Implementation of Component 7

Economic Valuation of Coastal and Marine Resources

"Putting a Value on Our Precious Resources"

Courtesy of the Coral Reef Monitoring Programm

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Preface

This report has been developed ad a methodology for the implementation of the pilot site study in the three countries : Dominica, St. Lucia and Trinidad and Tobago as part of the implementation of Component 7 : Economic Valuation of Coastal and Marine Resources.

The CPACC Project is committed to assisting Caribbean countries **in preparing to cope with the adverse effects of global climate change, particularly, sea-level rise, on coastal areas, through vulnerability assessment, adaptation planning and capacity-building.**

Component 7 will specifically **assist participating countries to apply the tools of resource valuation, environmental accounting and environmental decision-making for use in the development of policy frameworks and economic and regulatory approaches within the context of the coastal and marine resources and CPACC objectives.**

Implementation of Component 7

Component 7 will be implemented in St. Lucia, Trinidad and Tobago and Dominica. All preliminary country visits have been completed and one site from each country has been identified for economic valuation.

It was an a priori objective of component 7 to select sites from each country in order to achieve a maximum mix of different site characteristics and uses. This objective has been largely achieved. Although, some uses are replicated at more than one site, a wide range of valuation methods will be used when all sites are considered.

St. Lucia

The study site in St. Lucia stretches from coastal area from the vicinity of the Rat Island to the Union River. This area has significant economic importance in terms of tourism. The primary uses identified in the study site are:

1. Tourism
2. Residential properties
3. Fisheries

To value tourism, it was agreed that the Random Utility Model (RUM) would be the most appropriate. RUM provides a means of examining the value visitors place on a particular beach given the choice among a range of alternative beaches. These beaches will have different levels of the same set of characteristics as well as different access costs. Access costs can be though of as the cost of staying in a nearby hotel that will give easy access to the beaches. This model should reveal the value of the beaches and the near-shore environment for tourism. Since it is expected that the quality of beaches would be affected by climate change, this change in value could be determined by measuring the corresponding loss in choice of the beaches in the study area.

Fisheries

To value fisheries resources within the study area, the Change in Productivity Method (CP) will be used. The study area encompass some marshland which may indirectly influence fish production. In

addition, the Union River joins the sea within the study site. Siltation and agricultural pollutants carried by the river may also have an effect on the fish production. All relevant factors will be considered in the fish production model. Then looking at the variables which may be affected by the climate change, it should be possible to predict the change in productivity of fisheries due to climate change.

Residential Properties

Residential properties with coastal frontage will experience a loss of land due to storm activity and general sea erosion. This is a very common phenomenon in the Caribbean. The implication of this is that the value of price of coastal properties will vary depending on the vulnerability climate change. Using a Hedonic Model (HM), it will be possible to identify and evaluate the effect of the characteristics that are dependent on the climate. If the changes in these characteristics can be predicted under different climate change scenarios, then the corresponding change in value of residential land could also be derived from the model.

It is also possible that people will implement defensive measures in anticipation of climate change conditions, to protect their properties. In this case, the Defensive Expenditure method (DE) could be invoked to determine the value property owner's place on averting adverse impacts. This method therefore, provide a means of the minimum value of loss of damage resulting from climate change.

Trinidad and Tobago

In Trinidad and Tobago, the study site was determined to be from Point Lisas from the South to Waterloo in the North. However, the study site could be scaled down without losing the essential elements of the valuation exercise. Primary activities identified were;

1. Industrial
2. Fishing
3. Wetlands
4. Agriculture
5. Residential and commercial land use

6. Limited domestic recreation.

Industrial

It will be necessary for industrial plants, which are bordering the coastline to take preventive measures in response to the adverse climate conditions. Therefore, preventive/mitigation expenditure method seems to be the most appropriate to value the damage to industrial production.

Fishing

There are some fishing sites within the study area. Change in productivity method could be used to estimate the value of fish production and the effect on climate change on fish production.

Agriculture

The effect of climate change on agricultural production is not very clear. Regardless of the actual effect, it is most likely that the change in productivity method would be the most appropriate to value changes in agricultural production.

Residential and commercial land

To capture the effects of climate change in land prices, hedonic method seems to be the most appropriate. This method will reveal the effect of adverse climate conditions on land prices, and therefore, will provide a basis for valuation.

Recreation

One stretch of beach within the study area was identified as important for local tourism. Since this beach appears to be an isolated site in the study area, travel cost approach seems to be the appropriate valuation tool. Most probably, an on-site sample will be used to get information on number of visits, cost of a visit and other socioeconomic information, which is necessary for valuation of the beach. The value per unit area of the beach could be determined by dividing the total value by the area of the beach. If there is loss of beach area due to climate change, then the corresponding loss of value could be calculated.

Dominica

The study site in Dominica was decided to be the coastal area **from Roseau to Scotts Head**. During the recent hurricane, this area has experienced severe damage. Going south from Roseau, the coastal area has significant residential and commercial properties up to Scotts Head. Then again from, Soufriere to Scotts Head, the study area is primarily a marine park and the adjacent coastal communities.

The following uses were identified for this study site:

1. Residential and commercial properties (including the road).
2. Tourism (mostly diving and snorkeling).
3. Fisheries
4. Other nature based tourism activities for visitors and locals.

Residential and commercial properties

The coastline from Roseau to Scotts Head is bordered with residential and commercial properties. The road runs very close to the coast and highly susceptible to sea erosion. During the country visit, the consultant had the first hand experience of some of the damage done by the recent hurricane. The government has embarked on constructing a massive sea wall within the study site. This is a prime example of defensive expenditure. In addition, a hotel owner has built his own sea wall to protect the properties. Given the fact that some defensive measures have been already taken, either by the government of by individuals, it appears that defensive expenditure method would be the appropriate valuation method. Also, there are residential properties on the seaside from the road as well as on the landside. If there is a price differential based on the location of the properties, data on land prices could be used in a hedonic model. This will again the loss of value on the perceived vulnerability to adverse climate change conditions.

Tourism

The coastal area from Soufriere to Scotts Head is declared as a marine park. This marine park is managed by the resident communities in these two locations, with the advice of fisheries officers. Random utility model and/or travel cost model appear to be the appropriate valuation tools for tourist uses. If visitors

select this particular site from a choice set of other alternative sites, then this behavior can be modeled by the RUM.

Fisheries

The Marine Park is a multi-use site. The fisheries officer in charge of this area has indicated that catch- effort information is collected on a daily basis. Therefore, change in productivity method could be used to value the fish production in the study area.

Other tourist activities

The surrounding area provides opportunities for nature based tourism. One important location is the sulphur springs. How much of nature tourism occurs within the study site and the patterns of use is not very clear at this time. However, considering the natural characteristics of this area, and the fact that the objective of the government of Dominica to promote the island as a eco-tourism destination, a contingent valuation exercise may help to determine the preservation value of the natural area surrounding the study site.

Implementation Strategy

Stage 1 The initial country visits have given the consultants a general idea of the resources and uses of each study site. One of the loose ends to be tied up is the exact boundaries of each study site. The boundaries along the coast have been agreed upon. However, the landward boundary has been only tentatively determined. Therefore, in the first stage of the study, definite boundaries for each study site will be determined. This will be done with consultation with each country team, as well as by examining maps, and other relevant information on each study site. Once this is done, all uses and resources within each study area will be finalized with the consultation of country teams.

Stage II Once clear demarcation of each study site is done, then the consultants will collect all studies, economic and otherwise, done within each study area. Further, studies done on other parts of each island will also be examined to gather background information.

Stage III The next step is to collect all available data within each study site. Country team of each island has indicated that

some data and information are available on different uses and resources. Consultants will also, look for data in regional institutions such as CTO, CDB, OAS, etc. Once data from all possible sources have been collected, consultants will review them and determine the additional data requirements for each country.

Stage IV Once the additional data requirements are determined, the consultants will decide how to collect these data. It is very likely surveys will have to be conducted to satisfy the additional data requirement. At this stage the consultants will design and implement survey instruments with the cooperation of each country team.

Stage V Data tabulation and analysis is expected to start at this stage. By this time, it is expected that all fieldwork would have been done. In all previous stages, consultants will keep each country team informed about the progress. Therefore, when data analysis is begun, country teams will have been satisfied with the quality of data as well as the valuation methods that will be used. This will ensure that objectives of the project component and the expectations of team members of each country will not be compromised. Stage VI Consultants will start producing draft outputs for each country and will make them available for review. Team members will be expected to review draft outputs and get back to the consultants in a timely manner. This will facilitate revisions and keep improving the quality of the outputs. At this stage, the cooperation of team members will be crucial to guarantee that the final document meet or exceed the expectations of each country team.

Time line

The pilot stages is expected to run from March 2000 – March 2001. Two data collection cycles will be implemented to capture any seasonal variability in terms of use values or resource abundance.

Capacity- building

Training is seen as a crucial part of the overall process and will be conducted as part of the country visits, which are anticipated to occur during the pilot stage. Additionally sub-regional and regional workshops will be organized to share developments and

perspectives between participating countries as well as with all other CPACC countries.

Figure 1. Map of the Caribbean Region