



## A Feasibility Study on Payment for Forest Environmental Services in Cambodia

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**Abstract** The study conducted a feasibility study on payment for forest environmental services in Cambodia, combining quantitative and qualitative data sources. Literature reviews and interviews were conducted to determine conditions required for payment for ecosystem service success, and focus groups discussion and household surveys were employed to capture villagers' behaviors in forest management and payment for forest environmental services. Results showed that conditions required for PES success include clear defined ecosystem services; flexible contracts and payments; transaction costs that do not exceed potential benefits; a reliance on multiple sources of revenue delivering sufficient and sustainable money; a close monitoring of compliance, land use change and provision of ecosystem services; and the flexibility to improve effectiveness and efficiency and adapt to changing condition. PES-like failures in Cambodia resulted from inequity of benefit-sharing, a lack of management committee capacity to monitor participants and carry out punitive measures, and the poor quality of services and communication skills. Factors contributing to PES-like successes were simple and local program organization, low administrative costs, transparency of benefit-sharing to services providers, and active participation from villagers in complying with the regulations of programs. PFES could be integrated into the REDD finance mechanism. As a result, the case study in Chambok exemplified a community-based forest suitable for PFES implementation and possibly a joint program. This would lead to improved livelihood conditions of local communities through forest cover protection, and increase the awareness of downstream and upstream villagers in ensuring the sustainable provision of services.

**Keywords** Cambodia, feasibility, forest management, livelihood improvement, PES

### INTRODUCTION

Commercial logging, shift cultivation, wood harvesting for woodfuel and charcoal production, and habitat destruction by local villagers and in-migrants are the major driver to deforestation and forest degradation, and great threat to biodiversity. Government policies or incentives for forest management are urgently needed to secure sustainable use of forest resources and improve local livelihoods. In light of the failure of the command and control approach, payment for forest environmental services (PFES) may be considered a potential solution. There are number of successful studies on payment for environmental services (PES) from both other countries and Cambodia. In Costa Rica, environmental services (ES) is being bought through biodiversity conservation, carbon sequestration, watershed protection, landscape beauty and bundled services (Alcamo et al., 2008). The payment was made to water services at about (USD 40-43/ha/yr), biodiversity (grant from CBD, UNFCCC, Global Environmental Facility, CI and other bodies), Carbon sequestration (based on Certifiable Tradable Offset, CDM) and landscape (paid by hotel, tourists and other users) (Pagiola, 2008). In Cambodia, there are three types of PES-Like ranging from community based ecotourism, agri-environmental, and bird-nest protection programs.

## **OBJECTIVES**

The overall objective of this research is to conduct feasibility study on payment for forest environmental services in Cambodia. The specific objectives of the study are to: (i) determine condition required for PES successes, (ii) identify factors contributed to PES-Like successes and failure in Cambodia, and (iii) conduct a feasibility study of PFES in Chambok area in Kampong Speu Province, Cambodia.

## **METHODOLOGY**

The research combined quantitative and qualitative data sources from two different levels, national and local. For national level, existing literatures was reviewed for accessing of what condition to securely require PES success with the experiences from other countries. Key Informant Interview (KII) were also conducted for capturing their perception associated with the failures or successes of PES-Like schemes in Cambodia in relation to the factors driving forces to deforestation and degradation of forests. Six KIIs, who had experiences and worked closely related to PES in Cambodia, were planned for interview (two from government and four from NGOs); but only five KIIs were available for interview (one NGO was unavailable.) A fixed set of questionnaires were used and responses were recorded and later transcribed. Chambok area located in Phnom Srouch District, Kampong Speu Provinces was selected as the case study for identifying the perceptions and behaviours of villagers associated with forest management. In this regards, for local level, two small samples of twenties households were surveyed – one sample from an upstream community and one from downstream community. All households sampled make daily use of forest. The household selection was systematically selected (one household surveyed, four households missed, next household surveyed) and interviewed face to face with the complete set of questionnaires. With the purpose to capture more in-depth information, FGDs were conducted to recover the root causes of deforestation and understand the livelihood option and forest management behaviours of villagers. Two FGDs (one at the upstream and one at the downstream community) were interviewed in order to evaluate the understanding of these two stakeholder groups. Questionnaires, recorders, and flip chart were used during discussion.

## **RESULTS AND DISCUSSION**

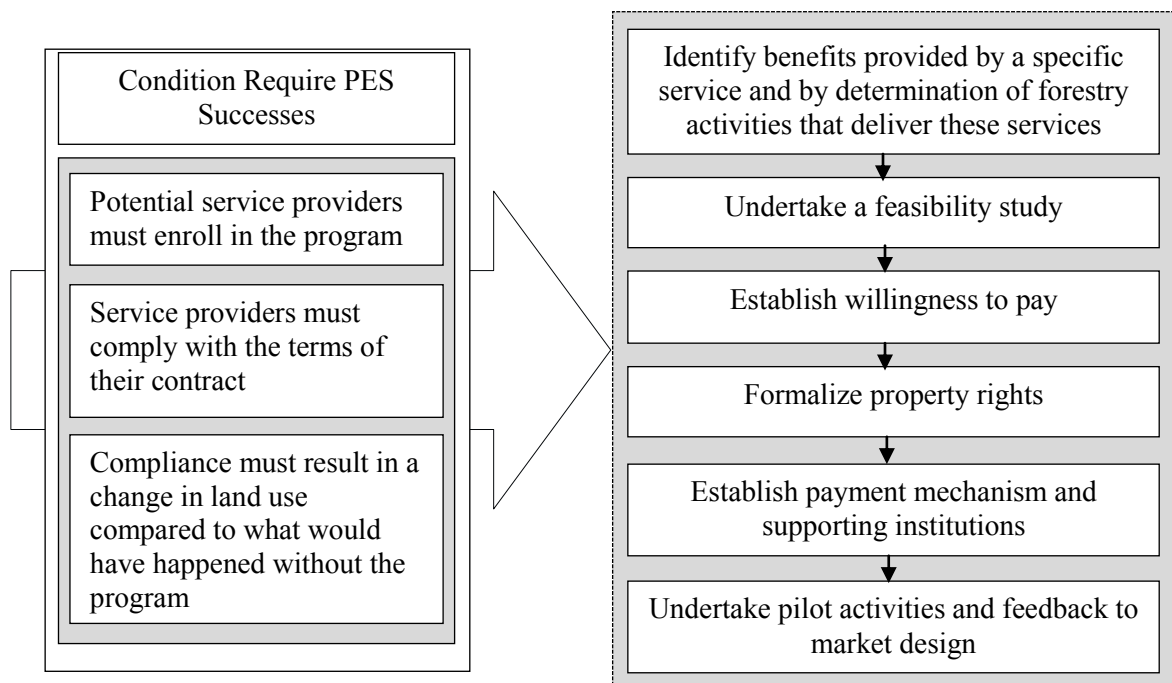
### **Motivation of PES in Cambodia**

From the forest resource point of view, PES appears necessary to ensure the forest coverage. The constitution and forest law pave ways to sustainable use of forest while protected area policy warranty the minimum forest coverage area. Forests in Cambodia fall under the general jurisdiction of the MAFF, with the FA charged as the responsible Government Authority (Forestry Law 2002, Article 3), the MoE is responsible for Protected Areas (PA), and the FiA is responsible for flooded forest and mangrove areas (Fisheries Law 2006, Article 3). Cambodian Law is hierarchical, therefore all subsidiary regulations should respect to differentiation of responsibilities laid out in the Forestry Law and other Laws. Even the law on PES is not legally regulated, the Royal Government of Cambodia (RGC) has set numbers of policies to ensure forest coverage and supported PES through REDD mechanism. For instance, the REDD project in Oddar Meanchey, under the collaboration between the FA and PACT Cambodia through thirteen CF, used PES as a mechanism for the distribution of benefits from the sale of carbon credits on the voluntary market (Chervier et al., 2010). About 7.1 million metric tons of carbon dioxides could be sequestered for over thirty years, while around 1,000 participated household were benefited (Poffenberger et al., 2008). The RGC has set policies to reform land administration and natural forest resource management. The reform has focused on strengthening environmental protection and natural forest resources through enhancing sustainable forest management, the use of forests to improve the livelihoods of people, demarcated PA system to protect biodiversity and endangered species, and

decentralized forest management through community forestry program. The use and extraction of forest products are carefully regulated through the delivery of permits, regulation of guideline for management, prohibited activities, and endorsement. The RGC also encouraged manmade plantation substitute for national forest demands, and created public awareness to replant and used community plantations for firewood and charcoal needs.

**Condition Require PES Success**

PES schemes tend to perform successful under the conditions clear and mutual agreement linking land uses to the provision of ES (Mayrand and Paquin, 2004); clearly defined ecosystem services (Wunder et al., 2008); flexible contracts (Sommerville et al., 2009) and payments and transaction costs do not exceed potential benefits; a reliance on multiple sources of revenues delivering sufficient and sustainable money; a close monitoring of compliance, land use change and provision of ecosystem services (Arriagada and Perrings, 2009; Landell-Mills and Porras, 2002); and the flexibility to improve effectiveness and efficiency and adapt to changing conditions (Sommerville et al., 2009). The conditions require PES successes are also depended on the successful completion of a series of steps (Fig 1). First, potential service providers must enroll in the program, and secondly service providers must comply with the terms of their contract. Third, compliance must result in a change in land use compared to what would have happened without the program (Wunder et al., 2008). The development framework for successfully ES market consist of six steps (Landell-Mills and Porras, 2002): (1) Identify benefits provided by a specific service and by determination of forestry activities that deliver this services, (2) Undertake a feasibility study, (3) Establish willingness to pay, (4) Formalize property rights, (5) Establish payment mechanism and supporting institutions, and (6) Undertake pilot activities and feedback to market design. In this regards, the needs to provide training or capacity building to PES providers are required in order to increase the attraction from buyers and their willingness to pay for ecosystem services.



**Fig. 1 Conditions require PES successes and framework for successful ES market development**

### **The failures and successes of PES-Like in Cambodia**

The opportunities costs for livelihood improvement between replanting and conserving forest to gain benefits and choosing alternative option by converting land-use to grow other crops is the first and foremost factors contribute to PES-Like failure in Cambodia. The benefits generated from replanting and conserving forests take long time while the villagers would prefer direct benefits in short time to support their daily consumption. Consequently, they would either not willing to participate in the program or participate but not respect to the rules and regulation. The second failure is induced by inequity of benefits sharing and lacking of capacity of the management committees to implement, monitor, and punish to those break the rules and regulations. Third is derived from poor quality of provided services and communication skills in particular with English language communication. When the service buyers need guides or rangers, the local villagers cannot afford to do so and even few can but not well. These would discourage service buyers to come, and then automatically fail the program through income generation shortage. Factors contributing to PES-like successes are simple and local program organization, low administrative costs, transparency of benefit-sharing to services providers, and active participation from villagers in complying with the regulations of programs. The simple locally arrangement with less administrative costs can disburse higher payments to individual villagers who provide the services. The transparency in benefits sharing to all beneficiaries can avoid jealousy and conflicts through operational management. The levels of participation and involvement from villagers and their commitments to comply with the rules and regulations are significant to retain program successes. Herein, the needs to build local support and understanding of rules and regulation for protected forests and land-use plans are also required to ensure the sustainable operation. The rules and regulation should notably be developed locally and approved by the entire village and the monitoring and evaluation should also be done continuously to check with the current statuses and the changes of existing resources.

### **Case study of PFES in Chambok area**

The Chambok area is located on the outskirts of the Kirirom National Park about 110 kilometers west of Phnom Penh Capital via national road No. 4 in Chambok Commune, Phnom Srouch District, Kampong Speu Province. Chambok Commune administers nine villages with a total population of 546 families. The Chambok CBE is initially developed in 2001 by a local environment organization Mlup Baitong, in cooperation with the MoE. Villagers in Chambok commune are farmers and around 94% of the populations are involved in forest resource extraction activities, including firewood and charcoal trading and collection of bamboo shoots, mushrooms, traditional medicine, and rattan. This unsustainable harvesting of forest products is leading to the rapid degradation of the forest resources both inside and outside the national park. The main challenges are generating additional incomes to support their livelihood. Based on the below quote from farmer, the forest resources in Chambok area are being threatened and urgently need management tool to address this problem.

*I am a farmer, but my incomes cannot support my family a whole year. I have to log trees to get money. I log the trees not because I don't know the values and advantages of forests, but because I have no other income generating opportunities.*

Villager in Chambok Village, Chambok Commune,  
Phnom Srouch District, KampongSpeu Province (Interview on 19<sup>th</sup> May 2012)

PFES may be considered as the potential solution to overcome this problem and provide additional incomes to villagers. Chambok area is appeared to be potential area for piloting program of PFES in Cambodia. First, the protected area of 1,260 hectare of forestland inside Chambok area can secure forest resources from illegal logging or invades from powerful outsiders. Moreover, inside the Chambok boundary, there are three CF and they have played important roles in forest

management. The CF enables villagers to understand clearly and recognize the benefit and importance of forest resources through closely involve them in forest resources management and protection. Second, the land uses of CF in Chambok area can potentially provide a variety of ES ranging from the regulation of hydrological flows, bird watching, waterfall beauty, and carbon sequestration potential from bamboo. The hydrological flows of waterfall in the upstream of Chambok generate clean drinking water to the downstream and are being bought by nine villages in Chambok Commune with an average expend USD 0.25 per month per household. Bird watching and waterfall beauty have considered as the most attractive ES to attract visitors to Chambok area. Third, the villagers are paid for providing forest conservation services if and only if they comply with the commonly-agreed conditions stipulated in contracts of the regulation on land-use plans, non-hunting and non-forest logging.

There is no single approach to require PES successes from theoretical and practical reviewing existing literatures. PES schemes are adapted to the very specific conditions under which they are established and to the specific characteristics of markets for different ES. The three program of PES-Like in Cambodia identified by (Clements et al., 2010) was successfully implemented based on its own specific characteristics of market for different ES and locations. However, mostly of them were heavily depended on funding project from donors. Can the program be sustained when the project was stopped funded? For sure, it could not be sustained without funds. So, the linkage of investors to invest in the program might be the best to sustain the program because their business operation are for making profits, and do so the program can get continuously support. Even the case study in Chambok shows the characteristics and ES trading inside Chambok area has complied with the criteria for implementing PFES, the knowledge and understanding on forest management of villagers are remained poor. The upstream villagers tend to easily change their behaviour through converting land-use for agriculture or encroaching forest lands for commercial and making woodfuel and charcoal. They are not critically enough to think in a longer time the negative consequences of doing so. The downstream villagers are still not aware that the services they used are being provided by upstream villagers, and its qualities could be changed in accordance to the land-use management behaviours of the upstream villagers. This means that the implementation program of PFES in context of Cambodia is not successful if the program depends on only downstream villagers to compensate to the upstream villagers.

## **CONCLUSION**

The major driven of deforestation and forest degradation in Cambodia are caused by institutional fragmentation, limited institutional and individual capacities, unclear of tenure, limited livelihood options, and lack of law enforcement. These five factors have contributed to ineffective of sustainable forest management even policy related to land and natural resource management was reformed by the RGC. The successful experiences from previous PES-Like in Cambodia draw lessons for the future development of program on PFES. This is particularly based on the livelihood impacts of land use change activities and the challenges involving in transferring conditional payment across actors and scales. The diversification of revenues for villagers involved in PES schemes through the creation of new markets for environmental goods and services is the key for success of PFES implementation. In doing so, the villagers will actively involve in the program with respected to non-hunting rules and non-logging regulation and not to turn their land-use easily for other purposes. So, the future implementation of PFES should be jointly carried out with REDD program in order to extend financing from PFES. In this regards, Chambok area is one of the typical community forestry among the others that suitable for applying PFES and possibly joint program between PFES and REDD. The implementation of PFES program in Cambodia should be driven under the theme of improving livelihood of local communities through forest protection and enhancing forest covers in the protected area. The raising awareness for downstream villagers (the future buyers) and upstream villagers should be provided for ensuring the sustainable provision of services. The needs to support from NGOs as mediator in buying ES or/and linking the program to business and private enterprise is very importance to secure PFES successes.

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