

SMART GROWTH AND RESILIENCE: LESSONS FROM COASTAL COMMUNITIES IN THE AMERICAS

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Abstract: *As coastal communities work towards greater resilience from both catastrophic and longer-term environmental impacts due to mismanagement, increased consciousness on the part of policy makers and stakeholders is beginning to create new economic opportunities that include improved management of the very basis for their sustainability: reef and beach rehabilitation and stabilization, improved co-management of near-shore protected areas, and new forms of development in the coastal zone. Specific actions addressing waste management (reduce, reuse, recycle, biogas), green hotels, aquaponics and hydroponics, renewable energy and efficiency, and habitat restoration are among those that offer the most immediate return on investment, particularly in terms of the long-term economic sustainability of vulnerable coastal settlements. The Organization of American States (OAS) Department of Sustainable Development (DSD), in collaboration with OAS Member States completed 25 small grants as part of the Reef Fix: Ecosystem Services Valuation Project for the Caribbean¹. The grants targeted interventions with measureable near-term economic impacts, particularly those that are able to be scaled-up and replicated in surrounding communities.*

Key words: Coral Reefs, Coastal Zone Management.

Introduction

With major back-to-back El Nino related global coral bleaching events becoming climate change visual indicators, there is renewed interest in community-based marine management. Likewise, communities are increasingly appreciating that marine ecosystem, such as mangroves, provide the benefits of environmental goods and services, from carbon storage and storm protection, to food and materials for local communities. Exploring management options that maintain resilience and enhance the delivery of benefits and services across multiple scales has been the objective a small-grants program with OAS Member States called Reef Fix that has enhanced livelihoods through stakeholder involvement and improved decision making that contributes to socio-ecological resilience in marine environments.

Background

Oceans cover almost three quarters of the Earth's surface, account for over 97 percent of the world's water, and harbor an estimated 1 to 2 million species (Mora et al., 2011, www.coml.org/about). At most, only a quarter of these species have even been described,

¹ Additional information available at: <http://www.oas.org/en/sedi/dsd/biodiversity/ReefFix/>

let alone investigated as to their ecological niche and societal applications (Appellants et al., 2012; Bouchet, 2012). Conservation and management of marine and coastal resources has become an urgent concern as the human induced impacts of overfishing, global warming, pollution, invasive species and unplanned near-shore development increasingly threaten the health of ecosystems and the essential economic and social benefits they provide to people around the world. The 2005 Millennium Ecosystem Assessment charges that 30 to 50 percent of ecosystems such as mangroves, coral reefs, wetlands and near shore forests have disappeared or been degraded to the point where any net gain for nearby communities has been severely compromised (See Box 1.) The high seas also manifest serious stress, but are beyond the scope of this paper.

BOX 1: Ecosystems and the Goods and Services they provide are on the decline:

Of 24 ecosystem services reviewed, only 4 services i.e., crop, livestock, aquaculture production and carbon sequestration have improved. Two other services, fisheries and freshwater, have been impacted to a degree that their sustainability is in question; the remaining 18 services have been degraded or declined where optimal levels of sustainable outputs are not being achieved. Evidence regarding rates of loss or degradation of ecosystems and ecosystem services, while aggregated, provides a relative scale of how serious the overall situation is globally:

- 35 percent of Mangroves
- 30 percent of Coral Reefs
- 50 percent of Wetlands
- 40 percent of near-shore Global Forests have disappeared or degraded
- About 60 percent of the world's ecosystem services are degraded

Source: Ninan, K.N., 2005

The years 1997, 1998, 2005, and 2015 were particularly devastating for the Caribbean reef systems. Corals can survive many intrusions, including a bleaching event if it is not too severe. However, if the algae loss, pollution or increased water temperatures are prolonged, coral eventually dies. In 2005 for example, the U.S. lost half of its coral reefs in the Caribbean in one year from an extended bleaching event, accompanied by warm water periods and excessive flushing of agro-chemicals caused by several storm events.

BOX 2: Two urgent actions for Caribbean Sea Conservation:

1. **Highlight Integrated Coastal Zone Management (ICZM)** tools that work with SIDS (small island developing states) to complete stakeholder analysis and socio-economic valuation to improve oversight of marine resources. The objective is to meet commitments made by SIDS to increase protected area coverage through effective management. Lessons learned and best practices from **Caribbean Challenge 2020** and **Reef Fix** projects offer insights into linkages where OAS Member States implement on-the-ground conservation measures to (i) have 20 percent of marine areas sustainably managed by 2020, (ii) utilize ecosystem goods and services valuation methodologies (iii) implement cost effective interventions to improve marine ecosystem health, and (iv) design revenue-raising techniques of cost recovery and user pays/polluter pays principles.
2. **Protect Ocean Life on the High Seas** The UN General Assembly formally committed to negotiate an international agreement to maintain healthy ocean ecosystems and the species within them. A high seas treaty also would chart a course toward creating a network of marine protected areas in the open ocean, ensuring that special places on the high seas receive the protection they need to remain vibrant, diverse ecosystems while providing the economic benefits that coastal communities require.

The Organization of American States Response: The Reef Fix Grants

The OAS Grants program demonstrated that governments and NGOs collaborating to better manage valuable national resources mutually benefit from ecosystems services valuation data, bio-physical information, and management recommendations. Overall, the OAS Grants program indicated that over the last decade, coastal residents have endured the repercussions of increasing pollution of the coast, increasing loss of life and property and, conflicts of interests among user groups.

Noting this, stakeholders agreed to share a common vision:

- To increase the economic benefits flowing from the sustainable use of coastal resources; and,
- Catalyze new forms of development in coastal zones.

Potential solutions include:

- Co-management and participatory approaches to planning, involving NGOs and community-based advocacy groups;
- Strong institutions with accepted mechanisms for cross-sectoral cooperation;
- Enforcement of and compliance with integrated policies through the use of positive reinforcement and incentives;
- Establishment of recognized rules and sanctions accepted by the interest groups;
- Valuation of socio-economic benefits demonstrating the benefits of conservation as opposed to unplanned development;
- Recovery, Restoration and Resilience projects supported by improved recognition and measurement of socio-economic benefits from ecosystems, (and;
- Public-private partnerships that maintain a seamless flow of information.

The process of closer stakeholder collaboration was assisted by the **Corporate Compact** (signed by 15 companies) which promoted **Private Public Partnerships and the Caribbean Challenge Initiative (CCI)** to accelerate marine conservation action in the Caribbean² Six specific actions were endorsed by the participating countries including marine protected areas, restoration investments, sustainable fisheries, sustainable tourism, ecosystem-based adaptation to climate change, and marine pollution.

Valuation of Marine Ecosystems

What is the full suite of ecosystem services of a coral reef worth? In Montego Bay, Jamaica more than 1,000 tourists and local people participated in a contingent valuation survey. The objective was to answer a key question: "How much would you be willing to pay to protect the coral reef?" This and other valuation techniques indicated that the total benefit attributable to the reef in its current condition is approximately US\$470 million, and that every 1 percent change in abundance is likely to generate a marginal benefit of approximately US\$10 million. (Gustavson, K et al, 2000). Most of the value is attributable to direct tourism revenues, directly dependent on healthy coral reefs. Coastal protection and non-use benefits (such as spiritual or existence value) are also important in terms of planning but are harder to quantify. When a cruise ship hit a reef in the Gulf of Aqaba some years ago, Egypt sought US\$10,000/ m² of damaged reef. The coral reefs of the main

²Source:http://www.caribbeanchallengeinitiative.org/images/CCI_Summit/CORPORATE_COMPACT_CCI_SUMMIT_FINAL_SIGNED_VERSION.pdf

Hawaiian Islands have an estimated worth of \$9.7 billion. (Cesar, Herman et al, 2002). These data while not comparable or in any way replicable data points, suggest that reefs are valuable real estate. But at this point, how valuable is at best a rough estimate. What would it cost to rehabilitate reefs that have become degraded? How much should we invest in reef rehabilitation? Who should pay? The simple truth is that we do not have many answers to these straightforward, yet complex questions.

Reef Fix: An Integrated Coastal Zone Management (ICZM) Ecosystem Services Valuation Project

Reef Fix, financed by the Governments of Mexico, Chile and Monaco, is a 10-year Integrated Coastal Zone Management (ICZM) country-driven program implemented in collaboration with SIDS (small island developing states) to complete stakeholder analysis, socio-economic valuations, and protected areas management plans. Twenty-five replicable and cost effective outputs include pilot investments and capacity building actions in: (i) ecosystem goods and services valuation methodologies (ii) cost-effective interventions to improve marine ecosystem health, and (iii) revenue raising techniques of cost recovery and user pays/polluter pays principles.

Reef Fix achievements identified by stakeholders

- Strengthened and increased participation of local communities in innovative biodiversity conservation,
- Built understanding of the importance of biodiversity conservation valuation,
- Supported civil society initiatives that added value to the work of government agencies,
- Supported a rigorous regional Caribbean-owned approach,
- Enabled local institutions to build capacity and expand influence in the Caribbean,
- Provided new information to help communities prioritize investment options (for example, sand mining vs. hotel construction vs. mangrove restoration vs. golf course development),
- Improved capacity of NGO, CSOs, including local groups to effect tangible outputs, and
- Facilitated networking and building partnerships at national and regional levels.

Overall Lessons learned to date from Reef Fix project 2012-2017

Outputs of the Reef Fix projects have assisted policymakers to better manage development options while maximizing socio-economic benefits. Misunderstandings will however occur in implementing any decision with any user group who lack trust in the equity of the management solutions proposed. In several marine parks, misunderstandings produced low levels of compliance with regulations and management directives. Reef Fix projects highlighted economic and social benefits, and thereby enhanced awareness of marine ecosystems benefits that may not have been immediately apparent to them.

1. As the principal inter-governmental body in the Americas, the OAS is ideally placed to foster the collaboration that is necessary to improve management of natural resource assets in coastal zones in the region.
2. The formation of a Project Steering Committee has great value -- As part of the OAS-DRD effort, several technical discussion panels and round tables were held with the purpose of sharing lessons learned in coastal zone management by specialized agencies and multilateral organizations.

3. Coastal zone management dialogue is transforming communities into more resilient and livable venues: making hard choices, experimenting, taking risks – and applying good governance practices at the local level.
4. Sustainable coastal communities are characterized as forward-looking, effective and inclusive supporting: urban design and land-use planning processes, protection of public spaces, affordable housing and spatial planning to promote social inclusion and infrastructure development as means to serve planned urbanization and rural-urban integration, sound finances to support provision of affordable and accessible public services and to provide social protection, policies that promote economic dynamism, and small-business formation and formal sector job creation.
5. Small Grants that emphasized social inclusion of civil society as an integral part of sustainable urbanization had high success rates as well as more replicability and sustainability.
6. OAS Member States are encountering a huge demand on the part of communities to develop functional and environmentally-friendly development plans.
7. The rapid coastal urbanization process will not be easily reversed and will require integrated policies that span issues such as population growth, food security, and citizen energy, and environmental security.
8. The most successful grants encouraged a new growth model focusing on creating networks that combine skilled laborers with universities and technical schools, while implementing improved sustainable transport, infrastructure, green building, and high-speed Internet aimed at manufacturing, innovation, technology development and advanced services.
9. There was agreement to act on a number of indicators that have reached critical thresholds, notably emissions of greenhouse gases and air pollution.
10. Identifying and sharing best practices and lessons learned from the Americas is highly cost effective and an excellent use of development funds.
11. Setting up of a formal evaluation process for each grant is key to engaging national and municipal governments, community associations and NGOs throughout the Americas.
12. The most successful projects merge the cross-cutting nature of coastal management by empowering human settlements to chart their futures.
13. Improved transportation and pedestrian safety are crucial for sustainable development.
14. A continually updated website allows for real-time dissemination of materials for each sub-project.
15. The small grants included a focus on reaching disadvantaged and/or underserved communities and promoting gender equity by allocating resources, programs, and decision making fairly and addressing any imbalances through stakeholder engagement and addressing the sustainability of basic services.
16. Virtually all coastal municipalities in the Americas are manifesting a healthy competitive attitude in reaching shared goals. Based on the leadership of elected Mayors, each city is an incubator to test the outcomes of these small grants.

Lessons learned from implementation of the Grants

Based on implementation and evaluation since 2012, the small grants demonstrate that effective and successful ICZM project execution (Scanlon, 1988) should include the following elements:

1. **Identification of problems and causes:** The identification of the underlying causes of problems and potential solutions is required to ultimately prevent or reduce problems such as littered and eroded beaches in the long term. A cleanup effort

alone is not sufficient to prevent reoccurrence. Controlling problems at the source is the most efficient and effective means to reduce cost and improve quality.

2. **Utilization of Economic valuation tools:** Evaluating the risks to critical ecosystems from anthropogenic factors, using the Habitat Risk Assessment models such as (RIOS, InVEST) can help with cost effective analysis of stressor activities. These tools can then be replicated in other locations.
3. **Striving for continuous improvement:** Environmental quality improvements are not without setbacks. One must stay focused on the goal with continuous effort and eliminate the sources of the problems that affect the reaching of your goal. Ongoing evaluation of results is required to provide data for control and improvement.
4. **Gradualism and realism:** National or regional policies should be implemented gradually through pilot projects or experimental programs. The establishment of plausible and enforceable norms, standards, and guidelines is an important starting point. Do not try to implement policies and instruments beyond the institutional means available.
5. **Institutional integration:** Intra-governmental and inter-governmental integration must be pursued to overcome barriers and to merge institutional strengths.
6. **Leadership:** The environmental management sector must lead the decision-making process by identifying stakeholders, barriers, and channels to consensus building.
7. **Participation:** Participation of stakeholders must be planned and based on information building and sharing. Avoid stalemate issues that might paralyze the process. Equity issues must be properly identified, evaluated and addressed.
8. **Market reliance:** The growing reliance on markets must be incorporated into environmental policy and incentive structures to influence behavioral changes. Avoid high transaction and collection costs.
9. **Catalyze business partnerships:** Work with the decision-makers in all sectors as those controlling the resources must be supportive of ICZM efforts.
10. **Recognize and promote excellence and good behavior:** This is more effective than handing out fines, and more constructive. More people working on a solution results in better solutions.
11. **Minimize government and maximize voluntary management and partnerships:** Governments often times rely too heavily on laws, regulations and punishment. Citizens must be involved to help set goals for excellence for society. The governance and operational processes should be continuously improved to meet changing marketplace situations and new stakeholder requirements.

Conclusion

Small grants awarded strategically can have a large impact if well designed and implemented. Reef Fix projects were measured by their ability to contribute to the sustainable development and conservation goals under each of the strategic performance indicators:

- Improved sustainable land and ecosystems management interventions that mitigate and allow adaptation to climate change.
- Enhanced livelihood opportunities for targeted communities from improved structure and function of ecosystem services.
- Reformed policy and legislation for better management of protected areas, improved management of water, land climate change mitigation.

- Monitoring and evaluation systems for improved socio-economic-environmental status e.g. access to renewable energy, or co-management of mangrove ecosystems.
- Creating permanent or self-sustaining finance mechanisms.
- Establishing a network of marine areas to meet the Caribbean 2020 commitments.

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