Estimation of Economic Valuation of the Hakgala Strict Nature Reserve: A

Contingent valuation sturdy

C.A. Mahanayakage[1], D. Sumanadasa[1]

[1]Faculty of Graduate Studies, University of Colombo, Colombo 03.

Extended ABSTRACT

Abstract

The study were done to quantify benefits that people obtain from Hakgala Strict Nature Reserve (HSNR), assign monetary values to identified ecosystem goods and services produced by HSNR, and determine annual economic value of HSNR ecosystem in its present. Targeted group of the questioner survey was the villagers living around HSNR and their willingness to pay (WTP) for conservation as a fee of the HSNR goods and services. This study revealed that 93% of the villagers were willing to contribute some amount of money as conservation fees. Most common explanation for WTP by respondents was a desire for better protection of the environment.

Background

The HSNR is situated in the central highland forest complex in the South Central part of the country. The HSNR comprises an area of 1142 Ha and has rich faunal and floral diversity that provide wide range of valuable ecosystem services, which links directly to human wellbeing of national and global population. Many of these services are not traded in commercial markets and therefore have no evident market value. Protected areas provide several important goods and services to society. However, since these goods and services are usually not traded in markets, their economic value is not known. In addition, the delicate balance between protecting valuable ecosystems and supporting rural communities to overcome poverty is disturbed.

The Problem

In the absence of valuation market or non-market price for ecosystem goods and services, the ecosystem users and other stakeholders do not know the value of the environment assets. As a result, the ecosystem gets subjected to overuse or exploitation. According to empirical evidences, ecosystem in the past was overexploited and this process still continuous. Though there is a need to convince users about the value of these assets from national point of view, such an assessment is minimal. In this regard, there has been no previous study in HSNR. An action is required to make a delicate balance between protecting valuable ecosystems in Sri Lanka and support to rural communities to overcome poverty.

Objectives

The overall objective is to estimate the Economic Value of HSNR System in its present form, i.e. to determine the total contribution of the ecosystem to local or national economy, Specific objectives of the economic valuation study were: To identify and quantify benefits (marketed and non-marketed) that people obtain from HSNR, anthropogenic threats, socio economic background of the adjoining villagers in neighboring area, To assign monetary values to identified ecosystem goods and services produced by HSNR and estimate annual economic value of HSNR ecosystem in its present form and opportunity costs of HSNR in terms of benefits foregone and other economic activities.

Source of data and research Methods

Research Method

This study was based on a random survey of 225 respondents in eight villages around HSNR. Predefined questionnaire was used for data collection and each interview was lasted for about 10 minutes. Only adults with an income were selected as interviewers since they were considered as realistic in making the decision on valuation of WTP on conservation in HSNR, subjected to their budget constraints. This study used payment card questions to elicit respondent's WTP. Easiness to calculate mean and median of WTP was an additional advantage. While this approach is straightforward, it is criticized, firstly, for the non-assurance of respondents to value non-marketed goods and services. This may be because respondents are rarely or never been asked to do so. Secondly, respondents may overstate or understate the value. It is possible for them to place high WTP to exaggerate the amount in hoping to expect changes of management policy. The other possibility is they would understate the value even though it does not give value for them. Hanemann (1994) states that open-ended questionnaires allow the respondents to answer without pressure, and they have the flexibility in responding. Hence, this situation may avoid the issues of starting point bias and hypothetical bias. Data derived from questionnaires were analyzed by descriptive analysis, coefficient correlation test, and multiple linear regression analysis was done by using Minitab 16.

Limitations

There are a number of well-known limitations to CVM (Mitchell & Carson, 1989), principally the assumption that respondents knew the surplus they derive from an environmental asset and that they will state this surplus truthfully (Jakobsson & Dragun, 1996). Stated preferences will be affected by aspects of survey design (design biases), cognitive function (strategic bias), and hypothetical bias (hypothetical questions yield hypo-theatrical answers). Many of these can minimize by sensitive survey design. To minimize hypothetical bias, we designed the CVM survey to simulate as closely as possible, a real market situation.

Findings

People living arround HSNR are willing to pay for biodiversity conservation in HSNR mainly because they feel a common responsibility for the work and hope that future generations will benefit from it. The mean WTP of residents arround HSNR for biodiversity conservation in the reserve is estimated around Rs. 2086.80 per year. Most people prefer to contribute to biodiversity conservation by donation. However, due to their low household incomes, some residents give priority to their livelihoods. Nevertheless, they are well aware of environmental protection and natural resource conservation issues.

Table 1: Respondent WTP, number of household, monthly mean WTP, annual WTP and given economic value of the

Number of household	Monthly mean WTP (Rs)	Annual WTP (Rs)	Given economic value of the HSNR (Rs)
3822	173.9	2086.8	7,975,749.60

This knowledge has a significant influence on their willingness to support and pay for biodiversity conservation in HSNR. Respondents' household per capita income influences their willingness to support and pay for biodiversity conservation in HSNR. Higher a respondent's net income, higher the probability they will support biodiversity conservation and greater the amount of money they will be inclined to contribute. In villages, level of the family heads affect their willingness to support and pay for biodiversity conservation in HSNR while respondent's level of education, gender, age, and civil status had no effect on WTP.

Table 1: Regression Analysis: WTP versus Gender, Age, Family size, Education, Income level and Environment concern

Predictor	Coef SE	Coef	T-Value	P-Value
Constant	170.7	131.7	1.30	0.196
Gender	-20.66	38.08	-0.54	0.588
Age	2.605	1.822	1.43	0.154
Family Size	-40.00	10.66	-3.75	0.000
Education	-37.55	24.53	-1.53	0.127
Income level	79.20	16.92	4.68	0.000
Environment Concern	-7.30	29.85	-0.24	0.807

The mean and median WTP amounts were Rs. 173.90 and Rs. 50.00 respectively. Estimated total value of WTP for conservation of HSNR by nearby community was Rs. 7,975,749.00. This will also contribute to long-term sustainable development of HSNR and other strictly nature reserves in Sri Lanka. HSNR average yearly budget from 1997-2000 (Rs.3 million), represent only 37% of the total value that the around the HSNR population is willing to pay for its conservation (Rs.7, 975,749.00). These figures were discrepancy between priorities of the government and the general public. Estimation of recreation value of Horton Plains National Park in Sri Lanka is Rs 51.68 million per year (Rathnayake *et al.*, 2011). HSNR economic value is higher than the recreation value of the Horton Plains National Park.

It is important to remember that task and responsibility of protecting nature resources and its wild life such as HSNR is not a sole responsibility of the government or legal authority involved, but is a matter of cooperation between Department of Wildlife Conservation and the public.

LIST OF REFERENCE

Hanemann, Michae, W. *1994, "Valuing the Environment through Contingent Valuation." Journal of Economic Perspectives, 8(4)*

Mitchell, R. C., Carson, R. T. *(1989), Using Surveys to Value Public Goods: The Contingent Valuation Method. Washington, D.C.: RFF Press*

Rathnayake, R. M. W. & Gunawardena, *U. A. D. P. (2011) Estimation of Recreational Value of Horton Plains National Park in Sri Lanka: A Decision Making Strategy for Natural Resources Management. Journal of Tropical Forestry and Environment, vol. 1, pp. 71-86.*

Jacobsson, K. M. and Dragun, A. K. *(1996) Contingent Valuation of Endangered Species, Edward Elgar, Cheltenham, UK.*