



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

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# The Potential of a PES Program in Eastern Thailand

The KhaoYai and Thap Lan National Parks in Eastern Thailand are both threatened by environmental pressures such as logging, agricultural development, and road construction. This new EEPSEA study has looked at the best way to get the local people involved in the development of a buffer zone and wildlife corridor to protect these two important areas. The study is the work of Sarun Kamolthip from the School of Development Economics, National Institute of Development Administration, Bangkok, Thailand. In particular, the study looks at the factors that would encourage local landowners and farmers to take part in a payment for environmental services (PES) scheme, under which they would help to protect the two parks.

The study finds that landowners and farmers prefer a PES approach that would both allow them to continue to cultivate and manage their land and help them do this in a more environmentally sensitive way. Unsurprisingly, higher monetary payments would make them more likely to get involved, although in-kind benefits would significantly reduce the need for monetary incentives.

The study recommends for policy makers to trade off some of the environmental gains of a PES program in exchange for getting the local people involved in the program. It further recommends reducing the distrust between the local people and the PES program managers so as to establish a good foundation for an environmentally beneficial PES prior to starting the implementation of the PES program.



A summary of EEPSEA Research Report No. 2016-RR12:  
"Landowners' Preferences for a Payment for Environmental Services Program:  
A Case Study in East Thailand" by Sarun Kamolthip  
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## The ecological challenges facing the national parks

Conservation problems are common around the perimeter of the Khao Yai National Park (KYNP) and Thap Lan National Park (TLNP) in Thailand. These problems can be traced back to the 1950s when logging concessions were granted in the area, which led to the extensive clearing of forest areas and to opening the way for land-hungry farmers.

The KYNP and TLNP were included in the World Heritage List in 2005 despite experiencing threats in ecological sustainability. Highway 304, which separates the two national parks, has been identified as a significant threat to these parks' ecological sustainability. This risk is set to be exacerbated by plans to expand this highway from two to four lanes.

In order to conserve the integrity of the two parks, a PES scheme was developed under the Enhancing the Economics of Biodiversity and Ecosystem Services in Thailand and Southeast Asia (ECO-BEST), a project initiated by the Thailand Department of National Parks, Wildlife, and Plant Conservation in cooperation with the German government, European Union, and Helmholtz Centre for Environmental Research.

Under the proposed scheme, landowners would voluntarily adopt practices that would generate higher levels of environmental services in the immediate vicinity of the TLNP. The scheme aimed to help create a wildlife corridor that would mitigate the impact of Highway 304 and its proposed expansion. However, the project never got off the ground.

## How to get landowners involved in conservation

To provide policy makers with information on a potential way forward, the EEPSEA study set out to determine the factors that would increase the likelihood that local landowners and farmers would participate in a PES program aimed to create a buffer zone for the parks. Under the hypothetical scheme, any cash crop agriculture in the proposed buffer zone would be stopped and the level of human activity would be kept as low as possible.

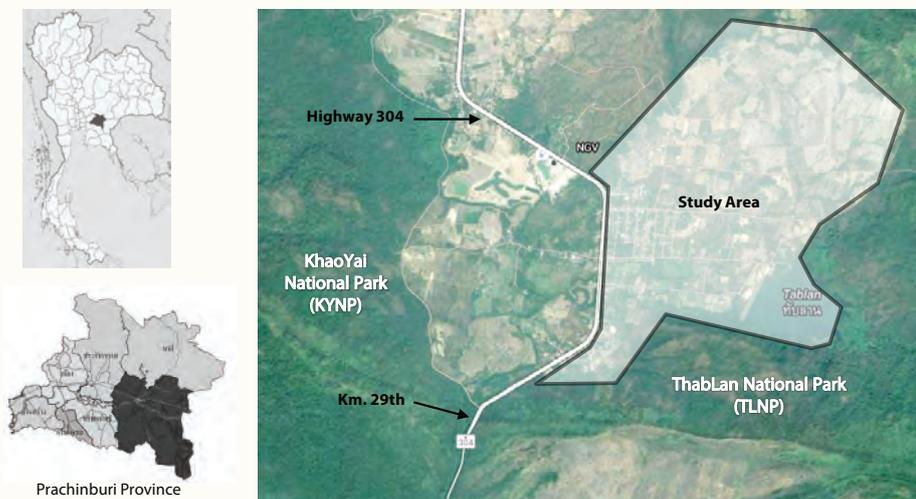
The study area was around Village No.1 of Bu Pram subdistrict, Prachinburi province in Eastern Thailand. The village was selected as it is located in an area that would provide a significant buffer zone in support of an effective wildlife corridor. The village is home to some 551 households.

The study offered local people a set of choices that detailed various aspects of a potential PES program. The rationale for a PES program that would help to establish a wildlife corridor for the KYNP and TLNP was developed through a technical discussion with experts from the Faculty of Forestry of Kasetsart University and with ECO-BEST project representatives. Refinements of the program were made using the feedback from focus group discussions and through the results of the pretested surveys, which were carried out with local landowners.

## Experimental choices for uncovering local people's trade-offs

The choices offered to landowners and farmers included two potential land-use practices for the buffer zone area—leasing the land to the buffer zone project and chemical-free farming. Many landowners in the study area have increasingly adopted chemical-free farming practices. Such practices reduce farmers' use of relatively expensive chemical fertilizers/pesticides and consequently increase landowners' profits.

Farmers and landowners were also offered a choice in terms of the length of the contract they would have to enter into in order to take part in the hypothetical PES project. One-, three-, five-, and seven-year contracts were proposed as alternatives. Other choices included a variety of nonmonetary, in-kind payments (which would be provided by the hypothetical program). These included free-of-charge technical assistance and advisory services for chemical-free farming. The participants were also offered a range of annual monetary incentive payment. Payments of THB 300, THB 500, THB 700, and THB 900 were proposed as alternatives.



**Figure 1.** Location of the study area

These different parameters were arranged in 16 choice sets, and then put into two blocks from which the respondents were asked to choose (i.e., eight choice sets per respondent). The survey was administered at

the village's hall. A small meeting was first convened to inform the villagers about the survey. The respondents were questioned via face-to-face interviews with trained interviewers. They were first asked for general information

about their current land-use practices. Then, the choice set experiment was explained to them, and they were asked to choose. The respondents were also asked about their socioeconomic situation. In total, 91 landowners provided responses that were used in the study.

### The type of PES programs that landowners prefer

Many landowners stated that they would prefer working with (rather than under) a PES project. They further said that they wanted to develop their farms to become more ecosystem-friendly. This was supported by the study results, which indicated that landowners generally preferred a land-use option that would allow them to cultivate and manage their land as part of a PES project, as opposed to giving up control of their land to the project.

The study results suggested that cash payments and in-kind benefits would have a significant positive impact on the willingness of farmers and landowners to take part in a PES program. However, the length of contracts would adversely affect the participation of landowners and farmers in a PES program. In addition, it was found that allowing participants to have unrestricted amounts of land to be enrolled in a PES program would encourage participation.

The study found that a payment of USD 189 per hectare per year would be required to induce the average landowner to participate in a one-year contract under a land leasing PES program with the condition of a minimum of 50% of eligible land and no in-kind benefit provided. However, the required payment would reduce significantly to USD 91 per hectare per year if agricultural advisory services were provided. An amount of USD 308 per hectare per year would be required to convince the average landowner to sign a similar PES program but a longer length of five-year contract.

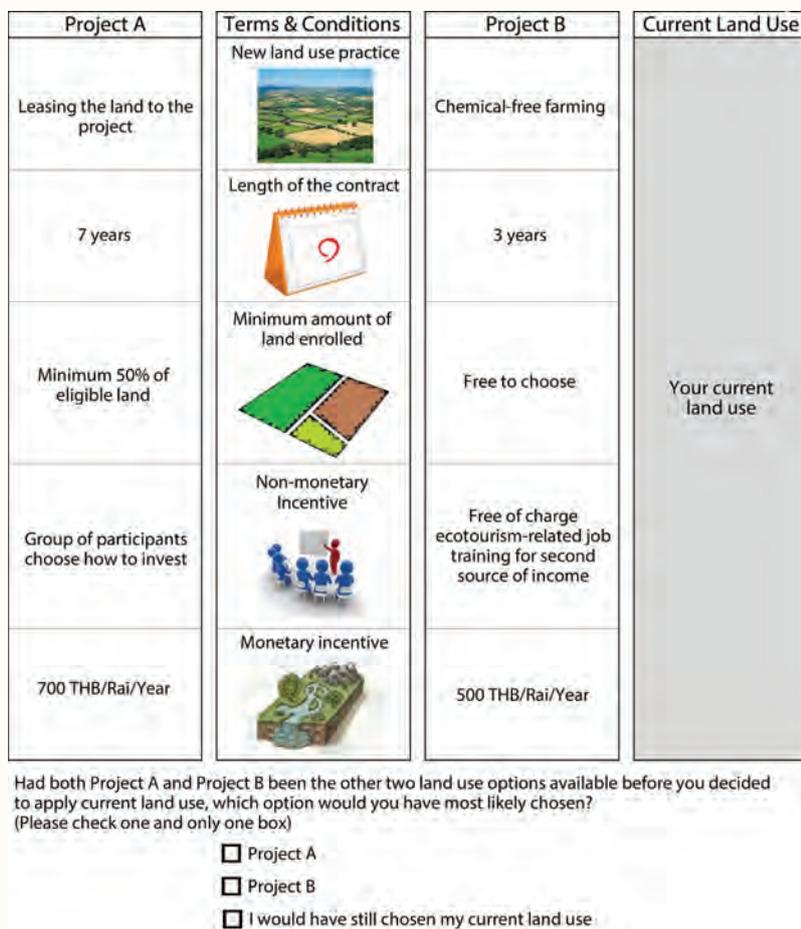


Figure 2. Example of a choice set used in the survey

Table 1. WTA estimates (per hectare, per year) for some combinations of program attributes

| No. | Length of Contract | Advisory Services | Minimum Land Enrolled | Chemical-Free farming (USD) | Land Leasing (USD)         |
|-----|--------------------|-------------------|-----------------------|-----------------------------|----------------------------|
| 1   | 1 year             | No                | Free                  | -42.95130<br>(63.84249)     | 108.37500***<br>(39.18639) |
| 2   |                    | Yes               | Free                  | -141.22100<br>(88.95213)    | 10.10490<br>(50.08713)     |
| 3   |                    | No                | 50%                   | 38.00530<br>(46.69162)      | 189.33100***<br>(47.56498) |
| 4   |                    | Yes               | 50%                   | -60.26440<br>(67.00711)     | 91.06150**<br>(41.33765)   |
| 5   | 5 years            | No                | Free                  | 75.80540*<br>(39.89084)     | 227.13100***<br>(49.13116) |
| 6   |                    | Yes               | Free                  | -22.46440<br>(58.22656)     | 128.86100***<br>(36.73490) |
| 7   |                    | No                | 50%                   | 156.76200***<br>(37.18413)  | 308.08800***<br>(69.48281) |
| 8   |                    | Yes               | 50%                   | 58.49220<br>(40.68095)      | 209.81800***<br>(47.29345) |

Note: (1) Assuming no ecotourism-related job training is provided. (2) \*\*\*, \*\*, \* indicate figures that are significant at the 99%, 95%, and 90% confidence levels. (3) Standard errors are presented in parenthesis.

The study also assessed the effects of the landowners' socioeconomic and farming characteristics on their decision to participate. Results showed that older landowners, those with a higher proportion of land growing cassava, non-land users, and those having successors all tended to want to continue with their current land-use practices. Landowners with highly productive lands tended to want to continue their current land-use practices as their opportunity costs were relatively higher.

Lastly, the distrust between landowners and national park officials was a critical obstacle to landowners' participation in a PES program in the study area. Although it does not directly relate to the design of a PES program, it is clear that (lack of) trust is highly significant to any potential program's success.

### The implications for policy makers

Overall, the results of this study suggest that landowners prefer a PES program with the following characteristics:

1. it would allow them to cultivate any land they enroll in the program,
2. it would allow them to enroll any amount of land in the program, and
3. it would only require them to sign short contracts.

The study also shows that in-kind benefits would enhance the attractiveness of a PES program and significantly reduce the need for monetary incentives. It is clear that if the cost of providing these in-kind benefits is less than the money saved by providing them, then their provision would make good sense from an economic point of view.

### Landowners' priorities could compromise conservation

Unfortunately, the target of minimizing human activity to support the establishment of a wildlife corridor will be less easily achieved with a PES program that has the characteristics that landowners prefer than with, say, a program in which farmers and landowners lease their land to the project.

This is primarily because the chemical-free farming option would not be as effective as the land-leasing option—which enable a full management of the project—at delivering the ultimate objective of supporting the successful establishment of a wildlife corridor. Short-contract periods will also count against success, as ecosystem restoration is a long-term endeavor (and thus a long-term contract is desirable). Moreover, from the project administrator's perspective, managing disconnected small parcels of land is obviously undesirable.

The study highlighted one possible way forward: higher monetary incentives may help encourage landowners to participate in PES programs that would generate higher environmental benefits, i.e., programs with a longer PES contract, a stipulation on the minimum amount of land that must be enrolled, and a stipulation that no activities would be allowed in the enrolled land.

### Policy recommendations

The study shows that policy makers or program managers will have to make a compromise between environmental benefits and participation rates.

The study therefore recommends conducting a comprehensive cost-benefit analysis to determine the best trade-off.

As the results show that in-kind benefits would play a very significant role in motivating landowners to participate in a PES program, the study also recommends that future PES programs should provide in-kind benefits in addition to direct monetary incentives.

Meanwhile, distrust presents a big challenge. Thus, the study recommends for policy makers or program managers to prioritize addressing this issue before starting the implementation of PES programs. The study suggests that, if trust between the participants and the project management could be established, then a long-term contract set-up might be possible. This is desirable as it will help sustain the impact of any environmental benefits produced by the program.

Finally, the study concludes that when an actual PES project is implemented, further detailed cost-benefit analyses must be conducted to ensure that the environmental benefits it produces are higher than its overall costs.

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