



*Strengthening local capacity
in the economic analysis
of environmental issues*

The Economy and Environment Program for Southeast Asia (EEPSEA) was established in May 1993 to support training and research in environmental and resource economics across its 10 member countries (i.e., Cambodia, China, Indonesia, Lao PDR, Malaysia, Myanmar, Papua New Guinea, the Philippines, Thailand, and Vietnam.) It aims to strengthen local capacity for the economic analysis of environmental issues so that researchers can provide sound advice to policy makers.

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Is Payment For Environmental Services the Future of Environmental Management in Southeast Asia?

Payment for environmental services (PES) is a relatively new approach to environmental management in many Southeast Asian countries. Although its implementation is at an early stage in the region, it is already being thought of as a potential alternative to the command and control approach. However, despite the fact that a number of national and regional pilot projects have been put in place in recent years, up until now there has been no research done to gauge the success of PES in the region and to assess its potential for the future.

To address this gap, an EEPSEA report reviewed 12 PES projects from four countries where PES has been applied. The study is the work of Nguyen Thi Y Ly and Pham Thanh Nam from Vietnam. The study shows that most of the projects have had a positive impact both on the environment and on communities' livelihoods and their knowledge of the value of natural resources and environmental services. However, there have been some cases of failure related to property rights, funding resources, and implementation problems. As a result, in order to make PES schemes more effective in the future, steps need to be taken to secure land tenure and to establish a clear PES implementation framework. Such a framework should solve issues relating to service evaluation, legal support, finance, and social capacity.



A summary of EEPSEA Research Report No. 2014-RR10: 'Payment for Environmental Services in Southeast Asia: A Regional Review of Policy Implementation' by Nguyen Thi Y Ly (Department of Environmental and Natural Resource Economics, Faculty of Economics, University of Agriculture and Forestry, Linh Trung Ward, Thu Duc District, Ho Chi Minh City, Vietnam. Email: ntyly@yahoo.com) and Pham Thanh Nam (Field Coordinator in Lam Dong Province, USAID's Lowering Emissions in Asia's Forests (LEAF) Program. Email: nphamthanh@snvworld.org)



(L-R): Payment for Forest Environmental Services project in Lam Dong, Vietnam; springs at Mt. Kanla-on, Philippines; and the lake at Singkarak Watershed in Indonesia.

The PES approach

PES is a process in which a well-defined environmental service (e.g., a sustainable water supply from an ecologically intact catchment area) is purchased by a service user/s (e.g., a hydroelectric plant) from a service supplier/s (e.g., villagers who manage the forest in a catchment area in a sustainable way). In 1996, the first formally labeled PES program was implemented in Costa Rica. The approach was then expanded to the USA, Mexico, Ecuador and many other countries. PES has now been documented in more than 280 regions and countries globally.

In Southeast Asia (SEA), the PES approach has been implemented in some countries at both regional and national levels. For example, the World Agroforestry Centre (ICRAF) has initiated a PES program that aims to reward poor upland farmers for providing environmental services to society. The program is called "Rewarding the Upland Poor for Environmental Services" (RUPES). It has been implemented in Indonesia, the Philippines, and a number of other countries.

However, during this initial phase of PES implementation in the region, the fortunes of PES projects have been mixed; some have been successful in applying this approach, while others have not. Despite this, no review of PES implementation in SEA has been done to determine why some PES projects have succeeded while others have failed.

To fill this information gap, this study reviewed and analyzed the implementation of PES

in Cambodia, Indonesia, the Philippines, and Vietnam to determine the factors behind success and failure, to understand the issues and challenges that are faced when PES is applied, and to make recommendations to maximize the positive impact of future PES projects.

12 PES cases

The study reviewed 12 PES and "PES-like" case studies; three cases from each of the four countries were included in the review. The collected case studies only comprised of projects that had been going for long enough to have significant impacts on ecosystems, the flow of ecosystem services, and the income of service providers.

For example, in Cambodia, the study looked at a habitat conservation project in Chumnoab Commune, Koh Kong Province. This PES project featured an agreement in which the local community was paid to maintain and protect the forest, crocodile habitat, and species of the region. Payments to these service providers were made by Conservation International.

To assess these case studies, relevant information was collected from regional NGOs that were involved in PES implementation in SEA. These agencies included the ICRAF-SEA, the Greater Mekong Subregion Environment Operations Center, and Winrock International's Asia Regional Biodiversity Conservation Program. In addition, researchers made contact with colleagues from EEPSEA's research network in the four countries to collect information.

Once the potential case studies had been selected, contact was made with key informers from each of the chosen projects to collect more detailed information. Field visits were also made to two PES sites in each of the four study countries to undertake direct observations, interview key people, talk with local residents, and meet key informers.

Assessing the cases

A checklist was used to do an initial review of the chosen PES projects. Each case study was assessed in terms of its location features, its potential, its purpose and drivers, and the financial resources it had available. The 12 case studies were then evaluated based on how well they had achieved their objectives and on how well their payment mechanisms had worked. They were also assessed on how efficient, equitable and legally and financially feasible they had been. In addition, each PES case study was also evaluated to see how well it had contributed to the sustainable livelihood of the local people. Finally a SWOT matrix was used to analyze the strengths, weaknesses, opportunities and threats facing PES implementation in each case study (and in each country). The findings from the SWOT matrix were used in suggesting improvements for future PES schemes.

The study finds that the development of the 12 schemes had been primarily driven by national or international donors, and that they had been set up to deal with degraded environmental services, deforestation, degraded

	Case study	Environmental influence/effects of the PES schemes
1	Agreement for Forest, Wildlife, and Crocodile Habitat Protection in Chumnoab, Cambodia	20,000 ha of degraded forest have been protected to improve environmental service delivery and conserve biodiversity. 10% of the global crocodile population hatched in year one.
2	Wildlife Conservation Society-Biodiversity Payment, Cambodia	Safeguarded over 1,550 nests of globally threatened or near-threatened species.
3	Oddar Meanchey REDD Project, Cambodia	Conserved 67,853 ha of forest (equivalent to sequestering 7.1 million tonnes of CO ₂ over a 30-year period).
4	RUPES - Singkarak Watershed, West Sumatra Province, Indonesia	- Rehabilitated 540 ha/year, or about 2,700 ha in five years. - Implemented agroforestry and conservation farming technology.
5	Way Besai Watershed, Sumber Jaya, Lampung Province, Indonesia	- Conserved and protected existing forest. - Agroforestry of timber and fruit trees. - Achieved erosion reduction of greater than 20%.
6	Cidanau Watershed, Benten Province, Indonesia	- Reforestation of 500 ha. - Application of agroforestry and livestock integration.
7	PES in Maasin Watershed, Iloilo Province, Philippines	Reforestation and rehabilitation have been implemented.
8	Mt. Kanla-on Spring Water Plant, Philippines	- Implemented 20 ha of reforestation and 80 ha of rehabilitation. - Two nurseries have been established and 100,000 fruit trees have been cultivated.
9	Watershed Rehabilitation Funds, Philippines	- Water quality has been improved. - Reforestation and agroforestry projects have been implemented. - Erosion and flood control structural measures have been built.
10	Payment for Forest Environmental Services in Upland Central Vietnam	Watershed protection, carbon sequestration, biodiversity conservation, and preservation of landscape beauty for 206 ha of forest.
11	Payment for Forest Environmental Services in Lam Dong Province, Vietnam	Protected upstream watershed forest (and its environmental services) to maintain water quality and quantity, control soil erosion, and preserve landscape value. The total protected area stands at 209,705 ha.
12	REDD in Da Nhim Watershed, Vietnam	Protected of 74,168 ha of forest for carbon sequestration and to mitigate climate change.

water resources, and inefficient environmental command and control mechanisms. Besides aiming to improve environmental service quality, most of the PES schemes had also been designed to alleviate poverty and drive social development.

The study shows that these schemes have generated a number of positive environmental, economic and social impacts. In particular, the projects resulted in approximately 375,232 ha of forest being reforested and protected from illegal logging and agricultural conversion. Hence, it is possible to state that the PES schemes reviewed have significantly improved environmental services, as summarized in the table above.

In economic terms, most of the studied cases have generated additional short-term household income through labor payments, and additional income from agroforestry and via the implementation of conservation

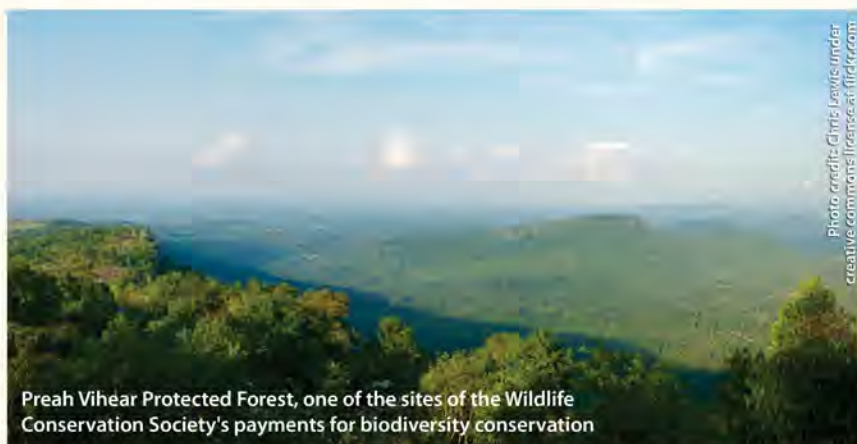
technology and practices. Consequently, this extra payment has helped increase the annual household income of participating service providers from 2% to 30%.

Moreover, the PES schemes have also had a positive impact on social development. For example, they have increased the awareness of local farmers and authorities about environmental service values, and PES implementation and its potential applications. The cohesion of rural society has also been improved through PES projects in which contracts have been signed between groups of farmers. Additionally, service users involved in PES schemes have helped improve social conditions by providing ground water collection devices, roads, schools, medical clinics, and nourishment programs. Overall, it is clear that PES schemes have created a good impression across SEA.

Challenges of PES implementation

The study finds that because individual land tenure is not secure and weak in most of the countries surveyed, PES participation has been limited to specific communities or particular locations. This problem has also limited the ability of PES projects to contribute to environmental service supply. The study also finds that, at the initial stages of PES implementation, institutions, governance mechanisms, and legal frameworks tend to be limited; although this is not the case in Vietnam where there is specific legislation designed to get PES projects in place.

The study also finds that, instead of employing user-payment mechanisms, most of the studied PES schemes have been primarily funded by donors, the private sector, and local government. They have also been implemented with limited financial resources



Preah Vihear Protected Forest, one of the sites of the Wildlife Conservation Society's payments for biodiversity conservation

and without plans to sustain funding beyond the initial start-up and implementation phases. As a result, many schemes have been short-lived and they have not been maintained sustainably. This problem is highlighted by the greater sustainability of those schemes that do receive financial resources from service users (such as environmental service payments or resource use taxes and fees).

Finally, many PES schemes have also faced difficulties in establishing the relationship between payments and improvements in environmental service quality. This is exacerbated by the challenge of measuring changes in environmental services, especially when the capacity of local staff and farmers/ environmental service providers to do such measurements is limited. Moreover, many payments have not been based on the value of, or on the opportunity costs of providing, environmental services; this leads to some service values being poorly judged. In turn, this has had a negative effect on fund contributions. Moreover, at the initial or pilot stage, payment mechanisms and monitoring systems have often been weak or without institutional back-up. Consequently, the rights and obligations of stakeholders have not been evaluated accurately.

Recommendations for the future of PES

In order to deal with the existing challenges of PES implementation and to ensure that the next phase of PES projects in SEA will be implemented as effectively and efficiently as possible, the study suggests a number of recommendations.

In particular, the land tenure of the local people involved in PES projects should be secured, existing PES regulations and rules should be enhanced, stronger legal frameworks for PES should be created, and government-controlled financial regulations for PES funds should be implemented. The study also recommends that environmental service payments should be a combination of cash and in-kind payments. This is necessary because the protection of environmental services will be more effective if it is connected to improvements in the livelihood of locals. Moreover, the study highlights the importance of having a long-term, sustainable source of funding from service users (rather than donors) and recommends that any project should look for funding from as wide a range of sources as possible (e.g., market-based environmental services).

To promote transparency and improve trust in the effectiveness

of the PES application, PES projects should have a group of technical experts to evaluate the baseline of environmental services, to measure the relationship between payments and changes in environmental service quality, and to monitor the changes of services over the payment period.

As PES is still a relatively new concept in the region, it is vital to define all aspects of any scheme as simply as possible and explain them to all stakeholders. This will help stakeholders understand what is involved and should make them more convinced to take part. In light of this, a specific PES contract (including payment conditions and evaluation indicators) should be drawn up as part of each PES project. Finally, the information related to PES schemes and their implementation should be openly delivered to stakeholders through communication media such as radio and television, as well as through local institutions (including local government agencies and NGOs) and community authorities.

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