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Economic Valuation of the Caramoan, Camarines Sur Beachscape: An Environmental Services Payment Scheme for Sustainable Ecotourism

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February, 2014

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ECONOMIC VALUATION OF THE CARAMOAN, CAMARINES SUR BEACHSCAPE: AN ENVIRONMENTAL SERVICES PAYMENT SCHEME FOR SUSTAINABLE ECOTOURISM

Raul G. Bradecina

EXECUTIVE SUMMARY

This study determined the extent of tourists' willingness to pay (WTP) for the conservation of Caramoan beachscape beauty in Camarines Sur, Philippines. The results will serve as valuable inputs in establishing a payment for environmental services (PES) scheme for the sustainable development of ecotourism and coastal resource management in Caramoan. It used Contingent Valuation Method (CVM) in analyzing the data generated from 760 respondents. A total of four analytical models were generated using different data sets: a) the uncorrected model (Model 1), which considers all responses to the WTP question; b) the certainty model (Model 2), where all uncertain replies to the WTP question were recorded as negative responses; c) the protest model (Model 3), which dropped negative responses and protest statements from the regression run; and d) the certainty plus protest model (Model 4), which merged Models 2 and 3.

It was found that majority of Caramoan tourists are younger, adventurous, without familial obligations, highly educated and earn relatively higher income. Majority perceive that a sustainable source of fund for conservation, and political and harmonized institutional arrangement for beachscape tourism and management are the most pressing institutional and management issues impacting the sustainability of Caramoan beachscape ecotourism.

Majority also agree to protect the beachscape. Those who disagree cite distrust in the institution that will implement the payment scheme as the foremost reason for disagreeing. Half of the visitors are willing to pay for the conservation of the beachscape beauty in Caramoan. Promoting the sustainability of the beachscapes is the main reason for their WTP, while distrust of the management of generated conservation funds served as the main basis for one's unwillingness to pay.

The visitors' WTP in the general model is estimated at PhP897; while the WTP in the model where protest and uncertain responses were not considered in the analysis is estimated at PhP1,147. In all four analytical models generated and used, only bid amount, age and income are the factors consistently correlated with WTP. Younger visitors and those who have higher income are more likely to be willing to pay for conservation. The average number of visitors in Caramoan was estimated at 1000/month at the time of the study.

Using the PhP897 and PhP1,147 mean WTPs, the total economic value of conserving the beachscapes in Caramoan is estimated at PhP10.76 and PhP13.764 million annually, respectively. These estimates justify the relevance of investing public funds to pursue sustainable beachscape ecotourism development in Caramoan.

Results of the study that highlight the need for a sustainable source of fund for conservation, and harmonized institutional arrangements for beachscape tourism and coastal resource management as priority concerns support the potential of implementing PES within a community-based coastal resource management framework under a marine fishery reserve-sanctuary setting co-managed by the community and the Caramoan LGU, or within a the natural protected area framework managed by the Caramoan Natural Park Protected Area Management Board. However, operational issues and bottlenecks in PES as cited in current literature (e.g. high transaction costs, unclear property rights and weak institutions) suggest that it is not a cure-all solution to the problems and issues related to the coastal environment and the conservation of panoramic views of the beaches in Caramoan. Instead, it should be viewed as a complement to a set of policies and processes that address these problems.

1.0 INTRODUCTION

The beachscapes of Caramoan are part of the Lagonoy Gulf coast, the largest fishing ground in the Philippines' Bicol Region. Like other coastal municipalities along the gulf, the municipality of Caramoan shares in the common problems inherent in the gulf's coastal resource utilization and governance such as overfishing, degraded coastal habitat due to illegal fishing and weak implementation of fishery laws (Pelea et al. 2005). The establishment of marine protected areas (MPAs) – used interchangeably with Marine Fishery Reserve-Sanctuary (MFRS) – as a tool for management has been seen to address some of these problems through co-management arrangement with fisher folks and the Local Government Units (LGUs) or municipal governments. As a community-based coastal resource management tool, the MFRS consists of a core no-take zone called “sanctuary”, and a buffer zone called a “reserve” where fishing using sustainable gears is allowed. Many of these MPAs and coastal resource management (CRM) activities in Lagonoy Gulf are financed from the LGUs' general fund and compete with various public services and investment priorities. The lack of sustainable funding and the dependency of CRM-oriented projects on the usually deficient LGU coffers have usually been credited for the failures of these conservation initiatives.

Several studies have recommended the development of non-extractive resource utilization activities in the Lagonoy Gulf area such as ecotourism as an alternative option to generate income for fisher folks and to fund the conservation of the coastal resources (Pelea et al. 2005). But its potential is yet to be tapped by most LGUs.

According to Rosales (2003), the lack of proper economic valuation is one of the weaknesses in the management of coastal resources. If corrected, it could encourage more investment and better management and conservation because comprehensive economic valuation involves identifying the various types of resource use and attaching monetary values to each. Rosales (2003) further stressed that recreation, while highly undervalued, has been identified as one of the more important uses of beaches, particularly those located in MPAs.

Conservation fees (CFs), or user or entrance fees, offer a potential source of funds for conservation. CFs are charges that are imposed to gain access to areas that offer natural attractions (e.g., beaches, dive sites, lakes, caves, and forests). CF schemes are based either on the user-pay or cost-recovery principles (Padilla et al. 2005).

The LGUs' collection of user fees from the recreational use of beachscapes can be found in the Local Government Code of 1991. The code gives LGUs the power to generate and mobilize revenue through taxes, fees or charges for efficient and effective governance. Moreover, the Philippine Fisheries Code of 1998 bestows upon the LGUs the primary mandate to manage municipal waters in the coastal zone that are not covered by the NIPAS Act¹, specifically municipal waters that extend to a distance of up to 15km from the shoreline. The NIPAS Act and Forestry Code² are the other significant laws that provide for the collection of fees from the users of environmental goods and services.

The use of economic valuation in computing the fees is mandated in DENR Administrative Order (DAO) 2000-51 “Guidelines and principles in determining fees for access to and sustainable use of resources in protected areas.” In setting fees, the guidelines adopt the willingness-to-pay (WTP) principle, where fees are based on the “WTP estimates of the visitors based on appropriate surveys (Sec 8.1.2),” and the cost-recovery principle, where “collected revenues shall cover, as much as possible, a reasonable proportion of all costs incurred in protecting, maintaining and enhancing the natural attractions of the protected area (Sec 8.1.1)”.

The Caramoan LGU is fortunate to have been gifted with white sand beaches, limestone rock formations, islands and coves. Four years ago, Caramoan was unknown in tourism communities. It generated local and international media attention when the international series of the hit reality show “Survivor” was alternately filmed in the area by French, Israel and Bulgarian televisions from 2008 to 2012. Since then, local and foreign travelers started to explore its beachscapes (Aguilar 2008). In 2010, the Caramoan local tourism

¹ Republic Act 7586, otherwise known as the National Integrated Protected Areas System (NIPAS) Act, provides for the establishment and management of protected areas in the Philippines.

² Republic Act 7161, or the Revised Forestry Code of the Philippines, indicates forest charges on timber and other forest products.

office recorded an average of 1000 visitors per month. This development also showcased the potential of non-extractive resource use (i.e., coastal ecotourism) as a viable option in providing livelihood and in generating conservation fees for the promotion of sustainable tourism and CRM in Caramoan.

The recent shift in the resource use pattern of the coastal area from mainly fishing to recreation tourism has spawned resource-use conflict and displacement of some sectors that used to benefit from the resource as a fishing ground. Moreover, the open access nature of the Caramoan beaches, as in most common pool resources, will likely lead to the degradation of the coastal tourism assets in the long run if not properly managed. These underscore the need to generate an estimate of the WTP for the conservation of the Caramoan beachscapes as input in establishing a payment for environment services (PES) scheme in forms such as user fees. The PES revenue can be ploughed back to fund CRM efforts and to ensure the sustainable livelihood of stakeholders who may be disproportionately impacted by the shift in resource use pattern in Caramoan.

This study estimated the WTP for the conservation of Caramoan beachscape in Camarines Sur, Philippines as input for establishing a PES system for sustainable ecotourism and coastal resource management in the area.

2.0 THE SITE

The small town of Caramoan is located at the tip of the Caramoan Peninsula, a rugged piece of land extending into the waters of the Maqueda Channel on the north and east and Lagonoy Gulf on the south. The municipality is situated between 124°59" east longitude and 13°46" north latitude (Figure 1). It covers approximately 27,741 km² with approximately 71km of irregular coastline surrounded by the vast ocean, bay, seas and swamps.

The municipality is home to 347-hectare Caramoan National Park, declared via Proclamation No. 291 on 20 July 1938, and is currently a natural protected area. It is a hilly peninsula, with deep gorges and a rough, rocky terrain. The forests are mainly lowland in type. Other habitats present in Caramoan National Park include mangrove forest, sand dunes and beaches. The natural features of this park include caves, limestone formations, white sandy beaches, an islet lake and a subterranean river. Its marine ecosystem is part of the Ticao-San Bernardino Strait-Lagonoy Gulf MPA with its marine waters adjacent to Maqueda Bay, the mouth of the Lagonoy Gulf. This protected natural marine area ranks extremely high in terms of conservation priority.

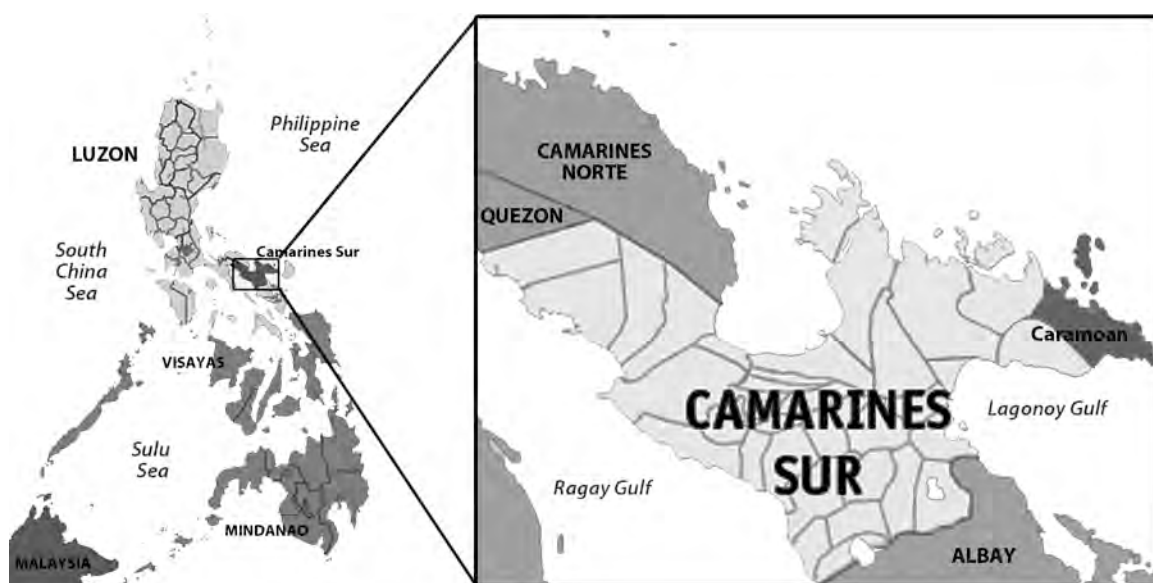


Figure 1. Location of the study area in the Philippines

3.0 RESEARCH METHODS

3.1 Activities

The contingent behavior method was used in this study. Several activities were done to achieve the objectives. First, exploratory visits and key informant interviews were conducted to gather information on the status of tourism management in the area as well as to seek affirmation from the municipal government officials. Second, the test questionnaire was constructed. The test questionnaire sought to gather information on the respondents' perceptions on national and local issues on the governance of the coastal environment, attitudes towards conservation, WTP for conservation of the beachscapes, and socioeconomic status. The enumerators were then trained. The training combined classroom lectures and actual survey conduct in the field using a draft of the research questionnaire. The questionnaire was pre-tested on 50 respondents using preliminary bid amounts of Php100, Php250, Php500, Php750, and Php1000.

The questionnaire was finalized using insights generated from the pre-test. The WTP scenario was revised and a separate brochure was developed. The brochure contained concise information on the status of the beachscapes and coastal area, the threats to the beachscapes, a description of the worst scenario, the current conservation initiatives implemented by the LGU to prevent the worst scenario from happening, and the hypothetical fee collection mechanism. In the bid elicitation part, final bid amounts of Php100, Php450, Php950, Php1250, and Php1800 were adopted. Finally, the survey was conducted using the finalized questionnaire and WTP scenario brochure.

Two intercept strategies were adopted in the interview of respondents, namely drop-off and face-to-face interview strategies. In the drop-off intercept strategy, the enumerators leave the questionnaire and the WTP scenario brochure with the respondents after having discussed them; the respondents then arranged to have the filled out questionnaires picked up the next day. This was done when the respondents requested for more time to carefully answer items in the questionnaire after a day of island-hopping. The face-to-face intercept strategy is the usual interview strategy involving (*impromptu*) direct extraction of information from the respondent. The respondents in the study were local tourists who have stayed for at least one day in Caramoan and have some form of employment and are earning an income. Sample respondents were directly assigned to the bid amounts. A total of 1,000 tourists were interviewed between January and April 2010, representing late lean season and pre-peak season. There was a 100% return rate.

3.2 Scenario Design

The scenario was conveyed to the respondents using a colourful brochure showing the beachscapes of Caramoan, the current status of its attributes and the hypothetical changes to these attributes if ecotourism is unmanaged. The hypothetical market is stated as follows:

The beachscape beauty of Caramoan is unique among the beaches of the Philippines because of the following features: high biodiversity of nearby Karst forest; fine white sand; beautiful beach sceneries; good coral cover teeming with diverse fishes; and private and secluded clear blue waters.

However, these are threatened by: 1) excessive and unregulated fishing, 2) siltation from upland areas, 3) growing tourist population, and 4) domestic wastes.

In ten years, we believe that if these threats will not be addressed, Caramoan will suffer from a decline in biodiversity and reduced coral cover, filthy sands and degraded beach beauty, polluted waters, and crowded beaches.

The Caramoan Local Government has established Marine Fishery Reserve-Sanctuary areas, and is currently implementing solid waste management and an environmental awareness campaign.

To raise funds to implement other programs to protect and preserve the beauty of Caramoan beaches and its ecosystem, we are thinking of creating a sustainable source of revenue by establishing entrance fees. The fund will be managed by the Tourism Council and the Caramoan local government unit. The fund will go to coastal resource management, biodiversity conservation and fisher folk livelihood.

Considering the above information about the Caramoan beachscape beauty and ecosystem conservation and management fund to be set up, let us suppose that tourists will be asked to pay entrance fees /or environment services fees. The entrance fee will be collected by authorized personnel in a booth at Guijalo Port, the sole port of entry to Caramoan mainland.

3.3 Elicitation Format

The elicitation format chosen in this study was the dichotomous choice format. This is stated as follows:

Let me take you back to the time that you were thinking of going to Caramoan. Would you have come if you knew that there was a Php__ entrance fee and that this fee were to be managed by the Caramoan local government unit and the Tourism Management Council and used solely for the purpose of protecting the beauty and ecosystems of Caramoan beachscapes? Please be reminded that there is no right or wrong answer to this question. This aims only to assess your care for the beachscape beauty and how much you value it.

The interviewer then mentioned the assigned bids to the respondent.

3.4 Development of the Contingent Valuation Model

The binary logit model was used in this study to determine the respondents' mean WTP using the dichotomous or discrete choice format. A total of four models were generated using different data sets, namely:

- a) **the uncorrected model** (Model 1) – applies to all positive and negative responses to the WTP question.
- b) **the certainty model** (Model 2) – applies to positive responses. All positive responses of the respondents who were either not sure or very sure of their replies were considered as negative responses and replaced with 0 (WTP=0) in the binary logistics regression run.
- c) **the protest model** (Model 3) – applies to negative responses. Negative responses that were given for the following reasons were dropped from the regression run: *Only the fishers and resort owners who directly benefit from its beaches should pay; Only the rich should pay; Majority of the poor will be affected; and I do not believe that the money paid will be used for the conservation of beachscape beauty.*
- d) **the certainty plus protest model** (Model 4) – considers positive answers from respondents who were not sure or very unsure of their replies as negative, and replaced them with 0 in the binary logistic run (as in Model 2); at the same time, observations with negative response and protest statements were dropped (as in Model 3).

In all models, all observations from respondents with monthly incomes of *Php2000 and below* as well as *Php200,000 and above* were considered outliers and were dropped from the logistic regression run. Twenty-five (25) out of the 1,000 respondents fell under this category.

3.5 Data Analysis

The analysis adopted the mean WTP formula from Hanemann (1984 as cited in Calderon et al. 2005; Launio et al. 2011) whose utility model assumes that if there exists a representative consumer who has an indirect utility function $V(P, M, Q, S)$, then the level of the consumer utility function depends on price (P), income (M), socio-characteristics (S) and quality (Q). When asked if he would pay to help protect the beachscape beauty in Caramoan at a given price P, the respondent will say yes if

$$V(M - P, Q^1, S) > V(M - 0, Q^0, S) \quad (\text{Equation 1})$$

Equation 1 shows that the respondent will answer yes if the utility derived from improved quality of the beachscape (Q^1) and paying the price (P) is higher than that derived from having no improvement in the beachscape quality (Q^0) and not paying the price ($P=0$). If $V(P, M, Q, S)$ is the observable component of the utility, the probability of the respondent saying yes is

$$\text{Prob}(\text{yes}) = \text{Prob}[V(M - P, Q^1, S) + \varepsilon_1 > V(M - 0, Q^0, S) + \varepsilon_0] \quad (\text{Equation 2})$$

where ε_i is an unobservable component of the utility. Assuming that the random variable ε_i follows a logistic probability distribution, one can write:

$$\text{Prob}(\text{yes}) = \frac{1}{1 + e^{-\Delta V}} \quad (\text{Equation 3})$$

$$\text{where } -\Delta V = V(M - P, Q^1, S) - V(M - 0, Q^0, S)$$

The recreational benefit of the hypothetical market to conserve beachscape is measured as WTP and is defined as

$$V(M = \text{WTP}, Q^1, S) = V(M = 0, Q^0, S) \quad (\text{Equation 4})$$

Hanemann shows that if $V(M - P, Q, S)$ is linearly specified, then the probability of the respondent saying yes is,

$$\text{Log} \left[\frac{\text{Prob}(\text{yes})}{1 - \text{Prob}(\text{yes})} \right] = \alpha_0 - \beta_1 P + \beta_2 Q + \sum \beta_i S_i \quad (\text{Equation 5})$$

Parameters α_0 and β_1 will be estimated parametrically. The mean maximum WTP for the conservation of beachscape and biodiversity beachscape and biodiversity can be calculated using Equation 6:

$$\text{Mean maximum WTP} = \frac{1}{\beta_1} \left[\ln(1 + e^{\alpha_0 + \beta_2 Q + \sum \beta_i S_i}) \right] \quad (\text{Equation 6})$$

Equations 5 and 6 were estimated using the routine of STATA[®].

4.0 RESULTS AND ANALYSIS

4.1 Socio-demographic and Economic Characteristics of the Respondents

The number of female visitors to Caramoan is slightly higher (53%) than the male visitors. Mean respondent age is 33.24 years old, with the age ranging from 17 to 69 years. More than half of the respondents (59%) are single. Majority are college graduates (76%) with a sizeable proportion (12%) having acquired postgraduate degrees. The respondents' income ranges from PhP2,000 to PhP400,000 per month; average monthly income is PhP26,319 (Table 1). These seem to suggest that Caramoan visitors are mainly young, highly educated and moderately affluent by Philippine standards.

Table 1. Socio-demographic and economic characteristics of the respondents

Parameters	Mean			Frequency	%
	Mean	Min	Max		
Sex				1000	
Male				467	47
Female				533	53
Age	33.24	17	69		
Civil status				1000	
Single				589	59
Married				394	39
Widowed				17	2
Education				1000	
Elementary level				0	0
Elementary Graduate				0	0
High School Level				3	1
High School Graduate				11	1
College Level				84	8
Vocational Level				19	2
College Graduate				760	76
Graduate/Post Graduate				123	12
Monthly income	26,319.10	2,000	400,000		

4.2 Awareness of National Issues Related to Coastal Environment

Among the national issues related to coastal environment, *water pollution*, *degradation of coastal habitats* (i.e., coral reefs, sea grass beds and mangroves) and the *decline of biodiversity* are the top three that the respondents are most aware of (Table 2). These issues are commonly attributable to institutional weakness and the increasing pressures on the environment and natural resource base by uncontrolled population in the coastal areas.

Table 2. Respondent's ranking of their awareness of national issues related to coastal environment

National issues	Frequencies by rank			Weighted Mean	Rank
	1	2	3		
Water pollution	413	187	151	1.651	1
Degradation of critical coastal habitats	144	217	152	2.016	2
Decline of biodiversity	49	43	62	2.084	3
Typhoon	18	9	35	2.274	4
Deforestation	37	98	105	2.283	5
Garbage disposal	37	297	203	2.309	6
Overcrowding of settlements in coastal areas	83	116	234	2.349	7
Coastal erosion	13	31	50	2.394	8

4.3 Awareness of Local Coastal Environment and Environment Governance Issues in Caramoan

Among the coastal and environmental governance issues in the study area, *littering on the beach*, *blast fishing* and *sand quarrying* are the top three that the respondents are most aware of (Table 3). This reflects the area's weak solid waste management scheme as well as the presence of unsustainable economic activities, which exert pressure on the area's resource base.

Table 3. Respondent's ranking of their awareness of local coastal environment and environment governance issues in Caramoan

Local environmental and governance issues	Frequencies by rank			Weighted rank	Rank
	1	2	3		
Littering on the beach	456	187	153	1.619	1
Blast fishing	56	56	56	2.000	2
Sand quarrying	54	77	58	2.021	3
Unplanned, uncontrolled proliferation of houses, resorts and infrastructures	147	286	243	2.142	4
Compressor fishing	6	20	12	2.158	5
Siltation	7	9	12	2.179	6
Overcrowding of tourists	36	74	86	2.255	7
Unregulated overfishing	34	86	96	2.287	8
Cutting of mangrove trees and vegetation	70	99	168	2.291	9
Small scale mining	14	46	49	2.321	10
Cyanide fishing	0	57	63	2.525	11

4.4 Institutional and Management Issues Impacting Caramoan Beachscapes

Among the institutional and management issues impacting Caramoan beachscapes, the respondents consider *sustainable source of fund for conservation*, *political issues* and *harmonized institutional arrangement for beachscape tourism management* as the top three issues to impact the long term sustainability of Caramoan beachscapes (Table 4). These issues highlight the importance of determining the monetary value of protecting the beachscapes as key information for justifying public investments for their management, and in designing rent capture mechanisms to generate sustainable funding. Generated funding can then be used for enforcing relevant conservation laws, patrolling, and incentivizing behaviors of stakeholders and personnel of institutions that manage coastal resources/protected areas.

Also highlighted are the complex institutional arrangements underlying the overall management of Caramoan beachscapes brought about by its contiguous nature, which span two governing institutions in the area under different institutional arrangements. The management of beachscapes within the protected area is placed under the Protected Area Management Board (PAMB), by virtue of the NIPAS Act, in partnership with the provincial government. On the other hand, the management of the beachscapes outside the protected area is placed under the Caramoan municipal government by virtue of the Local Government Code (LGC). The same code declares coastal waters within 15km of the municipality as municipal waters and places the responsibility of managing these resources on the municipal government.

Table 4. Respondents' ranking of institutional and management issues impacting Caramoan beachscape ecological sustainability

Issues	Frequencies by rank			Weighted rank	Rank
	1	2	3		
Sustainable source of fund for conservation and protection	254	102	1	1.696	1
Political issues	119	44	54	1.700	2
Harmonized institutional arrangement and mechanisms for beachscape tourism management	118	110	107	1.967	3
Enforcement of environment and fisheries related laws	97	164	94	1.992	4
Geographic and political jurisdictions between local and provincial governments	56	105	68	2.052	5
Comprehensive management plan for ecotourism and conservation of beachscape	163	194	192	2.053	6
Technical capability for management	78	62	102	2.099	7
Awareness of conservation	59	138	154	2.271	8
Institutional frameworks for ecosystem governance	42	77	107	2.288	9

4.5 Attitude towards Caramoan Beachscape Conservation

Almost all (98%) respondents support the protection of the Caramoan beachscape (Table 5). The proportion of respondents affirming beachscape conservation increases with an increase in the bid amount. However, only a little under half (49.3%) of the respondents indicated that they are willing to pay for the conservation efforts. The proportion of respondents willing to pay for conservation decreases as the bid amount increases.

Table 5. Respondents' attitude towards Caramoan beachscape conservation

Bid Amount	Attitude towards beachscape conservation			
	Agree		Disagree	
	n	%	n	%
All	981	98	19	2
100	192	96	2	1
450	194	97	6	3
950	198	99	2	1
1250	197	99	3	2
1800	200	100	0	0

4.6 Respondents' Willingness to Pay for Caramoan Beachscape Conservation

The number of respondents willing to pay for Caramoan beachscape conservation (49.3%) is almost equal to those who were unwilling to pay (50.7%) (Table 6). Of the five bid amounts used, respondents were most willing to pay the two lowest bids. The WTP response manifested a declining proportion as the bid amount increases.

Table 6. Respondents willingness to pay for Caramoan beachscape conservation

Bid Amount	Willingness to pay for conservation			
	Yes		No	
	n	%	n	%
All bids	493	49.3	507	50.7
100	172	86.0	28	14.0
450	116	58.0	84	42.0
950	79	39.5	121	60.5
1250	64	32.0	136	68.0
1800	62	31.0	138	69.0

4.7 Reasons for Willingness and Unwillingness to Pay for Caramoan Beachscape Conservation

Among the reasons cited by the respondents for their positive response to the hypothetical payment for beachscape beauty conservation, the highest percentage went to promoting the sustainability of the beachscape. This is followed by the following reasons: to provide a steady source of fund for the management of ecotourism in Caramoan (19%) and to reduce the threats to coral reefs, mangrove and sea grass beds (13%). Improving law enforcement posted the lowest percentage (3%) among the reasons behind the respondents' willingness to pay for beachscape conservation.

On the other hand, distrust or the refusal to believe that the money paid will actually be used for beachscape beauty conservation was the most frequently cited reason for unwillingness to pay (39%). This is followed by respondents' reported inability to afford the fees under hypothetical conservation payment scheme (25%) and the belief that only fishers and resort owners who directly benefit from the beachscape beauty should pay (16%) (Table 7).

Table 7. Reasons why respondents are willing or unwilling to pay

Reasons	Freq.	%
Willing To Pay		
It will promote the sustainable use of the beachscape.	183	37
It will provide a steady source of fund for ecotourism management.	95	19
It will lessen the threats to coral reefs, mangrove and sea grass beds.	64	13
It will maintain the cleanliness of fine white sand.	55	11
It will promote equitable sharing of benefits.	34	7
It will provide livelihood.	31	6
It will sustain the good quality of water.	19	4
It will improve law enforcement.	13	3
Unwilling To Pay		
I do not believe that the money I will pay will be used for the conservation of beachscape beauty.	196	39
I cannot afford to pay for the program.	129	25
Only fishers and resort owners who directly benefit from its beaches should pay.	83	16
Majority of the poor will be affected.	62	12
Only the rich should pay for this.	25	5
I prefer to give money to humanitarian causes instead.	6	1
I do not think conservation of beachscape beauty is necessary.	5	1

4.8 Parametric Logistic Regressions

The coefficients and probability values of the factors affecting WTP resulting from the logistic regressions of the CV model using the data set are presented in Table 8. Results showed that the bid amount (BID), age (AGE), and income (INCOME) were significantly correlated with WTP throughout the four CVM models. Attitude toward conservation (ATTITUDE) was significant and is positively correlated with WTP only in the Models 1 and 2, but not in Models 3 and 4.

Table 8. Significant variables affecting willingness-to-pay

Variables	Model 1	Model 2	Model 3	Model 4
	Uncorrected	Certainty	Protest	Protest + certainty
CONSTANT	.8467532	-.0814624	5.440678	2.542522
BID	-.0015613 (0.000)**	-.0016287 (0.000)**	-.0017068 (0.000)**	-.0014496 (0.000)**
GENDER	.039265 (0.784)	.0461732 (0.754)	.2093317 (0.335)	.1323797 (0.470)
AGE	-.0412971 (0.000)**	-.0433655 (0.000)**	-.0383502 (0.003)**	-.0370107 (0.001)**
CIVIL STATUS	.0412971 (0.801)	0.16748 (0.922)	-.0263536 (0.911)	-.0451128 (0.829)
EDUCATION	.0112675 (0.849)	.0673712 (0.276)	-.1020533 (0.223)	.0286563 (0.698)
INCOME	8.15e-07 (0.006)**	7.90e-07 (0.007)**	7.42e-07 (0.087)**	6.91e-07 (0.053)**
ATTITUDE toward conservation	1.470745 (0.005)**	1.212579 (0.025)**	-.1179345 (0.916)	-.3032096 (0.064)
No. of observations	975	975	621	621
LR Chi-square	188.56	192.84	106.98	107.58
Prob> Chi square	0.000	0.000	0.00	0.000
Pseudo R square	0.1395	0.1484	0.162	0.129

Note: ** significant at p(z) 5% level. Values in parenthesis are p-values

The negative vectors of BID and GENDER and the positive vector of INCOME are consistent with the study hypothesis. The negative and significant correlation of bid amount to the WTP implies that the probability of the respondents' willingness to pay for Caramoan beachscape conservation decreases as the bid amount increases. The negative and significant relationship of age to WTP indicates that the younger respondents are more likely to be willing to pay for beachscape conservation and protection in Caramoan. This is consistent with the *a priori* expectation that since environmental conservation is an investment on the future, only those who stand to benefit from returns on their investment in the future – depending on how long they expect to enjoy these benefits – will be more willing to pay. Because younger people are likely to outlive older people and are more likely to see and enjoy the fruits of protecting these assets longer, they are more likely to invest. Gratification of one's need for future recreational enjoyment served as the sole driver for the hypothetical willingness to pay for the conservation of Caramoan beachscapes and its ecosystems.

The positive and significant relationship of income to WTP indicates that the respondents with higher incomes are more likely to be willing to pay for beachscape beauty conservation in Caramoan. High-income respondents put premium on environmental improvements compared with their lower-income counterparts, whose limited income is a major constraint in valuing natural resources and environmental services (Seenprachawong 2001).

The positive and significant relationship of attitude to WTP indicates that respondents with higher appreciation for environment conservation are more likely to pay. The absence of causal relationship between attitude and WTP in the protest and uncertainty plus protest model only served to strengthen this observation.

There was no significant relation between WTP and the variables of gender, civil status, and education. This suggests that the decision of the respondents to accept or refuse a WTP bid for beachscape conservation is not affected by their gender, civil status and educational attainment.

4.9 Econometric Estimate of the Mean Willingness-to-Pay

The mean WTP for Model 1 was PhP897. The mean WTP for Model 2 was at PhP563 and is lower than that of Models 3 and 4. In Model 3, the regression run that dropped the negative responses with protest statements attached to the no vote has the highest mean WTP of PhP1,707 (Table 9). This implies that negative perceptions – such as doubt that the payment will be used appropriately, the lack of direct benefits from sustainable ecotourism efforts, and sympathy for those who will be displaced by initiatives to conserve the environment – have a negative impact on the WTP.

Table 9. Mean willingness-to-pay estimates for the different models from the econometric (logit) analysis

	Model 1	Model 2	Model 3	Model 4
	Uncorrected	Certainty	Protest	Protest + certainty
Mean WTP	896.7936	563.4065	1,707.511	1,146.729
Std. Dev.	294.3234	280.0965	248.8751	270.7361
Min	0.0000	0.0000	747.8479	100.1851
Max	2203.8860	1765.409	2710.075	2,239.213
No. of observations	975	975	621	621

The parametric mean WTP generated for the general model in this study, as well as in the rest of the models used, is considerably higher than the WTP values estimated for the protection and conservation of most recreational sites and protected coastal ecosystems in the Philippines. The WTP value for Anilao, Batangas is PhP552 (Padilla et. al 2005), while for Moalboal in Cebu, the figure is PhP49/visit (Rosales 2003). The WTP value for the conservation of the Tubbataha seascape is PhP543 annually (Subade 2005). It is probable that the limited access as well as the pristine nature of the Caramoan site explained for the higher WTP. Pham and Tran (2001) affirmed that people who have not yet availed themselves of the recreational benefits of a natural resort tend to be willing to pay more than people who have done so. Also, the variety of beachscape attractions consisting of several islands with varied and equally beautiful beachscapes and the

stretch of coastal beach dotted with Karst forests and limestone rock formations may have increased the respondents' utility values for the site which, in turn, led them to overestimate their WTP.

5.0 DISCUSSION AND POLICY IMPLICATIONS

Our analysis using Model 1 shows that visitors are willing to pay for the conservation of Caramoan beachscapes. Mean WTP is PHP897/visit. While majority agree to conserve the beachscape beauty, only 50% are willing to pay with those unwilling citing distrust of fund management as the main reason. Our WTP responses show internal consistency in that WTP decreases with increasing bid amount. Furthermore, the effects of respondent's age, income, and attitude for conservation on WTP were consistent with expected theoretical predictions. The significant and negative correlation of age and the positive and significant correlation of income and attitude to WTP suggest that Caramoan tourism should be packaged in such a manner that it targets the young visitors, preserves the beachscapes, and addresses the goal of conserving the coastal environment. The relatively remote nature and inaccessibility of the place to transportation makes the place an adventure tourism site, attracting young and curious tourists who have money to spend for the experience.

The visitors' valuation of the Caramoan beachscape beauty is relatively high. This high WTP is common for newly established ecotourism destinations that feature exclusivity and pristine nature. The estimate of economic values for the conservation of the beachscapes in Caramoan will encourage policymakers to invest public funds for its sustainable management and development. It will also rally the participation of the stakeholders to the conservation of these coastal resources as tourism assets with income earning potential. The same information on the WTP can also be used to pinpoint the needed revenue to be raised as the Caramoan LGU drafts its ecotourism master plan. The economic benefits of conserving beachscapes represented by the visitors' aggregate WTP reflect the extent of the value of the beachscape beauty at risk of being lost in the long run if conservation efforts are inadequate. This can help drive the Caramoan municipal government to allocate a larger annual budget for the management and conservation of beachscapes and coastal resources.

Most of the local environmental issues known to the visitors are associated with weak enforcement of laws brought about by the relevant institutions' scarcity of funds and the poor economic condition of a larger proportion of the fishing community. In Caramoan, as in the rest of coastal municipalities bordering Lagonoy Gulf, the lack of employment opportunities and the open-access nature of coastal resources spell poverty in the coastal fishery. This situation forces people to discount future benefits from coastal resources, resulting to resource degradation. To stop this trend of coastal resource degradation, there is a need to provide alternative livelihood activities for the community while investing in coastal environment rehabilitation efforts; these are key challenges to the Caramoan LGU to promote sustainable coastal ecotourism.

Also, the three top ranking institutional and management issues perceived by respondents to impact the long term sustainability of Caramoan beachscapes (i.e., *sustainable source of fund for conservation*, *political issues* and *harmonized institutional arrangement for beachscape tourism management*) highlight the need for sustainable funding, transparency and sustainable resource governance in the area. The lack of monetary incentives to key personnel of coastal resource managing institutions (i.e., *bantay dagat*, *MFRS management body*) and resource users to enforce laws and to adopt sustainable resource utilization practices, respectively, compromise effective coastal law enforcement and resource management. The establishment of PES or its form (e.g., user fees) as a scheme to sustainably finance conservation and development is an opportunity for the Caramoan LGU to incentivize the positive behavior of resource managing institution personnel and resource users.

A PES case in Tubbataha Reef National Marine Park (TRNMP) provides seascapes and marine biodiversity as bundled services to society at large. Buyers of the seascape are recreational divers as well as the global community. The PAMB functions as the provider of environmental services, as provided by the marine park. Other service providers include fisher folks and the local government for giving up access and

jurisdiction over the area and thus bearing the opportunity cost of park establishment. It is one of the PES schemes being implemented under the MPA framework (Tongson 2005b).

A similar direction can be considered for Caramoan in the long term as it braces to craft its tourism master plan. The Caramoan beachscapes served as background tourism elements in the filming of international reality shows, which restricted the resource users' (i.e., gleaners and fishers) daily coastal activities for weeks. Hence, while the use of Caramoan environmental services in filming reality shows was adequately compensated under existing institutional arrangements, it was not able to compensate for the opportunity cost of displacing resource users from fishing, gleanings and related livelihood activities. As in TRNMP, the PES in concept provided the institutional arrangement for the equitable distribution of monetary benefits arising from the use of the ecosystem's environmental services not only to compensate resource users but also to incentivize them to ensure the continued flow of these services through the adoption of sustainable resource utilization patterns.

In Caramoan, as in many areas of the Lagonoy Gulf, the processes involved in MFRS establishment have changed institutional frameworks for community-managed and LGU-community co-managed MFRS (Bradecina and Nieves 2006) giving resource users and stakeholders shared power in managing and generating funds for coastal management. The Local Government Code and the Fisheries Code of the Philippines, which provide LGUs with the authority to impose taxes, fees and levies for the use of the resources and environmental assets within the municipal waters, augur well towards exploring the potential of PES in the future. The current impetus for determining the viability of granting Territorial Use Rights to fishing communities in the use of common pool resources in coastal areas also provide a ray of hope.

Most of the PES-related studies done in the Philippines focused on landscape and seascape beauty (Tongson 2005a). This study attempted to contextualize PES for beachscape beauty. Results of this study that highlight the priority concerns for sustainable source of fund for conservation, and harmonized institutional arrangements for beachscape tourism and management support the potential of implementing PES within a community-based coastal resource management framework under a MFRS setting co-managed by the community and the Caramoan LGU, or within a natural protected area framework managed by the Caramoan Natural Park PAMB. However, the current literature (Padilla et al. 2005) citing some operational issues and bottlenecks in PES (e.g., high transaction costs, unclear property rights and weak institutions) suggest that it is not a cure-all solution to the problems and issues related to the coastal environment and the conservation of panoramic views of the beaches in Caramoan; it is but a complement to a set of policies and processes that address these problems.

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