



Motivation for payments for ecosystem services in Laos

The essential alignment

William Robichaud



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Photo by Luke Preece/CIFOR
A small river island in Laos

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Abbreviations

ACIAR	Australian Centre for International Agricultural Research
BOOT	Build, Own, Operate, Transfer
CA	Concession agreement
DOF	Department of Forestry
DUDCP	District Upland Development and Conservation Project
ES	Ecosystem service
FOMACOP	Forest Management and Conservation Program
GLIP	Government Letter of Implementation Policy
GoL	Government of Laos
IMA	Independent Monitoring Agency
LAO PDR	Lao People's Democratic Republic
MAF	Ministry of Agriculture and Forestry
MoNRE	Ministry of Natural Resources and Environment
NA	National Assembly
NGO	non-governmental organization
NMLA	National Land Management Authority
NNT NPA	Nakai-Nam Theun National Protected Area
NT2	Nam Theun 2 hydroelectric dam
NTPC	Nam Theun 2 Power Company Limited
PES	Payment for ecosystem services
PIZ	Peripheral Impact Zone
POE	International Environmental and Social Panel of Experts
REDD	Reducing emissions from deforestation and forest degradation
SEMFOP	Social and Environmental Management Framework and Operational Plan
THPC	Theun Hinboun Power Company
WCS	Wildlife Conservation Society
WMPA	Watershed Management and Protection Authority
VFA	Village Forestry Association

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1 Introduction

The concept of payment for ecosystem services (PES) has garnered substantial international interest as a cost-effective means to improve environmental management. Although not specifically designed to alleviate poverty, PES has potential to provide alternative (or supplemental) income to people whose livelihoods depend directly on the exploitation of natural resources, while at the same time incentivizing their sustainable use of these resources.

Laos (or the Lao People's Democratic Republic, Lao PDR) is one of Asia's least-developed, yet most natural resource-rich countries. It is largely rural, with substantial direct dependence on natural resources both for the livelihoods and incomes of its population, and income for the national treasury. Two of the most important sources of national income (both currently and potentially) are forestry and hydropower, both of which have potential to be used sustainably, if managed well. All of these characteristics make Laos, potentially, fertile ground for the application of the PES concept. This is particularly true in the hydropower sector.

Most tributaries of the Mekong River with good hydropower potential originate in the mountains of Laos. One of the country's top development priorities is to make itself the "battery of Southeast Asia" (Ferrie 2010), exploiting its hydropower potential and exporting the electricity to its neighbours (in particular Thailand and Vietnam).

This brief analyses the potential for PES to succeed in Laos, through a look at the country's practical, political and legal environment. It uses as a case study the Nam Theun 2 hydroelectric dam (NT2), which shares at least some elements of a PES scheme.

To examine to what degree NT2 is a PES scheme, and if it is a successful one, it is first necessary to define PES.

2 What is PES?

No formal definition of PES schemes exists, which has resulted in some confusion (Wunder 2007). However, there is general agreement that PES schemes share five fundamental elements: (1) a voluntary payment for a (2) well-defined ecosystem service (ES), with (3) at least one buyer, (4) at least one provider and with a (5) condition that the buyer pays only as long as the provider delivers the service (Wunder 2005).

Pagiola et al. (2005) added a qualification to this list: the purchasers of an ES should also be users of that ES. Therefore, rather than having governments or donor agencies finance the purchase of an ES, the ultimate users of the ES should pay for them. This is more likely to support and ensure the critical element of conditionality.

Within this framework of 'definition by characteristic', diverse initiatives, of various scales, have been promoted as PES schemes. Arriagada and Perrings (2009) identified four main ecosystem services that have been monetized for inclusion in PES schemes:

- Watershed services
- Carbon sequestration
- Landscape amenity (e.g. beauty)
- Biodiversity conservation.

Most PES schemes are small, both in terms of geographic scale and in the value of the financial transactions (Arriagada and Perrings 2009). They generally focus on payments to local people for assistance in conserving the ES of interest. Large PES schemes tend to be government-driven, either at provincial/state level, or nationally. NT2, as will be seen, is a large scheme that is an exception: it has been driven, in both design and implementation, mainly by a large international institution (the World Bank), with the participation of a consortium of private investors.

PES schemes vary not only in their design, but also in their effectiveness at achieving efficient, sustainable conservation of ecosystem services. Yet assessing this effectiveness and the incremental value of a PES scheme is difficult for two reasons (Arriagada and Perrings 2009).

First, there is no control. There is no way to know what would have happened to the target environment or resource in the absence of the PES scheme. The state of the environment prior to implementation of the PES scheme can be used only as an indicator.

Second, it is often not clear what is being purchased; i.e. it can be challenging to clearly define, quantify and measure many ecosystem services. Consequently, payments must sometimes be based on the indirect but more readily obtained metrics of the actions of the service providers, or indirect environmental indicators. In sum, it is not possible to see what would have happened without the PES scheme, and even if we could, it would be difficult to measure it.

3 Opportunities for PES in Laos

Laos has some characteristics that support the development of a clear system for implementation of PES schemes.

First, significant legal foundations are already in place. Table 1 summarizes Lao legislation related to PES.

Second, reflected in some of this legislation is clear policy support for the ‘user pays’ principle (especially Article 24 of the Water and Water Resources Law; Table 1).

Third, the GoL relies extensively on forestry and hydropower sectors for national development, yet is in a near-constant mode of ‘giving away’ the country’s rivers and ‘lending’ watersheds to foreign

investors, for the foreigners’ own income generation (through Build, Own, Operate, Transfer (BOOT) arrangements). This is a prime, fertile environment for the development of large-scale, ‘user-pays’ PES schemes.

Finally, in Laos there is now an emerging generation of young, well-educated professionals who are committed to conservation and genuine sustainable development. As they advance to positions of responsibility in the country, the enabling environment for PES will improve.

4 Nam Theun 2

Nam Theun 2 (NT2) is the largest and most complex hydropower project in Laos. Following several years of construction, at a cost of USD 1.3 billion, the gates of the dam on the Nam Theun river were

Table 1. Legal basis for PES in Lao PDR.

Law on State Assets (2002)	Stipulates a right to manage resources and receive compensation for this. Assets are owned by the national community and centrally controlled, although access, use and management of these assets may be granted to organizations and individuals. This could provide for PES arrangements where local groups could be granted access, use and management rights over an area to gain a particular set of benefits in exchange for sustainably managing the area or resource.
Forestry Law (2007)	Local people’s participation is a principle in protection, development and use of forest resources. Benefits (but apparently not ownership rights) may be conferred on those that protect and preserve forest and forestland resources in the country. Article 26 on “preservation of water resources in forest zones” foresees that formulation of plans and projects for forest preservation or forest regeneration needs to be carried out with local people’s participation.
Water and Water Resources Law (1996)	Article 24: “those conducting development activities and who use water and water resources must contribute funds for the preservation of headwaters and water sources.”
Law on National Heritage (2005)	Article 4 says the State promotes and creates the conditions for individuals, [and] organizations within the country and abroad to participate in the protection, conservation, restoration and rehabilitation of the national heritage in a sustainable manner. Article 13 defines natural heritage as having ecologic value.
Contract Law (1990)	Article 2 states that “A contract may be established between: State or collective organizations; State or collective organizations with other legal entities or individuals; and legal entities or individuals.” Article 4 states that “a contract may be made by one, two or multiple parties.” The possibility of contracting multiple parties can be important in the PES schemes.
Prime Minister’s Decree 333 on Protection Forest (2010)	Article 27 defines that villages, through Village Forestry Units, have various rights, including the right to organize villagers to manage and monitor protection forest.

Source: Adapted from Phothisat et al. (2013).

closed in 2008. Commercial electricity generation commenced two years later (after the 450 km² reservoir filled and various infrastructure and engineering tests had been completed).

Most of the dam's electricity is sold and exported to Thailand. For Laos, the core function of NT2 is to generate revenue, not electricity for domestic use. The project is owned and operated by the Nam Theun 2 Power Company Limited (NTPC), a consortium of private investors (majority) and the Government of Laos (GoL), (minority). NT2 is a BOOT project. For the first 30 years of commercial operation, the GoL will remain a minority partner in ownership of the project. After 30 years, full ownership of the dam (and its revenues) will be transferred from the NTPC to the GoL. The terms of these agreements, and various other obligations, are defined in an extensive and binding Nam Theun 2 concession agreement (CA).

The World Bank has been heavily involved in the project, almost since NT2 was first conceived in the 1980s. The Bank's role has not been as a direct financier but as a guarantor, for the project's private investors, against financial loss due to political risks (e.g. if the GoL one day withdrew from the CA and nationalized the dam). This role gave the Bank leverage to act as the project's chief architect in terms of fiscal, financial and social requirements: all aspects of the project had to meet the Bank's safeguard policies.

The Bank's intense commitment to NT2 has been in large part because of the project's resonance with current Bank thinking and priorities; that the way to alleviate poverty in the world's poorest nations is to replace (or augment) reliance on handouts of aid (grants or soft loans) with local private/public commercial ventures to generate income. NT2 is a model of this approach, and the Bank at one time called NT2 its most important development project in the world.

Given the size of NT2, and its impact on the environment, on the lives of more than 6000 people who had to be relocated and on the livelihoods of many thousands more in downstream areas, NT2 has been one of the most contentious and criticized development projects in the Bank's portfolio. It has also been the most criticized development project in Laos (at least until recent proposals to dam the main stem of the Mekong River). One of the most

active and persistent critics has been the International Rivers Network .

By the terms of the CA, various bodies were established to monitor the performance of the NT2 project, and stakeholders' adherence to the CA. The most active of these has been an International Environmental and Social Panel of Experts (POE). This is a three-person panel that closely monitors and makes recommendations (and sometimes requirements, under powers granted by the CA) related to social and environmental aspects of the project (e.g. village resettlement, downstream village livelihoods, watershed protection).

The 4000 km² Nakai-Nam Theun National Protected Area (NNT NPA) comprises nearly the entire watershed of the NT2 reservoir. It is the source of the headwaters of the Nam Theun river and all major Nam Theun tributaries feeding the NT2 reservoir. NNT NPA was gazetted in 1992, pre-dating the NT2 project. It is both the largest protected area in Indochina and, given its extensive forest cover and position in the heart of the Annamite Mountains, the most important PA in Laos for biodiversity conservation (Robichaud et al. 2001).

From the World Bank's perspective, NNT NPA is integral to the NT2 project, serving three purposes:

1. Effective protection of NNT NPA is considered compensation for the loss of the adjacent Nakai Plateau, most of which was inundated by the NT2 reservoir.
2. Conservation of NNT will also be an incremental conservation offset from the project.
3. Conservation of the NT2 watershed, i.e. NNT NPA, is critical to the long-term economic viability of NT2.

To ensure that NNT NPA fulfilled these roles, the Bank mandated the GoL to establish the Watershed Management and Protection Authority (WMPA). The new agency's role is to protect the watershed and biodiversity values of NNT, and improve the livelihoods of the approximately 6,000 ethnic villagers who live in the NPA. WMPA's operational budget comes from an obligatory contribution by NTPC, mandated in the CA, of approximately USD 1M/year from the NT2 revenues.

With a funding bridge arranged by the Bank and NTPC, WMPA commenced operation in 2005, before the dam was completed. Its Board of Directors

initially chaired by the Minister of Agriculture and Forestry, has devolved more responsibility to the local level, and is currently chaired by the governor of Khammouane Province. WMPA also has an Independent Monitoring Agency (IMA), currently comprised of four individuals (two Lao and two international), who monitor and advise WMPA on its performance against its mandate. WMPA cannot receive its annual tranche of funding from NTPC until the IMA approves WMPA's annual workplan and budget. It should be noted the WMPA both recruits and pays the IMA (although NTPC is allowed to reject one of three candidates for each place on the IMA), so 'independent' is perhaps a misnomer. The POE is also active in monitoring WMPA performance.

5. Is NT2 a PES scheme?

Nam Theun 2 has been broadly promoted and characterized as a 'user pays' PES scheme, or at least a PES-like scheme, by its promoters and developers (e.g. World Bank and NTPC): some revenues earned from sending reservoir water through the turbines are spent to protect the source of that water, NNT NPA.

Certainly, various WMPA activities are similar to components of PES schemes. These include tacitly 'rewarding' villagers with development aid in exchange for watershed forest conservation, and paying villagers to participate in ranger patrols against poaching (both illegal logging and wildlife hunting). Ultimately, revenues from the dam pay for all these activities.

But not all 'user pays' arrangements are necessarily PES schemes, as generally defined. Perhaps the best way to evaluate NT2's alignment with PES is to examine it against each of the principles listed earlier that define a PES scheme: at least one **buyer**, at least one **seller**, in a **voluntary, conditional** transaction, for a **well-defined ecosystem service**.

5.1 Buyer

The most obvious buyer of the service of a protected watershed is NTPC, a consortium of private, international investors and the GoL. NTPC pays approximately USD 1M/year for the service of watershed protection. Not all of the money is spent on protection of watershed from a hydrologic

viewpoint; some is also spent on wildlife conservation and on rural development for villages in the watershed, with only an indirect link to watershed protection.

WMPA, a GoL agency, could also be considered a buyer of ecosystem services. NTPC transfers the funds each year to WMPA, and it is WMPA that actually spends the money in the watershed. Although NTPC is the ultimate buyer, WMPA is a step closer to the transaction. Unfortunately, a weakness of WMPA, noted by external reviewers, is its low motivation to vigorously use its funding for watershed protection (McDowell et al. 2012). WMPA activities have often been shaped more strongly by GoL priorities (and pressure) to advance rural development and poverty alleviation. In consequence, some WMPA initiatives, such as track construction in the NPA, have actually diminished NNT's watershed protection values. In sum, WMPA fulfils the role of buyer by virtue of holding the cash, but sometimes fails to exhibit an essential characteristic of a buyer – willingness to purchase (in this case, environmental protection). Since WMPA's inception, external technical advisors, monitoring agencies (IMA and POE), the World Bank and NTPC have tried unceasingly to keep it focused on its mission of watershed protection and development *for* (and linked to) biodiversity conservation.

Another possible buyer of ecosystem services in the NT2 watershed is the World Bank; in this case, the Bank is a level above (or aside) NTPC in the transaction. Although the funds don't originate from the Bank, it set up the transaction, and made financial guarantees (insurance against political risk for NTPC investors) to ensure that it succeeds. The Bank embodies at least one crucial characteristic of a buyer – motivation. It is highly unlikely that NTPC would be paying a second party for watershed protection in the absence of the Bank's involvement. Of all the putative buyers, NTPC, WMPA and the World Bank, the Bank has shown the greatest motivation to see that the transaction succeeds in protecting the watershed.

In sum, there is a buyer of NT2 watershed protection (and we know the price is some part of approximately USD 1M/year). However, the implementer of the transaction (WMPA), the driver of the transaction (World Bank) and the funder of the transaction (NTPC) are different parties, making it difficult to identify a clear buyer.

5.2 Seller

The most obvious sellers of the service of watershed protection in NNT are the approximately 6000 villagers living in the protected area. Their livelihoods are tied to clearing a patch of forest for swidden agriculture, cultivating it temporarily and allowing it to regenerate while clearing and cultivating other patches. Consequently, the resident villagers are the ones positioned to provide the service of protection of the watershed forest cover. The seller of the service in the case of NT2 seems more readily identifiable than the buyer.

Given the villagers' service is to forego destruction of the watershed's forest cover, should potential commercial exploiters of natural resources who agree to forego destructive activities in the watershed also be considered providers of this service? Since the development of the NT2 project and establishment of WMPA, at least one gold mining concern and one logging concern have attempted to operate in NNT (McDowell et al. 2010b). The activities were illegal, but the parties involved had high political connections, rendering WMPA largely impotent to intervene. The activities were stopped only through repeated, high-level intervention and pressure on upper levels of the GoL from the World Bank and the POE. For these reasons, commercial mining and logging interests hardly qualify as sellers of the service of watershed protection: their activities were illegal, and so the only service provided was to adhere to Lao law and the GoL's international agreements; there was no financial transaction (at least no transparent one); and, finally, if they qualify as providers, so does every potential exploiter of the watershed who simply agrees to stay away (either through financial inducement or legal coercion).

Given that WMPA is the recipient of the USD 1M/year, are they selling the watershed protection service to NTPC? Quite possibly. WMPA is akin to a general contractor for watershed services, which then subcontracts NNT villagers to help provide them. WMPA also has a key characteristic of a seller in a PES scheme; a contract (embodied in the CA) with the buyer, NTPC. In instances when NTPC feels its USD 1M/year is not being used well, they knock on the door of WMPA to complain, not the doors of watershed villagers.

In summary, it is reasonable to say there are two levels of seller of NT2 ecosystem services; a 'micro level', comprised of villagers, and a 'macro level' institution, akin to a general contractor, WMPA.

5.3 Voluntary transaction

NTPC's decision to divert USD 1M/year of dam revenues to protect the watershed was not voluntary. It was a 'take or leave it' condition of World Bank involvement in the project, and thus NTPC's access to the World Bank's guarantee against political risks of financial loss.

Why wouldn't NTPC pay for protection of the watershed voluntarily, if watershed protection is vital to the long-term health of the NT2 reservoir and thus the viability of the project's income stream? There are probably two parts to the answer.

First, the watershed was already a national protected area, and thus its forest cover and watershed values at least nominally conserved. NNT was largely a 'paper park' at the time of the planning and development of the NT2 project, and the USD 1M/year was not meant to *establish* the NPA but, for the first time, to protect it well; however, these were not decisive incentives to invest in the site. Given NNT's size, and conservation importance, conservation organizations and external donors had expressed interest in supporting protection of NNT for years before NT2 was built. In fact, in the mid-1990s, the largest protected area management initiative in Laos up to that time, the Forest Management and Conservation Program (FOMACOP), short-listed NNT as one of its four pilot NPAs. FOMACOP subsequently dropped NNT from consideration, in anticipation of investment in its protection coming from the NT2 project. The Wildlife Conservation Society (WCS) also expressed interest in assisting technically with protection of NNT, but did not pursue donors or a partnership with the GoL for the same reason: anticipation of and/or uncertainties about eventual funding from NT2. The NT2 project had, therefore, the unanticipated and unfortunate consequence of initially diverting conservation investment from NNT, and a crucial decade of conservation was lost (some threatened species, such as the tiger, may have been lost from NNT due to the delay).

Second, and possibly more telling, NTPC would be unlikely to voluntarily pay for protection of the NT2 watershed (and certainly not the sum of USD 1M/year) because the majority private investors, with whom such a decision effectively lay (rather than the minority shareholder, the GoL), would share ownership and revenues from the project for only 30 years. After that time, full ownership of the project would be transferred to the GoL. Reservoir siltation from watershed degradation and the

concomitant loss of electricity generating capacity are long-term processes. Even if the NT2 watershed had been left unprotected, the financial consequences of a degraded watershed would likely have manifested only years into the project, when the private investors were preparing to walk away, or had already done so. They would not see a return on NTPC's USD 1M/year investment in watershed protection. Consequently, the USD 1M/year is paid only as a condition imposed by the World Bank and requirements of the CA, not voluntarily. NTPC and its shareholders entered the NT2 project voluntarily, as a package, but almost surely would not have included the component of payment for watershed services, at the current level, given the choice.

Likewise, it is problematic to find a measure by which one of the principal sellers in the NT2 transaction, watershed villagers, participate voluntarily. The restriction of Lao villagers' access to forested land, through a government program of land allocation, is ubiquitous throughout Laos, and participation is not voluntary (Chamberlain 2000, 2007). Villagers in NNT NPA are not exempt. There may be negotiations between villagers and WMPA and district officials about the configuration and boundaries of land allowed for villagers to use; land allocation in rural Laos is about restricting villagers' access to land, not expanding it (Chamberlain 2000). However, non-participation in the process is not an option, and penalties may be imposed upon villagers for failure to follow the allocation restrictions.

Not only are NNT villages involuntary suppliers of watershed services, they may not even be voluntary recipients of the payment currency of development aid. As a run-up to implementation of the NT2 project and birth of WMPA, the World Bank provided a grant to Khammouane Province to implement a District Upland Development and Conservation Project (DUDCP) in NNT. Designers selected three villages in NNT as pilot projects without first consulting them. At least one selected village balked, and initially refused to be involved, saying in effect, "thanks but no thanks – we're fine and prefer to be left alone." Only considerable negotiation and persuasion/coercion by provincial officials compelled the village to participate in the project. Predictably, the project yielded decidedly mixed results, with some ill feelings on both sides (Robichaud 2003).

Singh (2009) critically examined, in the context of the NT2 project, the process (and feasibility) of achieving genuine villager participation within an arena of

heavy international pressure (driven by the World Bank), on a communist state with little freedom of expression. She characterized the local participation among villagers to be relocated by the project as "negotiated performance."

5.4 Conditionality

Conditionality, or rather lack of it, is one of the clearest limitations in attempting to characterize NT2 as a PES scheme. The payment of USD 1M/year to WMPA is fixed in the NT2 concession agreement, without an explicit link to performance or actual conservation of the watershed (McDowell et al. 2012). In fact, the system can foster perverse incentives: WMPA and its staff gain no additional financial benefit from performing well, but can gain if they perform poorly, e.g. by colluding in the illegal exploitation of the watershed's natural resources.

Nor are there explicit, conditional links between provision of development aid by WMPA (the 'general contractor') and watershed conservation by the villages ('subcontractors'). Villages in NNT have been promised (and provided with) various types of development aid, delivered by WMPA with funds from revenues of NT2. This includes supplementary water supplies, tracks, solar electricity systems, rice and buffalo banks, medical dispensaries and the like. The rationale for this assistance has been threefold: to contribute to the GoL's national poverty alleviation and development goals; to provide development support in exchange for villagers' participation in watershed protection; and to tacitly compensate villagers for the loss of access to land from restrictions imposed by WMPA and the district through land allocation. But these have been unspecified, *quid pro quo* arrangements, with few or no conditions. Rather, villagers have been given development assistance in a sometimes vague attempt to cultivate their goodwill and acceptance of (and adherence to) restrictions.

5.5 Well-defined ecosystem service

The ecosystem service being provided to the NT2 project is protection of the forest cover of NNT NPA; or more specifically, a water supply without a high silt load, made possible by good forest cover. So far, conservation of the watershed forest cover has been largely effective (conservation of other elements of biodiversity, such as wildlife, which is also the responsibility of WMPA, has been less successful).

Although illegal logging of rosewood (*Dalbergia*) has been rampant in NNT for several years (as it has throughout the region), such logging is largely selective; it may not have significantly diminished the NPA's watershed protection function.

The nature of the ecosystem service on a general, macro level is understood and agreed (conservation of watershed forest cover), but how to define exactly what to pay for on the ground is more nettlesome. What, exactly, does NTPC expect of WMPA, and what does WMPA expect of villagers, in terms of watershed forest conservation? It is difficult to prove a linkage between a given type of land use and the provision (or disruption) of a watershed service, such as reduced siltation (Wunder et al. 2005). In the case of NT2, defining a defensible and measurable magnitude and form of forest conservation that would constitute a valuable ES for NT2 (and one worth paying for) is enormously complex and difficult. Any answer would be subjective and thus prone to disagreement among parties to the transaction. Still, even in an imperfect world, it is telling that no attempt to even estimate a figure has been made.

Given in part its status as an NPA, the approach taken has simply been 'more (forest) is better', or even, 'all is necessary'. Truly understanding the type and magnitude of forest loss that would constitute a threat to NT2 would require consideration of a plethora of factors – e.g. clear-cutting vs. degradation by selective logging; swiddening vs. the long-term destruction of forest by construction of rice paddies; and degree of slope, soil type, distance to streams and distance to the reservoir on which the activities occur.

In sum, NT2 lacks a well-defined ecosystem service, and in at least some other cases, the effort required to define one can be more expensive than the proposed transaction price for the service itself (Wunder et al. 2005).

To qualify as part of a PES scheme, an ecosystem service should add incremental value, which might not otherwise be provided without payment (Arriagada and Perrings 2009). Certainly, this is mandatory for reducing emissions from deforestation and forest degradation (REDD) schemes. Ethnographic evidence shows that villagers have lived in the area that now comprises NNT NPA for hundreds and probably thousands of years. Yet the area remained 98% forested until at least the 1970s (Robichaud et al. 2009). Although there was a

decrease in forest cover after the end of the American Indochina war, forest cover rebounded and increased in the 1990s, in the absence of any government or development intervention. The particular ethnic groups inhabiting NNT are rotational, rather than pioneering, swidden cultivators; their traditional livelihoods served to maintain extensive forest cover in NNT over a very long time. So what incremental service, exactly, would they be paid for?

In sum, the NT2 arrangement does not meet unequivocally and clearly any of the five criteria that characterize a PES scheme. It probably comes closest to matching the criteria of having a well-defined ecosystem service; at least there is general agreement on what the ES is – forest conservation in the watershed. It is farthest from the conditions of a clear buyer, voluntary transaction and conditionality.

6. What would NT2 look like if it were a genuine PES scheme?

It may be worthwhile to consider how the NT2 project could have been designed and structured to make it more PES-like (and thus presumably more effective at cost-efficient forest conservation). This will be examined in terms of the three most problematic of the five PES criteria in the NT2 case.

6.1 Buyer

The issue here is that the real buyer is not clear: the World Bank provides the motivation; NTPC provides the funding; and WMPA acts as both a seller (to NTPC) and a buyer (from villagers) of the ES of watershed protection. The NT2 project is like a stream, tumbling over multiple rocks, with resultant eddies of confusion and inefficient diversion from its objectives.

What would the project look like more ideally, *vis-à-vis* a buyer? Foremost, the greatest motivation for successful watershed protection would rest with NTPC and WMPA (the actual buyers), rather than, as now, an intermediary external to the transaction, the World Bank (and external monitors, such as the POE). While intermediaries are integral to many PES schemes, their role is better suited to administrative facilitation of the transactions, rather than attempting to motivate the buyer and/or seller.

The lack of motivation in NT2 is rooted in a few factors. For NTPC, it is in part a consequence of the BOOT arrangement: the dominant private partners in NTPC might not be invested in the project long enough to see a return on investment in watershed protection. For WMPA, weak motivation lies in part in competing GoL priorities – rural development and poverty alleviation being higher at present than watershed protection. Another factor is probably corruption (Doh 2013). Laos is ranked as one of the most corrupt countries in the world (TI 2012). Illegal exploitation of NNT's forest resources, made possible by illicit connections to GoL power centers above WMPA, and/or complacency or willing involvement of some (but by no means all) WMPA staff, have interfered with the organization's motivation and capacity to conserve the NT2 watershed (McDowell et al. 2013b).

Improving NT2's alignment with PES would require streamlining the arrangement by combining the motivation to pay and the ability to pay into one buyer. This 'what' is clear. How to achieve this lies in a consideration of voluntariness, below.

6.2 Voluntary participation

WMPA is not a voluntary seller of watershed protection services to NTPC (or buyer from the villagers). WMPA was created from the ground up, externally, specifically to fill that role; it has no choice in the matter, and neither does NTPC. Both are legally bound to their roles by the terms of the CA. In other words, there is no pool of voluntary, motivated competitors for the USD 1M/year watershed protection contract with NTPC.

The NT2 arrangement might have worked better with competition for the provision of watershed protection services, open to, for example, bids from international conservation non-governmental organizations (NGOs). Even though NNT has by far the largest funding, largest staff and largest pool of external technical support and monitoring of any protected area in Indochina, NNT is not considered the best-protected PA in the region, or even in Laos. That belongs to other PAs with the heavy involvement of highly motivated international conservation NGOs. Top-down, mandated participation has also been a weakness of PES schemes in neighboring China and Vietnam (Kolinjivadi and Sunderland 2012).

6.3 Conditionality

NNT and NT2 are doubly hampered. Not only is the principal seller of ecosystem services (WMPA) not highly motivated, there are no conditions set on their performance and no financial consequences for poor performance (McDowell et al. 2012). The USD 1M/year flows to WMPA largely uninterrupted, regardless of WMPA performance (the NT2 CA provides for WMPA's IMA to delay release of WMPA's annual budget if the IMA does not approve WMPA's annual workplan and budget, but this provision has never been invoked, and it is a condition on a promise of the quality of future results – the workplan – not on actual performance). In short, unless the CA is changed, WMPA can neither be fired, nor its contract cancelled, nor its payments reduced for poor performance. It is a single-source monopoly for the dam revenues earmarked for watershed conservation. This makes success very much a hit or miss proposition.

This lack of conditionality is one of the weakest links in the attempt to conserve NNT through revenues from NT2. Recently, the POE recommended injecting performance-based conditionality into WMPA (McDowell et al. 2012); this was the primary recommendation regarding WMPA in its post-mission public briefing in 2012.

In fact, in the early planning phases of the NT2 project, given that WMPA was to be established as a GoL agency, some external consultants urged the World Bank to make the GoL's annual receipt of its share of *all revenues* from NT2 conditional on their effective protection of NNT. One option was to have the GoL's share of NT2 revenues sent to an offshore escrow account, to be cleared and released periodically by the World Bank, upon independent verification of sound protection of NNT. This would have had the additional benefit of making the party most motivated for conservation of NNT, the World Bank, the *de facto* buyer of NNT conservation. The proposal was not adopted, due to World Bank concerns about GoL sovereignty, and the difficulty of defining benchmarks of forest protection.

It is harder to understand (and in hindsight, even more regrettable) that annual payments to WMPA for the provision of watershed protection services were also not made conditional. Options were, at least in theory, available to do this. For example, the level of annual disbursement to WMPA could

have been structured incrementally, with *up to* USD 1M/year available, dependent on performance. Start WMPA off with, for example, USD 200 000/year, and gradually increase the amount if, and as demonstrated, it could use the smaller amounts well (as verified by the IMA and POE).

Conditionality is also lacking between WMPA and the ultimate providers of protection of NNT's forest cover – NNT's villagers. There are no explicit contracts between WMPA and the villagers for the provision of development aid in exchange for forest conservation or erosion control. In fact, the GoL's general mandate to WMPA has been to *accelerate* development in the watershed, not introduce mechanisms to slow it down. The many lessons of the failure of well-intentioned 'integrated conservation and development projects' (ICDPs) to conserve biodiversity, mainly due to absence of direct links between the delivery of development and the achievement of conservation, were not known by the project's designers, not believed or disregarded. If an international conservation NGO had been involved, there may have been greater attention to these lessons.

In sum, in hindsight, the following structural changes to the NT2 arrangement would likely have made the project more clearly – and more effectively – a PES scheme:

1. Voluntary provision of watershed services, opening the USD 1M/year contract to provide such services to competing, international bids.
2. Provision of development assistance to NNT villagers contingent on their voluntary provision of forest protection. This would have required a different approach to land allocation and development than currently used in the rest of Laos, but there can be an advantage in trying another model. George et al. (2009) observed that the inflexibility of land allocation and its restrictions on alternative land uses by villagers was one of the main obstacles to successful implementation of a watershed PES scheme in northern Laos. Kolinjivadi and Sunderland (2012) considered it critical for the evolution of effective PES schemes in the region that ways be found, within existing political realities and power structures, to foster more direct participation of local communities in the negotiations of ecosystem service provision.
3. Provision of annual funding to WMPA (or other providers of watershed protection) conditional on performance, with renewable (and cancellable) contracts.

Much of the PES literature does not specifically identify *motivation* of buyers and sellers as an essential component of a successful PES scheme. Yet, in fact, it is motivation that is trying to be secured by the conditions of voluntariness (only unmotivated buyers and sellers would need to be forced into a transaction) and conditionality (conditionality is simply a mechanism to manufacture motivation to perform well). The protection of NNT has been less-than hoped-for due not to insufficient funding, unavailability of technical capacity or a surfeit of insurmountable conservation challenges. It has fallen short ultimately because the institutions with the most motivation for success (the World Bank and conservation NGOs) are mainly observers from the sidelines, and not parties directly involved in the transactions.

Kolinjivadi and Sunderland (2012) note explicitly that a "lack of intrinsic motivation" damages PES schemes through increased transaction costs. Intrinsic motivation costs nothing; attempts to manufacture motivation can be expensive.

Consequently, prior motivation of buyers and sellers is probably essential for the success of any PES scheme. In fact, it could perhaps replace voluntariness and conditionality as criteria of PES schemes, since voluntariness and conditionality are simply proximal mechanisms to achieve motivation (but not always essential to it).

7. Other PES-like schemes in Laos

There are some other PES-like schemes in Laos, both small and large scale. Small-scale examples are incentive-based nature tourism, wherein trekkers agree to pay local eco-guides a bonus for sightings of wildlife in lands at least partially managed by the eco-guides and their village (Eshoo in press), and protection of small watersheds (Mousquès et al. 2007; George et al. 2009).

There are two other, large-scale projects in Laos that at least superficially share some elements of a PES scheme. First, for the last several years, the Xepon mine in southern Laos has been providing funds to WCS to conserve biodiversity in areas distant from the mine site. But this is more a mechanism of paying for an environmental offset (compensating for the mine's environmental damage by supporting

conservation elsewhere) than a payment for an ES that is critical to the mine’s functioning.

The Theun-Hinboun (TH) dam is on the same river system as NT2, downstream, and was constructed several years before NT2. It is also a BOOT scheme, and likewise sells most of its electricity to Thailand. The project is managed by the Theun Hinboun Power Company (THPC), with a roughly similar structure to NTPC (a mix of foreign private shareholders and the GoL). And like NTPC, THPC uses some of its revenues to pay a second party, in this case WCS, to help conserve the watershed of the dams (THPC added a second dam on one of the river’s tributaries to store additional water for its powerhouse after the completion of the NT2 project upriver). But the arrangement differs from NT2 in some key aspects, which make it more PES-like:

1. The buyer is clearer, THPC, with less clouding of the issue with intermediaries, such as the World Bank and WMPA in the case of NT2. And in this case, the motivation lies clearly with this buyer.
2. Participation is more voluntary on both sides of the transaction, at least at the macro level. Like NTPC, THPC is bound by a CA to invest a fixed amount in watershed protection, but it significantly and voluntarily exceeds this amount (personal communication from A. McWilliam 2014). And WCS has voluntarily entered into its contractual obligations with THPC, motivated by its pre-existing interest and institutional priority to work on conservation of the Annamite Mountains (something absent from WMPA).
3. The transaction is conditional at the macro level. THPC is not required to renew its contracts and funding to WCS, but can choose to do so based in part on the condition of WCS performance.

Locally, however, there are no performance-based payments between WCS and the villagers they work with on behalf of THPC.

Another interesting and perhaps telling difference between NT2 and THPC is that, because of the superior (and in fact, outstanding) natural forest cover of NNT, the goal of NTPC and WMPA is principally forest cover *maintenance*. This can be problematic to define and measure (e.g. it is difficult to measure and monetize progress in maintaining a status quo). In contrast, much of THPC’s focus is on forest *restoration* in its watershed. This is a progress-based goal, which has components that can be readily defined, monetized and rewarded, e.g. the number of trees planted or number of hectares that are replanted in trees. This intrinsic difference alone makes TH more amenable to application of a PES scheme than NT2.

Table 2 summarizes and compares incorporation of the five definitional criteria of PES by the NT2 and TH projects, respectively.

Over the years, REDD has become an important driver in project development in the forest sector in Lao PDR. There are currently six bilateral REDD projects, three NGO-supported projects and seven regional projects. Over USD 90 million in finance is either under implementation or planning in Lao PDR from a variety of multilateral and bilateral development partners, NGOs and international research organizations. In recent years, considerable capacity has been built at national and provincial levels to raise understanding of REDD.

On the ground, considerable effort and funding has been expended to develop REDD schemes for NPAs in Laos, but two factors have constrained progress. One,

Table 2. Comparison of the incorporation of the definitional criteria of PES schemes by the Nam Theun 2 and Theun Hinboun hydropower projects.

	Nam Theun 2	Theun Hinboun
Buyers and sellers	Clouded by involvement of multiple parties in the transaction at the macro level.	At macro level, a clearer buyer (THPC) and seller (WCS).
Voluntariness	No part of the transaction is voluntary, regardless of how buyers and sellers are identified.	Voluntary between THPC and WCS; less clear if village participation in forest conservation is voluntary.
Conditionality	Little or no conditionality; no explicit contracts with villagers	Conditionality between THPC and WCS; no explicit contracts with villagers
Well-defined ES	Maintenance of forest cover is well understood as the ES, but difficult to measure and monitor.	Forest restoration is somewhat easier to measure and monitor.

deforestation rates in the NPAs are too low to qualify for REDD. Second, it has been difficult to identify a way to recoup from carbon earnings the high set-up costs of REDD, and maintain the economic viability of the program (personal communication from A. McWilliam, 2013).

8. Advancing PES in Laos: Is it possible, and how?

8.1 Efforts to date

Over the past several years, a number of initiatives and attempts towards putting PES on firm institutional and policy footing in Laos have been made. However, these actions have been disjointed and dispersed across various ministries and departments, with few concrete achievements to date. The attempts include (in addition to the hydropower and REDD initiatives described earlier):

- Drafting of legislation related to collection and use of a forest ecosystem service fee, including water-use fee. This was led by the Department of Forestry (DoF) of the Ministry of Agriculture and Forestry (MAF) and the National Assembly (NA).
- Meetings and discussions on potential applications of PES in Laos, led by the Environmental Protection Fund and the Center of Research and Information of the National Land Management Authority (NMLA).
- GoL study tours to various countries to become familiar with PES schemes (e.g. China, Vietnam), and GoL participation in various international meetings on the topic.
- At least two national and/or international meetings related to PES in Vientiane to discuss and share information and experiences on PES practices. The first was led by NMLA, and the second by the National Assembly (with external funding).
- Discussions on collection and use of water-use fees from hydropower projects in selected watersheds (Nam Theun and Nam Ngum), led by the Water Resources and Environment Agency, a precursor institution of the Ministry of Natural Resources and Environment (MoNRE).
- In 2013, DoF's Sustainable Forestry for Rural Development Project completed a feasibility review, *Payment for Forest Environmental Services in Lao PDR* (Photisat et al. 2013).

In late 2012, the Australian Centre for International Agricultural Research (ACIAR) commenced a research project in Laos, "Effective implementation of payments for environmental services." This undertaking, in collaboration with the National University of Laos, MoNRE and MAF, is planned for four years. According to the project's website, the project "[a]ims to develop PES policy options for the Government of the Lao PDR. Researchers will design a 'virtual' PES scheme as a 'proof of concept', and establish a draft set of guidelines for PES operation" (ACIAR 2011). It will initially focus on the Nam Ngum river basin in central Laos.

8.2 Constraints to development of PES in Laos

This review examined the circumstances that have limited the NT2 project from becoming more PES-like. On a broader scale, given the opportunities noted above, what obstacles constrain PES from taking root in Laos generally? Several may be at work.

1. **Limited support for benefit-sharing.** The GoL has, to-date, exhibited reluctance to allow local residents to directly benefit financially from either the exploitation or conservation of natural resources. For example, a Village Forestry Association (VFA) was established to generate income for villagers resettled by NT2 from the sustainable harvest of village-managed forests. Yet the VFA is commonly recognized as one of the most persistently dysfunctional and disappointing components of the entire NT2 portfolio (McDowell et al. 2010b, 2013a). This has been due in part to external meddling and corruption, and lack of commitment to the principal of villagers' rights to generate and keep profits from timber harvests. The World Bank (2013), which puts a decidedly positive spin on the NT2 project, nonetheless has these somewhat cryptic comments about the VFA (and several years after the VFA was established):

"VFA is still a nascent organization, facing similar challenges as other new community-led institutions."

"The following institutional issues are receiving priority attention:

... (ii) closing down of non-VFA sawmills on the Nakai Plateau, that would strengthen resettlers'

exclusive right to benefit from forestry resources on the Plateau;

... (iii) curbing unauthorized extraction of timber belonging to the VFA.”

Not only was the VFA established by a binding legal agreement, the NT2 CA, which was likely examined by more attorneys than any other document in the history of Laos, it shares many components of PES: it is a mechanism to allow local people to earn income by contributing to two of the GoL's highest policy priorities – sustainable management of forests and rural poverty alleviation. But even with these *a priori* advantages – in both law and policy – it has been a tough go in reality. This does not bode well for PES schemes in the country.

2. **Issues of transparency and governance.** PES requires financial transactions by buyers who trust they are operating in an open, fair and well-regulated system. Yet in its most recent assessment, Transparency International ranked Laos tied as the 15th most corrupt country in the world, and the most corrupt country in Southeast Asia with the exception of Myanmar (TI 2012). This perception will make it difficult for PES to take firm root in Laos.

For example, the appropriate and well-meaning GoL line-institutions – MoNRE, the Ministry of Industry and Commerce (which oversees hydropower construction) and the Ministry of Finance – are collaborating to develop a mechanism to collect from hydropower projects *voluntary* ‘watershed-use fees’ for a Watershed Fund, modeled on NT2's contribution of revenues to WMPA. Yet even in the best of environments, it is difficult to see why a hydropower project would voluntarily contribute to a centrally managed fund (rather than just pay to protect its own watershed directly). And projects will be even more resistant to do so in an atmosphere of corruption and lack of transparency. In fact, Neef and Thomas (2009) identified mistrust between buyer and seller as one of the main constraints to establishing viable PES schemes.

3. **Confusing and overlapping spheres of authority.** Line ministries sometimes compete to assert authority over the country's natural resources, and agreements made at the central

level might be ignored by the provinces, and vice versa. PES, at least as applied to watersheds, should be led by MoNRE. However, MoNRE is a new ministry, with 17 departments; and so some confusion reigns. Other ministries, particularly MAF, are also vying to be involved.

4. **Lack of additionality.** For PES to work, it needs to pay for a service not already provided. From the perspective of the GoL, all citizens are responsible for protecting forests and natural resources (in fact, it is illegal for citizens to do otherwise). This expectation of altruistic civic obligation runs particularly deep in communist states, where all citizens are expected to work for the common good, rather than personal gain. In other words, PES proposes to pay people for conservation actions that the GoL expects them to do anyway, as a civic duty (and matter of law). Consequently, visceral support for such an arrangement at upper policy levels could be weak.
5. **Unclear property rights.** A core feature of an effective PES scheme is that sellers in the transaction have clear rights of ownership to the ES they are selling. In Laos, ownership is clouded since rural villagers do not own the land on which they live, cultivate and use for such things as collection of non-timber forest products (Mousquès et al. 2007). They have only use rights conferred by the State, which are often too restrictive to allow PES schemes – which hinge on the ability to adopt alternative land-use practices – to function in Laos (George et al. 2009) or in Vietnam (Kolinjivadi and Sunderland 2012; McElwee 2012). Furthermore, since the land is owned by the State, the identity of the proper seller – and financial beneficiary – in the transaction of ecosystem services from the land is unclear. It is perhaps for this reason that, to date, initiatives to develop PES, at least in the area of watershed services, have focused on getting hydropower projects to pay into a fund controlled by the central government.
6. **Ideological disjunction.** PES is a deeply capitalist (and even libertarian) concept: that natural resources can be owned by individuals, monetized and voluntarily sold to the most willing buyer. Is it, *a priori*, a non-starter to try to fit this template onto one of the world's last Marxist states? Granted, Laos has lately embraced elements of the free market, but not

all. Of particular relevance to PES in Laos, the State still owns all forests and forest lands, exactly the areas where PES schemes would most commonly function.

Many of these same constraints have been recognized in attempts to develop PES schemes in neighboring Vietnam. To et al. (2012) wrote: “Local elite capture of PES benefits through the monopolization of access to forestland and existing state forestry management are...key problems,” and “...PES schemes create a market for ecosystem services, [and] such markets must be understood not simply as bald economic exchanges between ‘rational actors’ but rather as exchanges embedded in particular socio-political and historical contexts...” This is very much the case in Laos.

8.3 The way forward

Wunder et al. (2005) and Pattanayak et al. (2010) give several reasons why it is particularly challenging to establish successful PES schemes in developing countries. These general challenges are compounded in Laos by some characteristics intrinsic to the Lao state. It may be that the current institutional and ideological environment of Laos is not conducive to the establishment of PES schemes (George et al. 2009). Granted, there has been some success to-date in conserving the watershed values of the NT2 watershed, under something resembling a PES scheme. But this has been achieved only by heavy intervention of intermediaries, mainly the World Bank and the NT2 POE. Without their combined efforts, it is likely that road construction (through the watershed to the Vietnam border), commercial logging and large-scale gold mining would all be found in the watershed today (McDowell et al. 2010a, 2011); and, in fact, illegal commercial logging apparently still is (McDowell et al. 2013b). This rather urgent plea, which comprises the first POE recommendation in one of its 2010 biannual reports, gives clear voice to the difficulty of achieving compliance with even the best understood and prominent agreements on natural resources use and conservation in Laos:

“The POE states: That National Assembly legislation this year is a requirement if the NNT NPA is to remain inviolate.”

“The POE recommends accordingly:

- *1/16 That the Government of Laos, through a Presidential Order, a Prime Ministerial Decree or other urgent measures, take immediate action to protect the NNT NPA from mining and logging, thus making more specific the existing but inadequate measures which have failed to achieve this. Further that all relevant laws, decrees, regulations and orders be publicized and explained through workshops in Nakai and Khamkeut Districts to government officials and to resettler, PIZ [Peripheral Impact Zone] and NPA villagers and that all such regulations be strictly and effectively enforced.*
- *2/16 That a binding National Law be drafted and submitted to the National Assembly for its June, 2010 meeting. Consistent with the GLIP [Government Letter of Implementation Policy], SEMFOP [Social and Environmental Management Framework and Operational Plan] and Decrees, the law would establish the NNT NPA as inviolate, with mining and logging specifically prohibited, and would create an institutional mechanism for regular reports to the National Assembly on the status of the NNT NPA” (McDowell et al. 2010a).*

But intermediaries such as the World Bank and POE are expensive (and their costs could outstrip the income generated from a moderate PES scheme), and their degree of influence and leverage in NT2 would be extremely difficult to replicate in other projects. For commercial developers and the GoL, and contrary to best intentions, NT2 has not become a model of how to ‘do a dam better’, but a model of what to avoid, due to the high costs, complex and nettlesome legal requirements, close scrutiny and consequent slow pace of implementation.

If PES is to be a sustainable, long-term option for environmental conservation in Laos, it needs to become more ‘homegrown’, and driven from within the country. To foster motivation and reduce transaction costs, large government or international institutions could amend their roles, moving from directors and/or principal buyers to become facilitators of PES negotiations at more local levels (Kolinjivadi and Sunderland 2012).

If establishment of a suitable framework in PES were possible in Laos, what would it require?

First, to incorporate watershed conservation into PES schemes, more information through research on

the linkages between watershed forest conservation (or restoration) and hydropower project viability is needed.

Second, solving some of the constraints of PES, such as clearly defining the watershed ES and communicating these results in a persuasive manner to the Politburo, is essential. Currently, for PES mechanisms to be formalized in policy and in law in Laos, a proposal needs to travel from a ministerial cabinet (such as in MoNRE), to the Politburo and finally to the National Assembly, via the Ministry of Justice to draft the proposed law. Consequently, if the Politburo balks, the idea will be dead in the water. The monetization of elements of natural resources to allow private financial gain of villagers might also be out of alignment with the philosophy of the Politburo. Creating the motivation to allow things that have not previously been allowed in Laos will be essential, and not easy.

Discussion, both in this review and the literature generally, has focused on what Laos *should* do. But reality commonly takes a course different from 'should', or from the best intentions. A recently published study found a correlation between the age of country (its political age), and its willingness to invest in conservation (Herschfield et al. 2013). The study controlled for other factors related to a country's age, such as wealth (younger countries tend

to be poorer than older countries). The authors concluded that the explanation may lie more in psychological factors than in economic or overtly political ones. Residents and governments of countries with longer histories may find it easier to project a longer, stable future for their country, and are thus more willing to invest in protecting that future, than are residents of newer countries.

The modern Lao state is only 38 years old; it adheres to a communist ideology of top-down state control, and is one of the least transparent countries in the world. PES schemes, in contrast, are capitalist transactions, contingent on transparency, individual property rights and a shared focus on the future. Expecting PES to take root in Laos on a broad scale at this time might simply be expecting too much.

The way forward for PES in Laos may be to work within the existing reality, and focus on innovative, smaller-scale PES schemes, which are not tied to changes in land use, and are not dependent on novel approaches by the GoL. Examples are NGO-managed conservation projects that pay villagers for sightings of wildlife by eco-tourists. While the impact and benefits of such acutely local projects may be comparatively small, some impact is preferable to no impact at all, and in particular to no impact that comes at a high cost of betting against reality.

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Payment for ecosystems services (PES) is a mechanism that attempts to create motivation for the conservation of biodiversity, where insufficient motivation existed before. Laos is a country rich in natural resources, with high dependence on these natural resources (particularly forests and rivers) for national income generation. Consequently, the country would seem to be fertile ground for the application of the PES concept, particularly in the hydropower sector. The largest hydropower project currently in operation in Laos is the Nam Theun 2 dam, which exports most of its electricity to neighboring Thailand. The dam's watershed is the largest nature reserve in Indochina, Nakai-Nam Theun National Protected Area. Through mechanisms brokered by the World Bank, Nam Theun 2 has several features common to PES schemes. They are focused on using revenues from the dam to conserve the biodiversity and forest cover of Nakai-Nam Theun.

This brief examines the degree of alignment of Nam Theun 2 with PES principles as commonly understood, and examines the potential for successful application of PES schemes generally in Laos. Some generally recognized constraints to implementation of PES schemes in developing countries are compounded in Laos, a Marxist state, which embraces social and economic philosophies contrary to the capitalist PES features of individual ownership of natural resources and transparency. Consequently, motivation within government for advancing PES in policy and law will likely be low, and a constraint to its uptake within the country. The way forward will likely be to focus on small, local projects that align with existing government policy.



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