



## Payment for Environmental Services (PES): Case Study on Conservation Agreement on Forest and Biodiversity Conservation in Central Cardamom Protected Forest, Thmar Baing District, Koh Kong Province

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**Abstract** Cardamom mountain of Cambodia was classified as *Burma's hotspot* of biodiversity by UNESCO in 2006. It includes watershed, air filtering and many other natural resources such as timber and non-timber forest products (NTFPs), food, medicine and construction materials. Forest has been severely degraded by chronic war and over exploitation of wood by concession companies. Conservation International (CI) has collaborated with Royal Government of Cambodia (RGC) to reform forestry laws and establish the Central Cardamom Protected Forest. Payment for Environmental Services (PES), which is an effective concept for biodiversity conservation. The *win-win* approach of PES mechanism provides benefit to all villagers in return for sustainable conservation. For this reason, an overall goal of the research is to compare Conservation Agreement (CA) features and mechanisms of CI to those of PES. This research intends to describe CA mechanism through PES periscope, analyze institutional design and explain institutional arrangement as well as to indicate factors inducing changes in resident behaviour. This study was conducted inside and around the protected zone of Central Cardamom Protected Forest (CCPF) and it covers three communes of the district. Interviews were conducted on site with the participation of 59 people, including farmers, authorities and NGOs in the study area. Besides, states and NGO officers involved in this research were informally interviewed. The results of this study showed that CA as a mechanism is similar to PES, but it is not just PES due to its features. Although there are many features similar to PES mechanism, it is totally a not voluntary transaction because villagers live in state forests, so they don't have a legal land title. They don't have a right to manage the state forests which are controlled by forestry laws. On the other hand, CA design lacks institutional interaction between involved institutions so it is not legally recognized. All changes in local behaviours may be caused by the restriction imposed by the forestry laws and aids for community development that stop land encroachment. Conservation Agreement enhances the community development and alleviates poverty of local settlers inside and around CCPF by providing development training and incentives such as establishing microcredit, NTFPs processing and providing agriculture instruments. Overall Conservation Agreement is not pure PES but has affected participatory conservation and poverty alleviation.

**Keywords:** PES, conservation, incentive, conservation agreement, voluntary

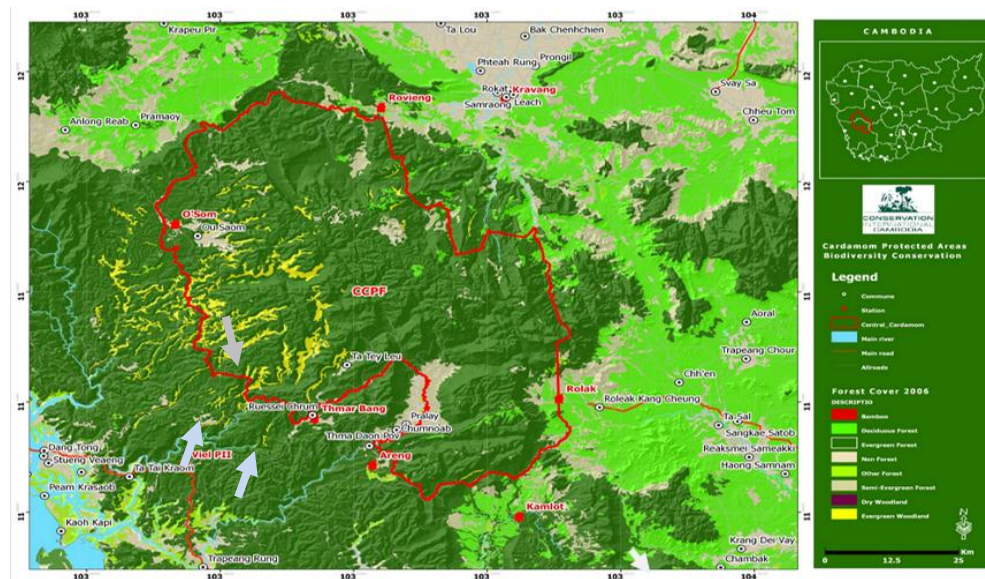
### INTRODUCTION

Ecosystem sustains human life by providing food and drinking water, maintaining stock of continuously evolving genetic resources, preserving and regenerating soils, fixing nitrogen and carbon, recycling nutrients, controlling floods, filtering pollutants, pollinating crops and more other services. The ecosystem is facing severe degradation caused by human activities in agriculture expansion (FAO, 2007a). Ecosystem degradation in Cambodia is also severe due to over exploitation of timber by concession companies after civil war (USAID, 2001). Cardamom

Mountain was defined as Indo-Burma biodiversity hotspot by UNESCO in 2006 which consists of hundreds of endangered plant and wildlife species. Many NGOs and state agencies which are working in biodiversity conservation are concerned about biodiversity and ecosystem degradation in Cardamom Mountains (CI, 2009). Within this wide context, Conservation International (CI) Cambodia has initiated the Conservation Agreement (CA) by paying for contribution to natural sustainability in Cardamom Mountain area through formation of PES due to its framework and features. Within this framework, a market-based mechanism, at least one service buyer, who is the beneficiary, pays for environmental services to ecosystem service providers under conditions specified in a contract facilitated by intermediate agents or intermediate buyers who are found as states in many implements of PES in other countries of the world. Due to Forestry Reform since 2002, institutional arrangement and its interaction have contributed to accelerate CA and promote it into a national level to be recognized by the states (CI, 2009). In addition, benefits from incentives helped to make large changes in land use practices and made the living of people better. This research has made an overall attempt to define and explain the importance of institutions and their institutional interactions in the design and performance of PES (Wunder, 2005) within three main objectives: 1) To describe the CCPF Conservation agreements mechanism through the PES (indirect). 2) To analyse the institutional design and explain the current institutional arrangement (process of elaboration, factors explaining the current framework). 3) To identify the factors that induce changes by the practices of CAs on people (development) and on natural resources (conservation).

## METHODOLOGY

**Study Area:** Selection of the study area was made after an exploratory trip in three communes (Thmar Dan Pou, Russei Chrum and Tatai Leu). This study has been carried out within the scope, objectives and availability of time for investigating the most crucial part of informative data obtained from the target area in response to the main goal of this research.



**Fig. 1 Map of study areas in CCPT**

Source: CI (2009)

The study area covers three communes inside the buffer zone of Central Cardamom Forest Protected, Thmar Baing district, Koh Kong Province. The three communes were chosen as the target area according to the implementation of CI's Conservation Agreement, which is the core of the present research objective and geographical and social diversity. The research areas are briefly shown in Fig. 1 above.

The red line indicates boundary of CCPF which is classified as state forest and controlled by FA in cooperation with CI. There are two target located outside the CCPF boundary and one located inside the protected zone.

**Sampling size and methods:** The number of interviewees was defined based on real situation of exploratory trip. Stratified sampling method was used as principle to define the number of interviewees, and then classified according to their involvement in social activities and knowledge of Conservation Agreements. Commune chiefs met and were informed of the present research in their commune boundaries and the objectives of the survey, and were asked for general information regarding the commune and villages (demographic, social, and economic data). A random sampling method for villagers was chosen due to the impossibility of preliminary stratification according to a set of criteria. However, as long as we got to know the villagers in the area, we tried to stratify the interviewees according to:

- **Age criteria** – Farmers actively engaged in social life, agricultural practices, and active household members in age groups of 20-40, 40-75
- **Period of stay in the commune** – Villagers living in the community for a sufficiently long time, both indigenous (born in the area) or migrants, as they were involved in the key events;
- **Occupation criteria** - Resident teachers, village/commune policeman, among other activities, as they are important beneficiaries according to the Conservation agreements. The design of sample size has been changed several times to be flexible to the real situations on field and available to villagers and other interview targets.

Eventually, 44 households, 8 community committee members and 7 commune councils or commune chiefs have been interviewed as shown in Table 1.

**Table 1 Number of ground respondents of research interview**

Commune name	Total interviews	Villagers	Village and commune chiefs and/ or members of their council	Natural resource management community committee members
Thmar Danpouv	27	21	3	3
Tatey Leu	19	13	3	3
Russey Chrum	13	10	1	2
Total	59	44	7	8

Besides on site interviews, many other states and NGOs officers involved in conservation of the research area were interviewed to understand their views about agreement and to look for an alternative approach in biodiversity conservation.

## RESULTS

After many months of field study, results answer to objectives of this research in the study area. The conservation agreement of CI has been designed with its own nature and criteria and then implemented by local people inside and around Central Cardamom Protected Forest. These results also express the institutional arrangement and its interaction in the context of conservation agreement as well as the comparison to the mechanism of PES. Finally, factors that induced changes within and around the implementation of CA are also highlighted to elaborate the right response to real local needs of community and help them get better off as well as to motivate them to be voluntarily involved in biodiversity conservation.