

# Economic Valuation on the Households' Willingness to Pay for an Improvement in Environmental Sanitation in the University of Eastern Philippines: An Economic Analysis

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## Rationale

Economic valuation is assigning an economic value to environmental factors such as the quality of air and water and damage caused by pollution that are normally not taken into account in financial valuation. It deals with quantifying the preferences of individuals for an environmental commodities. Thus, this paper was conducted to analyze the households' willingness to pay for an improvement in environmental sanitation in the University of Eastern Philippines. This paper hoped to provide answers to the following questions: a) households' willingness to pay for an improvement in environmental sanitation, and b) the economic factors affecting the willingness to pay of households' for an improvement in environmental sanitation through a solid waste management program in the University of Eastern Philippines.

## Review of Literature

Pearce, et al. (1994) mentioned that direct use values are fairly straightforward in concept, but are not necessarily easy to measure in economic terms. On the other hand, indirect use values correspond to the ecologists' concept of ecological functions. They define the total economic value as the monetary measure of a change in an individuals' well-being due to a change in environmental quality. The task of valuation is to determine how much better or worse individuals are (or would be) as a result of a change in environmental quality. Economists define the value of a change in terms of how much of something else (usually expressed as an amount of money) an individual is willing to pay to get this change ( or how much they would be willing to accept in order to permit the change to occur.

Hanemann (1984) estimated willingness to pay using Contingent Valuation Method and showed that the probability of accepting a payment was a function of the difference in the utility models (logit model). This allows the Logit coefficients to be interpreted using the specification chosen for the utility function.

## Research Methodology

Primary data on the willingness to pay bid of households for an improvement in environmental sanitation in the University of Eastern Philippines were gathered through personal interview of 127 sample households using a structured interview schedule in the three barangays (UEP Zone 1, Zone II and Zone III).

To determine the households' willingness to pay for an improvement in environmental sanitation and to analyze the economic variables affecting the willingness to pay of households all the three barangays of the University of Eastern Philippines were chosen. The total household population and the number of sample households per barangay is shown in Table 1.

The number of households in each sample barangay was obtained from the Barangay Offices in each sample barangay. The number of households in the three barangays toaled to 1,274. The total number of household respondents in this study was determined by getting 10 percent of the total number of households in the three barangays.

Hence, 127 sample respondents comprised the total sample size (Table 1). Proportional allocation method was utilized in determining the sample size or the number of sample households in each barangay. The list of households were obtained from the chairmen of the barangays covered. Random sampling technique was used in selecting the sample respondents in each barangay.

Table 1. Total household population and the number of sample households per barangay, three Barangays of the University of Eastern Philippines

Barangay	Total Household Population	Proportion of Households Per barangay To total Household Population In the three Barangays of The Unlversity Of Eastern Philippines	Number of sample households
Zone 1	356	28.0	36
Zone II	268	21.0	27
Zone III	650	51.0	64
	1,274	100.0	127

## Analytical Procedure

Contingent valuation method was utilized in order to determine the households' willingness to pay for an improvement in environmental sanitation. This was done by asking the respondents in each sample barangay how much they were willing to pay for an improvement in environmental sanitation during the household surveys

Mean and mode estimates of the willingness to pay were computed. The mode values are preferred to the mean values since the mean values might be affected by outliers which might either pull down the mean. The estimated mode value could be used as the user charge that could be imposed to residents in the three barangays of the University of Eastern Philippines for waste collection and disposal practices.

Logit analysis was utilized to determine the economic variables that influence the willingness to pay of households for an improvement in environmental sanitation. A chi-square test was employed to know if the amount that households are willing to pay for an improvement in environmental sanitation and household income or educational attainment were independent of each other.

Multiple regression analysis was employed to determine the factors which might explain the variation in the amount of money that households are willing to pay for an improvement in environmental sanitation.

## Results and Discussion

Majority (95.3%) of the 127 sample respondents from the three barangays were willing to pay for an improvement in environmental sanitation through a solid waste management program. About 4.7 percent said that they were not willing to contribute to the improvement in environmental sanitation in the three barangays of the University of Eastern Philippines. Of the 36 sample respondents in Barangay zone 1, 97.2 percent were willing to pay. Among the Barangay Zone II respondents, 92.6 percent of the 27 sample respondents agreed to contribute to the improvement of the environmental sanitation of the University of Eastern Philippines, while for the Barangay zone III, 95.3 percent of the sample respondents answered positively when asked about their willingness to pay to a common fund to improve the environmental sanitation through a solid waste management program. The modal WTP bids in all barangays ranged from P121 to P140 from the household survey. At present, no garbage fee is collected from households in all the sample barangays of the University of Eastern Philippines.

On the average, the sample respondents from Brgy. Zone II had a higher number of household (6.0) than the sample respondents from Brgy. Zone I (5.2) and Brgy. Zone III (5.3).

On the average, the sample respondents in Brgy. Zone I had the highest educational attainment (14.4 years), followed by Brgy Zone III (14.7), and Brgy Zone II ( 14. 3). These figures indicate that, on the average, the sample respondents in all the three barangays had reached college.

Majority of the sample respondents in all the three barangays are professionals composed of entrepreneurs, engineers, nurses, teachers, private and government employees. Brgy Zone I had the highest proportion of professional (79%%), followed by Zone II (57.8%), and Zone III ( 52.4%).

On the average, the sample households in Brgy Zone I had three highest monthly household income (P80,000), followed by respondents from Brgy Zone II (PP47,200.00) , and Brgy Zone III (P55,728). This could be attributed that most of the respondents in Brgy Zone I are professionals.

The logit and multiple regression results showed that the probability of households being willing to pay bids for an improvement in environmental sanitation were significantly and directly related to household income, household size, occupation of the household head, and educational attainment.

## **Recommendations**

Based on the foregoing results of the study, the following recommendations are suggested:

1. The local government units should collect a user charge from households for waste collection and disposal services in order to improve the present environmental quality of the three barangays in the University of Eastern Philippines.
2. Public advocacy on solid waste management should be conducted by concerned stakeholders aimed with promoting environmentalism.
3. The government should allocate funds for the purchase of new trucks for waste collection and disposal services
4. The role of the LGUs not only in the collection of wastes but also in waste disposal should be strengthened.

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