

MANUAL OF PRACTICE: Contingent Valuation Survey for Integrated Coastal Management (ICM) Applications

Catalina S. Tejam and S. Adrian Ross



undp



GEF/UNDP/IMO

Regional Programme for the Prevention and Management
of Marine Pollution in the East Asian Seas
DENR Compound, Visayas Avenue
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MISSION STATEMENT

The primary objective of the Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas is to support the efforts of the eleven (11) participating governments in the East Asian region to prevent and manage marine pollution at the national and subregional levels on a long-term and self-reliant basis. The 11 participating countries are: Brunei Darussalam, Cambodia, Democratic People's Republic of Korea, Indonesia, Malaysia, People's Republic of China, Republic of the Philippines, Republic of Korea, Singapore, Thailand and Vietnam. It is the Programme's vision that, through the concerted efforts of stakeholders to collectively address marine pollution arising from both land- and sea-based sources, adverse impacts of marine pollution can be prevented or minimized without compromising desired economic development.

The Programme framework is built upon innovative and effective schemes for marine pollution management, technical assistance in strategic maritime sectors of the region, and the identification and promotion of capability-building and investment opportunities for public agencies and the private sector. Specific Programme strategies are:

- Develop and demonstrate workable models on marine pollution reduction/prevention and risk management;
- Assist countries in developing the necessary legislation and technical capability to implement international conventions related to marine pollution;
- Strengthen institutional capacity to manage marine and coastal areas;
- Develop a regional network of stations for marine pollution monitoring;
- Promote public awareness on and participation in the prevention and abatement of marine pollution;
- Facilitate standardization and intercalibration of sampling and analytical techniques and environment impact assessment procedures; and
- Promote sustainable financing mechanisms for activities requiring long-term commitments.

The implementation of these strategies and activities will result in appropriate and effective policy, management and technological interventions at local, national and regional levels, contributing to the ultimate goal of reducing marine pollution in both coastal and international waters, over the longer term.

Dr. Chua Thia-Eng

Regional Programme Manager

GEF/UNDP/IMO Regional Programme

for the Prevention and Management

of Marine Pollution in the East Asian Seas

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FOREWORD

The theory underlying environmental and resource valuation presumes that individuals have well-defined preferences for goods and services and act in their own best interests.¹

Preferences are assumed to extend over not only private goods, but also over public goods, such as access to beaches and coastal vistas. Given a familiarity with goods, the prices of private goods and limitations of income and time, individuals are assumed to select private goods and public goods which makes them best off in their own terms.

This Manual of Practice briefly outlines a methodology employed to determine the economic value that residents of the Batangas Bay Region, Philippines, place on local marine and coastal resources, as well as their willingness to pay to preserve or enhance those resources. The Contingent Valuation Method involves three major steps: (1) design of the survey questionnaire; (2) survey administration; and (3) data analysis. Each of these is described herein, with direct reference to the Batangas Bay Region experience.

The Manual, hopefully, will serve as a base for the development and implementation of future economic valuation activities at ICM sites in the region. Over time, and through experience, the methodology and the analysis of information may become more sophisticated and comprehensive. However, as a starting point, the identified steps are viewed as practical and valuable, in providing decision-makers and other stakeholders with an indication of the preferences of the local constituency.

¹ Thomas A. Grigalunas and R. Congar, Editors. 1995. Environmental Economics for Integrated Coastal Area Management: Valuation Methods and Policy Instruments. UNEP Regional Seas Reports and Studies No. 164.

INTRODUCTION

In 1997, the GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas conducted an integrated coastal management (ICM) Contingent Valuation (CV) Survey in Batangas Bay, Philippines. Batangas Bay is the site of an ICM demonstration project which was initiated as part of the Regional Programme in 1994.

CV is a survey-based approach to the valuation of non-market goods and services, wherein monetary values are allocated to goods or services by survey respondents contingent upon a hypothetical scenario. CV applies simple procedures that enable the valuation of qualitative attributes through public perceptions and preferences, not yet possible through other methodologies.

In this regard, the survey was conducted to:

1. prepare and demonstrate the CV methodology as a viable process for establishing public support, priorities and, eventually, benefits derived from ICM; and
2. determine the public's attitude, support and willingness to pay for environmental and resource management programs.

Two outputs were derived from the demonstration. These included a technical report on the results of the survey, and this Manual of Practice for an ICM contingent valuation survey. The documents affirm the effectiveness of CV as a method for assessing the benefits and costs of non-tradable goods and services. They also serve as a tool for capacity building and management of ICM practitioners in the field of environment and resource economics.

DESIGNING THE CV SURVEY

Why CV?

There are several and varied reasons for conducting a CV survey, most basic of which is to elicit figures indicative of people's willingness to pay (WTP). WTP is the personal value—over and above the actual cost or price of a good or service—assigned by a person according to his/her own judgement.

In the Batangas Bay Demonstration Project (BBDP), CV was applied in order to:

1. determine the people's support, priorities and willingness to pay for environmental management programs that would address the key resource issues facing the Bay and proximate areas;
2. assess the people's degree of awareness and concern for environmental issues; and
3. disseminate information regarding the status of environmental resources in the Province of Batangas.

It may be said that almost every issue qualifies for valuation through the CV methodology.

Strengths and Limitations of CV

CV's advantage arises from its ability to place monetary values on non-market goods and services—including bequest and non-use value—which cannot be measured through other techniques. For instance, one may use this method to measure the aesthetic value of coastal waters and people's concern for the welfare of future generations. It is also flexible and generally easy to follow, utilizing the survey designer's creativity and resourcefulness to the fullest.

On the other hand, as values derived from this method are contingent upon the hypothetical or simulated scenario presented in the questionnaire, responses are difficult to validate and the possibility of responses beyond rational choice cannot be entirely avoided.

Therefore, the concept of trade-offs and other experimental combinations are employed to minimize the possibility of bias.

Applications of the CV Methodology

There are various ways of applying the CV methodology. One involves a **bidding procedure**, where a sequence of questions answerable by yes or no are presented to the respondents with clearly specified choices. For example, a question may be stated as such:

“If the monthly fee to be connected to the sewer line was P150, would you want to connect to the sewer line, or would you prefer not to be connected?”

The amount is varied upward or downward with each question, as in an auction. Responses are contingent upon the description of a scenario with a product or service the survey is trying to “sell”. For instance, in the Batangas Bay survey, a landfill was described as a safer and more environment friendly alternative for disposing garbage, compared to an open dump. Thereafter, respondents were asked for their willingness to pay for a landfill project.

Another technique of the CV methodology involves posing a **direct question**, such as:

“If your family will pay a higher fee each year for a new landfill, what is the highest amount each year you would be willing to pay for the new landfill?”

The question can solicit a definite amount, or provide ranges of fees to choose from, such as:

P 0-150 P 150-200 P 200-300
 P 300-400 P 400-500

In any case, the exercise simply aims at deriving the maximum value the respondent is willing to pay for issues and resources.

The survey may also present “**take it or leave it**” situations, where a respondent will be asked to choose one alternative from a set of programs presented to address a specific issue. Each program represents a hypothetical scenario, with associated costs of implementation and expected outputs. This is where trade-off combinations may be used. For example:


If you had the opportunity to choose one of the 3 options to preserve our natural resources until the year 2020, which would you choose? Please check (✓).

A

B

C

A
(No New Action)




Fish catch:
2,000 tons

P 0
each year

Additional fee
for households

B




Fish catch:
3,600 tons

P 1,000
each year

Additional fee
for households

C



Fish catch:
4,500 tons

P 2,000
each year

Additional fee
for households

The Process

Designing a survey based on the CV methodology generally follows the process below:

1. **Research targets.** "Sentinel" or key areas should be identified in order to assess public support for activities relevant to research targets.
2. **Developing the survey questionnaire.** Most of the work in designing the CV survey involves the development of the survey questionnaire, which is the fundamental tool for transmitting and receiving information required by the research. The questions should be direct to the point and comprehensive, yet appealing.
3. **Survey administration.** While developing the questionnaire, administrative, financial and logistic arrangements should be finalized to ensure the smooth flow of daily operations. Tasks under this component include recruiting and briefing enumerators, scheduling, and acquiring materials and supplies. The actual administration of the survey includes tasks performed at the scheduled dates, covering pre-selected survey

sites. This procedure entails observance of protocol, the distribution, completion and collection of survey questionnaires, and quality control. Usually, a minimum of 1,000 accomplished survey questionnaires are required to complete the survey.

4. **Drawing conclusions.** This procedure includes tasks after the target number of respondents has been covered. Here, administrative and financial details need to be cleared and accounted for. Survey data are encoded using an electronic database and submitted to statistical analyses. Finally, the analyzed information is presented in a format and style which reflects both the objectives of the research and the information needs of the prospective users.

Expected Outputs of the Survey

Responses take the form of a vote, as in a referendum, on specific issues relevant to the research. Thus, results may be used by local decision-makers on specific issues relevant to their areas of jurisdiction.

Results of the survey can be employed to provide information to a variety of uses and applications, such as:

1. the degree of public awareness of environmental issues;
2. public opinion of priority concerns to be addressed;
3. benefit-cost analysis of environmental management programs; and
4. user fee systems according to levels of income and willingness to pay for environmental preservation and management.

Thus, several outputs may be derived from the conduct of a CV survey depending on the perspective and interests of prospective users. In addition, the survey produces benefits over and above those directly expected. Information contained in the questionnaire proves to be both educational and entertaining, exposing the people to new concepts and technologies. The briefing of enumerators, who are locally recruited, exposes them to environmental and resource economics and ICM concepts, techniques and applications; while actual administration of the questionnaires helps build the enumerators' self-confidence and enhances their skills at speaking and listening to people.

DEVELOPING THE QUESTIONNAIRE

The procedures below refer entirely to the Batangas Bay ICM Contingent Valuation Survey, conducted by the Regional Programme on 16-25 May 1997. Appendix A is the English version of the questionnaire. Any portion of the questionnaire may be modified in accordance with the needs and interests of the researcher.

Statement of Objective and Scope

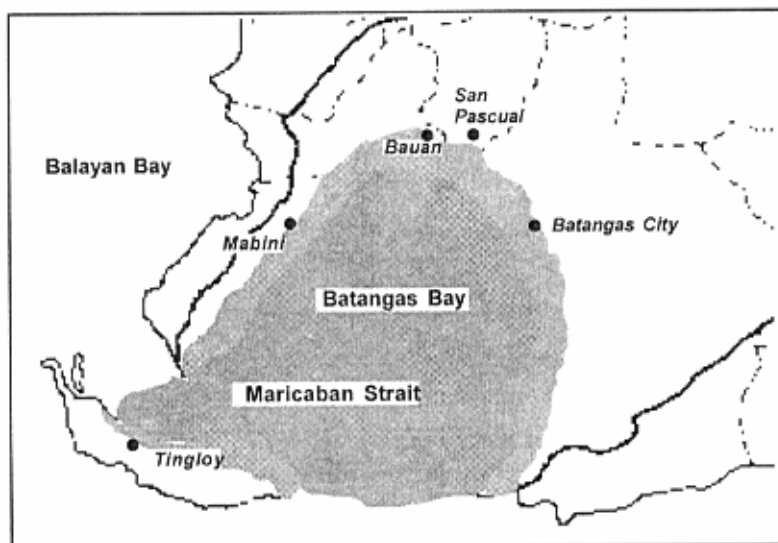
The opening statements of the questionnaire contain the objective and scope of the survey. The objective should be stated in one short sentence, and in a clear and straightforward manner. In the case of Batangas, the survey objective was simply stated thus:

“To know your opinion about resource issues in the Batangas Bay area”.

Thereafter, a map (as below) showing the area covered by the survey is provided to set the scene for questions that follow.

Identifying and Refining the Issues

Specific issues to be discussed in the questionnaire should be identified based on previous research conducted in the area. The first



draft of the Batangas Bay questionnaire contained nine issues identified in the Coastal Environment Profile of the Batangas Bay Region as significantly affecting its environment. These included: a) forestry, b) agriculture, c) coral reefs, d) fisheries, e) shoreline parks, f) solid waste, g) municipal sewage, h) mining and quarrying, and i) air quality.

A series of pre-tests in the Batangas Bay Region indicated a need for a reduction in the number of significant issues, and these were identified as: fisheries, coral reefs, garbage and sewage. In order to ensure well-discerned responses, the questionnaire was designed to provide background information on the status of the four selected issues in the Batangas Bay Region and projected conditions to the year 2020. A separate page of the questionnaire was designated for the solid waste issue in Batangas Bay.

Formulating Questions and Choices

The questionnaire uses a combination of CV procedures, as discussed previously. In the case of Batangas, the first section is devoted to determining the intensity of human activities in three bodies of water—including Batangas Bay, Calumpang River and Balayan Bay—in order to determine the gravity of pollution impacts and threats. This required a four column matrix with human activities listed in the first column and bodies of water listed in the topmost row of each column.

ACTIVITIES	Batangas Bay	Calumpang River	Balayan Bay
Fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swimming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sightseeing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laundry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passing by	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The next section contains a list of eight actions that may affect the quality of Batangas Bay waters. The respondent is asked to indicate his/her willingness to support each action on a scale of 1 to 5, with 1 representing strongest support and 5 indicating strongest opposition. For example:

Restrict commercial fishing in Batangas Bay

1	2	3	4	5	NA
strongly support	support	neutral	oppose	strongly oppose	no opinion

On the issue of solid waste, questions focus on the degree of concern over the issue, current participation in recycling activities, and willingness to pay for a new landfill. The degree of concern is measured on a three-point scale. Questions regarding participation in recycling and willingness to support a landfill are answerable by yes or no. Finally, a direct question is asked regarding the maximum amount a respondent is willing to pay for the new landfill.




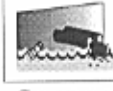
QUESTION: *Aside from recycling old newspapers, used bottles and metals, are you involved in any other recycling activities in your area?* YES NO

The respondent is then asked to rank four issues according to importance, based on the assumption that only one issue can be addressed each year. In the case of Batangas, respondents ranked the

preservation of fishery resources first, followed by a solution to the garbage problem, protection of coral reefs and the treatment of sewage.

V. RANK THE ISSUES

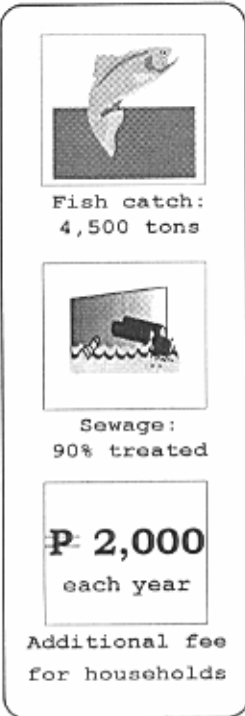
Place a number from 1 to 4 on each issue according to its importance to you.


Number:		Food
	<i>Fish</i>	
Number:		Sanctuary
	<i>Corals</i>	
Number:		Solid waste
	<i>Garbage</i>	
Number:		Waste Water
	<i>Sewage</i>	


costs. Though basically hypothetical, each scenario should be based on rational assumptions and baseline research.

In the case of Batangas, there are only two trade-off options for each program—the expected output from the program and its associated cost of implementation. It usually takes a number of pre-tests to determine a comfortable number of trade-offs. The number of trade-off options may be increased depending on the ability of the respondent to comprehend the options presented. An example of the three trade-off combination is presented in the right-hand box. However, given the lack of pre-testing time, and the uncertainty about public awareness concerning the four issues, it was concluded that the three trade-off options would not be incorporated into the first CV survey of the Batangas Bay.

The final section is the respondent profile, which solicits basic information about the respondent's social and economic status. Data from this section are utilized to determine which characteristics tend to influence responses.




Fish catch:
4,500 tons


Sewage:
90% treated

P 2,000
each year

Additional fee
for households

Design and Layout

The questionnaire should be designed to contain simple, direct and concise statements in the common vernacular, with a manageable number of trade-off options, in order to facilitate self-administration. Pictures and illustrations should replace words, where possible, in order to provide information that is both educational and entertaining.

Texts should be large, with loosely fit characters, for easy reading. In the case of Batangas, the questionnaire used mainly Courier and Bookman fonts (typical in newspapers), in double spacing using 12-pt fonts and above.

Space is used freely and care is taken to avoid putting too much information in one page. A 12-page document can be accomplished by a respondent in an average time of 20 minutes.

Pre-testing and Revision

There is no limit to the actual number of pre-tests required to develop a survey questionnaire. In the Batangas survey, four pre-tests

were conducted on individual and group respondents before the questionnaire was prepared for final printing. Each pre-test leads to a revised questionnaire that should be dated as the latest version.

The pre-tests serve to:

1. redefine and focus on the issues most prevalent in the survey area, eliminating the less significant concerns;
2. refine translation in the vernacular to facilitate readability and comprehension;
3. improve presentation with appropriate pictures, graphics and fonts;
4. observe the average amount of time required to complete the survey; and
5. take note of respondent reactions to the enumerator's approach and their general comments on the survey.

When pre-testing, questions about the questionnaire are asked after the respondent has completed the document. It would be best to ask open-ended questions, rather than questions answerable by yes or no. In the Batangas survey, some of the questions were as follows:

1. Regarding the approach:
 - What was your first thought/reaction when the survey staff approached you?
 - What would be a better approach?
2. Regarding the cover page:
 - As you best remember, what do the pictures represent?
 - (Referring to unclear pictures) If you drew the pictures yourself, how would you do it?
3. Regarding the objective:
 - What do you remember as the objective/purpose of the survey?
4. Regarding the picture of the area of coverage:
 - Which area did you think was within the coverage of the survey?
5. Regarding usual activities participated in bodies of water:
 - What other activities along the bodies of water should have been listed?

6. Regarding specific actions:
 - What concerns/issues were missed/not covered by the survey?
7. Regarding the sanitary landfill:
 - What do you remember as the difference between a dump site and a sanitary landfill?
 - What made you (support/not support) the landfill?
 - What made you choose this value (refer to peso value) over the rest?
8. Regarding program choices: (Go over each set of choices)
 - I see that you chose (No New Action/Program A/Program B). What made you choose this over the others?
9. Regarding the profile of the respondent:
 - Which question was difficult to answer?
10. For the overall comment:
 - What was your overall impression of the survey?

SURVEY ADMINISTRATION

Selection of Enumerators

Enumerators for the survey are selected based on the following criteria:

1. college graduates, preferably of social science fields;
2. preferably residents of the area of coverage;
3. proficient in the dialect of the area of coverage;
4. preferably with relevant field survey experience;
5. enthusiastic and willing to learn; and
6. pleasing personality.

A total of 20 enumerators are able to accomplish 2,000 questionnaires within 10 days. In the case of Batangas, each applicant was screened through an academic institution based in Batangas, and those hired entered into a service contract for the survey period.

Briefing

The enumerators should undergo a briefing seminar at least one day before the actual survey administration, to receive background information about environmental and resource economics, the CV methodology, a short description of the objectives and programs of the lead institution conducting the survey and the survey protocol. In addition, a list containing rules of conduct in survey administration may be provided to the enumerators to develop a sense of ownership and commitment in their work.

To encourage team work and quality outputs, the enumerators may be divided into groups with 4 to 5 members in each group. Camaraderie and team spirit should be fostered throughout the survey.

The Survey Protocol

Each enumerator is required to observe a set of procedures—beginning with a cordial approach and ending with a token of appreciation for the respondent—to encourage an honest response and to eliminate bias to the extent possible. When approaching the respondent, the enumerator

provides a capsule introduction of him/herself and the survey objectives. For instance,

“Good Morning/Afternoon, I am (first name) of the Batangas Bay Environment Management Project. We are conducting a survey on residents of Batangas. Are you a resident of Batangas Province? We would just like to know your opinions about environment issues concerning Batangas Bay.”

In order to maintain impartiality, the enumerator should not mention any affiliation.

Inquiries on the specifics of the survey should be entertained only after the questionnaire has been duly accomplished.

Administration and Supervision

Normally, a CV survey can be conducted in a variety of ways—by telephone calls, mail, or using an intercept approach. The latter entails selecting participants randomly in designated heavily populated sites. However, it may be necessary to go door to door, when the target number of respondents from key areas are unlikely to be achieved by other methods.

To ensure adequate quality control, accomplished questionnaires should be immediately handed over to the team supervisors for inspection. The enumerators are obliged to observe a strict daily regimen—involving short meetings at the start of the day, midday and afternoon—which facilitates the exchange of experiences, trouble shooting, problem solving and strategic planning.

Logistics and Supplies

Applying an intercept approach requires considerable room for mobility. Therefore, transportation should be readily available at all times.

The following materials should be prepared for administration:

1. copies of the survey questionnaires (including 500 extra copies);
2. pens or pencils;

3. identification for the enumerators, such as caps and/or shirts with the logo of the survey;
4. banners for the vehicles;
5. tokens of appreciation for the respondents; and
6. a loaded camera for photo-documentation.

Budgetary Concerns

The intercept approach proves to be relatively low cost compared to other survey techniques, with the bulk of expenditures going to transportation costs, followed by enumerators' fees and allowances.

Documentation

It is important for survey supervisors to document the progress of activities in print and film. Notes taken during meetings and briefings help the survey team plan for succeeding activities.

Photo-documentation serves two purposes. It lightens the mood of the survey and makes reports more attractive and interesting.

DRAWING CONCLUSIONS

Statistical Analyses

Upon completion of the survey, data are encoded into an electronic database software package. In the case of Batangas, the survey data were inputted using Foxpro.

Two types of analytical procedures are applied to the database. The set involving answers to specific questions are subjected to the chi-square test (i.e., χ^2 test) or test for independence to measure the degree of association of variables. The χ^2 statistic is used to compute actual and expected frequencies in the cell of a matrix. If two variables were independent, the value of χ^2 would be larger. The computed χ^2 value is compared to figures in the χ^2 distribution table that provides values corresponding to an upper tail area of the distribution curve and specified number of degrees of freedom.

The second set of procedures involves finding the relationship between respondent characteristics and their responses, using the one way analysis of variance (ANOVA).

The procedure for applying the χ^2 test and ANOVA is beyond the scope of this document and is available in any textbook on statistical methods.

Reporting and Presentation

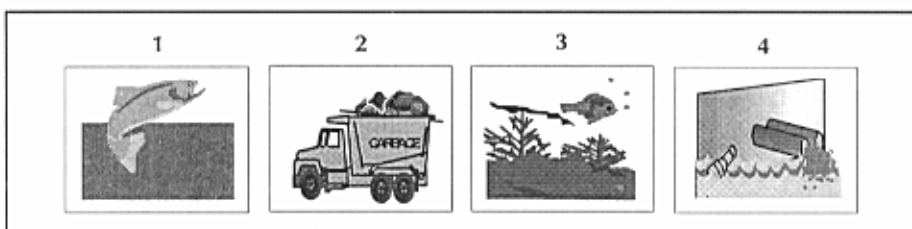
Clearing survey activities requires the submission of all documents relevant to the survey, including a technical and financial report on the process.

As mentioned earlier, multiple outputs are expected from conducting a CV survey due to its contingency to public perceptions, preferences and priorities. In effect, several sectors shall benefit from the results of the activity.

Public ranking of issues and their degree of support or opposition to actions contribute to the design and implementation of development programs initiated by local government decision-makers, environmental

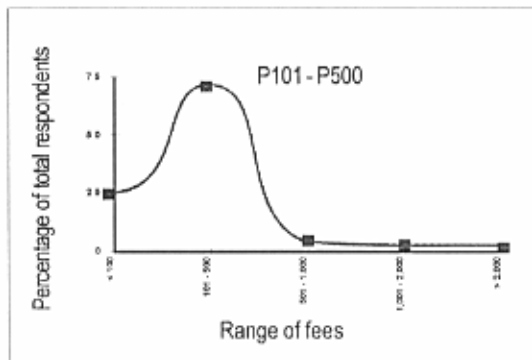
planners and legislators. In the case of Batangas, respondents indicated that their first priority was a program to preserve fishery resources, followed by a solution to the garbage problem, protection of coral reefs and sewage treatment (as below).

The survey should be able to go beyond public preferences, into the factors affecting choice, in order to present clear options for implementing environmental policies and integrated programs.



The study may also be employed to upgrade an existing user fee scheme, even as the figures revealed by the research should not be construed as fixed rates but, rather, as estimates of ranges of fees. In Batangas, most respondents indicated an average willingness to pay of around P200 per year for a landfill project.

When planning for an increase in user fees, it may be best for local governments to begin with the more conservative amount (i.e., the lower estimate) in order to avoid immediate rejection by the public.

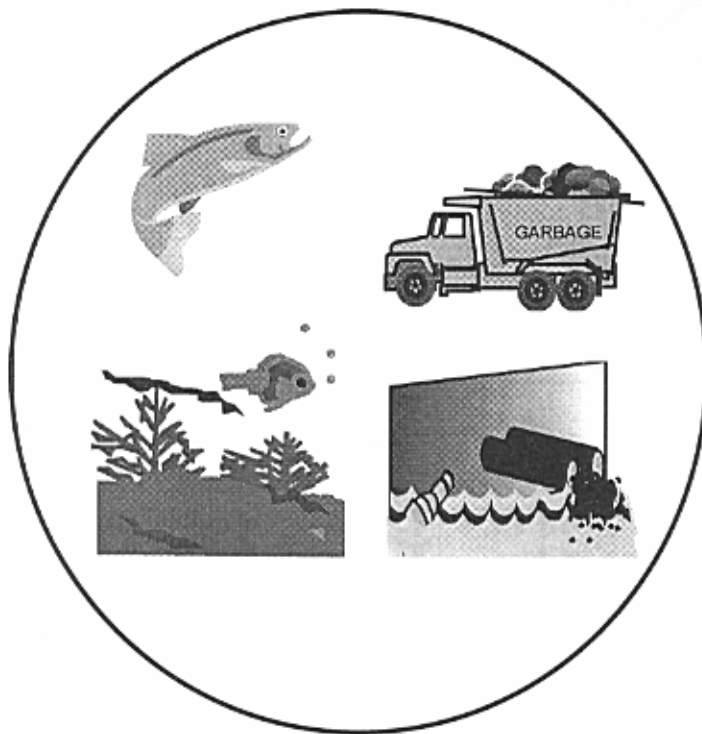


Finally, the exercise contributes to valuable research on environmental and natural resource economics that ICM practitioners will find relatively easy to apply.

APPENDIX A

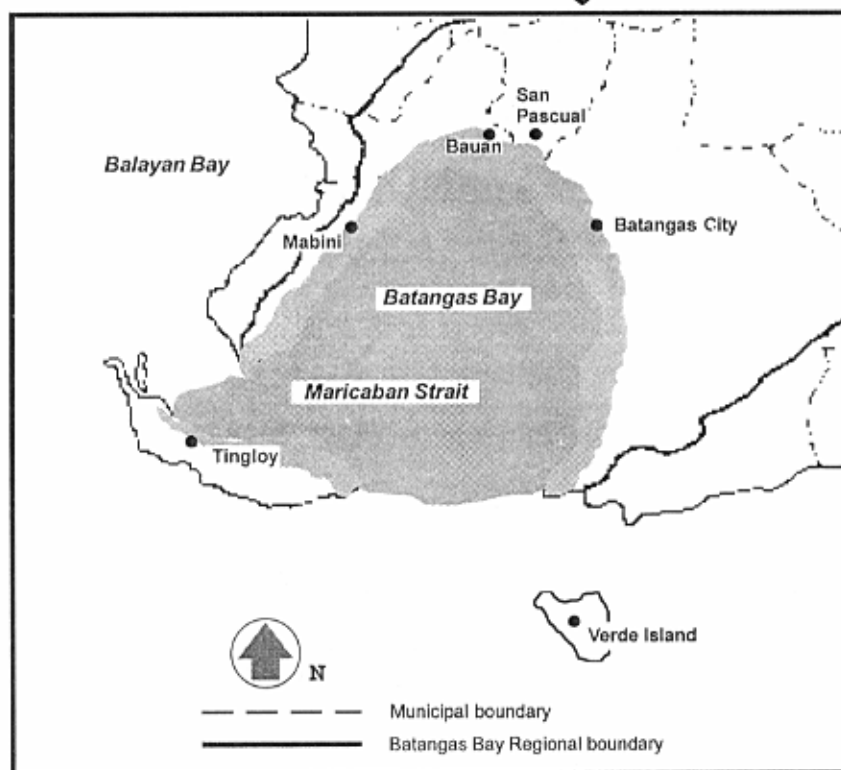
Sample Questionnaire

**SURVEY OF THE
COASTAL MUNICIPALITIES
ALONG BATANGAS BAY**



**OBJECTIVE:
TO KNOW YOUR OPINION ABOUT
RESOURCE ISSUES IN THE BATANGAS
BAY AREA**

SCOPE OF THE SURVEY:



- I. Please check the activities you participate in around the following locations:

ACTIVITIES	Batangas Bay	Calumpang River	Balayan Bay
Fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swimming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sightseeing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laundry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passing by	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

II. The following actions would affect water quality in Batangas Bay.

Please indicate how strongly you support or oppose each action, by circling a number.

- a) Better enforcement of environment regulations in your municipality or city.

1	2	3	4	5	NA
strongly support	support	neutral	oppose oppose	strongly	no opinion

- b) Zone to guide future development

1	2	3	4	5	NA
---	---	---	---	---	----

- c) Prohibit dumping of waste and oil from vessels.

1	2	3	4	5	NA
---	---	---	---	---	----

- d) Restrict commercial fishing in Batangas Bay.

1	2	3	4	5	NA
---	---	---	---	---	----

- e) Control discharges of waste from industry.

1	2	3	4	5	NA
---	---	---	---	---	----

- f) Improve garbage collection in all barangays.

1	2	3	4	5	NA
---	---	---	---	---	----

- g) Require pumpouts of existing septic systems.

1	2	3	4	5	NA
---	---	---	---	---	----

- h) Public information campaign on the environment.

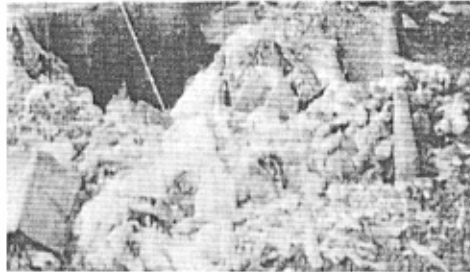
1	2	3	4	5	NA
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III. SOLID WASTE

SOLID WASTE includes garbage generated by residences, market places and commercial centers. Uncollected waste ends up on streets, vacant lots and waterways.

A **DUMP SITE** is:

- A site, like Smokey Mountain, where solid waste is dumped. →



QUESTION: How concerned are you about solid waste?

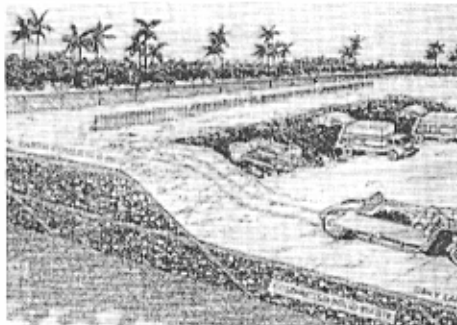
- No opinion
 Not concerned
 A little concerned
 Very concerned

QUESTION: Aside from recycling old newspapers, used bottles and metals, are you involved in any other recycling activities in your area?

- YES NO

In a **SANITARY LANDFILL**:

- Solid waste is buried underground.
- Obnoxious odors are eliminated.
- Health hazards are prevented. →



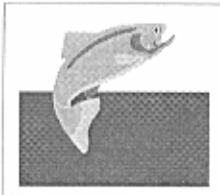
At present, YOUR FAMILY PAYS P120 EACH YEAR for garbage collection.

QUESTION: If your family will pay a higher fee each year for a new landfill, would you support the new landfill? YES NO

What is the HIGHEST AMOUNT EACH YEAR you would be willing to pay for the new landfill? P

IV. BACKGROUND INFORMATION

A bigger picture = increased quantity
 Smaller picture = decreased quantity.

APPROXIMATE
CONDITIONS IN
1985

Fish catch:
6,000 tons



Corals:
24% good



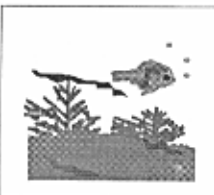
Solid waste:
40 tons each day



Sewage: BOD of
4,000 tons

APPROXIMATE
PRESENT
CONDITIONS

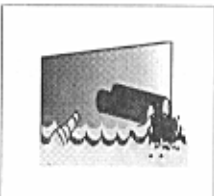
Fish catch:
3,600 tons



Corals:
37% good



Solid waste:
56 tons each day



Sewage: BOD of
6,700 tons

If no new action
is taken:
APPROXIMATE
CONDITIONS IN
2020

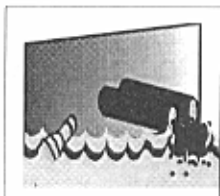
Fish catch:
2,000 tons



Corals:
25% good



Solid waste:
80 tons each day



Sewage: BOD of
8,000 tons



To preserve what we have, new actions are needed!



However, it is very expensive to solve all environmental problems.

We are trying to learn WHICH RESOURCES are most important to you.



And its VALUE IN MONETARY TERMS.



Consider each question carefully.

Do not add up the figures.

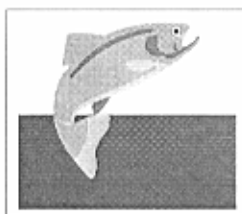
V. **RANK THE ISSUES**

Place a number from 1 to 4 on each issue according to its importance to you.



- 1 - first priority**
- 2 - second priority**
- 3 - third priority**
- 4 - fourth priority**

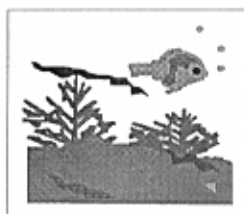
Number: _____



Fish

- **Food**
- **Source of income for fisherfolk**

Number: _____



Corals

- **Sanctuary and nursery of fish stock**

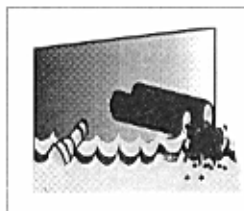
Number: _____



Garbage

- **Solid waste from domestic and commercial activity**

Number: _____



Sewage

- **Waste waters draining into rivers and seas**


VI *If you had the opportunity to choose one of the 3 options to preserve our natural resources until the year 2020, which would you choose? Please check (✓).*

A

B

C

A
(No New Action)

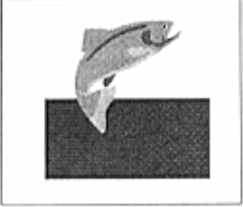


Fish catch:
2,000 tons

~~₱~~ **0**
each year

*Additional fee
for households*

B

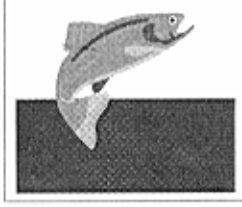


Fish catch:
3,600 tons

~~₱~~ **1,000**
each year

*Additional fee
for households*

C



Fish catch:
4,500 tons

~~₱~~ **2,000**
each year




*Additional fee
for households*

If you had the opportunity to choose one of the 3 options to preserve our natural resources until the year 2020, which would you choose? Please check (✓).

 A

 B

 C

A (No New Action)	B	C
<div data-bbox="150 709 389 915" style="text-align: center;">  </div> <p data-bbox="194 930 336 986">Corals: 25% good</p> <div data-bbox="159 1080 398 1286" style="text-align: center;"> <p data-bbox="211 1151 303 1193">₱ 0</p> <p data-bbox="192 1211 336 1234">each year</p> </div> <p data-bbox="139 1301 389 1358">Additional fee for households</p>	<div data-bbox="479 709 718 915" style="text-align: center;">  </div> <p data-bbox="526 930 668 986">Corals: 37% good</p> <div data-bbox="475 1080 714 1286" style="text-align: center;"> <p data-bbox="488 1151 688 1193">₱ 1,500</p> <p data-bbox="521 1211 665 1234">each year</p> </div> <p data-bbox="468 1301 718 1358">Additional fee for households</p>	<div data-bbox="808 709 1047 915" style="text-align: center;">  </div> <p data-bbox="855 930 997 986">Corals: 30% good</p> <div data-bbox="811 1080 1051 1286" style="text-align: center;"> <p data-bbox="838 1151 996 1193">₱ 800</p> <p data-bbox="850 1211 994 1234">each year</p> </div> <p data-bbox="797 1301 1047 1358">Additional fee for households</p>


If you had the opportunity to choose one of the 3 options to enhance government services until the year 2020, which would you choose? Please check (✓).

 A

 B

 C

A
(No New Action)




Solid waste:
60% collected and
disposed in a
dump site

₱ 0

each year

Additional fee
for households

B




Solid waste:
100% collected and
disposed in a
landfill outside
your barangay

₱ 2,000

each year

Additional fee
for households

C



Solid waste:
100% collected and
disposed in a
landfill inside
your barangay

₱ 500

each year

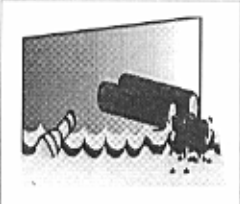

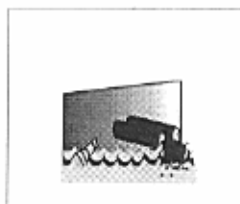
Additional fee
for households

If you had the opportunity to choose from 3 options to enhance government services until the year 2020, which would you choose? Please check (✓).

 A

 B

 C

A (No New Action)	B	C
		
<p>Sewage: Remains untreated</p>	<p>Sewage: 50% treated</p>	<p>Sewage: 90% treated</p>
<p>P=0 each year</p>	<p>P=1,000 each year</p>	<p>P=1,800 each year</p>
<p>Additional fee for households</p>	<p>Additional fee for households</p>	<p>Additional fee for households</p>

Notice: Your answers to these questions will remain strictly confidential.

PROFILE OF THE RESPONDENT:

- Do you: own your home rent
- Where is your home located?
Municipality/City _____ Barangay _____
- How many minutes does it take you to reach Batangas Bay from home? _____
- How long have you been a resident of Batangas? _____ years
- Are you: Male Female
- Are you: Single Married Widowed Separated
- Which age bracket do you belong to:
 15-19 20-24 25-29 30-34
 35-39 40-44 45-49 50-54
 55-59 60-64 65-69 70 and above
- What is the highest level of education you have attained?
 Elementary High School Vocational/Technical
 College Graduate school (e.g., MA/MS/PhD)
- Are you employed? Yes No
If yes: full-time or part-time
- Are you a member of any:
Government office? YES NO
Civic organization (e.g., Rotary Club)? YES NO
Environmental organization? YES NO
- Including yourself, how many people live in your household? _____
- Excluding yourself (and your spouse), how many people in your household over 18 years of age are gainfully employed? _____
- What is your MONTHLY HOUSEHOLD INCOME before taxes?
 1,000-1,499 1,500-1,999 2,000-2,499
 2,500-2,999 3,000-3,999 4,000-4,999
 5,000-5,999 6,000-7,999 8,000-9,999
 10,000-14,999 15,000-19,999 20,000 and above
- Do you have any other comments? _____

Thank you very much



PUBLICATIONS OF THE MPP-EAS

- Integrated Coastal Management in Tropical Developing Countries: Lessons Learned from Successes and Failures. 90 p.
- Enhancing the Success of Integrated Coastal Management: Good Practices in the Formulation, Design and Implementation of Integrated Coastal Management Initiatives (*Available in English, Vietnamese, Bahasa Indonesia, French, Portuguese, Swahili, Korean, Chinese and Thai*). 32 p.
- Strategic Environmental Management Plan for the Batangas Bay Region. 96 p.
- Coastal Environmental Profile of the Batangas Bay Region. 148 p.
- Integrated Waste Management Action Plan for the Batangas Bay Region. 76 p.
- Strategic Management Plan for Marine Pollution Prevention and Management in Xiamen. 60 p.
- Coastal Environmental Profile of Xiamen. 110 p.
- Sustainable Financing Mechanisms: Public Sector-Private Sector Partnership. 352 p.
- Oil Spill Modelling in the East Asian Region *with Special Reference to the Malacca Straits*. 304 p.
- Malacca Straits Environmental Profile. 259 p.
- Marine Pollution Updates (*quarterly publication*).
- Tropical Coasts (*bi-annual newsletter*).
- Annual Report 1996. 46 p.

COPIES ARE AVAILABLE FROM THE MPP-EAS REGIONAL PROGRAMME OFFICE:

GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS)

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