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# Social and Economic Analysis for Assessing Viability of Establishing Marine Management Areas: The Barbados Case Study

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Fourth Caribbean Environmental Forum and Exhibition  
St. George's University, Grenada  
23-27 June 2008

# Outline

The objective of this study was to examine the economic and financial viability of establishing Marine Management Area (MMAs) in Barbados, as part of an integrated participatory approach to define a suitable institutional setting and business plan.

- Introduction
- Method
- The proposed business model
- Financial viability
- Economic viability
- Conclusions

# Introduction

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# Introduction

Effective conservation is required to continue to sustain livelihoods that depend on marine areas.

The threats to these values include:

- degradation of reefs due to pollution and climate change;
- user conflicts and risks to human safety due to congestion and incompatible uses within marine areas; and
- environmental degradation due to development and crowding pressures on popular tourism sites.

# Introduction

- The challenge is to move from an open access regime to a common property management regime.
- Key requirements for success will be:
  1. defining property rights; and
  2. developing appropriate management funding mechanisms.

# Introduction

The formal establishment of MMAs and supporting institutions has been proposed to better enable management to:

- improve the quality of user experiences;
- protect marine values; and
- improve enforcement of current marine legislation.

This paper reports the results of the economic and financial viability analysis in support of the development of a business plan for MMAs.

# Method

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# Method

## *Stakeholder interviews and roundtable sessions*

- 150 individuals were contacted for interviews and focus group sessions from a number of government departments and agencies, NGOs, community-based groups and representatives of the private sector.
- Three roundtable sessions held, focusing on exploring the scenarios for the institutional and organisational framework.

# Method

## *Questionnaire*

- Specific structured questions to stakeholders on the preferred approach with respect to the institutional setting, organizational framework and business model for marine management.
- 71 questionnaires were distributed, and 27 completed and returned (for a 38% return rate).
- Responses statistically analysed with respect to the level of agreement with the statements put forward in the questionnaire.

# Method

## *Beach Surveys*

- Surveys recorded the number of individuals within approximately a 500m distance of the observation point that were involved in specific activities (e.g., swimming, snorkelling, scuba diving, water skiing, jet ski use, parasailing, walking).
- Contributed to an understanding of the relative proportion of various users at various sites, use patterns and commercial activities carried out on the beaches.

# Method

## *Water sport operator information request*

- Information request was distributed to all scuba diving and coastal cruise operators, and a number of glass bottom boat, water ski and jet ski operators.
- Asked for specific information on service packages offered, prices, total numbers of customers, operating costs, and capital.
- Meetings with individual operators or groups of operators were held to explain the purpose of the request and solicit the necessary information.

# Method

## *Secondary data collection*

- Search and review of available documents (including government publications and databases), research reports and published literature.
- Included the identification of information on tourism, water sports, fisheries, and wider benefits to the economy of Barbados.

# Method

## *Economic and Financial Analysis*

- Financial viability is the ability of the project to generate sufficient funds to meet all of its resourcing and financing obligations.
- Economic viability is determined by whether or not the net social benefits of the project are sufficiently high (positive) to deem the investment in the project to be the best use of financial resources.
- Economic analysis of the initiative was required because the initiative involves direct government investment and the use of a public resource.

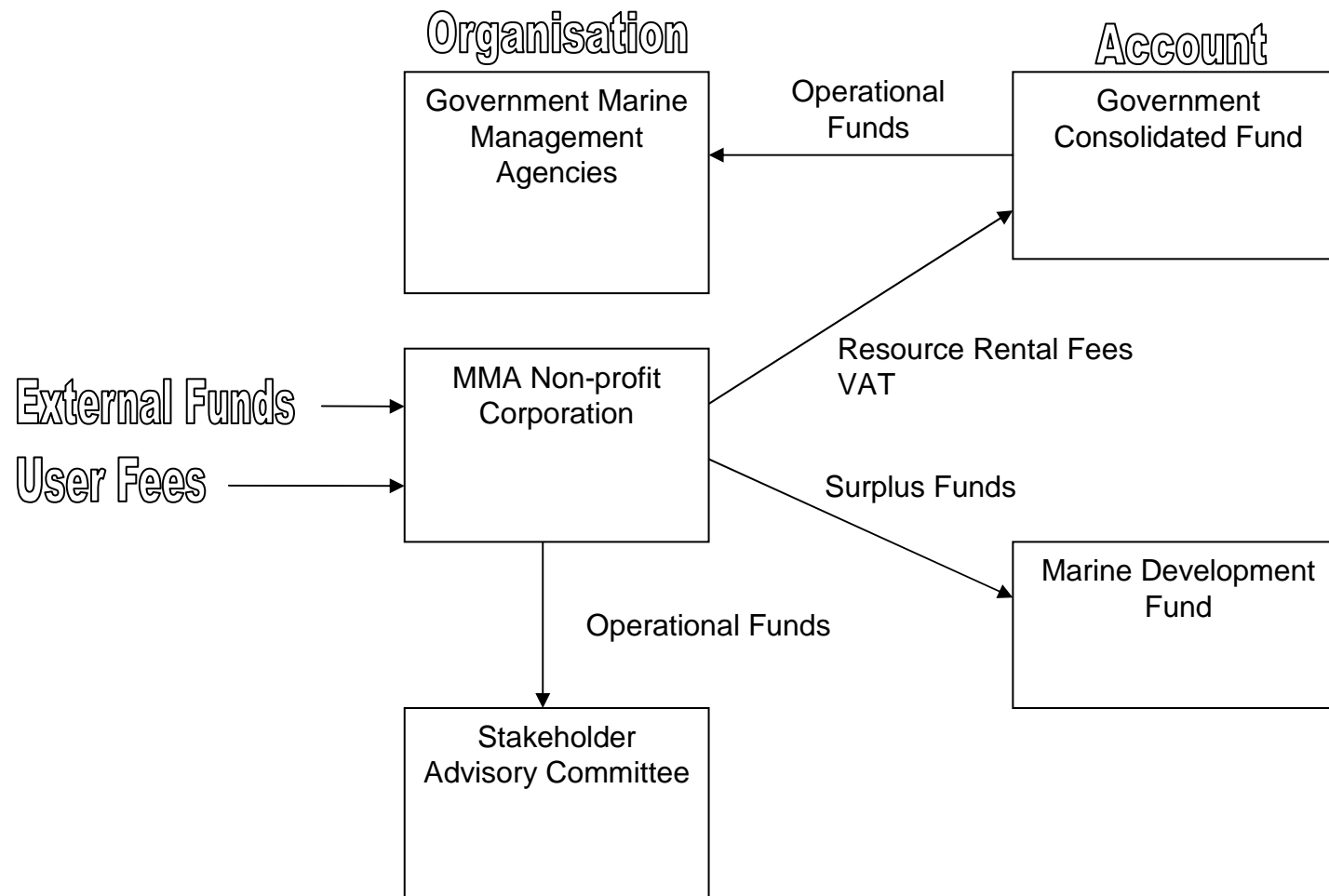
# The proposed business model

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# The proposed business model

- A number of options for the institutional setting to operate the MMAs were identified and discussed with stakeholders.
- Assumed a co-management structure between government, the private sector, community groups and NGOs.
- A hypothetical organizational structure and set of economic instruments was proposed with primary management the responsibility of a stakeholder-managed NGO, formally operating as a non-profit corporation.

# The proposed business model



# The proposed business model

User fees could include scuba tags, voluntary snorkel tags, mooring fees and operator permits:

- Analysis assumed that all scuba divers would be required to purchase a tag to dive Barbados waters through a commercial operator – US\$5, \$10 or \$15.
- Purchase of a water sports tag could be required for clients of commercial operators who are in excursions which include the MMAs, or it could be made voluntary – US\$5, with 60%, 75% or 90% contribution rate.

# The proposed business model

User fees could include scuba tags, voluntary snorkel tags, mooring fees and operator permits:

- Proposed that operator licenses required for dive boats, coastal cruise vessels, glass bottom boats, water skiing and parasailing boats, and jet skis within the MMAs – from US\$100 to \$400 per vessel.
- Primary purpose of the vessel license fee is not the collection of revenues, but the establishment of licensed property rights to the resource.

# Financial viability

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# Financial viability

- Overall, the initiative is predicted to be financially viable.
- The operating surplus will be modest at first, but is expected to increase to over US\$400,000 by year ten.
- For the Government of Barbados, the amount directed to the Consolidated Fund, less the required loan repayment, is modest.
- The revenues to government are projected to be sufficient to pay off the start-up capital loan.

# Financial viability

Year	MMA Non-profit Corporation Revenues and Costs (2005 US\$)			
	Revenues	Less Operating Costs	Less VAT and Resource Rental to Government	Surplus
1	\$1,723,466	\$1,484,633	\$172,347	\$66,486
2	\$1,762,398	\$1,484,633	\$176,240	\$101,525
3	\$1,802,275	\$1,484,633	\$180,228	\$137,414
4	\$1,843,096	\$1,484,633	\$184,310	\$174,153
5	\$1,884,906	\$1,484,633	\$188,491	\$211,782
6	\$1,927,721	\$1,484,633	\$192,772	\$250,316
7	\$1,971,561	\$1,484,633	\$197,156	\$289,772
8	\$2,016,465	\$1,484,633	\$201,647	\$330,185
9	\$2,062,441	\$1,484,633	\$206,244	\$371,564
10	\$2,109,515	\$1,484,633	\$210,952	\$413,930

# Economic viability

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# Economic viability

Two approaches to estimate economic viability:

1. Estimate of the net economic benefits at risk of being lost.
  - The *status quo* scenario from which to compare is difficult to define because many of the specific cause-effect relationships are not known with reasonable certainty.
  - The NPV of the program is estimated between US\$376.0 million (10% discount rate) and US\$462.2 million (5% discount rate).

# Economic viability

Two approaches to estimate economic viability:

2. More conservatively, assume without the proposed investments in the MMAs, the current values will be able to be maintained but will not increase over the next ten year period.
  - IRR of the initial capital investment of US\$1.8 million is approximately 30%.

# Conclusions

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# Conclusions

- The marine environment provides a number of important benefits to the people of Barbados and visitors alike – *e.g.*, sea bathing and snorkelling, scuba diving, various water sports, and fishing.
- The beaches and coastal areas are integral to the tourism product, and effectively managing that environment is critical to maintaining the competitive position of Barbados within the Caribbean market.

# Conclusions

- This study used a participatory and intense rapid assessment method from which an institutional setting and business model for the establishment of MMAs could be defined.
- The financial and economic analysis for the case study in Barbados indicates that the defined initiative would be viable.
- The method could be similarly applied in other jurisdictions throughout the Caribbean.

# Acknowledgements

This paper was the result of a research project conducted for the Natural Heritage Department, Ministry of Energy and the Environment, Government of Barbados.

The authors would like to acknowledge the assistance and advice provided by Mr. Steve Devonish, Dr. Leo Brewster and Mr. John Nichols (Government of Barbados), as well as individuals that were part of the larger research project, including Mr. Jagdev Bilkhu, Dr. Gordon Murphy, Ms. Natalie Hutchinson, Mr. Leslie Walling, Dr. Janice Cumberbatch, Ms. Shawn Carter, and Ms. Marcia Oxley.

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