



# Regional Synthesis of Payments for Environmental Services (PES) in the Greater Mekong Region

Luca Tacconi



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**Luca Tacconi**

Crawford School of Public Policy  
College of Asia and the Pacific  
The Australian National University

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Kids fishing on the Mekong river near Dont Det (Laos)

CIFOR  
Jl. CIFOR, Situ Gede  
Bogor Barat 16115  
Indonesia

T +62 (251) 8622-622  
F +62 (251) 8622-100  
E [cifor@cgiar.org](mailto:cifor@cgiar.org)

**[cifor.org](http://cifor.org)**

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# 1 Introduction

CIFOR has been conducting a regional review of payments for environmental services (PES) in the Greater Mekong region with support from the United State Agency for International Development (USAID). The purpose of this report is to synthesize the country studies on Cambodia, Laos, Thailand and Vietnam (Milne and Chervier 2014; Nabangchang 2014; Pham et al. 2014; Robichaud 2014) to compare the various PES schemes to assess their current status, implementation processes and lessons learned, and draw policy recommendations relevant to REDD+. The review process culminated in a Regional Workshop on Payments for Environmental Services (24–25 November 2014, Hanoi), that involved representatives of government organizations, nongovernmental organizations (NGOs), and the private sector from Cambodia, Laos, Thailand, and Vietnam, USAID staff, as well as researchers from CIFOR, some of the authors of the country review reports noted above, and the author of this report.

The countries considered by the review present rather different political and policy conditions, even though they are neighboring states, and as a result PES schemes are at a very different stages of development. In addition, the individual country reports, prepared for the review, differ to some extent in the details they provide about the status of the PES schemes considered. This makes a comparative review a difficult exercise. Nevertheless, there are interesting lessons to be learnt and recommendations for policy. A summary discussion of the definitions of PES is presented first, given that the definitional issue is raised in the individual reports. The discussion is used to present a comprehensive framework of the key design features of PES, which will be used to outline the features of the PES schemes in the four country studies in Section 3. A comparison of the key features and issues is drawn in Section 4, with the key lessons learnt from the country studies and this review are addressed in Section 5. The concluding section addresses policy recommendations relevant to REDD+.

## 2 The definition of PES and key design features

The earlier and most cited definition of PES, which is also the focus of a significant part of the analysis of the Laos country study, defines it as: “a voluntary transaction where a well-defined ES [environmental service] (or a land-use likely to secure that service) is being ‘bought’ by a (minimum one) ES buyer from a (minimum one) ES provider, if and only if the ES provider secures ES provision (conditionality)” (Wunder 2005, 3).

The above definition was criticized by Muradian et al. (2010), who redefine PES as a “transfer of resources between social actors, which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources” (p. 1205). That critique was underpinned by the view that Wunder’s narrow definition of PES results in only few cases being classified as true PES schemes, because most real world situations do not conform to it (Muradian et al. 2010; Vatn 2010). Muradian et al. (2010) provide three criteria to achieve a broader categorization of PES schemes, which are used in the Cambodia country study further considered below. The first criterion — importance of the economic incentive — relates to the role played by the incentives in the actual provision of the ES. There are cases in which the economic incentive is not the primary factor leading to the provision of the ES, which would have been provided even without the PES scheme (because of the intrinsic motivations), and there are other cases in which the economic incentive plays a critical role (Muradian et al. 2010). The second criterion — directness of the transfer — refers to the extent of the mediation present between the ES providers and the ultimate beneficiaries of the ES: “The most indirect situation would be when the state represents buyers, there is one intermediary between the state and providers and the latter do not receive individual payments for their individual environmental protection efforts” (Muradian et al. 2010, 1206). In this case, the payment to the providers would take place through investment in public goods (Muradian et al. 2010). The third criterion — degree of commodification — refers to the extent and clarity with which the ES can be assessed and acquired in measurable quantities. In some cases, the ES may be clearly commodified, such as tons of

carbon sequestered, whilst in others it is less defined (Muradian et al. 2010).

Based on a comparative review of the above definitions, (Tacconi 2012, 35) presents a revised definition: “A PES scheme is a transparent system for the additional provision of environmental services through conditional payments to voluntary providers.” This definition is broader than Wunder’s (2005) but more specific than that presented by Muradian et al. (2010) and also implied by their three criteria. It encompasses a variety of PES schemes. It includes schemes at various geographical levels, from the international (such as payments for REDD+) to the local level and pure Coasean schemes involving individuals and businesses, which form the basis of a PES scheme implied in the definition provided by Wunder (2005). The voluntary nature of participation of the ES providers is included in the above definition to emphasize its importance in relation to cost-effectiveness, Paretian economic efficiency and, in the case of individual ES providers, the right to choose. The beneficiaries of ES (often referred to as buyers) are not necessarily willing participants, as in the case of townspeople who might pay a charge for water use, part of which could be used for a PES scheme to maintain water quality — see Tacconi (2012) for a discussion of this aspect. The important role of intermediaries in PES schemes is correctly emphasized by Muradian et al. (2010) and also noted by the scholars who adopt the definition provided by Wunder (2005), and it is implied by the *system* referred to in the above definition.

The issue of PES schemes’ impacts on poverty and livelihoods has also received considerable attention in the literature. Pagiola et al. (2005) were among the first scholars to consider the potential impacts of PES on poverty. They note that the extent of the impacts could depend on how many participants are poor, on the poor’s ability to participate and on the amounts paid. They also stress that the impacts on non-participants need to be taken into account, and that although PES schemes are not specifically designed to reduce poverty, there could be synergies if the schemes are well designed and the local conditions are favorable.

Let us now turn to the framework that summarizes the key elements of PES schemes, and steps involved in setting them up. Some details of such a framework were presented by (Scheufele et al. 2014), and are used in the Thailand country study (Nabangchang 2014). That framework is revised and expanded here

(Table 1) to account for the elements explicitly noted in the definition of PES used here, as well as those that are implied by the need for a *system* to support PES schemes and for the need to account for the impacts on non-participants.

**Table 1. Key elements and steps for the establishment of a PES scheme**

No.	Element/step	Rationale
1	Regulatory framework	The regulatory framework (policies, laws) needs to allow the implementation of the scheme. If it is not in place, negotiation/lobbying to introduce it may be required.
2	Implementer of the scheme	The implementer of the scheme, in the pure Coasean form of PES, is the beneficiary of the ES. However, in many cases the implementer is the government or an NGO that identifies the need to maintain or regenerate an ES. In some cases the implementer may overlap with the intermediary.
3	Definition of the additional ES and amount to be provided	The ES that the scheme seeks to provide need to be clearly stated: e.g. biodiversity, climate, watershed function. The establishment of the level (i.e. amount) of ES provision should clearly state the additional amount that would be provided by the scheme compared to the situation without scheme.
4	Beneficiaries of the ES	The beneficiaries are those people and/or communities that benefit from the provision of the service. They range from the global and national communities (e.g. from biodiversity and climate services) to individual inhabitants of towns and villages (e.g. from watershed services). They are often defined as the 'buyers', but the definition by Tacconi (2012) allows for a PES scheme to be funded, for example, through general taxes paid for by all citizens in a country, without anyone being the specific buyer.
5	Geographical area	The geographical area to be targeted for the scheme: may be global, national or sub-national.
6	Measuring the ES or proxy	This involves the modeling or the definition of a proxy for the ES: for example, it may involve biophysical models of watershed services, or definition of units of greenhouse gases whose emission should be reduced to maintain climate services.
7	Voluntary ES providers	After the ES, or its proxy, are assessed, individual and/or community providers of the ES, who carry out practices that to maintain or increase it, need to be identified in order to assess whether they would be willing to provide the ES. Participation is negotiated directly or through auctions.
8	Affected non-participants	Some people, apart from the ES providers, could be negatively affected by the scheme, e.g. users without property rights to an area that is targeted for conservation; the population and the impacts need to be assessed, and the eventual compensation estimated actually provided. Compensation of negatively affected parties is one of the key elements of an equitable PES schemes.
9	Institutional system	This includes the description of the property and use right system in the geographic area, and the organizational structures that will be needed (already existing or to be set up) if the system does not involve just individual contracts, e.g. village committees.
10	Payment system	This step defines the structure of the payment system designed to deliver payments to the ES providers. If carried out before the assessment of whether an intermediary is required, it informs the decision of whether to involve an intermediary and the costs involved. In some cases, if the implementing organization does not have sufficient design capacity, an intermediary may be required to design the scheme. The concept of payment refers to cash and non-cash benefits, such as the provision of training; the preferred form of payment should be negotiated with the ES providers, and may also include the provision of benefits to individuals and/or community groups.

Table 1 continued

No.	Element/step	Rationale
11	Intermediary for the implementation of the scheme	A relatively small PES scheme, e.g. at watershed level, might not require an intermediary, but larger schemes often involve a range of intermediaries, such as government organizations other than the one funding the scheme, NGOs or private companies.
12	Unitary cost of provision of the ES	This step may involve the assessment of the opportunity costs faced by the ES providers, their willingness to agree to do or not to do certain activities, and compensation to those negatively affected. The ES providers may value the ES for reasons other than financial values and may be willing to provide the ES for payments below the value of the opportunity cost. This could be revealed through reverses auctions, but they are more complex to implement, particularly when there are unclear property rights systems.
13	Transaction costs	These costs refer to the management of the whole PES system, including payments to the eventual intermediaries.
14	Amount and source of funding for the scheme	Once the unitary costs of ES provision are estimated in the previous step, the total funding required to achieve the target set in Step 2 can be determined, and the source established. In some cases, it is possible, although not ideal, that the total amount to be allocated to the scheme is set at the beginning of the process, resulting in the units of the ES that could be provided being determined after the cost of provision is estimated.
15	Monitoring and compliance system	The monitoring system should be capable of assessing that the individual (or communal) ES providers deliver the ES (a requirement to ensure conditionality), and that the scheme as a whole delivers the ES defined in Step 2 in order to assess additionality, which also requires the assessment of any leakage from the geographical area of the scheme. Compliance needs to be addressed for the scheme to achieve its environmental objectives.
16	Information system	The information system may hold the data of the scheme (such as units of ES provided, ES providers, payments, etc.), and also needs to provide information to potential ES providers (who need to decide whether to participate, especially important if auctions are involved), and to those ES providers who will be enrolled in program in relation to payments due to the providers. This element of the overall system contributes to its transparency.
17	ES contract (including conditionality clauses)	Contracts are used to establish an agreement between the PES scheme and the ES providers who participate in the scheme. The contract establishes the responsibilities of the ES providers and the benefits they are entitled to receive, as well as eventual actions and penalties for non-compliance. Contracts are normally not used in schemes that require the participation of people/communities, rather than allowing voluntary participation of the ES providers.

# 3 The status of PES schemes in the case study countries

The four countries considered by the case studies appear to have rather different conditions relating to the establishment of PES schemes, and are at different stages in that development. The classification of the key features and steps outlined in Table 1 is used to summarize the status of development of PES (or a specific project) in each country, as derived by the present author from the country reports, and to present a comparative analysis in Section 4.

As noted earlier, there has been considerable debate in the literature, and especially in one of the country case studies, about the characteristics that define whether a scheme is a true PES scheme or not. It is important to note, however, that PES schemes, like any public or private initiative may be designed and/or implemented well or not so well. So, the fact that some characteristics of a specific scheme do not fully reflect the definition of PES does not automatically imply that the scheme is not a PES scheme. Moreover, a PES scheme may evolve over time from a relatively simple scheme, perhaps with some characteristics that do not fit the description of a PES scheme to a more complex and/or articulated scheme that better fits the description of a PES scheme (e.g. evolving from payments based on inputs to performance-based payments). Therefore, part of the task of reviewing PES schemes is to assess

whether they are well designed and implemented or not. Nevertheless, whilst the definition presented by Tacconi (2012), and adopted in this paper, is more inclusive than the definition proposed by Wunder (2005), there is a characteristic that, if absent, rules a scheme out of the PES realm: If there is no payment to the ES providers (in cash or in kind), the scheme cannot be considered a PES scheme, given that the payment is at the core of the concept of PES. Let us turn now to considering status of the schemes in the four Mekong countries considered in the case study reports.

## 3.1 The status of PES in Cambodia

There are ten PES schemes in Cambodia, six addressing biodiversity conservation (run by organizations such as Conservation International, Wildlife Conservation Society and the World Wide Fund for Nature), two watershed schemes (involving NGOs and government agencies) and two REDD+ pilot schemes (also run by NGOs and government agencies). All the schemes involve local villagers. The country study (Milne and Chervier 2014) raises concerns about the status of land and resource rights in the country and the possible implications for the PES schemes and the local population. These issues, and some of the lessons it points out will be considered later in this report.

**Table 2. Summary of the status of PES in Cambodia**

No.	Element/step	Description
1	Regulatory framework	PES is considered in government policy documents related to green growth, REDD+ and the national forestry program. PES is considered to be an innovative financing tool and distribution mechanism. There is no specific law or regulation on PES, but consideration has been given whether to introduce a regulation on PES.
2	Implementer of the scheme	The active schemes are mostly implemented by international NGOs, sometimes in collaboration with government departments.
3	Definition of the additional ES and amount to be provided	The schemes focus on biodiversity (conservation of specific species and habitat), watershed management (replenishment of ground water table in specific area, water quality inflow for hydropower), and carbon sequestration.
4	Beneficiaries of the ES	The global and national communities benefit from biodiversity (e.g. bird watchers, hoteliers) and carbon sequestration schemes. The managing agency of the hydropower scheme is the direct beneficiary of the services, with the users of electricity also benefiting indirectly.

continue to next page

Table 2 continued

No.	Element/step	Description
5	Geographical area	The PES schemes in Cambodia are implemented in specific, local geographic areas.
6	Measuring the ES or proxy	ES have not been measured directly, and in some cases the proxy has also not been clearly defined. Bird nests are a proxy for bird species conservation, for example, and this is further approximated by counting the number of days spent protecting them. As in many other PES schemes around the world, other proxies used are maintenance of certain land uses and respect of non-logging/non-hunting rules.
7	Voluntary ES providers	Individual villagers and communities appear to be engaged on a voluntary basis.
8	Affected non-participants	There is no information available about possible impacts on non-participants.
9	Institutional system	Unclear property rights are an issue that affects the design and implementation, as in many developing countries, although it does not make it impossible for schemes to operate. Some of the schemes also focus on clarifying property rights. Information on the decision-making structures of the PES schemes is not available.
10	Payment system	The schemes are small-scale and have a relatively simple payment system. Payments are made by the implementing organizations to individual villagers and/or community funds. The extent of consultation that has taken place with recipients about whether payments should be directed to individuals or communities is unclear.
11	Intermediary for the implementation of the scheme	The schemes are relatively small scale and the implementer organizations deal directly with the ES providers, that is, the villagers.
12	Unitary cost of provision of the ES	Information on the cost of provision of ES is not available. In some schemes, it is approximated by the daily rate of labor, as those schemes work on the basis of inputs (labor) rather than outcomes (actual population of species protected).
13	Transaction costs	Possible high transaction costs are mentioned, but data is not available
14	Amount and source of funding for the scheme	Information on funds required to achieve the provision of ES is not available. Sources of funds include tourist operators, the voluntary carbon market and, possibly, the operators of hydropower stations.
15	Monitoring and compliance system	Information on this element is not available.
16	Information system	Information on this element is not available.
17	ES contract (including conditionality clauses)	Information on this element is not available.

### 3.2 The status of PES in Laos

A scheme that may be considered to have PES features revolves around the Nam Theun (NT) 2 hydropower development (Robichaud 2014). The elements of this scheme are presented in Table 3. The fundamental issue to be noted is that villagers are not paid for the provision of the environmental services (watershed functions and biodiversity provision, approximated by maintenance of forest cover). The villagers are supposed to benefit from the scheme through rural development activities carried out by the implementing organization, the Watershed

Management and Protection Authority (WMPA). Specific contracts/agreements between the villagers and the WMPA have not been put in place, and the villagers have to follow the rules that were developed for the area by the government.

Therefore, given that there is no evident cash or non-cash payment to the ES suppliers, the people living in the area, the activity is not a PES scheme as currently understood by most practitioners and scholars. Other problems concerning the design of the scheme can be deduced from the table.

**Table 3. Profile of the Nam Theun 2 scheme**

No.	Element/step	Description
1	Regulatory framework	Existing laws and regulations could enable the establishment of PES schemes, although the recognition of property and user rights is problematic.
2	Implementer of the scheme	The implementer of the scheme is the Laos government, through the WMPA, a government body established with the specific mandate to protect watershed and biodiversity values of the watershed of the dam. It is allocated a fixed annual budget, not based on its performance.
3	Definition of the additional ES and amount to be provided	The focus is on conserving watershed functions, to limit siltation of the hydropower dam. The level of service is defined on a project-by-project basis. The conserved forests are also described as offsets for the loss of forests inundated by the dam, with significant biodiversity values.
4	Beneficiaries of the ES	The direct beneficiaries of the ES are: (1) the corporation that manages the hydropower dam, (2) the Government of Laos as a co-owner of the hydropower projects, and (3) the World Bank, as the scheme reduces its risk associated with being a guarantor of the project. Indirect beneficiaries are the users of hydropower.
5	Geographical area	Watershed supplying the dam.
6	Measuring the ES or proxy	The ES, or its proxy, have not been quantified. Modeling of watershed functions is a well-established method to assess, for example, effect on siltation of different land uses. Lack of focus on this is possibly due to the fact that the forest area to be conserved was already a protected area and, as such, could not be legally used for agriculture. Note, however, that villagers have been practicing shifting agriculture in the area for a long time.
7	Voluntary ES providers	An estimated 6000 villagers. They do not participate on a voluntary basis. Villagers have to participate in the scheme, and follow the rules set in place by the intermediary agency.
8	Affected non-participants	Land rights in the area are held by the state; the villagers inhabit the area but their rights are not formally recognized.
9	Institutional system	Information not available.
10	Payment system	There is no payment system to villagers, as they are not provided with cash transfers. They are supposed to benefit from rural development activities carried out in the watershed, but the extent to which they really benefit is unclear.
11	Intermediary for the implementation of the scheme	The WMPA could be considered an intermediary between the corporation (beneficiary) and the local people. However is more appropriately described as the implementer as it is the arm of the government tasked with the activity.
12	Unitary cost of provision of the ES	Has not been assessed.
13	Transaction costs	Information not available.
14	Amount and source of funding for the scheme	USD 1 million/yr allocated to the intermediary, WMPA, to be paid by the company that runs the NT2 hydropower dam. Not clear on what basis this amount was established, and not all of it is allocated to PES-related payments, as WMPA also uses it for wildlife conservation and rural development activities in the dam's watershed; the link to watershed services is unclear.
15	Monitoring and compliance system	A relatively independent panel assesses the performance of the intermediary agency; the performance of the scheme is difficult if not impossible to assess unless the ES and/or its proxy are measured. The WMPA appears to enforce the rules put in place to limit forest clearing by villagers.
16	Information system	Information not available on this element.
17	ES contract (including conditionality clauses)	Contracts not established with the ES providers.

It is worth noting that a similar situation applies to the scheme seeking to maintain watershed functions around the Theun Hinboun. In that case, the corporation that manages the hydropower project contracts an intermediary (the Wildlife Conservation Society) to carry out the field activities aimed at restoring forest cover. However, villagers do not receive payments for the activities involved in forest restoration.

Laos appears to have a regulatory framework with several characteristics that could enable the establishment of PES schemes. However, a major stumbling block in the regulatory framework is the difficulty in recognizing individual, common property, or user rights to natural resources such as land and forests. Moreover, there appears to be resistance at the government level to accept the principle that villagers should be rewarded directly for their efforts in providing ES. Obviously, this a legitimate view to be held by a government, but it needs to be questioned then whether there are

real opportunities to develop schemes with a closer resemblance to PES.

### 3.3 The status of PES in Thailand

The country study report (Nabangchang 2014) lists 16 PES schemes at different stages of design in Thailand. An interesting aspect about the current status of PES in the country is that it appears to be driven to a considerable extent by national organizations — such as the Department of National Parks, Wildlife and Plant Conservation, Regional Environmental Offices, and the Biodiversity-based Economic Development Office — although this trend may have been facilitated by the fact that the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) are providing initial funding for several of the schemes. Let us now summarize the overall picture of the status of PES in Thailand in Table 4 to enable a comparison with the other case study countries.

**Table 4. Summary of the status of PES in Thailand**

No.	Element/step	Description
1	Regulatory framework	There is not a specific PES law or regulation, but the regulatory framework includes environmental and resources management laws that aimed at conserving and sustainably managing ecosystems, and also allows the participation of citizens in those activities. Therefore it enables the implementation of PES schemes.
2	Implementer of the scheme	Government organizations: the Department of National Parks, Wildlife and Plant Conservation, Regional Environmental Offices, and Biodiversity-based Economic Development Office. An international assistance project: Enhancing the Economics of Biodiversity and Ecosystems in Thailand /Southeast Asia.
3	Definition of the additional ES and amount to be provided	A range of ESs have been targeted, including: terrestrial fauna diversity, marine systems functions (in reefs and mangroves), recreational services and watershed functions.
4	Beneficiaries of the ES	The identified beneficiaries of the various schemes include local people, companies and tourists. The national and international communities would also benefit from biodiversity conservation as it generates benefits that go beyond the local area.
5	Geographical area	PES schemes are distributed across the whole country, and include coastal and forest areas, reefs, within and outside protected areas.
6	Measuring the ES or proxy	Modeling of the ESs or their proxies has not been carried out yet.
7	Voluntary ES providers	The ES providers have been identified at a general level as being the local residents, but they have not been contracted yet.
8	Affected non-participants	Issue not addressed in the country case report.
9	Institutional system	The PES schemes are located on a range of property-rights types including private land, protected areas held by the state, community forests and areas with unclear property rights. In some cases, local management committees are being established, and in another case it is noted that one of the protected area committees that should guide the PES scheme is not functioning well.

No.	Element/step	Description
10	Payment system	Not yet developed.
11	Intermediary for the implementation of the scheme	No intermediaries reported.
12	Unitary cost of provision of the ES	Not yet assessed.
13	Transaction costs	Information not available.
14	Amount and source of funding for the scheme	Amounts of financial resources required for the individual schemes are not reported. Initial sources of funding include: local villagers who benefit from ES; provincial water works; a private company; and international donors such as the UNDP, the European Union, and the German government.
15	Monitoring and compliance system	Not yet developed.
16	Information system	Not mentioned in the country case report.
17	ES contract (including conditionality clauses)	Not yet developed.

### 3.4 The status of PES in Vietnam

Vietnam is the only country in Southeast Asia to have a national PES program. The payments for forest environmental services (PFES) program has evolved over the past decade and since 2011 has been mandated nationwide (Pham et al. 2014). The country study notes that the program aims to: (1) improve forest quality and quantity; (2) increase the forestry sector's contribution to the economy; (3) reduce the state's financial burden for forest

protection and management; and (4) improve social well-being. The extent to which the program is delivering on these goals has not yet been assessed. However, it has also been implemented at a national level only for 3 years, and it is probably too early for that assessment given that, for example, impacts on livelihoods take a while to eventuate. However, it is certainly useful to look at how the program has been designed and some features of its ongoing implementation.

**Table 5. Summary of the status of payments for forest environmental services (PFES) program**

No.	Element/step	Description
1	Regulatory framework	Initially introduced on a pilot basis in 2004, PFES was implemented at the national level from the beginning of 2011 by a specific regulation. In total, 20 legal instruments provide the regulatory basis for PES.
2	Implementer of the scheme	The national government has mandated the scheme, and the Ministry of Agriculture and Rural Development (MARD) is responsible for implementing it. It is directly implemented by the Vietnam National Protection and Development Fund (VNPDP) at the national level, with provincial branches (referred to below as PPDF).
3	Definition of the additional ES and amount to be provided	PFES addresses watershed functions, landscape services for tourism purposes, climate services through carbon sequestration and marine services, particularly maintenance of spawning areas and water quality for aquaculture (protected from sedimentation from forests).
4	Beneficiaries of the ES	Hydropower, water and tourism companies are potential direct beneficiaries, and their customers are the indirect beneficiaries. The extent to which they actually benefit is uncertain given that assessments of the ES actually provided are not carried out (Item 6). Potential indirect beneficiaries are also the national and international community who benefit from biodiversity and climate services.
5	Geographical area	Nationwide program.

Table 5 continued

No.	Element/step	Description
6	Measuring the ES or proxy	The ESs are not measured directly. The proxy is the area of forest protected. The quality of the forest is also assessed after a contract is signed with an ES provider, but monitoring of maintenance of quantity and quality appears limited (Item 15).
7	Voluntary ES providers	According to the decree establishing PFES, potential providers are all those subjects who hold a land title, including individuals, communities, and state-owned or private companies. There are significant constraints to identifying individual providers due to limited mapping and definition of boundaries, and a large number of rural people. The extent to which participation of ES providers is voluntary is unclear.
8	Affected non-participants	No detailed information available on this aspect. Non-participants may benefit from access to community halls and have festivals organized from them from PES funds.
9	Institutional system	This is well articulated. The VNPDF and its provincial branches sign contracts with the 'buyers' and pay the ES providers.
10	Payment system	The payment system is defined by two government 'circulars' (i.e. regulations), which spell out the roles and responsibilities of central and provincial authorities. The actual disbursement rate is low in some provinces; this appears to be influenced by factors such as lack of fully defined boundaries of forest areas, and large numbers of ES providers in remote areas with limited access to banking services. Information on the use of unspent funds is lacking.
11	Intermediary for the implementation of the scheme	Not involved, it is implemented by the government, although there is an example of an intermediary in a self-formed group of community members who are involved in implementation and payment.
12	Unitary cost of provision of the ES	Not assessed by the VNPDF; the country study report indicates that in one province the opportunity cost of corn is about US\$1500/ha/yr. Payments to ES providers are not related to opportunity costs. The average fee in a specific province is calculated on the basis of total revenue from ES beneficiaries divided by the forest area in the province. This is then multiplied by a coefficient that is supposed to account for the quality of the forest, and relative difficulty to protect it (although in some cases provincial authorities simply used a coefficient of 1 to simplify the formula). Payments to individuals are in the order of US\$2–20/ha/yr. The amount paid is heavily influenced by the amount of funds raised from the companies that are subject to PES related fees in the specific area.
13	Transaction costs	The VNPDF retains 0.5% of all revenues to cover its operations. The PPDFs are allowed to retain 10% of the funds they administer; PPDFs can also retain an additional 5% for a contingency fund for the support of ES providers in the event of a natural disaster. If other organizations are involved (such as management boards for protection and special purpose forests) in the contracting of individuals, they can retain 10% of the funds allocated to those contracts. The total management costs can therefore be up to 25.5% of payments that reach individual ES providers.
14	Amount and source of funding for the scheme	The total amount allocated annually is not fixed as it depends on the charges applied to the various companies that are subject to them. The charges are set at: hydropower 20 VND/1 kWh; water 40 VND/1 m <sup>3</sup> ; tourism 1–2% of revenues. The hydropower and water companies can pass on the cost to their customers. In 2012, the total amount collected was about US\$89 million.
15	Monitoring and compliance system	The monitoring of contracted forests is supposed to be carried out by the PPDF for state and non-state organizations, and by fund management boards at the district level for forests contracted with individuals and village communities. The above bodies also report hierarchically about disbursement of funds. The monitoring system involves self-reporting (which is not as transparent as independent monitoring); the self-monitoring protocol should be carried out on 10% of the total PES area, but that has never been achieved.

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No.	Element/step	Description
16	Information system	It is reported that the VNPDF has disseminated information to international donors, NGOs, and local authorities and communities; details on the information that was reported are not available. Companies are asking for clearer reports on how funds have been used.
17	ES contract (including conditionality clauses)	Contracts are signed by the implementing organizations with the companies that pay for ES as well as the ES providers. A constraint on the establishment of contracts with all potential ES providers is that whilst the Forest Protection and Development Law allows communities to manage forests, the Civil Code does not recognize communities as legal entities, therefore they cannot enter into legal contracts. A possible option to enable communities to enter into a PFES contract is to register as a Forest Cooperative. An important issue is that some ES providers do not understand some clauses of the contract due to limited education, so they are uncertain about their responsibilities and rights.

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## 4 A comparative perspective on PES in the Mekong Region

Vietnam is the only country out of the four considered that has a national PES program (Table 6). The implementation of a national level scheme involves several government agencies at different levels and it requires a purposefully developed regulatory system. For countries that implement PES on a project-by-project basis at the local level, a regulatory system that allows those projects (in the sense that it does not constrain them) is sufficient for the purpose. Therefore, the development of PES-specific regulatory systems in Cambodia, Laos and Thailand may not be a priority, unless they seek to scale up the experience of local PES projects to the regional or national level. Significant attention should certainly be devoted to addressing institutional constraints to PES schemes, and particularly to the lack or uncertainty of recognition of individual and community rights to resources.

Schemes in the region are mostly implemented by governments. Vietnam stands out in the sense that it is the government that manages the program and it also does not rely on external support to fund it. The other countries are almost on a continuum from Thailand where PES schemes are willingly implemented by (mostly) government agencies, to Cambodia, where the government seems to be uninterested in PES (and NGOs are therefore the only implementers), via Laos where the government is mostly involved in implementing schemes (which cannot be defined as PES, as noted below) through significant pressure from the World Bank. Some of the literature on PES has tended to define as 'intermediaries' the organizations that operate between the 'buyers' (i.e. what is defined here as beneficiaries) and 'sellers' (defined here as ES providers). If we move away from the definition of PES as a pure Coasean transaction, it is more useful to clearly identify intermediaries as those organizations that operate between the organization that establishes the scheme and the ES providers. On this basis, the schemes considered in this review do not have intermediaries.

The ES for which the schemes have been developed are quite clearly defined, but less clear is the extent

(i.e. amount) that is targeted. This is understandable for small-scale projects that are almost run on a pilot base by NGOs that seek to promote the conservation of a particular ES hoping that it may lead to a broader uptake by a government. It is less appropriate, however, that PES schemes that are clearly targeted to achieving a clear outcome — such as avoiding siltation of a dam or conservation of forest ecosystem services at the national level — have not developed clear objectives in terms of quantitative targets for the ES to be provided. Unless this is done, it is impossible to assess, after a period of implementation, whether additional services have been provided. Obviously, the assessment of additional provision as a result of a PES scheme also requires the measurement of the ES or its proxy. This is an element that is not addressed by any PES scheme in the four countries and requires attention, particularly in a national-level scheme such as that of Vietnam that involves the deployment of significant resources.

The potential beneficiaries of the schemes are relatively clear from the country reports, but it is less certain whether those beneficiaries actually believe that they will benefit (i.e. hydropower company in Laos), or whether there are real, objective benefits for some of the identified beneficiaries, in particular tourist operators and hydropower companies in Vietnam that have to pay for services that may actually not be applicable to the specific area where they operate. The providers of ES have been identified (at least in general terms, for the schemes that have not yet reached implementation phase). However, there is a significant problem in Laos. The ES providers are villagers who are mandated to participate in the scheme, and are supposed to benefit from rural development activities carried out by the implementing agency in the area, they do not receive direct benefits. Also of concern is the fact that none of the schemes considered appear to address the impacts on non-participants, unless they are addressed by some of the schemes but the country reports do not consider them.

**Table 6. Comparison of the key features of schemes in the four Mekong countries**

No.	Element/step	Cambodia	Laos	Thailand	Vietnam
1	Regulatory framework	Appears to allow PES	It allows PES	It allows PES	Yes
2	Implementer of the scheme	Mostly NGOs	Government, requested by World Bank	Mostly government	Government
3	Definition of the additional ES and amount to be provided	Defined	Defined	Defined	Defined
4	Beneficiaries of the ES	Various	Company and government	Various	Various, uncertainty about how some may actually benefit (e.g. tourist operators)
5	Geographical area	Local	Local	Local	National
6	Measuring the ES or proxy	N/A	N/A	N/A	Extent of forest area used as proxy
7	Voluntary ES providers	Villagers	Villagers, involuntary	Villagers	Villagers, voluntariness unclear
8	Affected non-participants	N/A	N/A	N/A	N/A
9	Institutional system	Not developed, unclear property rights	No property rights	Being developed	Well articulated
10	Payment system	Simple, implementers pay providers directly	No payments to ES providers	Not yet developed	Developed, but limited in relation to payments to ES providers
11	Intermediary for the implementation of the scheme	No	No	No	No
12	Unit cost of provision of the ES	N/A	N/A	N/A	Not assessed by scheme, payments not based on this cost
13	Transaction costs	N/A	N/A	N/A	Provision made for transaction costs, up to 25.5%. Actual assessment not available
14	Amount and source of funding for the scheme	Amounts spent N/A, sourced from tourist operators, carbon market, hydropower	A fixed annual amount paid by company	Amount not assessed, a range of ad hoc sources	Total amount depends on charges to companies; rates are regulated
15	Monitoring and compliance system	N/A	N/A	N/A	A system is in place, but its implementation is limited possibly due to lack of protocols and staff
16	Information system	N/A	N/A	N/A	Some reporting, but it is not clear what is being reported
17	ES contract (including conditionality clauses)	N/A	No	Not yet contracted	Contracts are signed with ES providers and buyers; some constraints to contract communities

The question of payments is another area of concern. In terms of the system itself — the process involved in paying the ES providers — it can be expected that schemes that are being developed have not yet designed it (Thailand), or do not have a sophisticated system, a positive aspect, when the schemes are small-scale ones (Cambodia). However, it is a concern that a national scheme like that in Vietnam has been identified as having problems in the system of dispersing payments to ES providers, and it is extremely problematic that the scheme in Laos does not make payments to the ES providers. In relation to the latter scheme, given that ES providers are not selected on a voluntary basis and that they do not receive payments, it cannot be defined as a PES scheme.

Adding to the above concerns, the costs of providing the environmental services have not been assessed by any of the schemes, not even the national one in Vietnam where, according to the review report, the payments to the ES providers may be considerably below the opportunity costs faced by them (on the basis of data relating to one province). This issue may be less significant in the small-scale projects in Cambodia that reward participants for their services (e.g. protection of birds' nests on the basis of daily labor rates). Definitional issues of what

constitutes a PES scheme or not aside, the question of (appropriate levels of) payments is particularly important because it means that ES providers who do not receive them are most possibly facing negative impacts on their livelihoods from the schemes. Details of transaction costs are not considered in the country review reports, apart from that on Vietnam. In that case, it is noted that provisions for funding of transaction costs are made in the scheme, but it is not certain whether the transaction costs have been assessed by the scheme itself or not. It should be noted that this should be considered by the Government of Vietnam given that transaction costs of up to 25.5%, as currently allowed, are relatively high.

The monitoring and compliance system, information system and contracting of ES providers have not been implemented in the schemes, again Vietnam aside. In the latter case, the monitoring system appears to be in place but does not seem to be well implemented, whereas the information system seems underdeveloped, and no reference was made in the review report about provision of information to ES providers on the scheme's contractual conditions. The contracting process appears to be well developed but facing some constraints to the establishment of contracts with communities.

## 5 Lessons learnt from the implementation of PES schemes in the Mekong region

A key factor at the core of some of the limitations in the design features and implementation processes of PES schemes in the region, as highlighted above, is a lack of understanding and acknowledgement of the contribution of ecosystem services to social and economic activities, as noted in the case of Thailand (Nabangchang 2014) and also evident in Cambodia and Laos (Milne and Chervier 2014; Robichaud 2014). On the other hand, the case of Vietnam demonstrates that when the political class understands those benefits it leads to the implementation of schemes that could have wide-ranging effects. Continued information dissemination and capacity building activities targeting, for example, senior level staff in key government agencies would be needed to achieve a greater understanding and acknowledgment of the benefits generated by ecosystems, and generate increased support for the PES schemes aimed at maintaining those benefits.

Obviously, it would be naïve to think that lack of understanding of the benefits of environmental services is the only possible reason constraining the sustainable management of those ecosystems and PES schemes. The activities of states are driven in some cases by a political elite that seeks to capture the benefits generated by natural resource extraction, such as in Cambodia, and through corrupt deals, as in Laos. It is difficult, therefore, to see how the focus of information and capacity building activities could change in the short term. Nevertheless, changes in public policy and administration are often incremental. It cannot be excluded that PES schemes designed to be managed at higher standards of accountability and transparency — by a committed bureaucracy, also with external influence and support if needed — could contribute to improvements in natural resource governance. For example, the Vietnam country study notes the need for clearer guidelines on use of PES funds by government organizations. Such a development could generate flow on benefits, given that changes in public administration processes in one sector can influence the standards of other public sectors. Accountability is not the only aspect that needs increased attention

in the development of PES in the region: it was noted in the previous section that transparency of the PES schemes needs to be improved through the development of appropriate information systems as none of the schemes appeared to include this element.

Another important question related to political perspectives about resource management is the possible unwillingness of the state to allow its citizens to benefit from conservation activities, if it is implicit or explicit (e.g. stated in policy) that all citizens should contribute to the conservation of ecosystems without implementing benefit-sharing programs such as PES, as appears to be the case in Laos (Robichaud 2014). It may be argued that this perspective is not necessarily due to the political system given that Vietnam, also a socialist state, is the most advanced country in the region in the implementation of PES. The Laotian perspective is therefore possibly due to the views that were put forward by a political and bureaucratic system over decades in which it was relatively closed to market activity and rural people lived to a greater extent a subsistence life. This issue deserves further exploration to assess how it may be influenced in order to allow greater benefits from resource management to flow to rural people.

This leads us to considering the question of a possible ideological disjunction between PES and the ideology of socialist states such as Laos (Robichaud 2014), on the basis that PES is argued to be a capitalist approach. In my view, it is more appropriate to describe PES as a system to provide financial incentives to bring about changes in land use. These financial incentives are designed to compete with the financial incentives faced by people who have to decide if and how to use a natural resource, such as land. Given that those rural people are already dealing with an incentive system, adding a further incentive to be considered in their decision making processes does not appear to be a big stretch. Moreover, the fact that PES is compatible with a socialist political system is demonstrated by Vietnam, which does allow the provision of benefits

from environmental conservation to the people who contribute to their provision.

Whilst payments are made by some of the PES schemes in the region to ES providers, none of those schemes base their payments on the opportunity costs that the providers face. This aspect is an issue of concern because the ES providers could be negatively affected by such an approach. Therefore, the implementers of PES schemes in the region should address this issue as a matter of priority.

A lesson closely related to the one just noted is that payments for the conservation of forest areas should reflect more closely differences in types of forest and therefore quality, as noted in relation to Vietnam (Pham et al. 2014). The implementation of this lesson would add an increasing level of complexity to the structure of payments. In principle, it is certainly desirable from an economic perspective. The issue is whether ES providers would clearly understand the reasons for differentiated payments. Lack of understanding could lead to dissatisfaction towards the PES scheme, and possibly lack of interest in participating, or withdrawal from the scheme, and therefore should be managed with significant caution. In terms of priority, the implementation of a payment system that meets the ES providers'

opportunity costs (or at least their willingness to accept) should receive priority.

The provision of benefits to the ES providers is unlikely to occur, or simply be viable, unless resource use or property rights are attributed to them. Significant resistance to implementing this key element of resource management is clearly displayed in Cambodia and Laos. This is a vexed issue across many countries, and one that presents a significant roadblock to the expansion of PES schemes and their satisfactory implementation.

Coming full circle back to the maintenance of ecosystem services which began the section, even if appropriate levels of payments were made to ES providers, unless ESs were adequately measured and monitored, there would be a significant degree of uncertainty whether the PES scheme actually provided ESs that are additional to those that would be provided even without the scheme. This is a problem that, unfortunately, is all too common in PES schemes around the world (Pattanayak et al. 2010), and one that all schemes in the Mekong region have to address. Consideration of the monitoring approach adopted in Vietnam, including its possible strengths and weaknesses, could inform the approaches to be adopted in the other countries.

## 6 Conclusion

The country review papers identified a number of issues concerning the design and implementation of PES in the Mekong region that have been summarized, assessed and compared in this paper. It is important to note that in some countries there has been significant progress made in the implementation of PES, and the experiences of those countries can inform further developments in countries in the region that have an interest in initiating or expanding schemes. The issues that have been identified include positive and negative aspects of the existing schemes. They are relevant to a range of conservation activities, whether they address species conservation or forest management in the context of REDD+.

A comparative review of the impacts on livelihoods of seven PES schemes across three continents found that they provided some livelihood benefits

to participants, particularly in terms of building individual participants' and community institutions' capacity, and in some cases contributing to income (Tacconi et al. 2013). However, positive impacts cannot be assumed when a PES scheme is set up. The design features that have been considered in this paper can be expected to have a significant impact on livelihood and environmental outcomes of those schemes. Unless those design features are considered in detail, or are reconsidered for the existing schemes, there is understandable concern that they may have negative impacts on livelihoods, and possibly limited or no relevant environmental outcomes. This will also apply to the implementation of REDD+ in the Mekong countries, particularly in ones that do recognize or protect resource use and ownership rights of the rural population, who are the main providers of environmental services.

## 7 References

- Milne S and Chervier C. 2014. *A review of payments for environmental services (PES) experiences in Cambodia*. Working Paper No 154. Bogor, Center for International Forestry Research.
- Muradian R, Corbera E, Pascual U, Kosoy N, and May PH. 2010. Reconciling theory and practice: An alternative conceptual framework for understanding payments for environmental services. *Ecological Economics* 69(6):1202–8.
- Nabangchang O. 2014. *A review of the legal and policy framework for payments for environmental services in Thailand*. Working Paper No. 148. Bogor, Indonesia: Center for International Forestry Research.
- Pagiola S, Arcenas A and Platais G. 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and the evidence to date from Latin America. *World Development* 33(2):237–253.
- Pattanayak SK, Wunder S and Ferraro PJ. 2010. Show me the money: Do payments supply environmental services in developing countries? *Review of Environmental Economics and Policy* 4(2):254–74.
- Pham TT., Bennett K, Vu TP, Brunner J, Le ND, Nguyen DT. 2014. *Payments for environmental services in Vietnam*. Occasional Paper No. 93. Bogor, Indonesia: Center for International Forestry Research.
- Robichaud W. 2014. *Motivation for payments for ecosystem services in Laos*. Working Paper No. 142. Bogor, Indonesia: Center for International Forestry Research.
- Scheufele G, Bennett, J, Kragt M, and Renton M. 2014. Development of a ‘virtual’ PES scheme for Nam Ngum River Basin. Research Report No. 3, Effective implementation of payments for environmental services in Lao PDR. Canberra, Australia: Crawford School of Public Policy, The Australian National University.
- Tacconi L. 2012. Redefining payments for environmental services. *Ecological Economics* 73(1):29–36.
- Tacconi L, Mahanty S and Suich H. 2013. The livelihood impacts of payments for environmental services and implications for REDD+. *Society & Natural Resources* 26(6):733–44.
- Vatn A. 2010. An institutional analysis of payments for environmental services. *Ecological Economics* 69(6):1245–52.
- Wunder S. 2005. *Payments for environmental services: Some nuts and bolts*. CIFOR Occasional Paper No. 42. Bogor, Indonesia: Center for International Forestry Research.



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This report synthesizes the country studies on PES schemes in Cambodia, Laos, Thailand and Vietnam – that were prepared for a regional review – to compare the various schemes, to assess their current status, implementation processes and lessons learned, and to draw policy recommendations relevant to REDD+. A summary discussion of the definitions of PES is provided, given that the definitional issue is raised in the individual reports. That discussion is used to present a comprehensive framework of the key design features of PES, which is then used to outline the features of the PES schemes in the four country studies before presenting a comparison of their key features and issues. Then, the key lessons learnt from the country studies and this review, as well as the policy recommendations relevant to REDD+, are derived.

The countries are almost on a continuum in terms of actors implementing PES schemes, from Vietnam with a national, government-implemented scheme, to Cambodia where the government seems to be uninterested in PES, and NGOs are therefore the only implementers. The environmental services (ES) for which the schemes have been developed are quite clearly defined, but less clear is the extent (i.e. amount) that is targeted. The potential beneficiaries of the schemes are relatively clear from the country reports, but less certain is whether there are real, objective benefits for some of the identified beneficiaries. The provision of benefits to the ES providers is unlikely to occur, or simply be viable, unless resource use or property rights are attributed to them. A related concern is that the costs of providing the ES services have not been assessed by any of the schemes. The monitoring and compliance system, information system and contracting of ES providers have only been implemented (in part) in Vietnam's scheme.



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