Willingness to Pay for Restoring Isahaya Bay Wetland: Evidence from Contingent Valuation Method

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1. Introduction

Lately, the Isahaya Bay land reclamation project (IBLRP) came into a lot of discussions due to the construction of sea walls in 1997. This has led to a lot of controversies among the local residents and fishermen of Nagasaki, Isahaya, Kumamoto, Fukuoka and Saga.

In the wake of these debates, it is of great interest to quantify the environmental value of the Isahaya Bay wetland, as thought by the people living in different parts of Kyushu. In order to do so, we plan to use contingent valuation method (CVM), to quantify the benefits of restoring the Isahaya Bay wetland.

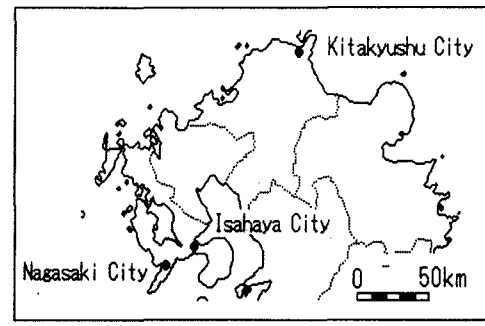

Figure1 Location of the sample cities

2. Methodology of the Study

Contingent Valuation Method (CVM) is used to estimate the willingness to pay (WTP) value, which depends on survey techniques to value a particular commodity (Mitchell and Carson, 1993). In order to choose from the various survey techniques and elicitation methods, particularly suitable for our study of valuing the Isahaya Bay wetland, we have conducted pre-testing of questionnaires. And this led us to opt for mail survey technique and dichotomous choice (DC) elicitation method.

3. Questionnaire Distribution

A total of 1,800 questionnaires were distributed in the three cities of Kyushu- Isahaya, Nagasaki and Kitakyushu (600 each). The response rates are as described in the Table 1.

Table 1 Questionnaires Distributed and Response Rate

	Isahaya City	Nagasaki City	Kitakyushu City
Questionnaires Distributed	600	600	600
Questionnaires Returned	124	117	160
Response Rate (%)	20.67	19.50	26.67

4. Findings of the Study

4.1 Influence of the IBLRP

Regarding the influence of IBLRP, 38 percent, 37 percent and 38 percent of the respondents in Isahaya, Nagasaki and Kitakyushu respectively, have reported to have no influence (see Figure 2). Whereas, the second highest influence was reported to be environmental damage. Thus, respondents of all of these three cities, including Isahaya, have recognized IBLRP as detrimental to natural environment.

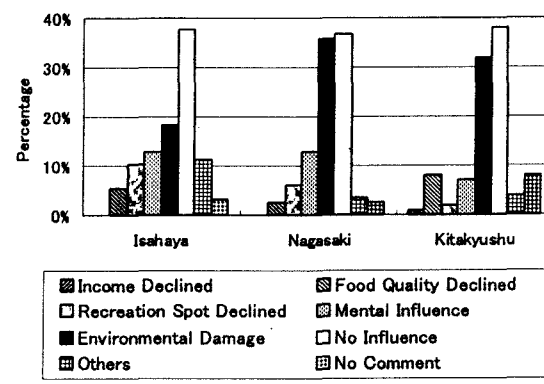

Figure 2 Influence caused by IBLRP

4.2 Willingness to Pay (WTP)

The analysis of data has been conducted by applying both Turnbull and Weibull method. According to the Turnbull method, the Mean WTP's are 6,440 yen, 6,560 yen and 6,567 yen for Isahaya, Nagasaki and Kitakyushu respectively (see Table 2).

The WTP figures under Weibull method are plotted in figure 4, which shows that the Median WTP's of Isahaya, Nagasaki and Kitakyushu are 1,282 yen, 2,517 yen and 4,108 yen respectively.

Table 2 WTP according to Turnbull Method

	Isahaya City	Nagasaki City	Kitakyushu City
Sample Size (complete)	121	115	160
Mean WTP (¥/year/household)	6440	6560	6567
Median WTP (¥/year/household)	850	4000	4000
SD of the Mean	782.81	0	584.46

4.3 Reasons for Not Willing to Pay

Among the reasons for not willing to pay, 58 percent of the respondents of Isahaya city cited that agricultural land reclamation and disaster prevention is more important than protecting environment (see Figure 3). On the other hand, 31 percent and 51 percent of the respondents in Nagasaki and Kitakyushu respectively, quoted unwillingness to pay as a fund.

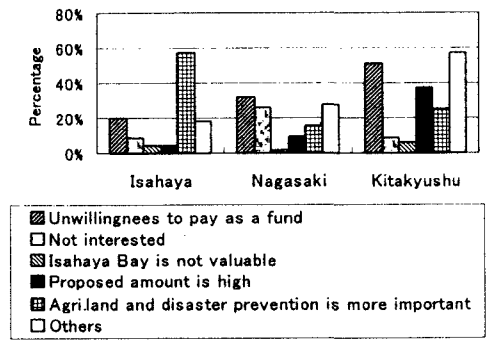

Figure 3 Reasons for Not Willing to Pay

5. Conclusions

A comprehensive study has been conducted for determining the value of the Isahaya Bay Wetland in three cities of Kyushu Island, Japan (Isahaya, Nagasaki and Kitakyushu), by applying contingent valuation method. The results lead to the following conclusions:

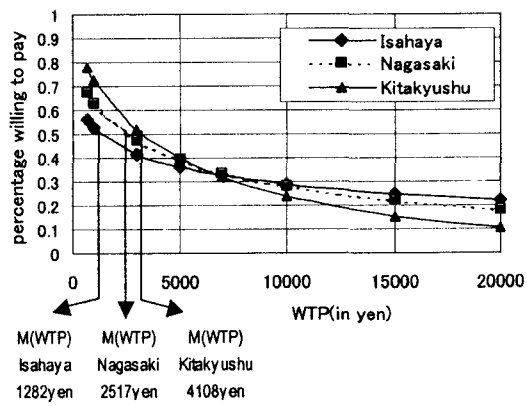

Figure 4 Percentage of Respondents WTP

a. The mean WTP for the three cities are approximately 6,500 yen. This means that on an average, each household of Isahaya, Nagasaki and Kitakyushu city are willing to pay approximately 6,500 yen for restoring the Isahaya Bay wetland (see Table 2).

b. Fifty percent of the household of Isahaya, Nagasaki and Kitakyushu are willing to pay 1,282 yen, 2,517 yen and 4,108 yen respectively, for restoring the Isahaya Bay wetland (see Figure 4). This indicates that, as we go more further from the IBLRP, more the median WTP increases. Thus, it can be concluded that, in case of the particular commodity like the Isahaya Bay wetland, where sea walls are constructed having both positive (flood control) and negative (environmental damage) impact, the furthest we go from the location of the project, more the median WTP increases.

c. There is a sizeable gap between median WTP and mean WTP, a difference that has large implication on policy makers concerning the appropriateness of continuing the IBLRP.

d. Finally, although the respondents of Isahaya city view IBLRP more as protection from flood (50 percent) than damaging eco-system (44 percent), but their mean WTP is very close to those of Nagasaki and Kitakyushu. This implies that, they are supporting the project for protecting them from flood disaster; at the same time they also acknowledge the destruction of eco-system caused by the project.

Reference

Mitchell, Cameron R. and Carson, Richard T.,1993, Using Surveys to Value Public Goods- The Contingent Valuation Method, Resources for the Future, Washington, D.C.