Effective Implementation of
Payments for Environmental Services
in Lao PDR

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KEY FINDINGS AND POLICY RECOMMENDATIONS ON PAYMENTS FOR ENVIRONMENTAL SERVICES SCHEMES IN LAO PDR

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1. Introduction

The research project 'Effective Implementation of Payments for Environmental Services in Lao PDR' was commenced in 2012 following negotiation between ACIAR and the Government of Lao PDR (GoL). Its goal was to assist policy makers advising the GoL in designing and implementing schemes that would enable targeted improvements to the environmental condition of Lao PDR to be achieved through local people being paid to supply environmental services.

The project is now reaching its final phase with the contributions made by the project research partners – the ANU and UWA from Australia and the NUoL and MAFF from Lao PDR – being drawn together to deliver a set of findings and recommendations.

In this Research Report, the final in the series prepared under the project, the key achievements, findings and policy recommendations are presented to guide the reader through the primary elements of the research work and to demonstrate how the project has fulfilled its goal. As such, this Research report acts as a summary document for the project. Reference is made to the preceding Research Reports as sources of more detailed information regarding specific elements of the project.

2. Key achievements

In the context of two case study sites:

➢ Protection of Wildlife Diversity in the Phou Chomvoy Provincial Protected Area

➢ Green Peafowl protection in the Green Peafowl Species Conservation Zone of the Phou Khao Khouay National Protected Area

We have:

➢ Designed a conceptually sound and practical model for a PES scheme in a developing country context;

➢ Built stochastic simulation models to predict the impacts of anti-poaching patrols on wildlife;

- Surveyed residents of Vientiane (about 413) and international tourists to Lao PDR (about 680) to estimate their willingness to pay for wildlife protection with about 100 National University of Laos students doing the personal interviews and supporting the data collection management (the students were trained through the project);

- Surveyed households in the fourteen villages that are located in our case study areas to describe their current situation before the PES schemes are started;

- Surveyed the wildlife in our case study areas to find out which species are present and to estimate their populations;

- Consulted with the people living in our two case study areas to set up the terms of community conservation agreements and contracts for anti-poaching patrol teams;

- Sought advice on the schemes from national, provincial and district officials;

- Coordinated our activities with the Lao Wildlife Conservation Association (WCA), Worldwide Fund for Nature (WWF), Luxembourg Agency for Development Cooperation (LuxDev) and Wildlife Conservation Society (WCS);

- Received expressions of interest from local people of all fourteen target villages to form anti-poaching patrol teams in both case study areas;

- Run tenders for the supply of anti-poaching patrols in the fourteen villages involved;

- Calculated the number of patrols to be offered and the price to be paid to the anti-poaching patrol teams in both PES schemes and assessed their costs, benefits and surpluses;

- Negotiated with patrol teams and village leaders in preparation for contract signing;

- Successfully negotiated the financing of the two PES case studies through World Bank/ Environmental Protection Fund (EPF) funding over three years;

- Appointed two patrol managers, one scheme accountant and one scheme coordinator financed through the WorldBank/EPF funding;

- Coordinated with the EPF to arrange the logistical operations of the schemes;

- Contracts signed and patrolling commenced;

- Taught seven short courses on aspects of PES scheme design and establishment;

- Trained Lao people in the design and use of PES schemes through 'learning by doing';

- Provided advice to EPF officials on the operation of PES schemes at a broader level in Lao PDR;

- Published four Policy Briefs designed to keep policy officials up to date with the projects activities, findings and recommendations

- Published eighteen research reports, four policy briefs, and continuous updates on the dedicated project web page;

- Submitted and published four papers in international journals and published one book chapter reporting the project's findings;

- Enrolled a Laotian PhD student in PhD studies at ANU to continue the scheme assessment process after the completion of the ACIAR project.

3. Key findings

The major findings of the Project included:

- A PES scheme must be designed so that it is both conceptually sound and practically feasible in the context of Lao PDR.

- The 'model' PES scheme should be:

  - based on sound economic principles

  - voluntary for the suppliers involved

  - transparent in its operation

  - rewarding action

  - producing additional wildlife protection cost-effectively

  - enhancing the livelihoods of the people engaged in the scheme

  - producing a net-benefit to the people of Lao PDR.

Two 'pilot' PES schemes that were designed to integrate the above principles were implemented to protect wildlife diversity in the Phou Chomvoy Provincial Protected Area and the Green Peafowl Species Conservation Zone of the Phou Khao Khouay National Protected

Area. The schemes will improve environmental protection and enhance the livelihoods of local people engaged in the PES schemes.

The schemes involved the contracting of teams to patrol the protected areas against poaching of endangered wildlife. The price paid to patrol teams for each patrol was determined through the interaction of supply and demand, with a production function being used to convert patrol inputs to predicted wildlife outputs. Contracts with patrols differed between the 'busy' season (where higher opportunity costs prevailed given rice growing activities) and the quiet season. Patrols were equipped with GPS units to ensure patrolling services were carried out. Bonus payments were made for dismantling snare lines and poacher camps. Perverse incentives were avoided by setting the bonus payment rate below the costs of manufacturing snares along with GPS/photographic proof requirements. A further element of the scheme involved payments made to village development funds to encourage those in engaged villages who were not in patrol teams to be active in wildlife protection. Community conservation agreements were entered into in order to receive the village payments. Payments comprised of fixed lump-sum payments and a component that varied according to the extent of patrol team payments. Further incentives for compliance were provided through social pressures derived from ceremonies upon inception and on-going social recognition for success.

The training of staff and students of the National University of Laos, staff of the Government of Lao PDR and staff of NGOs in the principles and techniques of environmental and resource economics, particularly as they apply to PES scheme design and implementation was important in ensuring better analysis of environmental and resource management issues with subsequent improvements in policy making capacity.

Important data have been collected and analysed over the duration of the Project.

The choice modelling method was used to estimates wildlife protection benefits experienced by residents of Vientiane and international tourists visiting Lao PDR. These were found to be significant and demonstrated the potential for securing sustainable sources of PES scheme funding. A number of innovative strategies were introduced in the choice modelling applications. These were designed to deal with the complexities of cross-cultural/language exchanges between interviewer and respondent. They included the extensive use of show cards, visual stimuli in choice sets and provision of a separate booklet of choice sets, which when completed was returned to the interviewer in a sealed envelope. Intensive briefing of the NUoL

students engaged as interviewers for the CM application was also critical to the exercise's success.

Estimates of the costs of carrying-out anti-poaching patrols to protect wildlife were generated using Reverse Auctions. It was found that local villagers were capable of engaging in these auctions despite their limited education and exposure to commercial business exchange. The auction data yielded supply curve estimates that proved to be consistent with the predictions of economic theory. The importance of consultation and training in the lead up to the auction must be stressed. The use of familiar examples to explain the auction process was important in the briefing sessions.

Estimates of the impacts on wildlife populations caused by anti-poaching patrols were made using bio-physical models. Despite the lack of data, useful models were created and have been designed to be readily amended as more data are collected through the anti-poaching patrols. The patrols have been designed to incorporate collection of wildlife sighting data. These data, over time, would become a valuable addition to the bio-physical modelling process.

All of these data will provide a useful base for the development of further PES schemes across Lao PDR. It is important to recognise that over time and over different application contexts, modifications to the PES pilot scheme's key parameters will be necessary. Flexibility in application was found to be a key ingredient to successful implementation. Such flexibilities need to relate to the social, economic and environmental conditions prevailing. For instance, in the period between negotiating agreements with villages and patrol teams, additional employment opportunities arose that changed the opportunity costs of participants. With marginal cost shifts, alterations in the terms of the contracts needed to be negotiated.

The PES scheme 'model' was designed to ensure that net benefits are generated from applications. If negative net benefits are apparent in any context, the model would ensure that a scheme would not be introduced. However, the project also found that transaction costs must be taken into account when contemplating applications. PES schemes require the actions of 'brokers' external to the buyers and sellers who act to structure the 'deal' between the two sides of the pseudo market. The costs of these brokers – including government, NGOs, research agencies, etc - need to be recognised.

4. Policy recommendations

➢ **Use a conceptually rigorous framework as the basis for the PES scheme.**

Because a PES scheme is founded on the notion of bringing prospective buyers of environmental services (ES) together with potential suppliers, the concept of a market exchange is the most appropriate framework. Use of the market framework allows the application of economics principles to ensure rigour.

See: Research Reports 1, 3 and 4.

➢ **Inform the PES scheme using an understanding of the strength of demand for the environmental services being sought.**

An integral component of market analysis is understanding demand. This requires identifying sources of demand and the estimation of the extent of each source's willingness to pay for the ES under consideration. Because ES are normally not marketed (and hence why PES schemes are considered) the estimation of willingness to pay requires the application of non-market valuation techniques.

See: Research Report 13.

➢ **Inform the PES scheme using an understanding of the costs incurred in supplying the environmental services.**

The second fundamental component of market analysis is the cost of supply. Potential suppliers of the ES must be identified and their costs of adding to supply estimated. This information is best collected through competitive auctions in which potential suppliers nominate the ES producing actions they would be prepared to carry out given a range of different prices paid. Competitive auctions ensure that suppliers operate cost-effectively: That is, production of ES occurs at the lowest cost.

See: Research Report 16.

➢ **Link information on demand for ES with the costs of supplying ES producing actions**

To integrate the demand information (collected in ES output space) with the costs of supply information (collected in ES producing input space) the relationship between ES inputs and outputs must be estimated. This bio-physical 'production function' must be predictive because ES producing actions are yet to have occurred. Hence it needs to be stochastic but with the potential for up-dating when more data become available as the PES scheme comes into operation.

See: Research Reports 11 and 12.

➢ **Set a 'market clearing price' for ES producing actions**

Setting a price to be paid to suppliers for ES producing actions that equates supply with demand ensures economic efficiency: That is, ES are produced to achieve maximum net benefits to buyers and sellers. It also makes sure that a PES scheme will only operate if the benefits of the scheme are greater than its costs. By setting a single price an incentive is established for suppliers to lower their costs over time (that is, to become more efficient) so that they can enjoy greater profit.

See: Research Reports 17.

➢ **Select suppliers on the basis of market clearing price and auction bids**

ES suppliers are selected on the basis of their auction bids and price: Those who, in the competitive auction, offered to supply ES actions at the determined market clearing price are selected as PES suppliers (self-selection mechanism). The amount each supplier will provide is the amount they offered in the auction at the determined price. Engagement is therefore voluntary and socially inclusive. With the same price being paid to all suppliers, the PES scheme is seen to be 'fair'.

See: Research Reports 16 and 17.

➢ **Add specific incentive payments to help achieve specific goals**

Where the ES producing actions are broadly defined in terms of production inputs, targeting of ES goals by suppliers can be encouraged through payments made for specific outcomes. These

payments are made in addition to the general payments for actions that are the subject of the competitive auctions. However, potential suppliers should be made aware of the existence of the supplementary payments prior to their participation in the competitive auction.

Non-financial incentives such as recognitions may be effective elements in the incentive structure.

See: Research Reports 9 and 10.

➢ Engage the whole community in the area where the ES are to be supplied

The supply of ES should be diversified beyond those who are selected as ES suppliers. Wider incentives for community engagement in environmental conservation actions as well as provision of community support to the selected ES suppliers can be provided through tied payments for community investments. This involves payments being made into communal funds that are available for use on conservation activates. The community payments should be tied into both the extent of payments made to those supplying ES within the scheme and compliance with general community conservation rules.

See: Research Reports 14 and 15.

➢ Avoid perverse incentives

Payments should be designed so that they do not encourage outcomes that are contrary to the goals of the PES scheme. Payments designed to reduce specified actions should not be sufficiently large so as to encourage people to engage in the specified actions so that they can be paid to stop their actions. Contract conditions backed by monitoring of actions before and after the PES scheme's implementation can minimize perverse outcomes. Peer monitoring is an effective and low-cost element of an overall monitoring system.

See: Research Reports 9 and 10.

➢ Determine the amount of money needed to fund the PES scheme using cost estimates

The amount required to fund the scheme can be estimated by multiplying the market clearing price by the number of ES producing services being purchased at that price. Any 'on-costs' needed to support the PES scheme (including any costs not covered by the payments made to suppliers, such as on-going management and administrative costs associated with coordinating

the scheme and community payments) must be added to this total. This is the sum that is required to finance the sustainable operation of the PES scheme.

See: Research Report 17.

➢ **Source funds to support the PES scheme using demand information**

Refer to the demand estimation studies to identify potential sources of funds and the extent of willingness to pay from the different sources. By ensuring that the payment vehicles used in the willingness to pay surveys are realistic alternatives for people to pay, the valuation studies also demonstrate the viability of implementing an actual payment scheme. The rules for payment specified in the demand valuation studies should be used to establish a mechanism to collect the total funds required for the PES scheme.

See: Research Reports 13 and 17.

➢ **Use contracts to bind suppliers**

Those selected to become ES suppliers should be required to enter into binding contracts. The terms of the contracts must be suitable for monitoring so that payments made for ES supply are conditional on contract compliance. The market clearing price is the key incentive signal incorporated in the contract. Sanctions must also be included to minimise breaches of contract. Monitoring assists in ensuring that ES supply is additional to existing efforts. Community agreements with rewards and sanctions clearly specified are also required to bind members of the community. Guarantee suppliers access to a mechanism for grievances, conflict resolution and redress free of charge.

See: Research Reports 14 and 15.

➢ **Inform, train and consult with the community where the ES are to be produced**

To ensure that the PES scheme's development and implementation is transparent, close communication with the whole community in the ES supplying region is required. This involves the provision of information regarding the scheme at every stage, training those affected by the different aspects of the scheme and taking into account the wishes and viewpoints of the impacted community in the design and implementation of the scheme.

See: Research Reports 14 and 15.

➢ Incorporate flexibility into the scheme's design

A PES scheme should be designed to be in place for an extended period of time, given that ES are likely to require relatively long time periods to be sustainably produced. Over time, patterns of supply and demand and relationships between inputs and ES outputs will change. The PES scheme design needs to be sufficiently flexible to account for changes while remaining consistent to the rigour of its conceptual foundation. Specifically, supply and demand estimates – and hence the market clearing price – will require periodic up-dating. This should be timed to coincide with renominations of contracts for supply. Information collected on ES conditions during the period of the contract should be periodically integrated into the biophysical input-output relationship estimations.

See: Research Reports 9, 10, 11, 12, 13, 16 and 17.

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