

**Capturing ecotourism benefit values in
Riverine and Marine Parks:
Montego Bay Marine Park, Jamaica, and
the Canaima National Park in Venezuela.
Richard Huber Organization of American States**



Most efficient way to raise money to fix environmental deterioration and sustainably manage natural resource

- Relationship made between ecosystems and the value of economic goods and services
- Who should rightfully retain rents or net benefit values earned through the use of the environment?
- Hotel room view – proximity to noisy highway
- Tour operators “feel” the true costs associated with using the protected area.

Coral reef ecology

- Decline from 50% coral cover in 1970's to 5% in 1990s
- Hughes -- Overfishing, hurricane damage and disease -- Hurricane Allen (1980)
- La Point -- Phase shift from coral to macroalgal dominance -- Nitrogen and Phosphorous highest concentrations worldwide
- TNC - REA -- nutrient loading, changes in current circulation, and mechanical damage
- Pigott and Land 1986 - submarine groundwater discharges
- Large scale non-point source nutrient loading associated with deforestation sewage, ag and ind developments.

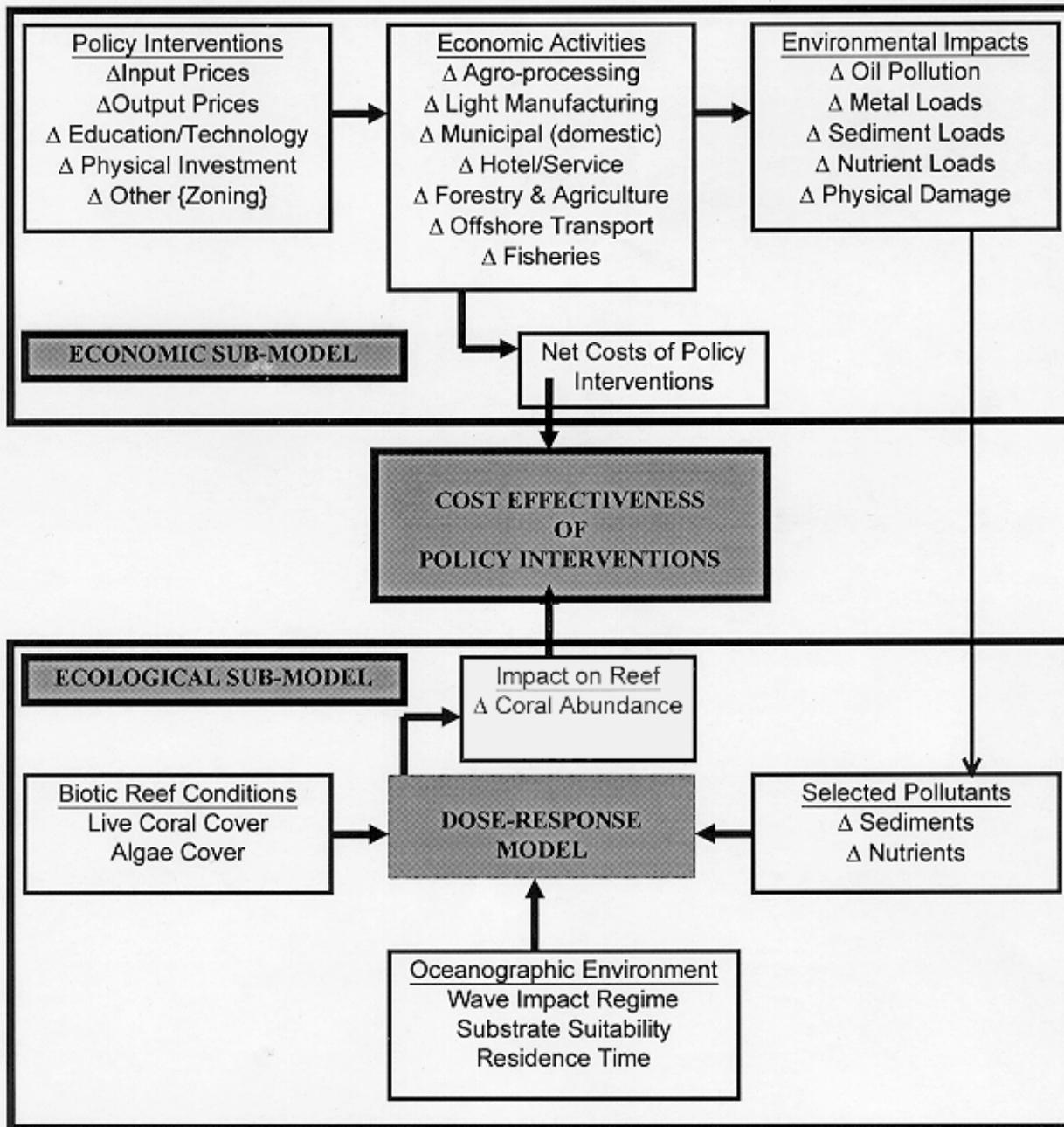
What Triggers ICZM program?

- Decentralization and local autonomy Debt-Swap
- Desire to increase economic benefits flowing from use of the Coastal Zone
- Serious resource depletion problems and damage to productive coastal areas increasing pollution of marine environment and loss of life and property
- Perceived economic opportunities associated with new forms of development
- conflicts of interest among user groups

Integrating Scientific Data & Expert Opinion to improve coral reef health & How to generate revenue

What is the most cost effective means for achieving a given level of coral reef quality as expressed by percent coral cover?





A conventional framework for economic optimization analysis

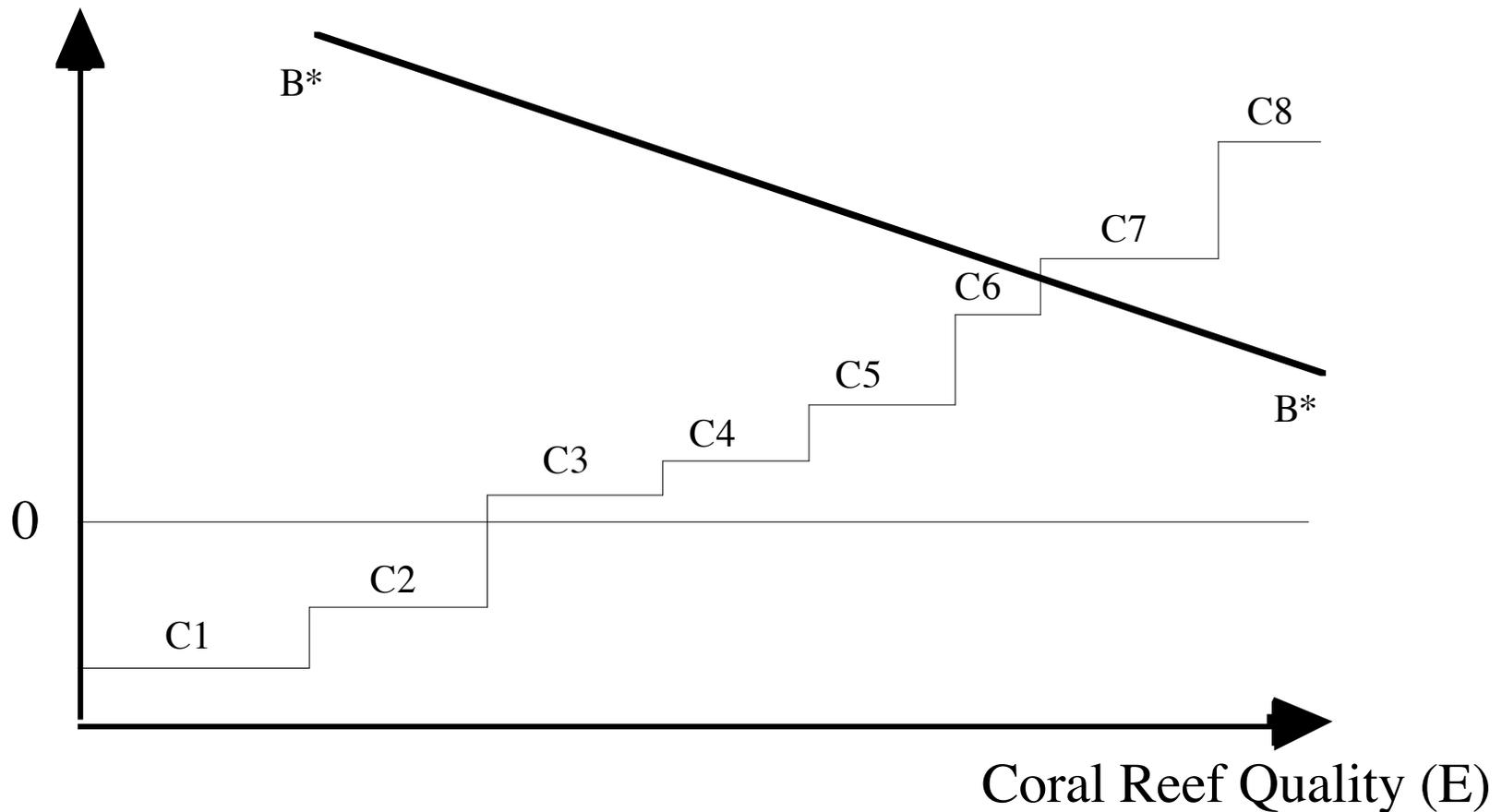
C_s = Measure of cost-effectiveness in reducing effect/impact indicator "E" by intervention 's'

E = Quality indicator

s = policy intervention or investment

$B^* - B^*$ = Marginal environmental benefits associated with reducing quality indicator E

C (\$/unit)



The Economics

Valuation Methods

- Cunard Liner hit a reef in Gulf of Aquaba
Egyptians sought \$23m or \$10k/m²
- Direct use valuation - estimating the lost productivity or value in the absence of proper protection or conservation
- Contingent valuation - estimating the benefits derived from “public goods”

Total Economic Value (TEV)

Use values

Non-use values

Direct use values

Indirect use values

Bequest, option and existence value

Outputs/services that can be consumed directly

Functional benefits enjoyed indirectly

Functions that value either the future use, expected new information and based on moral convictions

*Extractive (capture fisheries, mariculture, aquarium trade, pharmaceutical)

*Biological support to sea bird, turtle, fisheries
*Physical protection to other coastal

* Endangered and charismatic species

* Threatened reef habitats

*Non-extractive (tourism/recreation, research/education, aesthetic)

ecosystems, coastline, navigation)
*Global life-support in terms of carbon storage

* Aesthetic reefscapes

* 'Way of life' linked to traditional

The Economics

Creating the Benefits Function

Valuation methods and site-specific economic survey data to create the benefits function - to be used as educational and planning tool to assist policymakers

- Fishery NPV -- \$1.31 million
- Tourism and Recreation NPV -- \$315 m
- Coastal Protection Function -- \$65 million

Policy Instruments Classified by Flexibility in Individual Decisionmaking

<----Minimum Flexibility----> <----Moderate Flexibility----> <----Maximum Flexibility---->
 <----Maximum Government Involvement----> <----Increased Private Initiative---->
 <Control Oriented> <-----Market-Oriented-----> <----Litigation Oriented---->

Regulations and Sanctions	Charges, Taxes, and Fees	Market Creation	Final Demand Intervention	Liability Legislation
General Examples				
Government restricts nature and amount of pollution resource use for individual polluters or resource users	Government charges fee to individual polluters based on amount of pollution or resource use.	Government establishes system of tradable permits for pollution or resource use and then monitors compliance	Government supports labelling or performance rating program that requires disclosure of environmental information.	Polluter or resource user is required by law to pay any damages to those affected through court system.
Specific Examples				
<ul style="list-style-type: none"> • Pollution Standards • Land use restrictions • Construction impact regulations • Fines, Bans, and Quotas 	<ul style="list-style-type: none"> • Greening of conventional taxes • Taxes affecting transportation choice • User charges for water • Source-based effluent charges 	<ul style="list-style-type: none"> • Deposit-refund systems for solid and hazardous wastes • Tradable permits for water and air pollution emissions 	<ul style="list-style-type: none"> • Consumer Product Labeling • Disclosure legislation requiring manufacturers to publish waste information • Blacklist of polluters 	<ul style="list-style-type: none"> • Damages Compensation • Liability neglecting firm's manager environmental authorities

Source: Huber et al. 1999

Global Optimization using combined cost and benefit functions

- Optimal improvement of coral reef abundance of 13% requiring net expenditures of \$27m
- Interventions -- installation of sediment trap, waste aeration, sewage outfall, improved SWM collection, and implementation of economic incentives to improve waste management by the hotel industry.
- Financing -- Voluntary \$1/Night Hotel Tax earmarked hotel room fee of US\$1 per bed-night, to lead to an annual revenue of approximately US\$1.5 million.

- Contingent valuation method (CMV) trust fund managed the Park
- Payment for a 25% increase in coral reef cover.
- Willingness to pay (WTP) was estimated as US\$3.24 per person in Jamaica
- Estimated WTP of approximately US\$20 million in Montego Bay (Spash et al. 2000).
- Jamaicans had a mean expected WTP of US\$3.75, while typical tourists had a mean expected WTP of US\$2.73.
- 150,000 stopover tourists a year visiting Montego Bay, consumer surplus (WTP) total approximately US\$410,000
- A NPV of US\$1,708,000 (10% discount rate) over the five year stream of the payment scenario.

Establishment of a Public-private Partnership Matching Fund

Goal: Community-Based Restoration Program to restore important habitat and foster long-term environmental stewardship among citizens

Objective: Restore Mobay's most productive ecosystems mangroves, estuaries, coral reefs for on-the-ground habitat restoration projects through establishment of a dive and yacht mooring fee.

On-the-ground restoration projects: fish/lobster trap education and redesign; estuary and coral reef restoration, cleaning of storm water channels, a pilot volunteer stewardship and monitoring program, native plant propagation and planting, exotic plant removal, bulkhead removal, marsh creation, re-vegetation and reconstruction of barrier islands, streamside forest buffers, shoreline restoration, creek and storm water clean-ups, informational signage, and water quality monitoring.

Canaima National Park

Venezuela

- Larger than Belgium
- Tepui summits, steep flat-topped table mountains
- 100k visits/year
- 17.7 million kW/yr
valued at 1.2k/kW



Canaima National Park

Venezuela

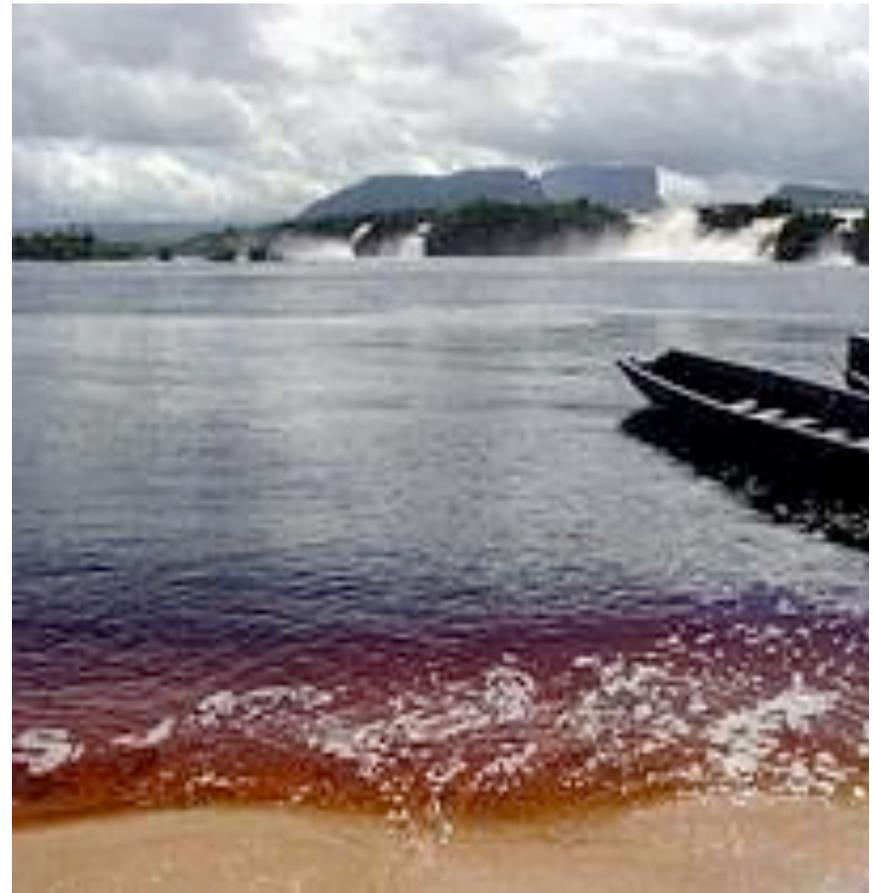
- if unchecked deforestation occurred in the fragile Caroní basin, the power capacity of the hydroelectric system would be reduced between 10% and 15% when the project useful life was half over.



Canaima National Park

Venezuela

- Charge US\$10 for international visitors and US\$4 for Venezuelan residents
- US\$1 per overnight stay in the park, to lead to an annual revenue of approximately US\$5.0 million.



The End

