Policy Implications of Economic Value of Wetlands within a Protected Area of Thailand

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Abstract

This study explores the policy implications of contingent valuation survey carried out in an adjacent community of Pailom and Ampuvararam Temples Wildlife Non Hunting Area (PATWNHA). Results indicated that a majority of the community members perceived of Wildlife Non Hunting Area as being beneficial for wetlands based ecotourism and were willing to pay US $ 1.40 /month (0.63 percent of their monthly household income) towards its wise use. In spite of ecotourism's potential to revitalize community's economic growth as well as finance wetlands conservation initiatives, a policy level constraint was believed to have impeded wise use initiatives so far. Study suggests that it is deemed necessary to a) synchronize nexus amongst existing protected area, wetlands and ecotourism policies to enable purposeful community involvement and b) initiate a model wise use strategy to institutionalize wetlands based ecotourism within Wildlife Non Hunting Areas.

Key words: contingent valuation, protected area, willingness to pay, wise use of wetlands, Thailand

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1. Introduction

Degradation of wetlands due to unsustainable activities have been a major concern in Southeast Asia because of policies that a) undermine traditional role of the local community in and around the wetlands, and b) overlook the economic value of wetlands resources to the community (Junk, 2002), and Thailand is no exception. While the majority of rural Thai population still depends on the social, economic and ecological benefits accrued from more than 42,000 identified wetlands (amounting to almost 7.5 percent of the country's total area), wetlands are continually being converted into the agricultural fields and reclaimed for the deranged development activities at an alarming rate (OEPP, 2002). Although Protected Area (PA) Policies (the 1960 Wild Animals Reservation and Protection Act and the 1961 National Parks Act) offer legal protection to some of the wetlands within PA, wise use[2] of wetlands became a national priority only after Thailand acceded to the 'Ramsar Convention' in 1998 and formulated the National Wetlands Policy (NWP) in 1999.

The 1999 NWP particularly emphasizes on community involvement in the management decision-making to share the economic benefits accrued from alternative livelihood opportunities such as wetlands based ecotourism. Since ecotourism is responsible travel to natural areas that conserves the environment and sustains the well-being of local community' (IES, 2007), country's Ecotourism Policy duly emphasizes on allocation of economic benefits to the community through their involvement (Sriphnomya, 2002). While the ecotourism policy complements the notion of wise use embedded in the wetlands policy, it surely contradicts the PA policy that prohibits any form of community involvement.

Economic value can be described as the amount of money community members are willing to pay or relinquish in order to receive benefits or the amount of money they are willing to accept in compensation for

[2]Wise use basically refers to the 'sustainable utilization' of wetland resources so that it may yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations (RCS, 2004)

their loss (Garrod and Willis, 1999). The idea of a value expressed in terms of Willingness to Pay (WTP) is concerned with the proper allocation of resources to improve the well-being of ecotourism resources as well as the communities that host ecotourism. WTP as a measure of an economic value, therefore, compliments a notion of welfare economics based on a socially acceptable understanding that communities would not be involved in wetlands based ecotourism management unless they believe that long-term benefits will exceed the immediate cost (Barbier, et al., 1997).

Few studies have made an attempt to value the wetlands based ecotourism in Thailand in recent years (Seenprachawong, 2003; Baddeley, 2004). However, the focus of these studies has been on to highlight the significance of economic opportunities from the visitor's perspective and not the community itself. The problem with this approach is that a) it reveals no information whatsoever about the community's intentions and b) it overlooks an essence of value of the local resources to the local community. Since, an important motivation for combining community's intentions and WTP responses in wetlands management is to generate a comprehensive information-base in formulating sound policies (Turner et al., 2002); the purpose of this study was to examine the policy implications of a) community's intentions towards wetlands resources, and b) the economic value of these resources.

2. Study Area

This study was conducted in the Pailom and Ampuvararam Temples Wildlife Non Hunting Area[3] (PATWNHA) in Pathum Thani province of Thailand. PATWNHA is named after the two historic Buddhist temples located in the vicinity and was established in 1978. It is located in an outskirt of Bangkok and spreads over an area of 12 hectares along the eastern banks of Chao Phraya River. It also represents a few remaining freshwater marsh/forest

[3] Wildlife Non Hunting Area is categorized as managed resource wetlands in Thailand that is equivalent to the IUCN Category VI Protected Area. There are 55 Wildlife Non Hunting Areas in Thailand covering almost 1 percent of the country's land area (BCST, 2004).

wetlands supporting more than 250 bird species and one of the largest population of Asian Openbill (*Anastomus oscitans*), a protected bird species in Thailand. Based on the ecological and cultural significances, the PATWNHA is enlisted as one of the high priority wetlands of Thailand (OEPP, 2002).

3. Methods

3.1 Survey Design

Several small settlements are scattered along the fringes of the PATWNHA and the study was carried out in a particular community of 'Ban Soun Ma Maoung Tai' (locally called Moo-5) with a total of 63 households. A census based survey was carried out amongst household-heads between the months of June and August 2005. In order to incorporate qualitative observations, a semi-structured questionnaire was designed for the survey with three specific sections. First section contained socioeconomic inquiries including; age, sex, income, education, occupation, household size, and years of residence and the data was analyzed in terms of frequency, percentage and mean. Second section contained eight specific statements to which respondent's perceptions towards the PATWNHA and activities of its management authority were documented using a five-point Likert Scale that ranked each of the perceptions into; strongly disagree, disagree, no opinion, agree and strongly agree. Perceptions were then assigned with a progressive value of 0,1,2,3 and 4 respectively (Neuman, 2003) and the mean values were calculated. In order to elicit respondent's WTP, third section contained an elicitation of WTP survey and described below.

3.2 Willingness to Pay

Contingent Valuation (CV) was chosen as an appropriate technique to reveal local people's Willingness to Pay (WTP) because it is the only method that is able to measure the use and non-use values (White and Lovett, 1999). The underlying assumption is that respondents are able to translate utility of the wetlands resources into a single monetary amount representing a value to them. CV uses direct questioning of the individuals to create a hypothetical market scenario and allows respondents to state their maximum WTP in an

interview setting (Venkatachalam, 2004). While CV has become a well-accepted tool after the landmark endorsement by the National Oceanic and Atmospheric Administration (NOAA) panel, following the Exxon Valdez oil spill of Alaska in 1989 (Arrow et al., 1993); it has also been a subject of controversy due to the limitations, including; scenario misspecification, biasness and invalidity of the responses (Mitchell and Carson, 1989). Although there is no standard approach in designing an ideal CV survey (Portney, 1994), a careful survey design can minimize the potential limitations (Mitchell and Carson, 1989). In this case, an attempt was made to construct the hypothetical payment scenario as realistically as possible by directing respondent's payment towards the 'community savings fund', a well-established community cooperative practice in rural Thailand. Three objectives of the 'community savings fund' were suggested as:

- To form a wetlands management committee in managing the community savings fund with close consultations and collaboration with relevant stakeholders
- To collect entrance fees (if applicable) and operate one community souvenir shop in order to contribute towards an economic growth of the community
- To highlight and promote the natural and cultural significance of the PATWNHA by investing on educational/visitor center facilities.

A particular attention was paid towards the simplicity and suitability of the language in the context of rural Thailand, as the questions were first designed in English and then translated into Thai. Face to face interview (versus telephone interview or mail survey) was chosen as a mode of delivery so that the interviewers could better motivate respondents to elicit monetary values and clarify any potential complex scenarios arising during the survey (Whittington, 1998). An A4-size three-page leaflet containing detailed information about the wetlands and temples within PATWNHA along with the location map was compiled in English and then translated into Thai. This leaflet was used as a briefing material by the two Thai interviewers before each interview

in order to provide the background and justify the purpose of the survey to the respondents.

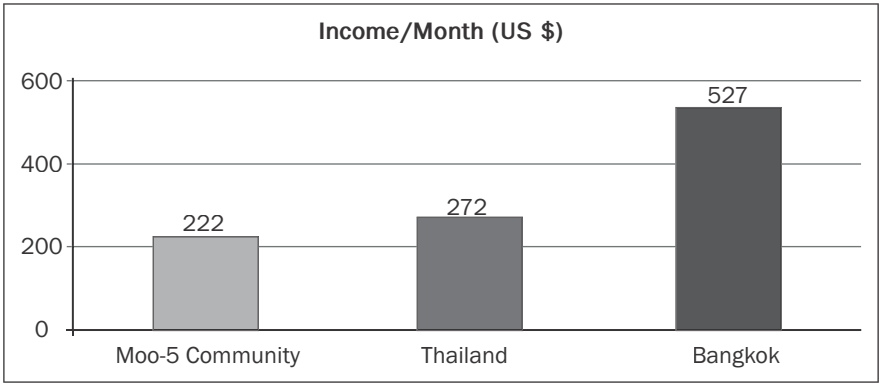
The dichotomous choice format was adopted for the CV (versus open-ended format) because of the better validity (Donaldson, et al., 1997). In this format, the respondents were first asked whether they were WTP or not, and if the answer was 'yes', a range of monetary choices in baht/household/month; 5, 10 to 50 at the interval of 10 each, 100 to 500 at the interval of 100 each, as well as the open-ended option were presented. The range of choices was based on the responses to an open-ended format used during the pre-testing. Finally, the reasons behind WTP or not WTP were documented at the end as a follow up to verify the respondent's intentions. After the data collection was complete, responses were scrutinized and illegitimate ones were trimmed before calculating the frequency, percentage, mode and median of WTP amount. A regression and scale analysis (Gray and Kraenzle, 1998) between the dependent variable (WTP amount) and independent variables (socioeconomic data and the mean values of perception) was carried out using SPSS.

4. Results

4.1 Socioeconomic Analysis

There were more female (61.9 percent) compared to male (38.1 percent) respondents. The average age of the respondents was 42; the majority (50.8 percent) had a primary level of education; and their main occupation was farming (30.2 percent) followed by factory laborers and retail traders, accounting for 23.8 percent each. Household size and years of residence averaged at 3.84 and 32.62 respectively.

The average household income/month (Fig. 1) was 8,896.83 baht[4] (approximately US $ 222), slightly below the Thai national average of US $ 272 and far less than Bangkok's average of US $ 527 (NSO, 2002). Qualitative discussions revealed that some of the household-heads were concerned about the lack of economic opportunities within the community that resulted in an emigration of the younger members of their community into nearby Bangkok.



Source: This Survey and NSO, 2002

Figure 1. Comparison of the Average Household Income of Moo-5 Community with the Thailand's National and Bangkok's Average

4.2 Perceptional Analysis

The mean results of the Likert scale responses (Fig. 2) indicated that a majority of the community members perceived wetlands within the PATWNHA as being beneficial and management of such resources should not only be the government's responsibility. While respondents felt that establishment of the PATWNHA was necessary, they were skeptical about management authority's ability to communicate with the community as well as manage the ecotourism. A majority of respondents also perceived that they should have more rights to participate in the decision-making and believed that co-management of ecotourism would be beneficial. Last but not the least, respondents also perceived that charging foreigners an entrance fee was reasonable which particularly holds potential as approximately one thousand tourists (birdwatchers-mostly foreigners and pilgrims-mostly Thais) visit the PATWNHA every week on average (Mr. Anuchit - head of the PATWNHA, pers. com. September 25, 2005).

4.3 WTP Analysis

Seven responses (three WTP and four not WTP) were considered illegitimate (respondents either

[4] US $ 1.00 ~ Thai Baht 40 during the month of September 2005

Table 1. The Means Results of Likert Scale Responses towards the Pailom and Ampuvararam Temples Wildlife Non-hunting Area and Activities of Its Management Authority

No.	Statement	Mean
1.	Establishment of PATWNHA was necessary	2.89
2.	Wetlands within PATWNHA are beneficial	2.98
3.	PATWNHA management is only government's responsibility	0.85
4.	PATWNHA management often consults with community	1.32
5.	Community should have more rights to participate in decision-making	2.83
6.	PATWNHA management is capable of managing ecotourism	1.01
7.	PATWNHA and community should co-manage ecotourism	2.76
8.	Foreign visitors should be charged a nominal entrance fee	2.84

indicated they were WTP because they could afford it or not WTP because government should pay for it) and trimmed (Venkatachalam, 2004). Six additional respondents were not sure how the 'community saving funds' would handle the finances and hence were removed as protest bids. Remaining 50 of the valid responses were analyzed, of which, 47 (94 percent) of respondents were WTP and three (6 percent) were not WTP. The mean and mode of WTP amount was 56.30 (US $1.40) and 50 (US $1.25) baht/month/household respectively (Table 2).

The mean WTP amount was equivalent to 0.63 percent of respondent's average monthly household income. Considering 63 households within Moo-5, the value of ecotourism

Table 2. WTP Responses (Baht/Household/Month)

Mean WIP	N	Standard Deviation	Minimum WTP	Maximum WTP	Mode
56.30 (US$ 1.40)	50	51.93	0	250	50

resources to the community was estimated at 42,562.8 baht/year (US $ 1064). This was considered a significant amount compared to the annual budget of the PATWNHA management authority towards conservation, maintenance and public relation activities was about 120,000 baht/year (US $ 3,000) (Mr. Anuchit - head of the PATWNHA, pers. com., September 25, 2005).

The regression analysis indicated that four out of 15 (seven socioeconomic and eight perceptional) variables influenced the WTP amount (Table 3). Income and perception of resources being beneficial had a positive coefficient. Years of residence and perception of a right to participate in the decision-making had a negative coefficient. Positive association suggested that respondents were WTP more as their income increased and perception towards the wetlands being beneficial strengthened. Negative association suggested that respondents were WTP lesser amount as they resided in the community longer and stronger they believed in having participatory rights. While positive association made sense, explanation of negative association had to rely on the outcomes of qualitative discussions. First, elderly residents were resentful over loosing unrestricted access to the bird hunting and egg collection, bamboo shoot harvesting as well as fishing once the PATWNHA was established. Second, the lack of communication between the community and the PATWNHA authority at present made respondents skeptical about the prospect of having rights in an immediate future. It is also noteworthy to mention that the size of the household negatively influenced the WTP amount at the slightly lower significance

The adjusted R square value was 0.415 suggesting that 41.5 percent of variation within the dependent variable could be explained. Depending upon the nature of WTP studies, regression analysis manage to explain a minimum of 3 or 4 percent of the variance in some cases while others may explain up to 60 percent or more. While low variance is often associated with the non-use resources utility that attracts very small bids, R square value of above 0.15 is considered reliable for the WTP studies (Garrod and Willis, 1999).

Table 3. Summary of the significant (95 percent confidence interval) regression of relationship between WTP amount and 7 socioeconomic and 8 perceptional variables

R	R Square	Adjusted R Square	Standard Error of Estimate	DF
.690	.476	.415	39.735	48

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t-value	Significance
	B	Std. Error	Beta		
1. Years of Residence	-1.306	.350	-.424	-3.728	.001*
2. Average HH income	3.088E-03	.001	.391	3.529	.001*
3. Community should have more rights	-17.325	7.919	-.243	-2.188	.034*
4. Wetlands are beneficial	37.752	16.535	.253	2.283	.027*
Number of household members	-8.525	4.350	-.222	-1.960	.057

* Significance ≥.05

5. Discussion

The purpose of this study was to examine the policy implications of a) community's intentions towards wetlands resources, and b) the economic value of these resources. It was evident from the results that not only did the community perceived of wetlands being beneficial but such perceptions positively influenced their WTP amount as well. The economic value of wetlands resources to the community was also found to be significant compared to the PATWNHA's annual budget. However, lack of communication between the community and the PATWNHA authority as well as lack of community involvement has made ecotourism only partially beneficial so far, despite the popularity of the area for several decades. The root cause behind this is the existing protected area policy that prohibits

local community's participation in management decision-making (Roy, 2004) contradicting the national wetlands policy as well as the ecotourism policy that emphasizes on the community involvement instead. It is apparent that unless the nexus amongst sector-wise polices (wetlands, ecotourism and protected areas) are synchronized (Fig. 2), tangible outcomes from wise use initiatives within protected areas can not be expected.

This study therefore suggests that the PATWNHA authority should:

1) Urge higher authorities to amend existing protected area policy, at least within the Wildlife Non-hunting Areas to accommodate local people's role in wetlands management decision-making
2) Jump-start the formulation of wise use of wetlands strategy by
   i) Endowing 'seed money' to the community savings fund,

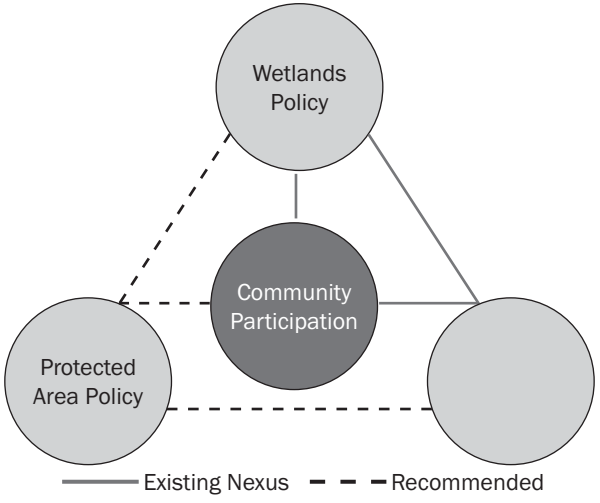


Figure 2. Existing and Recommended Nexus to Synchronize Three Key Policies of Thailand Relevant to the Wise Use of Wetlands

ii) Instigating entrance fee collection from foreign visitors on a trial basis and allocate a portion of such fees to the community savings fund, and
iii) Scaling up communication and outreach efforts with the community.

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References

Arrow, K.J., Solow, R., Portney, P.R., Learner, E.E., Radner, R. and Schuman, H. 1993. *Report of the National Oceanic and Atmospheric Administration (NOAA) Panel on Contingent Valuation*. Federal Register. Vol. 58(10): pp. 4601-14. Washington DC.

Baddeley, M.C. 2004. *Are Tourists Willing to Pay for Aesthetic Quality? An empirical Assessment from Krabi Province, Thailand* . Tourism Economics. Vol. 10(1): pp. 45-61.

Barbier, E. B., Acreman, M. C. and Knowler, D. 1997. *Economic Valuation of Wetlands: A Guide for Policy Makers and Planners*. Ramsar Convention Bureau, Gland.

BCST. 2004. *Directory of Important Bird Areas in the Kingdom of Thailand: Key Sites for Conservation*. Bird Conservation Society of Thailand. Bangkok.

Chettamart, S. 2003. *Ecotourism Resources and Management in Thailand*. Paper presented at Malaysia-Thailand Technology and Business Partnership Dialogue. 27-28 July 2003. Langkawi, Malaysia.

Donaldson, C., Thomas, R. and Torgerson, D. J. 1997. *Validity of Open Ended and Payment Scale Approaches to Eliciting Willingness to Pay*. Applied Economics. Vol. 29: pp. 79-84.

Garrod, G. and Willis, K. G. 1999. *Economic Valuation of the Environment Methods and Case Studies*. Edward Elgar Publishing Limited. UK.

Gray, T. W. and Kraenzle, C. A.1998. *Member Participation in Agricultural Cooperatives: A Regression and Scale Analysis*. United States Department of Agriculture. RBS Research Report 165.

ICEM. 2003. *Thailand National Report on Protected Areas and Development*. Review of Protected Areas and Development in the Lower Mekong River Region. International Center for Environment Management. Queensland, Australia.

IES. 2007. *International Ecotourism Society*. (URL: www.ecotourism.org Accessed on 02/2007)

Junk, W.J. 2002. *Long Term Environmental Trends and the Future of Tropical Wetlands*. Environmental Conservation. Vol. 29 (4): pp. 414-435.

Mitchell, R. C. and Carson, R.T. 1989. *Using Surveys to Value Public Goods: The Contingent Valuation Method*. Resources for the Future. Washington DC.

Neuman, W.L. 2003. *Social Research Methods Qualitative and Quantitative Approaches*. Fifth Edition. Pearson's Education, Inc. USA.

NSO. 2002. *Key Statistics of Thailand*. National Statistics Office, Office of the Prime Minister. Bangkok.

OEPP. 2002a. *An Inventory of Eetlands of International and National Importance in Thailand*. Ministry of Science and Technology and Environment-Office of Environmental Policy and Planning. Bangkok.

Portney, P.R. .1994. *The Contingent Valuation Debate: Why Economists Should Care*. Journal of Economic Perspectives Vol. 8 (4): pp. 3-17.

RCS. 2004. *Ramsar Handbooks for the Wise Use of Wetlands*. 2nd Edition. Ramsar Convention Secretariat, Gland.

Roy, S. 2004. *Planning and Management of the Protected Areas – Lessons from the Thai Experience*. Paper Submitted in 4th Asian Scholarship Foundation Fourth Annual Conference. Bangkok.

Seenprachawong, U. 2003. *Economic Valuation of Coral Reefs at Phi Phi Islands, Thailand*. International Journal of Global Environmental Issues. Vol. 3(1): pp. 104 -114.

Sriphnomya, E. 2002. *Ecotourism Policy in Thailand*. In T. Hundloe [ed.], Linking Green Productivity to Ecotourism Experiences in the Asia–Pacific Region. Asian Productivity Organization, Tokyo, pp. 236-241.

Turner, R.K., Paavola, J., Cooper, P., Farber, S., Jessamy, V. and Georgiou, S. 2002. *Valuing Nature: Lessons Learned and Future Research Directions*. CSERGE Working Paper EDM 02-05.

Venkatachalam, L. 2004. *The Contingent Valuation Method: A Review*. Environmental Impact Assessment Review. Vol. 24: pp. 89-124.

Weaver, D. 2001. *Ecotourism*. First Edition. John Wiley and Sons Australia Limited. Sydney, Australia.

White, P.C.L. and Lovett, J. C. 1999. *Public Preferences and Willingness to Pay for Nature Conservation* in the North York Moors National Park, UK. Journal of Environmental Management Vol. 55: pp. 1-13.

Whittington, D. 1998. *Administering Contingent Valuation Surveys in Developing Countrie*s. World Development. Vol. 20 (1): pp. 21-30.