Economic Valuation of Solid Waste Dumping into Pinga Oya Stream, Sri Lanka

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ABSTRACT

Pinga Oya is a hydrologically significant stream connected to the longest river in Sri Lanka, Mahaweli River. Its water quality is declining rapidly and one of the major reasons is solid waste dumping by the stream-bank residents. Due to the declining water quality, Pinga Oya stream has lost its ability to provide stringent water uses along with other indirect environmental services to the downstream residents. Stream-bank residents' socio-economic perspectives on eliminating waste dumping to the stream have not been studied yet although they play a significant role in this regard. Hence, the objective of this study was to estimate the economic value of eliminating solid waste disposal into Pinga Oya through household willingness to pay (WTP) of stream-bank residents.

The hypotheses of the study were H1: WTP varies with respondents' demographic and psychological characteristics (age, gender, household income, education level and environmental awareness), H2: WTP increases with stream water use and H3: WTP varies with program feasibility and change of program facilitator. The study employed contingent valuation method to estimate household WTP to eliminate solid waste dumping to Pinga Oya, using a hypothetical solid waste management program. Payment card method was used to elicit the respondents' household WTP. Total of 362 households, within 500m from the stream bank were interviewed in person during the questionnaire survey. Mean household WTP was estimated and ordinal logit model was used to test the hypotheses.

Estimated mean monthly household WTP for eliminating solid waste disposal into Pinga Oya stream was LKR 45.58. Respondents' age, household income, ascribed responsibility and program feasibility were found to significantly increase with WTP. Also, respondents whom were beneficiaries of the education reform implemented in 1998 was also had significantly higher WTP. Changing program facilitator from government to community-based organization were found to significantly decrease with WTP. Gender, education level, awareness of the need and stream water use frequency were not significantly associated with WTP. Respondents living close to the stream had significantly higher WTP while living in the downstream or upstream had no significant influence on WTP. H1 was partially confirmed, H2 was rejected while H3 was confirmed according to regression analysis. The estimated mean household WTP was compatible with subsidized local public utility payments including water tariff. Respondent's age, household income, beneficiaries of educational reforms, ascribed responsibility, program feasibility, program facilitator and households' proximity to the stream have a significant influence on their WTP. The policy to eliminate solid waste dumping to Pinga Oya should have environmental awareness

programs which provide specific knowledge on concerned environmental issue(s) and highlighting shared and individual responsibility towards protecting environment. Implementing programs should be highly feasible and facilitated by the government to attract higher public participation.