



Policy Perspectives

Perspectives on resource management and environmental policy from the Centre for Resource Management and Environmental Studies (CERMES), Faculty of Pure and Applied Sciences, University of the West Indies, Cave Hill Campus, Barbados

Economic value of goods and services from marine ecosystems in the Wider Caribbean: State of knowledge and next steps

Key points for policy-makers

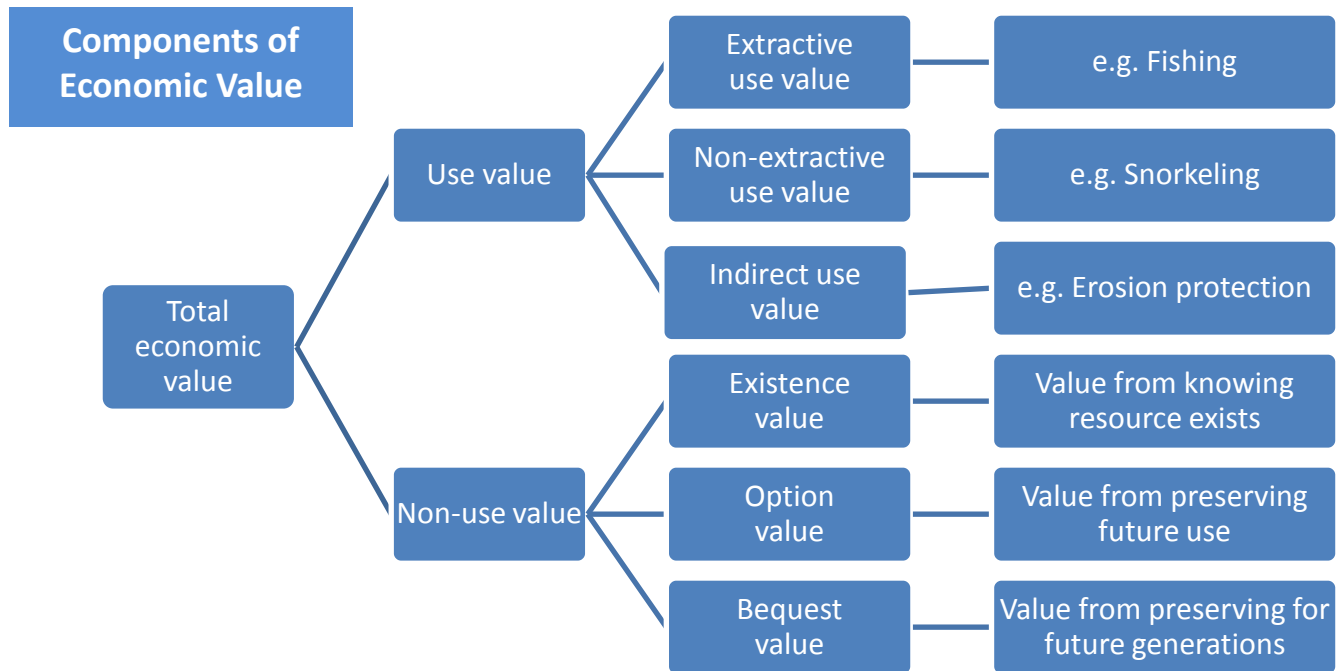
- Marine ecosystems in the Wider Caribbean Region (WCR) supply many goods and services that are critical for human well-being.
 - The entire market economy depends on the existence of natural systems, yet policy makers often ignore the value of environmental goods and services and their economic and social benefits.
 - Valuation expresses the benefits derived from ecosystem goods and services in easily understood, comparable monetary units.
 - Valuation will be most important in highly resource-dependent regions such as the Caribbean.
 - Marine resource valuation efforts in the Caribbean have been piecemeal, uncoordinated and only loosely tied to policy objectives.
 - Most valuation studies have focused on benefits associated with provisioning and cultural ecosystem services; relatively few address supportive and regulating services.
 - Marine resource valuation in the Caribbean has focused on obvious and measurable benefits: coastal and reef ecosystems; marine protected areas, recreation and tourism.
 - The economic value of Caribbean pelagic and continental shelf ecosystems is largely unmeasured.
 - An agenda is urgently needed for prioritization and coordination of valuation efforts, and their incorporation into the policy process. See suggested agenda on page 4
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- Understanding, measuring and monetizing environmental contributions to human well-being is the domain of *economic valuation*.
 - Without valuation, conservation efforts may be viewed as “too costly” relative to activities that degrade ecosystems but provide immediate and obvious financial rewards.
 - Economic valuation can support decision-making by agencies that manage natural systems.
 - Valuation studies can inform the policy process with full information on economic dependence on ecosystems, the real costs of ecosystem degradation and the benefits of ecosystem conservation and restoration.
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Explanation to support the key points

Economic value

Economic value is what a particular good or service is worth to people, in terms of the contribution of the good or service to well-being. “Nonmarket” goods and services such as clean water and diverse ecosystems

provide real economic value. Economic benefits are often derived without direct use or interaction with the environment.



The importance of economic valuation

Economic valuation is the process of monetizing the benefits or costs associated with a good or service. Anytime there is a potential for *tradeoff* between market values and non-market values, economic valuation can facilitate this comparison by expressing both in monetary units.

Valuation allows a comparison of two alternative states of the world (e.g. with policy and without policy). Benefits (outcomes) from ecosystem services (processes and functions) provide the basis of economic valuation studies. These benefits can be compared to gains from activities that may harm the natural environment, and represent the economic value that is at risk from resource degradation.

Valuation can also be used to understand the economic gains that can be realized from conservation or prevention of environmental damage.

Valuation is a critical input into resource management decisions.

Example

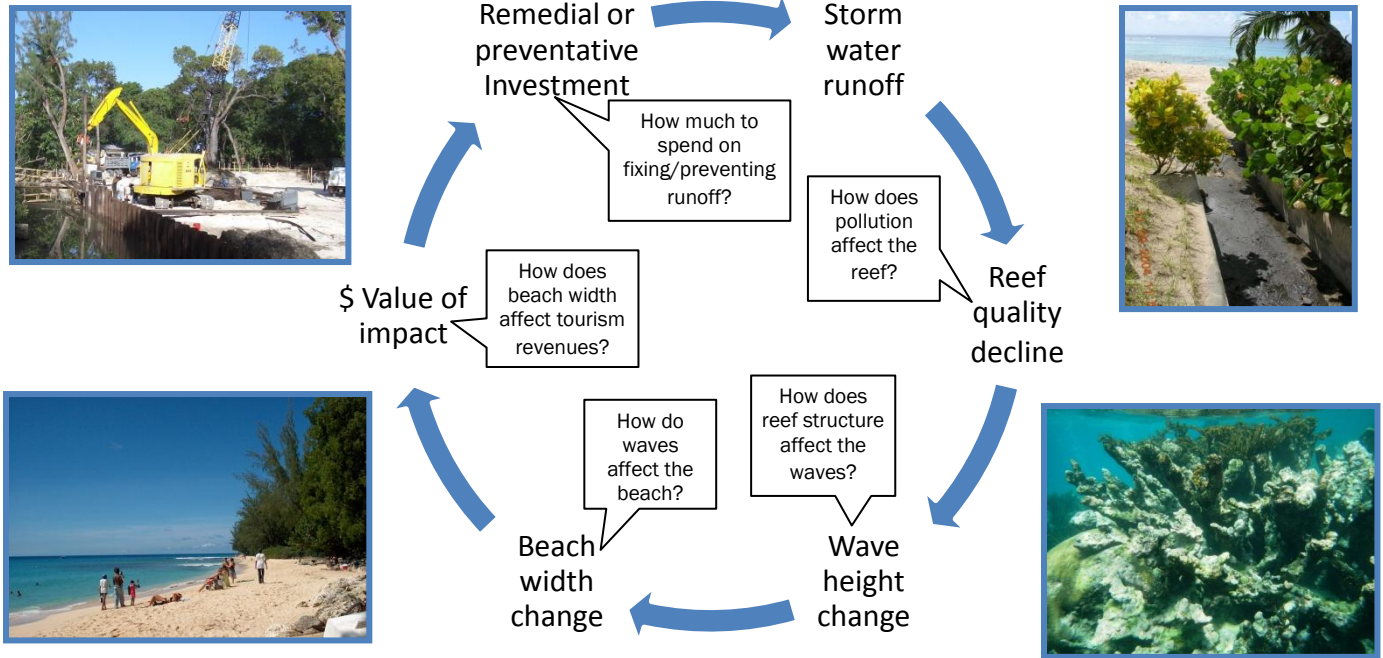
Degradation of coral reef ecosystems from runoff

Contaminated or heavily sedimented runoff impairs reef processes and functions, inhibiting biological production, biochemical processing, waste assimilation and maintenance of biological diversity.

The benefits of food, recreation, aesthetics and coastal protection are therefore diminished.

Without an understanding of the economic value of these benefits, reef processes and functions may be undervalued relative to activities that generate market values but damage reef health.

An understanding of the economic value of these benefits will allow policy makers to make proper decisions regarding investment in prevention



Valuation in the Wider Caribbean Region

To date, marine resource valuation in the Wider Caribbean has focused on obvious and measurable benefits in a few select countries. These are mainly the benefits from coastal and reef ecosystems as associated with marine protected areas, recreation and tourism. The economic value associated with most natural resources in the Wider Caribbean remains unknown.

Furthermore, valuation efforts in the region have been uncoordinated, using a variety of approaches and perspectives. Finally, they have been largely disconnected from policy objectives. This has resulted in

estimates that are (1) incomparable across studies, (2) difficult to incorporate into management decisions and (3) contribute little to informing the region’s decision-makers in making policy level decisions.

Among nations in the Wider Caribbean Region, Jamaica has received the most attention by resource economists. Bonaire and Curacao have also been the setting for numerous valuation studies, the majority of which are in the context of reefs within MPAs. Recently, Barbados, Belize, Costa Rica, St. Lucia and Tobago have received some limited attention by resource economists

State of knowledge for marine resource values in the Wider Caribbean

Benefits		State of knowledge about value		
		Reef Ecosystem	Pelagic Ecosystem	Shelf Ecosystem
Provisioning Services	Food	√√√	√√√	√
	Medicine	√√	?	?
Regulating Services	Climate regulation	?	?	?
	Hazard protection	√√√	?	?
Cultural Services	Recreation	√√√	√√	?
	Research/Education	√	?	?
	Aesthetics	√	?	?
	Culture	?	?	?
	Non-use values	√	?	?

We need an agenda for valuation in the WCR

The economic value of natural resources in the Caribbean region remains largely unknown.

Current valuation efforts have been piecemeal and largely unconnected to policy needs.

Policy makers should promote a decision-making environment supported by an appropriate science policy interface that will remedy the dearth of valuation knowledge and the uncoordinated approach to valuation. Policy makers should:

- Promote regional coordinating processes for valuation; and
- Identify priority needs for valuation.

Broad priority areas for future valuation work include:

- *Economic* benefits derived from the pelagic and continental shelf ecosystems,
- Economic value of the cultural and food security benefits of small-scale fisheries including,
 - effects of overfishing on national economies, employment, and food security and
 - Economic practicality of fisheries subsidies.
- Estimates of non-use values for marine ecosystem goods and services in the WCR
- Economic contribution of Caribbean reefs and other coastal ecosystems to climate change mitigation and adaptation.

Economic valuation of marine ecosystem goods and services forms an essential part of ecosystem-based management by:

- Informing us of the gains to be obtained from improved marine resource management;
- Indicating what will be lost through inaction; and
- Indicating the true costs of development options.

References and resources

Abaza and Rietbergen-McCracken, 1998. "Environmental Valuation: A Worldwide Compendium of Case Studies" United Nations Environment Programme, Environmental Economics Series No. 26.

Bockstael, N. E., et al. "On measuring economic values for nature." *Environmental Science and Technology* 34: 1384-1389.

Dixon, J. A., 1998. "Economic values of coral reef: what are the issues?" in Hatzilios, M. E., et al. (eds.) *Coral reefs: challenges and opportunities for sustainable management*. World Bank, Washington, pp. 157–162.

[EPA] United States Environmental Protection Agency Scientific Advisory Board, 2009. "Valuing the Protection of Ecological Systems and Services: A Report of the EPA Science Advisory Board". United States Environmental Protection Agency, Washington D.C.

Farber, S., et al., 2006. *Linking Ecology and Economics for Ecosystem Management*. Bioscience, 56(2), 121.

[NRC] National Research Council, 2011. "Approaches for Ecosystem Services Valuation for the Gulf of Mexico After the Deepwater Horizon Oil Spill: Interim Report", Committee on the Effects of the Deepwater Horizon Mississippi Canyon-252 Oil Spill on Ecosystem Services in the Gulf of Mexico. National Academy Press, Washington, D.C.

Schuhmann, P., et al. 2011. "The Economic Value of Marine Biodiversity to Recreational SCUBA Divers in Barbados", University of North Carolina Wilmington.

Schuhmann, P. 2012. *The Valuation of Marine Ecosystem Goods and Services in the Caribbean: a review and framework for future work*. Centre for Resource Management and Environmental Studies (CERMES), University of the West Indies, Cave Hill Campus, Barbados. 56 p.

Turner, R.K., et al, 2003. "Valuing nature: lessons learned and future research directions". *Ecological Economics* 46: 493–510.

The Centre for Resource Management and Environmental Studies (CERMES) has initiated this occasional outreach publication, *Policy Perspectives*, to share some of the lessons learnt from ongoing research.

The information for this *Policy Perspective* was provided by Dr Peter Schumann, Department of Economics and Finance, The University of North Carolina at Wilmington.

The information was originally compiled for the Caribbean Large Marine Ecosystem (CLME) Project

The information in these policy briefs is for use by policy-makers and their advisers to strengthen the linkages between research outputs and policy-making in the Caribbean.