Economic Valuation of Wetlands -The Case of Maduganga

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Abstract

Wetlands wherever are very sensitive. They are valuable ecosystems that provide a wide range of benefits to associated communities. Yet they remain under-valued and over-exploited and their very existence is at stake due to human activities. If we truly want to sustain our ecological security, we must measure ecosystems and biodiversity - scientifically as well as economically. In this study, utility measures of welfare economics have been used to value non-market products of Maduganga wetland, by conducting a sample survey of 400 households. For the valuation, two composite non market products of environmental benefits and economic benefits have been identified. The data collected through the contingency valuation method were analyzed and the results were compared with those of similar studies. The present study is a continuation of the earlier work with some new quantitative findings leading to interesting policy implications.

Of the wetland associated households, more than 90.0 percent gave very high bequest, existence and intrinsic values to the wetland products. Sixty (60.0) percent gave high values for selfish, indirect and option use of those products. Above 90.0 percent of residents gave very high values to all environmental attributes indicated in the questionnaire except for diving snorkeling and swimming. In respect of economic benefits, however, they gave very high values only for fishery and tourism products. Other products for which there was no market were given low values-a clear case of free riding. Of the residents over 70.0 percent believe that supply of products depends on the condition of the wetland and 58.0 percent relate the supply to the status of conservation of the wetland. Of them 97.0 percent believe that the wetland should be preserved and managed. The protection is required for fishing and agriculture (27.0 percent), biodiversity (21.0 percent), preservation of nature (20.0 percent) and flood control and nutrition retention (16.0 percent). Of them 57.0 percent and 30.4 percent respectively were concerned on the present consumption and the conservation for the future.

Given the poverty of the residents of the area adjacent to Maduganga wetland, it is interesting to find that over 90 percent of respondents value environmental attributes and believe in their conservation. Of the sample households, 47.0 percent have a willingness to pay (WTP) Rs.

300.00 per month as a fixed amount for the management of the wetland whereas 31.4 percent have a WTP an amount below the above mentioned fixed amount, ranging from Rs 25.00 to Rs 200.00 per month. Of the total sample population, 44.8 percent wished to ensure continuous supply of products while 30.4 percent wish to preserve the wetland for the future generations. Of the residents, 64.7 percent believed that Maduganga Wetland Management Project (MWMP) would be effective. Of the sample, 47.0 percent households are willing to finance the management program and the majority of them i.e 53 percent households prefer a private trust fund as the institutional arrangement for management. More than 50.0 percent of residents who have a WTP the fixed amount, believe that the private sector-oriented management is far more effective in protecting wetlands than the public sector-oriented management.

The entire analysis is based on theoretical proposition of welfare economics applied in valuation of environmental and economic benefits of wetlands. The regression results indicate positive relationships of environmental benefits to Awareness of Wetland (co-efficient value of 0.124) and Awareness of Threats to Wetland (co-efficient value of 0.225). Attempts to enhance economic benefits, however, will result in a negative impact on household income of the benefitiary group. The negative co-efficient of -0.170 for independent variable, New Management Program, implies a reduction of 17 percent economic benefits to the respondent households revealing that the institutional measures to protect the environment may lead to a reduction in the net-economic benefits derived by target benefitiaries. The variables, Monthly Household Income (co-efficient value of 0.107) and Education Level (0.078) are positively related to the respondents' WTP. The estimated WTP for economic and environmental benefits is Rs. 164.00 per month, per household and the estimated WTP value of the sample resident population was Rs. 14,5 mn per year for the Maduganga wetland.

Overall, the findings of the study lead to important policy implications. The findings reveal that the creation and development of markets for wetland products are found to be feasible while coastal wetlands are found to be manageable by valuing of and charging for wetland products. The key findings are that given the socio-economic-demographic profile of the Maduganga community, in that 97.1 percent of respondents had education between no-education and secondary level education and 64.5 percent of the average five-member- household receives an income below Rs 15,000 per month, over 90.0 percent of the respondents value environmental attributes and believe

in their protection and conservation and that they prefer private sector oriented management system to sustain flows of economic and environmental products for their wellbeing. Of the respondents who have a WTP the fixed amount, 53.3 percent opted for a private trust fund, while 25.3 percent and 4.4 percent wished the fund be managed by Government and local authority respectively. Forty-seven (47.0) percent of beneficiaries are willing to support a program that would require them to pay. Thus, the establishment of MWMP, complemented with expressed WTP for reliable product supply to domestic users, may be considered an appropriate initial step towards the development of a management program for the wetland.

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