Vietnam Forest Protection and Development Fund (VNFF) signs contracts with buyers that set out the amounts they must pay for ES. Payments are disbursed for the maintenance of existing forest cover as a proxy for ES. The Provincial Forest Protection and Development Fund (FPDF) signs contracts with service buyers and collects payments for services supplied within the province. The fund also prepares payment plans, monitors and releases payments to service suppliers and submits periodic reports to the VNFF.

Equity is mentioned explicitly as a core principle of PFES design and implementation by the central government: “Transparency, democracy, subjectivity, and equity, in line with the legal system of Viet Nam and international agreements that Viet Nam ratifies or joins, are ensured.” (Decree 99/2010/ND-CP on the Policy for Payment for Forest Environmental Services).

The FLA process determines equity outcomes but FLA reveals the ambiguity in forest demarcation and delays in allocation. These factors potentially lead to barriers to access to PFES benefits (Loft et al. In press).

Further, equity concerns are reflected in the rules determining payment distribution. The level of incentives distributed for the provision of ES is dependent upon the total payments collected from watershed service buyers. After a management fee (10% of total gross revenue) and reserve fund contribution (5%) have been deducted by the provincial FPDF, payments are being distributed to forest owners on a per hectare basis. The level of payments for forest owners is adjusted by applying the so-called K-coefficient (Box 1).

The design of a K-coefficient is aimed to adjust the distribution of benefits. Experience with the application of the K-coefficients during the piloting phase and early implementation in some provinces shows difficulty of employment and all provinces in Vietnam still struggle to fully apply this coefficient in practice (VNFF 2015).

#### Box 1. Employment of K-coefficient.

Total amount paid to forest owner (VND)	=	Average fee per hectare of forest (VND/ha)	x	Forest area managed for services (ha)	x	K-coefficient
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The K-coefficient is designed to adjust the payment level distributed to forest owners to set an incentive for those who do the best job of providing ecosystem services four factors. The K-coefficient is determined by multiplying values for its four sub-coefficients:

$$K = K1 * K2 * K3 * K4$$

The value of each K-coefficient is provided in Circular 80/2011/BNNPTNT on methods to determine payments for forest environmental services (issued by MARD) as follows:

- K1<sup>a</sup> (forest volume status): 0.9 for regrowth and poor forest; 0.95 for medium forest; 1.0 for rich forest
- K2<sup>b</sup> (forest function): 0.9 for production forest; 0.95 for protection forest; 1.0 for special use forest
- K3 (origin of forest): 0.9 for plantation; 1.0 for natural forest
- K4 (difficulty of forest protection): 1.00 for very difficult; 0.95 for difficult; 0.90 for not very difficult.

a This classification is based on standing wood stock. Rich forests mean forests having standing wood stock of over 200 m<sup>3</sup>/ha; medium forest is from 100–200 m<sup>3</sup>/ha; poor forest is 10–100 m<sup>3</sup>/ha; regrowth is less than 10m<sup>3</sup>/ha.

b Forest classification in Vietnam is based on its functions. Production forests are designated for timber production; protection forests (watershed and coastal forests) are for watershed and coastal protection; and special use forests are for biodiversity conservation (e.g. national parks, protected areas, nature reserves)

Source: Pham et al. (2013,19)

# 3 Methodology

## 3.1 Study design

This study aims to go beyond the economic calculations, which focus on the costs and benefits that influence individuals' decisions to engage in behavioral change (Persky 1995); it will consider additional factors such as procedural and distributive fairness that can affect individuals' motivation (Vatn 2010).

As a first step towards assessing the importance of equity perceptions for the effectiveness and efficiency of PES programs, this study aims to examine local equity perceptions of the implementation process of PFES in Dien Bien – one of the provinces that implemented PFES in 2011 following Decree 99/ND-CP in 2010 on nationwide implementation of PFES. In particular, this study will assess whether the process of (designing and) implementing the benefit-sharing mechanism under the Vietnamese national pilot PES program and the distribution of benefits (i.e. costs and risks) resulting from the implementation of this incentive-based policy instrument is perceived as “equitable” at the local level.

For further analysis, we use an analysis framework by viewing the equity concept under following three dimensions:

**Contextual equity** (McDermott et al. 2012) or “equity of access”(Brown and Corbera 2003) relates to existing social conditions – “the ways in which different actors in society are able to engage with and participate due to existing capabilities and external factors ‘including information, communication and knowledge, and the way institutions operate at different scales” (Brown and Corbera 2003, 46).

**Procedural equity** refers to participation in decision-making and inclusion and negotiation of competing views (Brown and Corbera 2003). Levels of participation vary and can be categorized.

**Distributive equity** refers to the allocation of outcomes and their impacts on different stakeholders in terms of costs, risks and benefits (Corbera et al. 2007; Proctor et al. 2008; Pascual et al. 2010; McDermott et al. 2012). However, what is regarded as a “fair share” varies according to different situations and cultures. Different stakeholders may implicitly apply different “economic fairness criteria/principles” (Table 1).

**Table 1. Distributional equity principles.**

Theory	Distribution principles	Example of PES
Merit-based	Distribution should be proportional or relative to the contribution or inputs of the stakeholders e.g. work effort (Konow 1996; Miller 1999; Pascual et al. 2010).	Those who put most effort (input-based) or those who produce the best results (output-based) in the provision of ES.
Needs-based	Distribution should be according to needs and those with the greatest needs should receive a higher reward (Rawls 1979; Dobson 1998; Konow 2001) in order to ensure that the position of the least advantaged individuals is as high as possible (Pascual et al. 2010).	Those ES providers who are poorest should benefit the most.

continued on next page

Table 1. Continued

Theory	Distribution principles	Example of PES
Egalitarian	Distribution should be equal among all providers of a service independent of the cost and level of service provision (Pascual et al. 2010).	Each ES providers should receive the same (e.g. per unit of land area), independently of the level and cost of ES provision.
Achievement/ status/power	Those with more authority, status, or control over the group should receive more than those in lower level positions. The basis for the claim is prior attained status or power, or a traditionally inherited position (Forsyth 2006)	Leaders/representatives of ES providers should get more due to the inherited leadership position.

Source: Loft et al. In press.

We use this framework to assess the equity dimension of PFES implementation in Dien Bien through information, communication, decision-making processes and equity principles employed by local land users.

### 3.2 Site selection

Dien Bien province<sup>1</sup> was selected as a study site as PFES has been implemented in Dien Bien since 2012 with high revenues collected from buyers –about USD 12 million– 5th ranking among top provinces which yielded highest revenues from PFES (Dien Bien FPDF 2014; VNFF 2015). The main ecosystem service providers in Dien Bien are forest owners as individuals, households and communities. Up to 2014, these service providers received about 88% of total payment (USD 5 million) (Dien Bien FPDF 2014). To date, 84% of forest area in Dien Bien province is entitled to get a payment from PFES. The main buyers are Son La and Hoa Binh hydropower plants which account for more than 98% of total PFES revenues. In total, there are 1065 ES providers: one State organization (Muong Nhe Protected Area Management Board), 588 communities (comprising 37,879 households) and 476 individual households (Dinh 2015).

The selection of case studies was based on the following criteria: (i) PFES scheme has been implemented in studied sites; (ii) differences in poverty rate; (iii) variety in the occupation of ethnic minority groups; (iv) history of forest conservation efforts; and (iv) accessibility. After consultation with provincial officers, four districts were selected (Tuan Giao, Tua Chua, Muong Lay and Dien Bien district) and in each of these districts one commune was chosen. Ta Ma, Muong Bang, Lay Nua and Muong Pon communes were selected (Figure 1).

<sup>1</sup> The total area of Dien Bien province is 956,290.37 ha with 760,449.86 ha of forest land accounting for 79.5% of total natural area. The forest cover rate of the province in 1999 was 28.7% (Decision No. 03/2001/QD-TTg dated January 5<sup>th</sup>, 2001 of Prime Minister), and increased to 40.2% by 2012. In Dien Bien, the major pressure to forest mainly comes from forest-dependent communities through their agricultural production activities and the practices of shifting cultivation. The forests of Dien Bien have an important role in providing ecosystem services such as watershed protection and water regulation to hydropower plants in Da River. The population of the province was 504,502 people in 2012 (252,378 men and 252,124 women); the population density is 52.8 people/km<sup>2</sup>; the growth rate of population is 1.587% (TFF and FIPI 2012). The province composes of 21 ethnic groups, among which major people are Thai (46%), Kinh (24.6%) and Hmong (18.6%); other ethnic groups include Yaos, Dzay, Tay, Ha Nhi, Lao, Cong, Si La, Kho Mu, La Hu. The poverty rate in the province remains high. A total of 51,644 households (equivalent to 50.01% of all households of the province) are considered poor (TFF and FIPI 2012). The majority of the poor households are located in remote rural areas. While Thai people are gradually changing their traditional form of cultivation into permanent farming, Hmong people still rely on income from swidden area and are known as shifting cultivation communities. In term of language, Thai people are familiar with Kinh language (Vietnamese official language) while the fluency of Hmong people and other groups in this language is far lower.

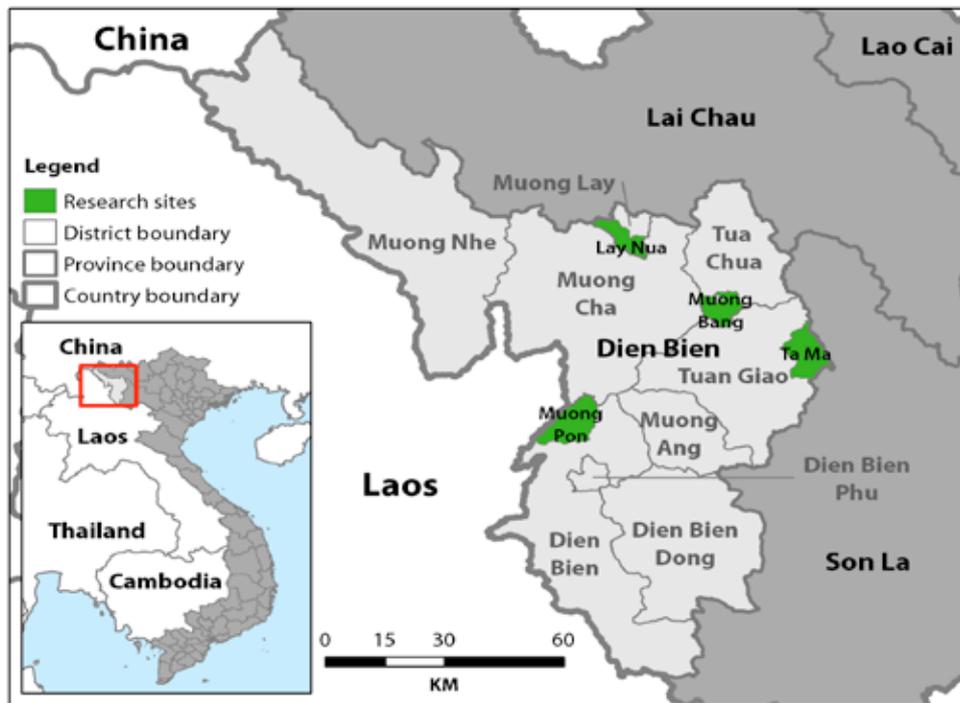


Figure 1. Map of Dien Bien province highlighting studied commune sites.

Source: produced by authors

These communes shared some similar characteristics in terms of forest management (i.e. community forest is the dominant forest management type) and livelihood activities (i.e. they rely mainly on forestry and agriculture) (Table 2). Two case study villages in each commune were selected based on: (i) the significant disparity of PFES payments received between two villages to understand the difference on the perceptions of ES according to the amount of PFES payment; (ii) ethnic groups occupied; and (iii) accessibility (Table 3).

Table 2. Study sites.

District	Tuan Giao	Tua Chua	Muong Lay	Dien Bien
Commune	Ta Ma	Muong Bang	Lay Nua	Muong Pon
Poverty rate	high	low	high	high
Forest coverage (%)	51	23	46	43
Ethnicity	Thai, Hmong	Thai, Hmong, Kho Mu	Thai, Hmong	Thai, Kinh, Hmong, Kho Mu
Village with highest PFES payment	Ke Cai	Doi 6	Ho Huoi Luong	Muong Pon 2
Village with lowest PFES payment	Phieng Cai	Doi 8	Ban Bac 2	Huoi Un

Table 3. Background information of studied villages.

Commune	Ta Ma		Muong Bang		Lay Nua		Muong Pon	
Village	Ke Cai	Na Dang	Doi 2	Doi 6	Ho Luong 1	Ho Huoi Luong	Muong Pon 2	Huoi Un
Number of households	115	93	98	77	84	44	111	86
Poverty rate (%)	48.7	50.5	21.4	35	1.2	80	13	62.5
Major income source	agricultural production; animal husbandry							
Main ethnic group	Hmong	Khang	Thai	Thai	Thai	Hmong	Thai	Hmong

### 3.3 Data collection

In this study, a range of mixed methods was used, including surveys with village heads, focus group discussions and in-depth interviews with farmers to scrutinize the difference in perspective of different hierarchies (village heads and households). Fieldwork was carried out in Dien Bien by the research team in June and July 2014. In addition, an extensive literature review was conducted, covering: (i) PES implementation globally; (ii) equity dimension in PES; and (iii) documents on PFES implementation in Vietnam and Dien Bien. The research team also conducted interviews with informants from Dien Bien FPDF to understand the key features of PFES implementation in Dien Bien province.

In order to understand the context of PFES implementation in the studied sites, we sent surveys to village heads in all 52 villages in four selected communes. The surveys were designed to collect information about population, income, poverty rate, forest status; knowledge and interaction between buyers and sellers; financial flow; monitoring and evaluation measures; and motivation for and restriction of participation in PFES. This was aimed to provide a baseline measure of the awareness of and knowledge about PFES across the region.

In each of the four communes, focus group discussions (FGDs) were conducted in two case study villages as presented above. The purpose of FGDs is to gain an overall picture of forest status and livelihoods in the village, opportunities and challenges of PFES and key actors in the village. The participants were randomly selected in order to achieve balance of age, gender and wealth status. In the FGDs, participatory rural appraisal tools were applied:

- A village history timeline was conducted to understand the history of each village and the important milestones that promoted or hampered the village's development; we gained an insight into the important events according to farmers
- Wealth ranking among farmers was conducted to understand the criteria of poverty classification and which anti-poverty strategy the farmers would like to adopt
- A SWOT analysis was applied to obtain the opinions of farmers on the strengths, weaknesses, opportunities and threats of the PFES scheme
- A Venn diagram was drawn to show those actors that have influenced the decision-making process in the villages.

The third research method is household surveys. The research team conducted 179 in-depth interviews with households in the eight selected villages. The interviewed households were randomly chosen. The interviews focused on: (i) knowledge of households of PFES including buyers, payments, their rights and liabilities; (ii) PFES contract arrangement; (iii) payments flow and decision making process regarding on how PFES payments were used; (iv) effects of PFES on local livelihoods; (v) local perception of fairness with regard to the current PFES benefit sharing mechanism; and (vi) risks and costs of participating in PFES.

A brief profile of the household respondents is depicted in Table 4. First there were a balanced proportion of women respondents (45%). Second, most of the households were Thai ethnic (55%), followed by Hmong (33%), Khang (16%), and a small amount of respondents were from Kinh. The villages were generally homogenous in terms of ethnicity.

A total of 61% households were considered to be poor. A considerable portion of the respondents (35%) was illiterate. All 179 household respondents participated in PFES under a community contract. Amongst that, 7 out of 179 has an individual contract extra as they hold a land-use certificate to manage their allocated forests.

**Table 4. Household respondent characteristics.**

District	Commune	Village	Total	Gender		Ethnicity			
				Male	Female	Thai	Hmong	Khang	Kinh
Muong Lay	Lay Nua	Ho Luong 1	15	6	9	14	–	–	1
		Hua Huoi Luong	13	5	8	–	13	–	–
Tuan Giao	Ta Ma	Ke Cai	28	13	15	–	28	–	–
		Na Dang	28	23	5	–	–	28	–
Tua Chua	Muong Bang	Doi 2	22	11	11	22	–	–	–
		Doi 6	24	8	16	24	–	–	–
Dien Bien	Muong Pon	Muong Pon 2	29	14	15	29	–	–	–
		Huoi Un	20	18	2	2	18	–	–
<b>TOTAL</b>			<b>179</b>	<b>98</b>	<b>81</b>	<b>91</b>	<b>59</b>	<b>28</b>	<b>1</b>

# 4 Equity considerations embedded in local PFES implementation

## 4.1 Knowledge of local ES providers of PFES

### 4.1.1 Process of information dissemination

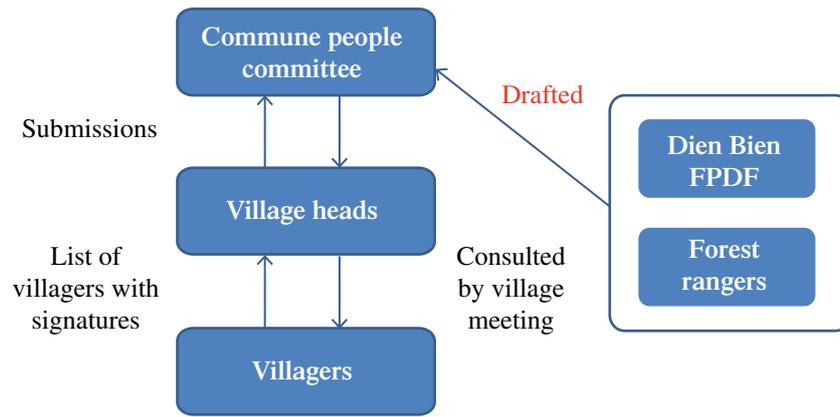
#### Information on contractual arrangements

Dien Bien FPDF acts as an intermediary, linking buyers and providers of ES. They are also responsible for the dissemination of PFES information and arranging contracts for the two parties. In this paper, we focus on ES providers groups and explore the effectiveness of the communication process in disseminating PFES information to local ES providers and the amount of information obtained by these actors.

In Dien Bien, the forest protection agreement is commonly used as a way of settling agreements about the rights to PFES payments and obligations of PFES participation between the commune people committee (CPC) and the communities (represented by the village heads). The agreement does not specify its validity and duration in its text. It contains information on rights, obligations and liabilities under PFES; information on the allocated forest plot (forest status, size, type, origin and timber volume); rights to get PFES payments and sanctions in case of noncompliance. The obligation of ES providers is stated as: (i) to protect forest according to plans and vision of government and; (ii) to regenerate forest in 12 months from the time of exploitation of the production forest. In turn, ES providers are eligible to receive PFES payments once they comply with the agreement. The sanction in case of noncompliance to the agreement is the reduction of payments, or, “any violation will be treated under the provision of relevant laws and regulations.” However, guidance on which specific laws and regulations will be adopted and the process of law enforcement are not clearly stated in the agreement. Farmers and village heads only refer to village forest protection regulations and ask forest rangers in cases of noncompliance or violation.

There are two types of forest protection agreements: an individual –for forest owners as individual households and a community –for forest owners as communities. For individual agreements, households are invited to CPCs to sign the contract. For community agreements, village heads organize the meeting, inform local people about PFES and the agreement, collect the signature and sign the agreement with CPCs on behalf of the community. In cases where a villager is illiterate, he/she could simply put a fingerprint instead of a signature (see Figure 2 for the process of arranging the forest protection agreement). Just 7 out of 179 farmers reported that they kept a hard copy of their individual PFES contracts. In our village head survey, 72% of surveyed village heads reported that they had not kept the hard copy of the community agreement although they acknowledged that they had signed it on behalf of their communities. In most cases therefore, it is not possible to check back with the original agreement if questions arise.

The interviewed households had a vague understanding of the PFES agreement, as no household respondents were able to specify the differences between a PFES agreement and a non-PFES agreement. The clauses of agreement made between communities and CPCs, as aforementioned, were drafted without consulting the communities. In the village heads’ survey and household interviews, up to 56% of surveyed village heads and 100% of surveyed households were unclear on how the agreement was drafted and by whom. Village heads did not fully understand who developed the agreement terms. Just 44% of village heads mentioned forest rangers and only a few (6%) identified Dien Bien FPDF as being involved in the process.



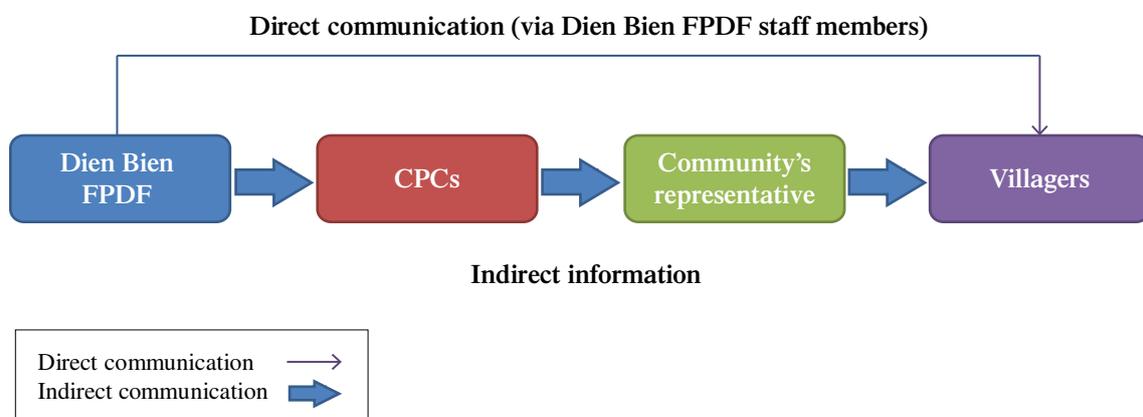
**Figure 2. Contractual arrangement process.**

Source: produced by authors.

These individual and community agreements were drafted in the Kinh language (Vietnamese official language) while most of population in the studied communities consists of ethnic minority groups who speak their own languages. Based on the village head survey, Kinh people account for only 10% of the population while other ethnic groups such as Thai and Hmong, account for 42% and 46% of the population, respectively. In addition, the illiteracy rate is high, with an average of 68% illiteracy in these communities (half of those in 32 out of 55 villages were reported as illiterate); some communities had an illiteracy rate of 100%. This suggests that various communication channels should be put in place to complement written documentation.

**PFES information flows**

PFES information is currently delivered to local ES providers both directly and indirectly. Direct communication is when Dien Bien FPDF’s staff members come to the villages to distribute payments and disseminate information to farmers, but this was only carried out in one of eight study villages –Muong Pon 2 village. In all other cases, indirect communication was carried out. This involves the delivery of information indirectly by communal people committees (CPCs) and representatives of communities (mostly village heads). Information is distributed from Dien Bien FPDF to CPCs, and from CPCs to representatives of communities, who inform households, usually in village meetings (Figure 3).



**Figure 3. PFES communication channels for local ES providers.**

The information delivered to local ES providers, as Dien Bien FPDF highlighted, should be concise and simple to help local people understand the concept of PFES and differentiate PFES from other forestry programs such as 661 (5 Million Hectare Reforestation Program) or 327 (Greening the Barren Hill Program). However, as highlighted by informants from Dien Bien FPDF, the term “Payments for Forest Environmental Services” was rarely used in communicating with farmers, as it was a difficult concept for local people to understand. Instead, PFES was often explained as “a government policy in which hydropower plants pay local people to protect forests because these plants need the maintenance of forests for water provision and water regulation.”

Our informant from Dien Bien FPDF stated that direct communication between Dien Bien FPDF and the communities (in Muong Pon 2) is more effective than indirect communication. “In the villages where we came directly, distributed money and explained to local people what is PFES, people have a better awareness of PFES than other villages” (personal communication from Vang, A.D., Dien Bien FPDF staff member, 5 May 2015). Similarly, the seven interviewed households that had individual contracts had a better understanding of PFES than those households with community contracts. Those seven households are required to go and get PFES payments from CPCs and their PFES information can be gathered directly from CPCs without village heads being involved. Given that total number of Dien Bien FPDF staff members is 16, their direct visit to villages for payments and information dissemination works out at less than 10 villages per district. As a result, indirect communication with the involvement of local authorities is the most popular option. Under current arrangement with two more layers of information flow (CPCs and community’s representatives) there is a risk that the information could be distorted or that farmers are not fully informed. However, local knowledge of PFES in Muong Pon 2 (where there was direct communication) is not evidently better than in other studied villages (Table 5). Thus, it is difficult to conclude that direct communication is more effective than indirect communication.

### **Grievance-handling system**

A proper grievance-handling system designed for local ES providers is not in place. Village heads act as a focal point for information flow and payment disbursement at the village level and manage any grievances brought up by farmers. All of the studied households listed the village head as the person who would address any complaints or questions related to PFES. If local people wished to obtain PFES information, they usually asked the village heads or their neighbors (reported by all of the interviewed households). The majority of households claimed that they did not know and did not have access to other authorities responsible for this matter. Only 13% of household respondents mentioned that they would raise the issues with higher authorities (e.g. CPCs) if their village head was unable to answer the questions related to PFES, but no case where farmers directly asked CPCs or higher authorities were recorded at the time of the fieldwork. In all 52 villages where we conducted a village head survey, there was no direct meeting, contact or information exchange between local service providers and service buyers (hydropower plants and water supply companies) reported.

#### **4.1.2 Local knowledge of PFES**

Knowledge of local ES providers of the key features of PFES is limited (Table 5). For example very little is known about the actors involved in PFES agreement, the timing of participation and the frequency of payment.

One of the tasks of Dien Bien FPDF is to help local ES providers understand that PFES is different to the State subsidies programs by highlighting that the payment is paid by hydropower plants to ES users. Interviewed households often report that they could not differentiate PFES from other State support programs, so farmers were uncertain about PFES information. Farmers’ knowledge of who pays them (i.e. hydropower plants and water supply companies) was very limited. For instance, 92% of interviewed farmers know who had directly distributed money to them (CPCs and village heads) but they did not know who the ES users were. Muong Pon 2 village (where direct communication was carried out) had the highest rate of farmers who knew about hydropower plants. However, there is a knowledge gap between village heads and farmers as village heads showed considerable knowledge about the source of payments.

Almost all of the village heads (92%) confirmed that the PFES payments were paid by hydropower plants and were able to name two of the largest hydropower plants (Son La and Hoa Binh).

This knowledge gap was also reflected in other dimensions of knowledge of PFES. A large proportion of village heads (76%) were unaware of the official rules and procedures for determining payment levels, while at the household level, not one interviewed households were able to point out the factors which could adjust the amount of payment made. Village heads had better knowledge of this than farmers as 28% of village heads pointed out the factors that might contribute to the difference in the amount of payment made (i.e. forest protection performance, forest quality and forest size). In addition, only a minority of surveyed households could recall the amount of PFES payments paid to these households. For example, in Doi 2 village, only 23% of interviewed households could recall the amount of PFES payments distributed to their households. The female respondents had less knowledge of this aspect compared to the male respondents. Just 2% of the households surveyed could recall the level of payment per hectare per year.

Moreover, understanding of the rights and obligations related to PFES agreements was low amongst local ES providers (Figure 4). More than 70% of household respondents did not know which forest protection activities they were required to comply with under PFES. In addition to their limited understanding of the rights and obligations under PFES, data shows that most farmers (70%) also had no knowledge of the amount, timing and frequency of PFES benefits. As a result, they were unaware if their payment was late or not. Only one household respondent reported that they knew the reason for late payment (i.e. due to the slow process of forest inventory). Local people were told about the level of payment made by the village management board and most farmers never cross-checked about the payment with any other authority.

Village heads generally demonstrated a better understanding of PFES than farmers did but PFES knowledge in both groups was far from comprehensive. In the village head survey, a quarter of village heads reported that they did not remember or know about the content of the community agreement. In addition, almost one-third of the village heads (29%) stated that they were not familiar with the overall terms of the agreement; they only stated the responsibility to protect the forest without outlining what activities should be conducted, implying that they were either not fully informed or they did not fully understand what they had consented to with regard to PFES. While the village heads reported that they understood the payment offered for forest protection activities, the farmers tended to see PFES solely as a requirement of the local administration.

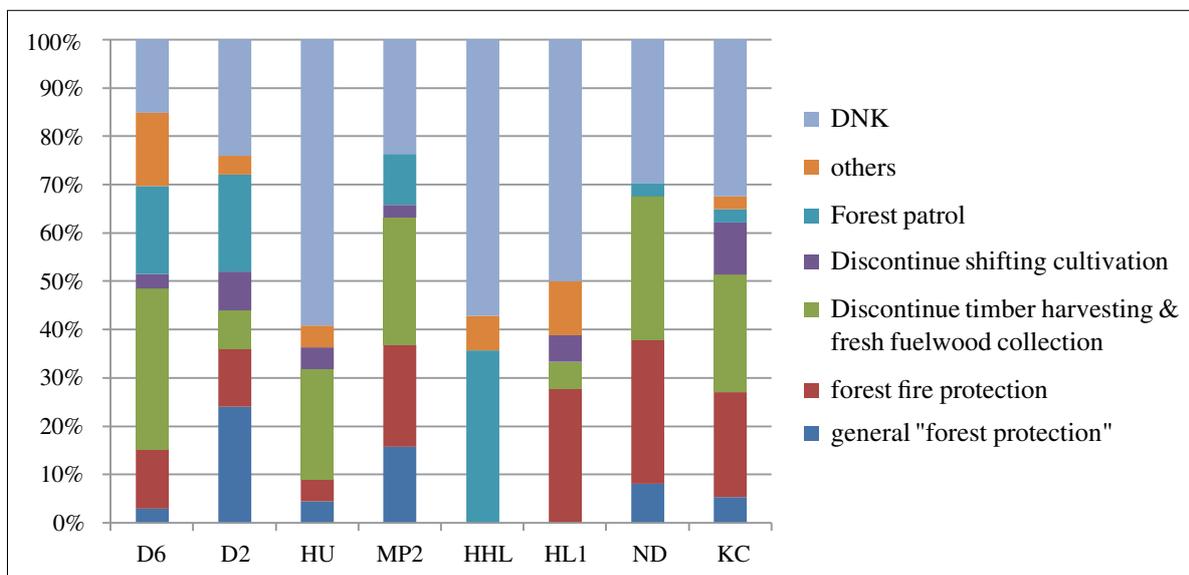


Figure 4. Awareness of forest protection activities according to the responses from the different study villages.

Note: (DNK=don't know/remember)

There was a difference in PFES knowledge across villages, ethnic groups and by gender. For instance, the number of respondents who were unclear about the activities needed for compliance with PFES was higher in Khang and Hmong groups compared to groups in Thai villages. More female informants were ignorant of the type of forest protection activities needed than male informants. Thai and Khang female respondents displayed better knowledge of PFES than Hmong female respondents. Hmong women were generally excluded from PFES information flows as the household heads (i.e. the husbands or fathers) did not usually share this information with their family members; information was more often shared between members of Thai families. Thai women were also more active in social interaction.

Villages with higher PFES payments had better knowledge of PFES than those with lower ones (Muong Pon 2, Doi 6, Ke Cai, Ho Huoi Luong compared with Huoi Un, Doi 2, Na Dang, Ho Luong 1) on key PFES features (Table 5). It suggests that the size of payment does matter; in fact, there might be a correlation between the size of PFES payments and the interest in PFES by farmers in the studied communities.

Given the clear lack of comprehensive understanding of PFES, village heads and farmers expressed their need to acquire more information on PFES such as the obligations regarding PFES and what activities should be taken to improve the payment made. Almost all (92%) of village heads and more than half (57%) of households said that they wished to have information exchange with the buyers. However, there is considerable difference between village heads and households (92.8% compared with 57%) in the attitude towards contact with service buyers. The higher rate reported by village heads is because village heads are representatives of communities, and their duty is to gather information and disseminate to other farmers. Amongst households, some households indicated that they were reluctant to seek information from service buyers because of lack of confidence and language barriers.

## 4.2 Payment distribution and involvement of local land users in the decision-making process

### 4.2.1 Process of payment distribution to communities

In this section, we discuss the payment distribution and utilization within communities under community agreements. Table 6 describes the size of payment allocated to eight studied villages.<sup>2</sup>

For ES suppliers that are organizations, the payments are transferred via a bank system. In other cases, the formal procedure of PFES payment distribution within communities under community agreements in Dien Bien follows the steps outlined below:

**Step 1:** After defining the service providers, Dien Bien FPDF builds a payment schedule and informs CPCs about the schedule. Dien Bien FPDF will visit each CPC to distribute PFES payments. After receiving payment, CPCs must inform ES providers in their commune about the payment date.

**Step 2:** On the payment date, Dien Bien FPDF staff members will be present at the CPC office. ES suppliers will go to the CPC office to get the payment. If ES suppliers are communities, at least three community representatives (i.e. the village head, the secretary and the village policeman) will collect the money on behalf of the community.

**Step 3:** Farmers will decide how to distribute and use the PFES money. This step is only available in the case of community agreement on PFES.

<sup>2</sup> All studied villages are within the Song Da watershed area. The payment level per hectare of forest within this watershed was VND 350,000 (USD17) – accumulated in 2011 and 2012 – (paid in 2013) and VND 200,000 (USD10) in 2013 (paid in 2014) (Dien Bien FPDF 2014). Dien Bien is officially involved in PFES since 2011 and payments have been collected from users since then. However, Dien Bien FPDF started to operate in 2013. Thus, the payment made in 2013 is the accumulated payment in 2011 and 2012. The payments made in 2014 were collected in 2014.

Table 5. Summary of village head and household respondents' knowledge of PFES issues.

Knowledge on:	Actors that drafted the PFES agreement	Forest protection activities agreed to conduct	The buyers	Date of participation	Size of payment	Forest type & area size under PFES agreement	Actors decided the payment frequency	Factor influencing payment level between years
Ho Luong 1	VH	+	Hydropower comp., but cannot specify	-	+	type, % of area under PFES	-	-
	HH	30%	13%	-	67%	73% know type	-	-
Ho Huoi Luong	VH	-	Son La, Hoa Binh hydropower comp.	-	+	type, % of area under PFES	-	-
	HH	39%	15%	-	+	54% know type	-	-
Ke Cai	VH	+	-	-	+	type, % of area under PFES	-	-
	HH	50%	14%	-	89%	54% know type	-	-
Na Dang	VH	+	Son La hydropower comp.	-	+	type, % of area under PFES	-	-
	HH	48%	7%	3.5%	71%	39% know type	3.5%	-
Doi 2	VH	+	Son La, Hoa Binh hydropower comp.	-	+	type, % of area under PFES	-	-
	HH	45%	-	-	23%	45% know type	-	-
Doi 6	VH	+	Son La, Hoa Binh hydropower comp.	-	+	type	+	-
	HH	75%	-	4%	92%	33% know about their protection forest	4%	-
Muong Pon 2	VH	+	Son La, Hoa Binh hydropower comp.	+	+	type, % of area under PFES	-	+
	HH	48%	28%	-	86%	51% know type	-	-
Huoi Un	VH	+	Son La, Hoa Binh hydropower comp.	-	+	type, % of area under PFES	-	-
	HH	29%	25%	-	75%	73% know type	-	-

\* +: known; -: unknown

**Table 6. PFES payment in studied villages (yearly payments) (VND).**

	PFES payment to village (2013) (VND)	PFES payment to village (2014) (VND)	PFES payment/HH (2013) (VND)	PFES payment/HH (2014) (VND)	Beneficiaries
Ho Luong 1	5,851,000	3,350,000	60,000 (USD 3)	40,000 (USD2)	Household
Ho Huoi Luong	828,000,000	792,000,000	5,700,000 (USD 285)	4,390,000 (USD 219.5)	Household, village forest protection group
Ke Cai	754,600,000	503,396,000	7,400,000 (USD 370)	4,200,000 (USD 210)	Household, village forest protection group
Na Dang	50,060,500	28,606,000	500,000 (USD 25)	280,000 (USD14)	Household
Doi 2	54,250,000	30,000,000	500,000 (USD 25)	300,000 (USD15)	Household, village forest protection group
Doi 6	74,394,950	42,511,400	600,000 (USD 30)	400,000 (USD20)	Household, village forest protection group
Muong Pon 2	391,765,500	554,779,125	1,500,000 (USD75)	530,000 (USD 26.5)	Household, village forest protection group
Huoi Un	12,540,500	17,758,602	100,000 (USD5)	100,000 (USD5)	Household, village forest protection group

As observed in other provinces, the rationale and the details of K-coefficient are often not well understood by forest owners due to poor communication and information sharing. Thus to avert conflicts among communities, Dien Bien FPDF currently only employs K3 (origin of forest).

As ES suppliers are excluded from the decision-making process on payment distribution procedures at provincial and community level, village heads and farmers can only decide about the PFES payment distribution process within their communities.

Dien Bien FPDF makes a decision on the frequency and timing of payment distribution twice per year (one for advance payment and one for the rest of the payment – each time approximately 50% of the payment is released). From a local perspective, the preference for the frequency of payment is quite diverse. Most village heads (63%) stated that they preferred to have an annual payment because it was most efficient, easy to distribute and saved time. Just 15% of village heads stated that they would prefer twice a year payment; they said that phased payment within a year would drive better compliance to PFES requirements. Advance payment would encourage the participation of local people and the second payment would ensure performance. However, household respondents indicated that they would prefer if payment was made once per year. The majority of these respondents were located in villages with lower payments (e.g. Huoi Un, Na Dang). First, if payment was too scattered, the amount of payment was consequently too small to reinvest in livelihood activities. Secondly, a high frequency of payment also meant high transaction costs. “The total payment for the whole year is low. If we receive the payment two times, we don’t know what to do with such a low payment. If we receive once for a whole year, maybe we can buy something when the payment is accumulated,” stated a household respondent.

There is also a fear of corruption amongst household respondents, and the fear is likely to be higher in villages with high PFES payments. Respondents in Ho Huoi Luong village (highest PFES payments amongst studied villages) stated that they preferred having less actors involved in the distribution process, and if possible, they would like the CPC or Dien Bien FPDF to directly distribute payments to farmers, without involving the village management boards. However, local ES providers were not able to influence the process of payment distribution from Dien Bien FPDF to communities.

Currently, 100% of PFES payments transferred to ecosystem services providers in Dien Bien FPDF are in cash. This type of payment is preferred by 88% of household respondents due to its flexibility so farmers can tailor it to their personal needs (e.g. buy livestock and fertilizer, pay for children's education). Those preferring cash payment are mostly farmers receiving higher amounts of PFES payments (e.g. in Muong Pon 2, Ho Huoi Luong and Doi 6). In addition, in the villages with a history of various support programs (e.g. Muong Pon 2 and Doi 6), the surveyed households pointed out that they preferred cash as they were already getting various in-kind benefits from other support programs (e.g. community forestry program in MP2). Interviews from Ke Cai showed that local people had low interest in in-kind benefits as their previous experience with community facilities offered by government was easily damaged. Amongst households who preferred in-kind benefits, the preference for which type of in-kind benefits depended on the context of the village such as its geography and economic status. Community tools/facilities (e.g. roads, infrastructure) is often mentioned in isolated villages with difficult access (Huoi Un and Ho Huoi Luong). Moreover, villages with low cash payments had a higher rate of preference for in-kind benefits.

The preference between receiving individual or collective benefits depended on economic status and the existence of support programs in each village. For example, farmers in Doi 6 and Muong Pon 2 with better wealth status and infrastructure stated that they would like to receive individual benefits while village with underdeveloped infrastructure (e.g. Ho Luong) still preferred to receive collective benefits.

Most village heads (69%) and household respondents (82%) said that the process of how payments level were set was not transparent or well understood. There were differences in responses between village and gender categories. A significant proportion of respondents who perceived the process as transparent were located in Doi 2. Based on our observation, it seems that more people in Doi 2 had more access to information as the vice commune chairman lived in Doi 2. The village head also had better recording and accounting skills as he served as an accountant in the army. Significantly, women were less informed compared to men as they rarely participated in village social activities.

#### **4.2.2 Decision-making process on payment use within villages**

Voting in the village meeting was perceived by all surveyed village heads and household respondents as the fairest way of making collective decisions on community issues, including PFES and this procedure was used in all studied villages. However, this does not necessarily mean that collective decisions made in village meetings were conceived as fair by all of the local ES providers. The majority of interviewed households (64%) stated that decisions about using PFES payments were made at village meetings. Just 7% of interviewed households stated that they thought that local authorities made the decisions. Another 7% said that decisions were made by village management boards (i.e. village heads and village secretary) who would usually dominate village meetings without considering the villagers' opinions. The decision in Hmong and Khang groups was more likely to be made by a notable person in the village or by local authorities; the majority (80%) of Thai respondents stated that decisions were made by farmers in village meetings while only 50% and 35% of Hmong and Khang respondents, respectively, agreed. Notably, 22% of household respondents said they were not clear about how decisions were made.

### 4.2.3 PFES payment utilization within villages

According to the village head survey, the priorities for using PFES payments were different across communities. The types of payment utilization varied and included: (i) building community infrastructure; (ii) upgrading and buying common assets for the community; (iii) paying the village forest protection group; (iv) equally distributing payments to all households; (v) setting up micro loans for diversifying livelihood activities; and (vi) other activities (e.g. saving in a community fund for a year-end party) (Figure 5).

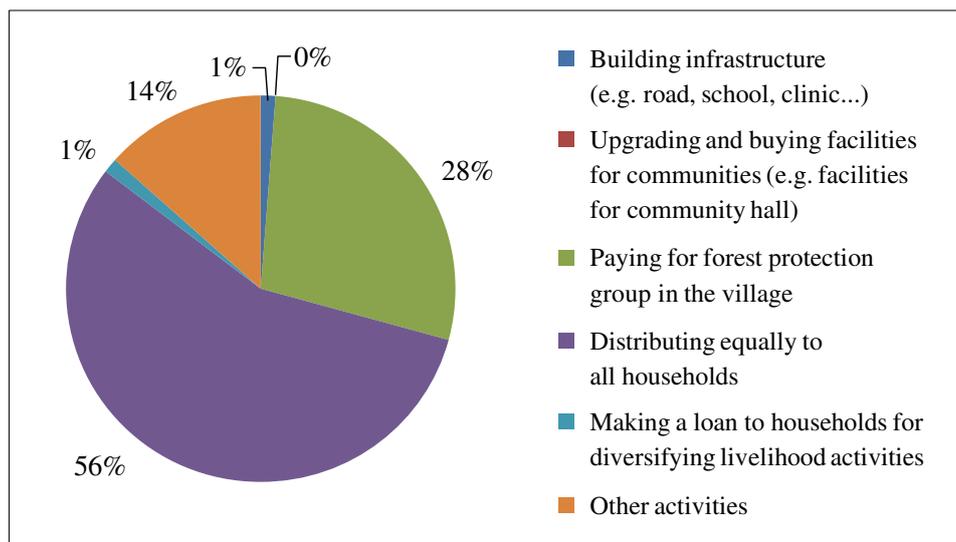


Figure 5. Utilization of PFES payments within villages.

Equal distribution to farmers was the top-ranking preference of farmers (selected by 56%). Households expressed their concern about the misuse of payments where payments were saved and used for collective actions. Thus, immediate distribution was considered to be a safer choice. Most village heads (74%) also expressed a preference for this option to minimize potential disputes as the village head often held PFES payments before the decision on their use was made; only 6% of those villages had a village accountant. Village heads have a critical role in deciding how the money should be used, but their limited financial management capacity leads farmers to mistrust them when other options for money using are suggested.

The second preferred option for payment distribution within the villages was that a portion of the payments would be transferred to village forest protection groups (28%). This option was often complemented by the equal distribution option. Surveyed households stated that they agreed with this option because they thought that the money should be given to people who conducted the work. In most cases, both households and village heads claimed that the payment for forest protection group is not high enough and cannot cover for their labor as PFES payment is mostly used to buy their equipment for forest protection task. The selection of members of forest protection groups was also voted for in village meetings. Both village heads and farmers confirmed that the payment to each member of the forest protection group was lower than a working day wage in rural areas of Dien Bien (approximately VND 70,000/USD 3.5 per day). The payment for these groups was usually taken from PFES payments or other financial sources of forest protection, without any extra support from the government. Surveyed households believed that the participation in forest protection or security group was often considered as a duty rather than a voluntary activity motivated by benefits.

The collective use of payments such as micro loans required the trust of farmers in the financial management capacity of village management boards. The needs of villages were considered as well. For example, building infrastructure was chosen only in villages with underdeveloped infrastructure.

The size of payment also influenced the use of the payment. For instance, villages that received low PFES payments tended to store the payment in village funds or spend it for common use because the amount was too small to equally distribute it to each household.

Peer influence is also an influential factor in collective decision-making. Some household respondents stated that sometimes they did not agree with the selected option, but they didn't dare to voice their opinion, as they were reluctant to disagree with their neighbors.

### 4.3 Local communities' perceptions of the equity principle

In order to gain insights on the perceived equity of benefit distribution and the underlying distributional equity criteria (Table 1), farmers were asked whether the payments they received were perceived as sufficient, which benefit-sharing options were conceived to be fair and who should have been prioritized in benefit distribution.

#### 4.3.1 Perception of sufficiency of payments

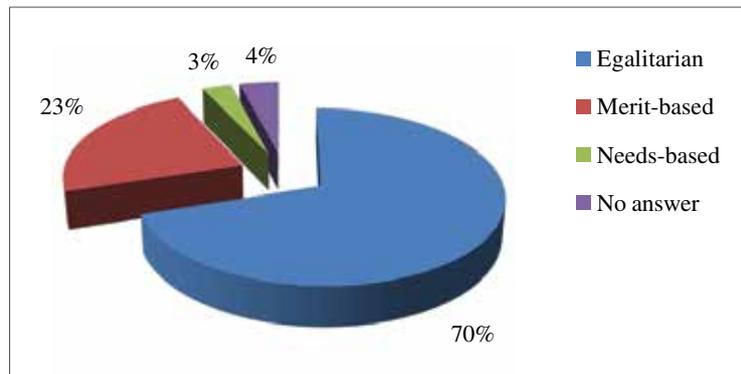
Data revealed that the payment amount from PFES was perceived to be "sufficient" by 62% of interviewed farmers and 77% of surveyed village heads. However, there were different benchmarks used by informants to assess whether the payment was sufficient or not. One benchmark for assessment was to compare PFES to payments from previous forestry programs. Another one was to compare the PFES payments to the payments which farmers could get using the same labor spent according to local market prices.

There were differences in household responses to this question between village, age, ethnicity and education level classifications. A village with high payments perceived the payments to be sufficient (e.g. Ke Cai farmers). Amongst the studied villages, Huoi Un received the smallest payment of about VND 100,000 and not surprisingly, the majority of farmers (65%) felt that the payment size was not sufficient. Some explained that the implication of equal distribution disregarded people's efforts. In the equal distribution option, the forest protection groups do not get extra benefits even they make more efforts and villagers who commit illegal logging still receive the same shares as others who don't.

#### 4.3.2 Distribution criteria

To explore the principles of equity that farmers use, we asked them about who they thought the benefits should be distributed to, in the context of their villages. Data shows that giving an equal share to all households (egalitarian based approach) was preferred by 70% of those surveyed, following by a merit-based approach (those who carry out more forest conservation efforts will get a larger share) (23%), and then by a needs-based (priorities are given to the poor and marginalized people in the community) (3%). Achievement/status/power-based approach (e.g. power groups – such as village heads or notable persons – will get the larger share) was not chosen by anyone. The ideas of priority for power groups would never be accepted under local norms and might provoke conflicts. Data from village head survey also displayed strong support for the egalitarian principles and most village heads stated that using the power-based principle would give them a bad reputation.

In our studied villages, the strong preference for the equal share option can be explained by various factors: i) study villages have a long history of using the equal share option in distributing public benefits; ii) ease of distribution – equal share is the easiest way to distribute; iii) farmers were told that all households equally contributed to forest protection tasks; and iv) to avert conflicts between farmers.



**Figure 6. Preferences for PFES benefit distribution.**

The preference for an equal share option was also expressed for payment use, which is discussed in Section 4.2.

Household interviews across the eight studied villages (with different ethnic groups, history and traditional customs) revealed that equal distribution was applied not only for PFES benefits but also for other support programs. Equal payments has been a long held practice, used to minimize the conflicts that might arise in villages, as interviewees stated. If benefits were not distributed equally to each household and farmers did not understand rationale behind the distribution, there might be conflict.

Furthermore, in applying equal distribution, village heads only needed to organize a meeting and immediately distribute the money to farmers; otherwise they had to keep the money and were more likely to be suspected by the farmers. Apart from the difficulty of helping all of the farmers understand the rationale for selected payment options, other choices of distribution options rather than equal share require financial management skills. All households are responsible to attend forest patrols under forest protection regulations formed by collaboration between the village and local authorities. In the studied villages, all of the households in the village were organized in to several groups (those groups consisted of a certain number of households) and each group was in charge of a forest patrol rotationally during the year. In the case of forest fires, all households were required to work on it. Thus, the forest protection work was equally distributed to all households. As the contribution was more or less equal, farmers insisted that their share of benefits should also be equal. Farmers often see labor input as a benchmark to deciding the option of benefit sharing, hence, it is understandable that the input-based option ranks second. However, if labor is used as a benchmark, a record of labor input of farmers should be managed in a transparent manner. In this case, the equal share option is still most efficient, as it requires no documents.

The needs-based and power-based options were not popular. These options were rarely mentioned by Thai group and were completely ignored by Hmong and Khang groups. As the poverty rate in Hmong and Khang village was high, informants indicated that it was difficult to prioritize the poor and marginalized groups. The power-based option was rejected as it is against local norms.

In the previous discussion, we explored how people determined the type of benefit-sharing option they used. After that, farmers were asked about the basis for payment distribution (Figure 6). A large proportion of interviewed households (82%) selected the input-based basis as fair as higher payments would be distributed to actors who spend more labor and time on forest protection activities (Figure 7).

It is worth exploring the difference shown in Figure 6 (where the equal share option is dominant) and Figure 7 (where the merit-based option is dominant). Farmers explained that their preference for equal sharing was linked to the merit-based principle; people conceived egalitarian as fair because households contributed equally to forest conservation efforts (using input as a benchmark). Hence,

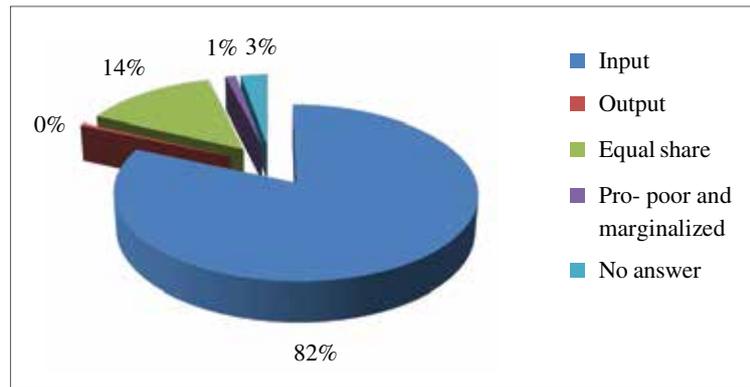


Figure 7. Basis for payment distribution by local households.

while farmers wanted an equal share for each household, about 80% of them agreed that members of village forest protection groups deserved to get extra benefits if they conducted forest patrol more regularly than ordinary farmers.

Data shows that output basis was almost rejected. Measurement and verification of forest quality is challenging. In addition, farmers argued that it was unfair if someone got a larger payment because they were allocated better forests than others.

## 4.4 Motivation for participating in PFES and forest protection efforts and linkages between equity perceptions and behavior change

### 4.4.1 Default participation in PFES

In the studied communities, local land users viewed the involvement in forest protection as a government requirement. Among forest-dependent communities in Dien Bien, communities and forest rangers jointly developed village forest protection regulations. In those regulations, the duties in terms of forest protection by community members and the sanctions for noncompliance were outlined and required all members of communities to comply. Before the presence of PFES, communities had been paid through other forestry programs (e.g. 327, 661) for forest protection. The communities were still required by local authorities to protect forests when these programs ended. For example, conversion from forests and forest land to other land uses is strictly prohibited and could be subject to punishment – communities and households had no legal right to convert forest areas to other land use types. Thus, PFES becomes an obligation rather than an option. While this regulated and enforced behavior may be effective in the short term, the relevance of this practice, particularly in the context of changing markets and socioeconomic dynamics, may not be sustainable or fair.

In practice, there are still some households in the communities who are reluctant to participate in PFES as they see it as giving low benefits. These households are often reportedly relatively rich and do not wish to carry out forest protection activities. However, the village forest protection regulation requires all community members to participate in forest protection. Moreover, peer influence also plays a role, for example, a respondent in Huoi Un village highlighted “I protect forest because all the farmers in my village do that”.

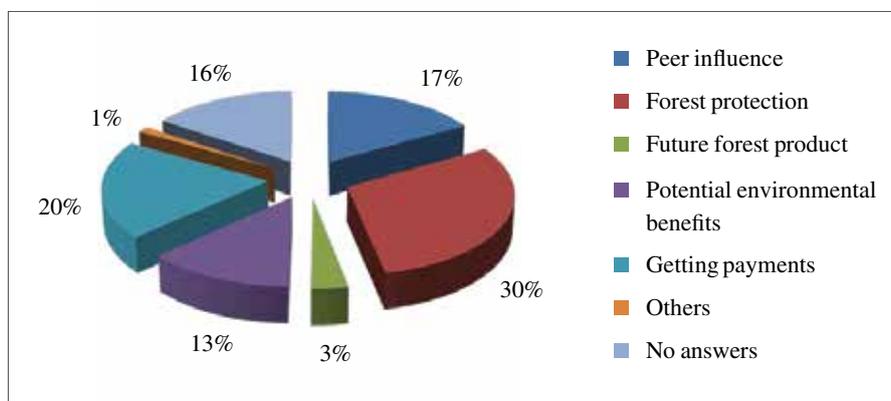
Disincentive instruments might also play a role. As regulated in village forest protection regulations, households who do not comply with forest protection (e.g. are absent in forest fire control or are involved in illegal logging) will be under certain kinds of sanctions (mostly financial fines). The common punishments are financial sanctions or PFES payment reduction to the identified forest protection violators. For example, a typical financial fine is about VND 50,000–100,000 (USD 2.5–5)

for a first violation and VND 100,000–150,000 (USD 5–7.5) for a second violation. However, household respondents reported that current sanctioning is not sufficient to prevent forest violations as profits from violation behavior (e.g. illegal logging) often far exceed the fines.

#### 4.4.2 Motivational factors for PFES

In this study, we specifically asked interviewed households about their motivations in getting involved in PFES. Households were able to state more than one reason for driving their participation in PFES as the questions they answered were multiple-choice type questions.

The reasons why people chose to participate in PFES varied and included both economic and non-economic incentives. Economic incentives, e.g. PFES payments (20%), certainly played a major role (Figure 8).



**Figure 8.** Incentives for involvement in forest protection efforts.

Villagers who got higher PFES benefits (HHL, TM farmers) mentioned PFES payments more frequently as motivation than those who received lower payments. It highlights again the importance of the size of payments. Another key motivation was peer influence (16%). In the studied villages, forest protection was conceived as a communal task, thus, all members of communities were expected to be involved. Forest products were only rarely mentioned (3%) as benefits or incentives. The benefits from forest products were more frequently mentioned in Khang and Hmong villages than in Thai villages. In the studied villages, the access to forest resources was very strict due to complicated procedures to get permissions from local authorities, thus the potential extraction of forest resources was not really attractive to local people as their access is limited.

A large proportion of respondents stated the incentive was to have “forest protection” as an outcome. This basically linked to a requirement of government, where local people see forest protection as a means to fulfill government’s demands. Thai villages often have more diverse livelihood activities, hence are more independent from forests for their livelihoods, so benefits from forest products are less important to them than to other informants. Village heads and farmers did not mention equity issues thus there we can find no linkage between equity considerations and potential behavioral changes.

Based on our household survey, a large proportion of households could not estimate the foregone profits by engaging in PFES, as alternative livelihoods are not possible on forest land. Thus, local land users usually did not consider opportunity costs as forest conversion was strictly prohibited. Other related costs with regard to PFES payment distribution (e.g. village meeting or gasoline for village head to go collect the money) was reported by both village heads and farmers as a minor cost.

# 5 Discussion

## 5.1 Knowledge of local ES providers

In this study, we found that there is a PFES information deficit among local land users. This issue should receive careful attention as it might cause noncompliance from local ES providers where weak communication appears. Experiences from REDD+ projects globally showed that lack of coordinated communication to local communities may be a source of opposition and conflict (Reed 2011).

For example, the lack of clarity on PFES information of farmers on their rights and liabilities, and which activities they should carry out, could impede the compliance of these ES suppliers to PFES arrangements, and might have negative effects on PFES implementation. Moreover, as the salient features of PFES (e.g. who are buyers) are not properly communicated to local land users, the effectiveness of PFES implementation is questionable, as farmers cannot distinguish PFES from other government subsidy programs. This creates further risks as conservation interventions can only be successful in the long term if local people accept their aims and activities (Sommerville et al. 2010).

PFES implementation in Dien Bien shares a similar problem that was pointed out by Reed (2011) as the remote location of many communities is a barrier to full and timely communication. In our study sites, direct and indirect communication each has their own drawbacks: economic inefficiency (direct communication) and the risks of ineffectiveness in information delivery (indirect communication). While governmental intermediaries were not able to conduct frequent direct communication due to limited resources and budgets from governmental intermediaries, indirect communication is widely preferred. However, with three layers (district officials, CPCs and village head), indirect communication is likely to pose questions on the quality of outputs of information dissemination system where information can be distorted.

Another issue is the lack of a grievance-handling system, which results in strong dependence on the village head for verifying information. However, even the village heads in our village head survey do not show a comprehensive understanding of key features of the PFES program. Hence, there is doubt about their capacity to respond to feedback from farmers.

The language barrier is also a problem in the communication process. As local communities in this study are not fluent in written Kinh (Vietnamese) or local languages, verbal communication is of utmost importance. This further emphasizes the role of village heads and village management boards in disseminating information.

Thus, the capacity of village heads and village management boards should be addressed. At the time of writing, Dien Bien FPDFs has started to introduce a PFES manual for village heads so that they could record the PFES payments distributed and used in the village. In addition, training in financial management skills for village heads was planned.

To diversify the sources of information, Dien Bien FPDF could uptake lesson learned from other provinces in Vietnam. For example, some materials on PFES written in a simple style (e.g. using leaflets, posters) could be disseminated to communities as already implemented in Son La and Lao Cai provinces. Son La set up a hotline system, where a phone number was publicized to communities on posters where local land users could directly call the FPDF to get PFES information.

## 5.2 Involvement of local land users in the decision-making process

Local ES providers had low participation in the collective decision-making process at various stages by their absence in the formulation process of the forest protection agreement (informal PFES contract) and their absence in decisions about benefit distribution from provincial to village level. Community engagement in the collective decision-making process only surfaced in terms of distribution of the PFES payment once it was delivered to the village. This might pose some risks in terms of procedural equity. Consequently, decisions on how PFES payment should be used varied according to number of contextual factors: the priorities of village, the financial management skills of the village management boards and the size of the payments.

The allocation of benefits once payments were delivered to village level, as found out in our study, were decided upon by the village heads and farmers through a voting procedure in a village meeting. As a result, village heads not only play crucial role in information flow but also in the decision-making process; their role was to receive, keep and manage the money and facilitate the meeting which decided how the money should be used. As suggested by Pham et al. (2014), clear procedures for this decision-making process should be developed to monitor and ensure the ways which payment are used match with the community's decision.

Several challenges to ensuring inclusive decision making happen in village meetings. Local social norm prevents farmers speaking up and providing contrasting views. In addition, limited understanding of PFES, as pointed out earlier, is another barrier for their meaningful participation. As reflected in our findings, peer pressure as well as the dominance of certain people might also affect the willingness of others to speak up. Village meetings also serve to inform and get agreement from farmers on forest protection agreements prior to PFES implementation. However, the negotiation in those village meetings is very little as village heads only verbally inform and seek the agreement of farmers while very little feedback from farmers is encouraged or made.

To address the challenges for promoting active participation in the village meeting, a method of voting where voters in the meeting are anonymous could be developed. For example, the facilitator of the meeting could pass around to the participants a paper outlining the different options for the use of payments (a clear verbal explanation should be given in advance of this, as many constituents could be illiterate) and then voters could tick off or put their fingerprint on their chosen options. It might eliminate hesitancy of participants in the village meeting to voice their opinions.

Pham et al. (2014) also mentioned that legitimacy over the decisions from the meeting could be increased by a careful meeting minutes recorded by a village secretary. This again highlights the need for capacity building of village management boards. Moreover, promoting the youths with higher education in a few Thai villages to the job of recording and bookkeeping could increase the transparency of process.

As farmers are excluded from the process of negotiating the agreement on decisions about the type, amount and frequency of payments, this results in local perceptions that equity is not properly considered and poses a risk of conflict. Thus, program implementers and policy makers should review the perception of process and communication not only about PFES implementation; wider consultation with local land users should also be conducted.

## 5.3 Local perceptions of fairness and its impact on the collective decision

This study shares similar results with findings from Martin et al. (2014) with regard to environmental justices in their case study in Rwanda where the egalitarian option is the dominant choice and other distributive options are rejected. The needs-based principle is ignored as there is no significant discrepancy in villager's wealth status. The poor are also eligible to get benefits for some government

support programs, which are particularly designed for poverty alleviation, thus, there is little need for PES or an environmental program to prioritize the poor. Similarly, the prioritizing of village heads and notable persons option is also rejected.

However, the dominance of egalitarianism in the studied villages needs to be prudently assessed. The underlying notion of equity still lies in the input-based basis. It is crucial to understand this point when designing PFES to match with local equity. At this stage, the dominant notion of fairness of local people (merit-based) still overlaps with current practices (equal share-based) due to the equal contribution to forest patrols under village regulations. However, the distributional options should be reconsidered when the households' efforts are no longer equal. Some households specifically participate in the forest protection group and still fulfill their responsibility (e.g. in the case of forest fires, all household are expected to participate) the same as other farmers do.

Across study villages, there are significant differences in the amount of payments paid to villages where some receives very high level and some are very low due to discrepancy in the amount of forest area allocated. This is also against the perception of input-based option, as village heads claimed that the difference in term of labor input amongst village is not that prominent. Hence, we suggest an inter-community equalization mechanism.

While local people put a heavy focus on input-based options, output-based payments are almost ignored. The first explanation is that the output is not easily measured. Moreover, returning back to the PFES information, local land users do not have good knowledge of forest status, thus it is difficult to measure output beyond a baseline. Moreover, the output-based option largely depends on external factors (e.g. external illegal loggers) while local people stated that those factors are beyond their control.

The overlap on notion of justices through various level, from local land users, local authorities to State policies, can contribute to the economic and environmental outcomes of projects (He and Sikor 2015). Thus, it is worth examining whether local perspectives of ES suppliers match with the notion of justice used by project implementers or set by policy makers of PFES. K-coefficient could be seen as a starting point to understand the principle of distributional equity from State policies.

K1 and K2 require detailed assessment of forest quality and quantity and this assessment will be costly and time-consuming. Given that the process of forest inventory and allocation in Dien Bien is still slow, gathering accurate data to determine K1 and K2 is not feasible as a proper monitoring and evaluation system is not in place. Moreover, local land users do not have a good knowledge of status and type of forests in order to understand the implication of K1 and K2. Regarding K1, K2 and K3, forest owners that are organizations are likely to have higher PFES payments than households or communities as these organizations (e.g. SFEs) are often allocated forest area of better quality compared with local households and communities through the FLA program (Nguyen et al. 2008).

The rationale behind K4 is often unclear to implementers and too abstract to be applied. In principle, K4 takes into consideration of social and geographical factors in the context. However, it is questionable on how to translate these factors into practice. There is an argument that payments should be higher for ES suppliers who live far away to forest area under their protection because their transportation costs and time is added up. However, a counter argument is that if the forest area is isolated, the work of protection will be easier because that forest area is likely to avoid intervention, e.g. illegal logging. Moreover, there is no guidance yet on which are the social and geographical factors should be considered while only distance from forests to resident area to forest area is somewhat taken into account. Besides of that, questions on how to adjust payments according to level of income, ethnicity and gender were still not solved.

Dien Bien FPDF insists that only K3 is easy enough to use. This is also reflected at local level as local ES providers are only able to identify the origin of forests rather than other criteria. However, it should

be noted that the vast majority of interviewed households do not know anything about the application of a K-coefficient.

It is reported that the application of the K-coefficient is one of the key challenges in PFES implementation at provincial level (VNFF 2015). It seems that the perception of fairness of government did not meet the perception of fairness of local people, as reported by FPDFs in Lam Dong and Son La province in the PFES pilot phase (Pham et al. 2013). The coefficient is often seen as unnecessary and ignored because there is a concern that different payments varied by forest types can provoke conflicts in communities (Pham et al. 2013; VNFF 2015). As a consequence, in the pilot period since 2008 to 2010, Son La and Lam Dong province had applied  $K=1$  for all kind of forests (Pham et al. 2013). This  $K=1$  is still employed by eight provinces to date (VNFF 2015).

As stated earlier, State policies determine that the same payment level is applied for each forest hectare in a certain watershed area. The payment level that ES suppliers receive is determined by the forest area they manage and by the watershed. This leads to significant differences in the amount of payments between villages where two villages manage the same amount of forest area but under different watershed areas and have different level of payments. Some are calling for a uniform payment level over a certain region, but it is against the wishes of buyers, as they only want to prioritize watersheds that serve their operation (Nguyen 2015).

Moreover, this study also observes a slight difference in the notion of justice across studied villages due to a variance in contextual factors such as economic status and ethnicity. This aligns with the argument that equity dimension is context dependent (Pascual et al. 2014).

As such, the mismatch of the principles of equity between State policies, provincial implementers and local ES providers can be clearly seen. The contestation over the meaning of justice should be viewed as an important element and should be addressed, for example, by providing sufficient space for local people to adapt their notion of justice (Sikor and Cam 2016). Thus, in order to reduce the gap among different stakeholders over perceived principles of equity in PFES implementation in Dien Bien, a participatory process should be adopted which includes communities and buyers in defining criteria for indicators of the K-coefficient.

#### **5.4 Motivational factors for PFES participation and linkages between local perception of equity and behavioral change**

The key drivers of deforestation in Dien Bien are shifting cultivation and land conversion for agricultural production to cope with food security issues (TFF and FIPI 2012). When exploring motivation factors for PFES participation, consideration of these drivers needs to be part of the equation. Although deforestation is illegal, this practice still exists where local people have no other options to ensure their basic needs. As such, food security in particular and livelihood activities in general requires proper attention with regard to the design of PFES.

PFES payments are seen as a promising reward for forest protection. However, it seems that it is not only the size of payments that matters. We cannot observe the influence of local perceptions on distributional equity and its link to behavioral change due to the limitation of our study design and process of our household interviews. The ability to sift out the finer details of distributional equity on behavioral change is also affected by the fact that forest protection and deforestation is already a legal obligation that comes with their rights to the forest. Thus, the use of field-framed games or experiments on behavioral economics may be one way of digging deeper into this issue (Bruner and Reid 2015; Salk et al. In press).

This study also indicates that we need to rethink the assumption of using opportunity costs to determine PES payments distribution (Martin et al. 2014). With strict regulation from government, the

conversion from forests to other land use types is not always possible in our cases, therefore, the use of classic opportunity costs to motivate away from forest clearing activities does not apply. Rather, it would be more relevant to consider the different types of costs or burdens borne by the local people in having to protect forests as a national public good.

Better attention should be paid to how to align PFES benefits with the preferences of local people in order to improve their incentive performance (Pham et al. 2014). From results of our research, a closer examination on the type and form of benefits (i.e. in cash vs. in kind; individual vs. collective) and the local context could be helpful in designing and adjusting PFES incentives to match up with the needs and preferences of local people.

Besides monetary incentives (cash payments), other non-monetary benefits such as access to forest products, climate regulation and preservation for the use of future generations were mentioned as factors that might drive the involvement of local people in forest protection efforts. In addition, there is a strong need to acquire more information from PFES as the vast majority of interviewed households indicated that they want to have meeting with buyers or local authorities to have a clear understanding of the rights and liabilities with regard to PFES.

## 6 Conclusion

This study addressed the research question of how equity is locally conceptualized in the PFES benefit-sharing process and what influences their different conceptions of equity or fairness. In our case study of the national PFES scheme in Dien Bien, we examined the process of information dissemination and communication, the participation of local land users in allocation and structure of benefits, the different principles or conceptualizations of equity by local communities and to what extent equity considerations served as motivation for forest protection efforts.

Information deficit is a prominent issue in PFES implementation in Dien Bien. Local people are not fully aware about their rights and responsibilities with regard to PFES and basic information on PFES payments is also limited. Village heads play a crucial role in controlling the information to local people and often are the only channel of information in most villages. Thus, this information asymmetry might hamper the role and position of local communities in the decision-making process.

This current situation also limits the local community's role and voice in the benefit-sharing mechanism; they only have a say at final steps on how the payment is used within villages. The current benefit-sharing mechanism is characterized by the local traditional customs of benefit distribution and is based on existing mechanism and practices of previous forestry and government support programs. It is questionable within these constraints if there is capacity for local people to influence the decision-making process as they have the rights to vote for how payments are spent but otherwise they have little voice or influence in the overall process.

While payments are not be perceived to be the key motivational factor for local people to participate in PFES, they are useful in rewarding local people for their efforts in forest protection. Farmers appreciate economic incentives but non-economic incentives could also drive local people to PFES participation as other benefits from forests such as regulation of sub-climate were considered to be important. The proponents of PES schemes should scrutinize the perspective of ES suppliers on the benefits gained from forests as well as the costs and burdens from protecting forests, to determine how to design appropriate incentive mechanism which match with local demand and needs. We found that egalitarian and merit-based principles are preferred among communities. However, it should be carefully considered when the egalitarian equity principle, which is currently employed, does not necessarily match with rationale of local people. In addition, local perspectives of fairness are not explicitly reflected and taken up by project implementers as the focus is to speed up distribution process. This lack of careful consideration on potential effects on creating distributional inequity of PFES payments could have detrimental effects on the sustainability of the program. Current PFES implementation also faces major challenges in addressing equity issues in PFES (e.g. the application of K-coefficient). This calls for better collaboration by actors across levels. For example, the use of K-coefficient could be a joint indicator development between CPC and farmers.

This case study from Dien Bien highlights the need to improve information flows and communication with local farmers, as the information they acquire may be crucial in their decision to engage in PFES decision-making and reporting processes, to participate in PFES and may affect their behavior in conserving forests. In addition, it is important to understand the underlying rationale behind the local perspective of equity, as egalitarian distribution has a long history at the local level, but the factors perceived as "fair" by people is distribution based on work efforts. So what is considered as equitable is not always fair. Currently, the PFES participation of local farmers is shaped by the long-term relationship and legal obligations on forest protection by farmers. This may change, however, with fast-changing socioeconomic dynamics, market influences and information networks in rural Vietnam. The local perspective of fairness within these changing conditions should be taken into account for

understanding motivations and behavioral change towards forest conservation and management. The mismatch of fairness perceptions between government and local people, and the lack of procedural equity in the current design and implementation of the PFES benefit-sharing mechanism should be further elaborated and addressed. As such, this study provides insights into how local equity perspectives can be interpreted and taken up in PFES implementation which is not only effective and efficient, but also achieves equitable outcomes.

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Vietnam is the first Southeast Asian country to implement a national program for payments for forest environmental services (PFES), providing lessons on how such systems can be designed to achieve forest outcomes that are effective, efficient and equitable.

This Working Paper presents results from an in-depth study on the implementation of PFES in Dien Bien province, Vietnam, which assessed how equity was locally conceptualized in the PFES benefit-sharing process and the factors that influenced local perceptions of equity.

We found that local perceptions of equity varied across PFES communities because of differences in social contextual factors such as ethnicity and in the geography of the areas that affected the size of PFES payments and the level of PFES implementation. While PFES policy did include distributional equity considerations through formulation of the K-coefficient, this coefficient was not properly implemented on the ground due to its complexity and lack of data.

The procedural aspects of equity were found to be lacking. Poor information flows, lack of awareness of rights and responsibilities and the non-participation of local ecosystem service (ES) providers in decision-making processes led to a general sense of inequity and demotivation.

This study suggests that particular attention should be given to improve information sharing and communication patterns with local ES providers and to establish a proper grievance handling system for two-way information flow. The inclusion of local people in decision-making processes on the key elements of benefit-sharing mechanisms is crucial in aligning PFES benefits with the preferences of local people and could potentially help to motivate their performance in forest management. Policy makers and program implementers will want to examine local perspectives of equity – and to understand how these can change over time – so that they can tailor the design of benefit-sharing mechanisms to generate effective, efficient and equitable PFES outcomes.



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