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SUSTAINING LIVELIHOODS FOR PEOPLE ON THE CARIBBEAN COAST

Environmental Basis for Assessing the Sustainability of Traditional NR-Based Livelihoods

By Dr Judith Gobin, Environmental Scientist

INTRODUCTION

The status of natural resource (NR)-based livelihoods in Caribbean coastal communities is affected by a combination of *external factors* (global and regional pollution and degradation, global and regional overfishing); and *internal factors* (local pollution and degradation and local overfishing). In addition, at a local and community level, destructive extractive techniques (dynamite fishing, long-lining, trawling, gillnetting with undersized meshes); and illegal (closed season) harvesting—are commonly practised.

The research on which this assessment is based was carried out in St. Lucia and Belize during 2002 and 2003. These countries, like most Caribbean territories, recognise the critical need for alternative livelihoods and/or new or improved techniques in NR use and practices. Indeed, they have already undertaken some initiatives towards management of these fragile resources.

THE ENVIRONMENTAL PERSPECTIVE

The Caribbean coastal and marine area shares common global problems:

- reduction in natural stocks from overfishing;
- pollution and contamination from anthropogenic sources; and
- stresses to NR from these negative impacts as well as from natural disasters.

In this context, the sustainability of traditional NR-based livelihoods was assessed by examining the status of the fishery (derived from coral reefs, seas and sea grass beds) for each country, and an attempt was made to determine the contribution to the said status, by the case study communities: Praslin and Anse La Raye in St Lucia; and Sarteneja and Hopkins in Belize.

MAIN DRIVERS OF NON-SUSTAINABILITY

Biologically productive coastal and marine habitats (coral reefs, mangrove wetlands, sea grass beds etc) are under increasing stress due to the cumulative effects of pollution, sedimentation, dredging and coastal reclamation. Pollution and increased oceanic temperatures have played a role in reducing some fisheries, but scientists agree that overfishing on a vast scale is the primary culprit (Pew Oceans Report, Dayton, Pauly et al. 2000). These activities can effectively cripple the productive capacity of these ecosystems.

In the Caribbean context, we must recognise that degradation and pollution arise out of various activities from municipal, industrial and tourism developments, agricultural activities (large and small businesses). In addition, natural disasters such as heavy swells, hurricanes and storms also contribute to degradation of these resources by razing reef tracts, damaging branching corals, destroying mangroves and sea grass beds.

Poverty is both a cause (one of many) and an effect of this environmental degradation, since unproductive systems hamper the possibility of a sustained livelihood for people who depend on aquatic resources. Conversely, poverty itself poses a threat to coastal resources since survival is the highest priority of the poor. While the poor coastal communities of St Lucia and Belize are contributors to this pollution and degradation of coastal resources, this problem is a national (and regional) one and needs to be addressed at both these levels. This will include addressing issues such as proper sewage disposal, solid waste disposal, reduction in effluents

KEY ISSUES ADDRESSED :

This Policy Brief looks at the policy implications of environmental factors affecting natural resource based livelihoods, based on research in St Lucia and Belize during 2002-2003. The sustainability of traditional NR-based livelihoods is assessed, and policies are suggested for sustainable alternatives.

MARINE ECOSYSTEMS & LIVELIHOODS IN STUDY COMMUNITIES

ST LUCIA

“The activities affecting St Lucian coastal resources, typical of most Caribbean islands, include overfishing and illegal fishing, tourism/infrastructural development, waste disposal, recreational use, farming, deforestation, bad agricultural practices and sand mining. Illegal (illegal mesh sizes, trammels, activities in marine reserves) and destructive (use of dynamite, trawling) practices by foreign and local vessels continue to plague the fishery resources.

Tourism infrastructural development which tends to be proximal to beaches is growing. In addition to their generated sewage and solid waste products, which enter coastal areas, destructive practices— clearing of mangroves—are often associated with such development. With many homes being non-sewered, and many sewage treatment plants not functioning, sewage pollution is a problem in St Lucia.”

Praslin:

MARINE ECOSYSTEMS	CONDITIONS	THREATS	LIVELIHOODS
Coral Reefs; Coastal/marine area	Fair	Siltation from human activities leading to eutrophication poor water quality	Fishing: 21 registered boats; 52 registered fishermen; 25 Sea Moss farmers in Praslin Bay
Sea grass beds	Good viability	Sediment from poor farm practices	Lobster, conch & sea egg harvested
Mangrove: 17.35 hectares	Good mangrove viability; Fair landscape	Siltation due to human activities, impeding circulation of fresh and salt water	Marine Reserve; organic matter for marine & coastal species; protection against erosion and pollution; Wood for charcoal, livestock fodder
Beach: 243m long, adjacent to mangrove;			Community recreation; pot and spear fishing; small craft mooring and landing
Water	Poor	Sewage from pits; solid waste	

Anse La Raye:

MARINE ECOSYSTEMS	CONDITIONS	THREATS	LIVELIHOODS
Coral reef, coastal & marine areas	Rich ecosystem: coral reef; patches of sea grass beds; Unsatisfactory coastal water quality	Extremely high levels of faecal coliform; raw sewage disposed directly into the bay and into the Anse La Raye River; Pollution, sedimentation from agricultural practices	- Fishing: reef fish, lobster & conch; coastal pelagic fish; migratory pelagics. 53 registered vessels; 100 registered fishers - Tourism: Anse La Raye waterfall; diving; weekly Fish Fry

BELIZE

“Belize’s Barrier Reef (BBR) is the largest coral reef in the Caribbean and the second longest (220 kilometres along the coast, covering 22,800 square kilometres) in the world. This diverse and well-developed reef ecosystem represents the last extensive and flourishing reef environment in the Caribbean (Wildes 1992)... The main uses of the BBR resources are its contributions to tourism (18 per cent of the GDP) and fisheries (4.5 per cent of the GDP)... Of Belize’s 2.4 million hectares of territorial marine area, 6.9 per cent has protection status. Of this, less than 10 per cent is excluded from any extractive use (Programme for Belize Document 2001).”

Sarteneja and Hopkins (Shared access to extensive Belize Barrier Reef System):

MARINE ECOSYSTEMS	CONDITION	THREATS	LIVELIHOODS
Coral reef, coastal & marine areas	Rich ecosystem; Marine Protected Area; Water quality not systematically assessed.	Expansion of fishing and tourism; Natural disasters; Upland pollution and coastal development.	Fishing; recreation
Sea grass beds			Home to Antillean manatee; Fished for conch
Mangroves		Ineffective management though mangroves fall in protected areas	Traditionally mangrove timber used for firewood, charcoal, poles, fish traps, construction

RESPONSE OPTIONS

These initiatives focus on *improving* policies and legislation on target habitats; enforcing existing legislation; and, where necessary, enacting new legislation. Mariculture is cited as a non-consumptive NR use which can provide an alternative livelihood.

EXTRACTIVE NR USES- PRASLIN, ANSE LA RAYE, SARTENEJA AND HOPKINS			
Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives
Consumptive (or extractive) NR (seas and coasts, coral reefs, mangroves, sea grass beds and coastal lagoons) uses	No	<p>- Global and regional issues affecting: Overfishing- resulting in reduced fish stocks</p> <p>Pollution of sea and coastal waters from land based activities: sewage, industry, agriculture and tourism</p> <p>Inappropriate fishing techniques; Trawlers (dragging etc)</p> <p>Nationals harvesting juvenile fish (net mesh sizes)</p> <p>Transnationals fishing out of season; undersized catches</p> <p>Introduction of license and quota systems</p> <p>Offshore and pelagic fishing techniques</p> <p>Sea moss harvesting</p>	<p>Education on the status of global and regional fisheries and the coastal ecosystems due to Overfishing. Loss of important protein source.</p> <p>Education on effects of pollution on the regional seas and coastal ecosystems; Education in proper disposal practices, infrastructure to reduce wastes at sea, reduction in the use of chemicals. Human health impacts.</p> <p>Impose total ban on industrial fishers- longliners and trawlers</p> <p>Devise effective strategy to ensure enforcement of laws in regard to mesh sizes</p> <p>Devise effective strategy to ensure enforcement of transboundary laws /use of the EEZ etc</p> <p>Devise effective strategy to ensure enforcement of laws in regard to these.</p> <p>Adhering with the license system, training in offshore fishing techniques.</p> <p>Provision poor with credit for harvesting; Educate to reduce over-harvesting by improved techniques.</p>

MARICULTURE- SEA MOSS AT PRASLIN, ST LUCIA AND SUGGESTED FOR BELIZE			
Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives
Cultivation of sea moss	Sustainable	<p>Quality of coastal waters affected by pollution of the seas and coastal waters from land-based activities, sewage, industry, agriculture, tourism</p> <p>Unsustainable techniques of cultivation</p>	<p>Education on effects of pollution on the regional seas and coastal ecosystems; proper disposal practices, Infrastructure to reduce wastes at sea. Reduction in coastal release of toxic chemicals, sewage, industrial pollutants; education on human health impacts.</p> <p>Improved techniques; Capacity building strategies at community (Co-ops); Potential for economies of scale in production; Effective Legislation/Improved Policing; New credit facilities available (public and private).</p>

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives
Sea Moss Processing	Sustainable	<p>Processing techniques</p> <p>Institutional facilitation; Institutional structure (Co-op);</p> <p>Market;</p> <p>Access to Credit;</p> <p>National Policy.</p>	<p>Improvement in techniques to improve/increase production; Information on marketing product standards (labelling etc).</p> <p>Available land for 'housed' drying facility.</p> <p>Price competitiveness of "gel" product; Potential for increased 'gel' market; Use of facilities of the Livestock Development, Company and packaging of drinks.</p> <p>New credit facilities available (public and private)</p> <p>Vision and institutional pro-activity.</p>

Sustaining livelihoods for people on the Caribbean coast

This Policy Brief is one output of a project to share Policy Relevant Knowledge on Feasible Alternative Natural Resource Based Strategies for Enhancing Livelihoods. The research base was generated in an earlier project titled, Feasibility of Alternative, Sustainable Coastal Resource-Based Enhanced Livelihood Strategies, undertaken in 2002-2003 with case studies in St Lucia and Belize.

Other Policy Briefs in the series include:

— **Achieving Community-Based Tourism that Benefits the Poor in the Land Water Interface;**
— **Legal/Institutional & Policy Environment for Natural Resource-Based Livelihood Strategies;**
— **Poverty & Sustainable Livelihoods in the Caribbean.**

Series Editor: Suzanne Francis Brown
For further reading see: **People and the Caribbean Coast. Feasibility of Alternative, Sustainable Coastal Resource-Based Enhanced Livelihood Strategies (SEDU, 2004) and Feasibility of Alternative, Sustainable Coastal Resource-Based Enhanced Livelihood Strategies (R8135). Technical Report of Team Activities and Findings (SEDU)**

reaching the coastal area and major infrastructural changes. The associated public health issues must also be addressed.

In the context of St Lucia and Belize the “drivers” discussed above are two of the main factors (operating at both the global and regional levels) which cumulatively affect the state of natural resources and the livelihoods associated with them. Additionally, there are the local level “drivers”:

- Artesanal fishers engage in destructive practices: ghost nets; gill nets across river mouths;
- Negative effects of artisanal trawlers on habitats and nursery areas: use of cyanide and dynamite to ‘displace fish from cover also destroy reefs and other organisms;
- Fishing during the spawning season limits fish populations;
- Illegal harvesting of lobster and conch, out of season, is detrimental to sustainability;
- Poor sea moss harvesting techniques and unmanaged exploitation in the wild lead to reduced natural stocks;
- MPA limits, designed to protect bio-diversity, manage resources, provide education opportunities and enhance recreational opportunities, must also take resource users into account.

LESSONS LEARNED

- Financial constraints are common to both case-study areas; less support is given to environmental concerns in order to address lack of employment in St Lucia and Belize. Inadequate collaboration and ineffective institutional arrangements add to the problems.
- Measures are in place in both St Lucia and Belize to reduce present unsustainable practices—limited entry for specific fisheries; quotas for lobster and conchs; seasonal restrictions; gear restrictions; size limits; moratoria; closed areas (MPAs); mesh size restrictions. Various marine-related programmes feed into the overall management and conservation efforts of the two case studies—MPAs, CARICOMP, CFRAMP (Caribbean Fisheries Resource Assessment Programme), CPACC (Caribbean Planning for Adaptation to Climate Change) and other supporting organisations/projects UNEP, ENESCO, UNDP, UNCED.
- In this context, the St Lucian government has already adopted a precautionary approach to fisheries management. The OECS Heads of Government, in the Castries Declaration (1989) resolved “to establish a regional regime for regulation and management of the pelagic resources in the Lesser Antilles region...”, and “to take all possible measures...to prevent the use of indiscriminate fishing methods in their exclusive economic zones.” These include licences and limited-entry systems, closed seasons, closed areas etc. Similarly, Belize has placed a moratorium on aggregate fishing of the Nassau Grouper, and designated many MPAs which include no-take zones.
- The Meso American Barrier Reef System (MBRS) Programme initiative for the Meso American countries (British Honduras, Mexico, Belize, Nicaragua, El Salvador and Guatemala) has on paper over 60 existing and proposed coastal and marine protected areas, though many have little on-site management. Incentives will be created for stakeholders to shift toward patterns of sustainable use of MBRS resources focusing on fishing and tourism. In Belize, pilot activities have converted reef fishermen to recreational (fly fishing) and sea-kayaking tour operators. Other opportunities include tour guiding in adjacent coastal protected areas; value-added processing of fish; marketing cultural amenities; and providing accommodation. WWF (World Wildlife Fund) has identified this area as one in which significant co-financing resources will be placed.”

Focus is also proposed on:

- Monitoring and management of spawning aggregation sites;
- Improved institutional capacity in sustainable fisheries management;
- Promotion of alternative livelihood systems; and
- Dialogue aimed at developing a regional fisheries policy.

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