VOLUME I

MAIN FINDINGS

SCIENTIFIC ANNEX

Feasibility of Alternative, Sustainable Coastal Resource-Based Enhanced Livelihood Strategies (R8135)

TECHNICAL REPORT OF TEAM ACTIVITIES AND FINDINGS

BY SUSTAINABLE ECONOMIC DEVELOPMENT UNIT (SEDU)
University of the West Indies
St Augustine Campus
Trinidad and Tobago

(Dennis Pantin, Dennis Brown, Michelle Mycoo, Christine Toppin-Allahar, Judith Gobin, Winston Rennie, Jim Hancock)

ANNEX
TECHNICAL REPORT OF TEAM ACTIVITIES AND FINDINGS
(R8135)

TABLE OF CONTENTS

VOLUME I: MAIN FINDINGS

CHAPTER 1: **Introduction: Sustainable Development and Sustainable Livelihoods**

CHAPTER 2: **Macro-Economic and Livelihoods Trends in the Caribbean**

CHAPTER 3: **Main Findings: St. Lucia**

CHAPTER 4: **Main Findings: Belize**

CHAPTER 5: **Main Generic Findings and Implications for New Knowledge**

VOLUME II: DETAILED TOPIC ANALYSES

CHAPTER 6: **Natural Resources Profile**

CHAPTER 7: **Poverty and Sustainable Livelihoods in the Caribbean**

CHAPTER 8: **Strategic Constraints to NR-Based Livelihood Strategies (Including Poor People's Rights Of Access to NR in the Coastal Zone and Policy/Institutional Environment)**

CHAPTER 9: **Land-Use, The Poor And Sustainable Livelihoods**

CHAPTER 1

INTRODUCTION: SUSTAINABLE DEVELOPMENT AND SUSTAINABLE LIVELIHOODS

CHAPTER 1

1.1 Introduction

This Technical Appendix details the study commissioned from the Sustainable Economic Development Unit (SEDU), Economics Department, University of the West Indies, St Augustine, Trinidad and Tobago, by the United Kingdom's Department for International Development (DFID) on the theme, "The Feasibility of alternative sustainable coastal resource-based enhanced livelihood strategies."

This Technical Appendix begins with an Executive Summary of a report divided into Volume 1 with five (5) chapters and Volume 2, with four supporting chapters of detailed topic analysis (Chapters 6-9).

Chapter 1 addresses the Goals, Objectives and Approach to the Study together with a summary review of the literature on sustainable development and sustainable livelihoods, as a necessary contextual background. This introductory chapter concludes with summary profiles of natural resources and poverty trends in the Caribbean as a whole, together with the two case study countries.

Chapter 2 provides a review of macro-economic and linked livelihoods trends in the Caribbean and the case study countries and communities. Chapters 3-5 conclude the main report with the Main Findings of the study. Chapter 3 provides these main findings for St. Lucia and Chapter 4 repeats this same process for Belize. Finally, Chapter 5 addresses the Generic findings and Implications for new knowledge.

Chapters 6-9 provide more detailed reports on the specific and discrete issues of natural resources, poverty, legal/policy/ institutional and land-use issues, respectively.

The Report structure facilitates the requirements for evaluation of the actual research, linked to the log-frame, while simultaneously providing a readable, flowing document (in Chapters 1-5) easily accessible to the stakeholders in the study countries. During the July 2003 visits to report findings, stakeholders and others made requests for the actual Report. Chapters 6-9 provide further details for the more specialised reader.

1.2: Goal, Objectives and Approach to the Study

1.2.1: Goal and Objectives

The goal of this study is to contribute to improved resource-use strategies in coastal zone production systems in the land-water interface in the Caribbean with particular reference to the livelihoods of the poor.

The specific objectives, outputs and activities are detailed in the log-frame, which is appended to the FTR. For ease of reference, a summary, revised, format is added below.

1.2.2: Approach to the Study

The study began with the identification of criteria for the selection of two case-study countries and then, subsequently, for the choice of the two case study communities in each of the two selected countries. The second component of the research approach involved a literature search and review on the two countries and communities. The third step entailed field visits to both countries and communities. In each country, researchers interviewed key informants in target institutions at national and community level. The interviews were complemented by focus-group meetings in the four case-study communities. In June-July 2003, the research team returned to the case-study communities—St Lucia between June 30 and July 2; and Belize, between July 22 and 26, 2003—to report findings and to facilitate uptake by the target institutions. Further details are provided below on the criteria for country and community selection.

DFID- R8135 – Log Frame (Restructured)

Outputs	Objectively Verifiable Indicators (OVIs)	Activity/Milestones
1. Improved understanding of demand for alternative sustainable NR-based livelihood strategies to enhance livelihood outcomes for poor people (particularly women, the landless, indigenous people and other vulnerable groups) in coastal zone in the Caribbean	By 30 June 2002 case studies selected, target beneficiaries and participatory mechanisms identified and demand for alternative strategies for enhanced livelihood outcomes determined	**1.1 Assessment of Fragility of NR** a) Relevant reports previously completed reviewed. b) Criteria for case study selection chosen c) Case studies selected d) Fragility and Vulnerability of production systems for NR based livelihoods evaluated.
		1.2 Assessment of Sustainability of traditional NR-based Livelihood strategies a) Target beneficiaries and participatory mechanisms identified. b) Existing quality of life, demographic trends and expectations of target beneficiaries documented. c) Carrying capacity of NR to accommodate increase in traditional NR-based livelihood strategies assessed. d) Demand for alternative strategies for enhanced livelihood outcomes identified by participatory process.
2. Improved understanding of strategic constraints to NR-based livelihood strategies, including poor people's rights of access to NR in the coastal zone and policy/ institutional environment	By 31 August 2002 strategic constraints on access of poor to NR output evaluated	**2.1 Evaluation of Security of Ownership/User Rights of poor people** a) Comparative analysis of types and security of land tenure and legislation governing land use made b) Comparative analysis of legislation governing ownership and use of marine resources carried out c) Comparative analysis of emergent competing commercial interests performed d) Impacts of (a), (b) and (c) on access of poor to NR evaluated
		2.2 Evaluation of Policy/Institutional Environment for NR Management and support of Livelihood Strategies a) Regulatory framework for NR management identified. b) Gov't policies regarding formal and informal utilisation of NR by poor identified. c) Impacts of (a) and (b) on livelihood strategies identified.
3. Improved understanding of opportunities for enhanced livelihood outcomes for the poor in the coastal zone, including alternative sustainable NR-based livelihood strategies	By December 31 2002 feasible alternative strategies for enhanced livelihood outcomes identified and cost/benefit analysis performed	**3.1 Exploration of Alternative Livelihood Opportunities for Enhanced Livelihood Outcomes** a) Alternative opportunities for enhanced livelihood outcomes that benefit the poor identified. b) Demand for alternative strategies for enhanced livelihood outcomes that can be satisfied by non-NR based opportunities considered. c) Demand for enhanced livelihood outcomes dependent on NR based livelihood strategies identified.

Outputs	Objectively Verifiable Indicators (OVIs)	Activity /Milestones
		3.2 Exploration of Sustainable Consumptive Uses a) Alternative sustainable techniques for pursuing traditional consumptive NR-use livelihood strategies identified. b) Mechanisms for implementing change strategy for adoption of (a) developed.
		3.3 Exploration of Sustainable Non-consumptive Uses a) Alternative, sustainable techniques for pursuing non-consumptive NR use livelihood strategies identified b) Mechanisms for implementing change strategy for adoption of (a) developed.
4. Strategies for enhancing capacity of the poor to utilize multiple alternative sustainable NR- based livelihood options identified	By 28 February 2003 poverty assessment and needs analysis completed and change strategy identified	**4.1 Identification of Needs of the Poor** a) Incidence of poverty, particularly amongst women, the landless, indigenous peoples and other vulnerable groups identified. b) Structural and behavioural factors affecting livelihood choices identified and assessed. c) Needs arising from (a) and (b) identified.
		4.2 Evaluation of target Beneficiaries to Respond to Change a) Social capital evaluated b) Internal and external factors influencing vulnerability identified
		4.3 Participatory Development of Mechanisms for Change a) Capacity building mechanisms identified b) Uptake pathways identified and communication strategies developed
5. Indicators that may be monitored to determine success in uptake and sustainability of changes in livelihood strategies developed	By 31 March 2003 indicators that may be monitored to determine success in uptake and sustainability of changes proposed	**5.1 Identification of Indicators for Monitoring Uptake Success** a) Literature on indicators critically reviewed b) Appropriate indicators in the Caribbean context proposed
		5.2 Identification of Indicators for Monitoring Sustainability of Livelihood Changes • Literature on indicators critically reviewed • Appropriate indicators in the Caribbean context proposed
6. Strategies to ensure development impact in comparable environments and sustained uptake by target beneficiaries and institutions identified and promoted with key TIs	By 30 June 2003 strategies formulated, means of dissemination of results identified and measures for sustainability of impacts identified	**6.1 Identification and Extraction of Generic Principles** a) Generic principles distilled from case studies b) Recommendations for utilisation of principles formulated c) Means of disseminating knowledge identified in collaboration with TIs
		6.2 Identification of TIs and Uptake Pathways a) Consenting TIs identified at an early stage of the Project b) Uptake pathways identified, developed andmarket tested with TIs

1.2.2.1. Criteria for selection of case-study countries

The study began with the formulation of criteria for selecting two Caribbean countries which would be as representative of the range of natural resources which exist in the Caribbean and, as well, simultaneously, to reflect the use of such natural resources by the poor in the region. The Map immediately above shows the range of country choices from which the two countries were selected.

Five factors were identified:

1. Range of geographic situations—small island states, archipelagic states, and continental states;
2. Range of eco-systems—target habitats, coral reefs, lagoons, mangroves and sea grass beds;
3. Range of socio-economic conditions—the existence of target beneficiaries—women, indigenous people, landless people;
4. Range of resource ownership/control;
5. Range of governance situations—evaluation of local level institutions, NGOs etc.

An analytical matrix then listed the 17 Commonwealth Caribbean countries into four groups according to factor 1, above, to facilitate selection of one country from each class. The categories used were: Continental States, Archipelagic States, Island States and Dependent Territories (very small territories).

Four issues also were identified in relation to factors 4 and 5:

(a) Ownership/control of coastal land;
(b) Right of access to the coastline;
(c) Regulation of NR use—specifically the target habitats;
(d) Governance.

The following countries were short-listed:

- Continental State – Belize;
- Archipelagic State – Antigua and Barbuda or Trinidad and Tobago;
- Island State—Barbados, St Lucia or Dominica;
- Small Island Territory—Anguilla, Cayman Islands or Tobago.

Published data on poverty profiles were only available only for Belize, Jamaica, Trinidad and Tobago, Guyana, St Vincent and the Grenadines, St Kitts-Nevis, and the Turks and Caicos Islands.

Based on the available poverty data, the countries of interest identified on the basis of poverty trends were:

- Continental State – Belize
- Archipelagic State – St Vincent and the Grenadines
- Island State – St Lucia
- Small Island Territory – Turks and Caicos Islands.

Consideration was then given to the situation of indigenous people. Such populations exist only in Belize (two types), Guyana and Dominica.

St Vincent and the Grenadines also have a small population of Black Caribs. Belize is of more interest than Guyana, for the status of the Maya and Garifuna peoples and their resource rights are less studied.

In the analysis of landlessness in the region, consideration was given to the prevalence of squatting and land tenancy and the existence of security of tenure legislation. Based on the available information the following countries appeared to be of interest:

- Continental State – Belize;
- Archipelagic State – Antigua/Barbuda;
- Island State – St Lucia;
- Very Small Territory – Turks and Caicos Islands.

Belize and St Lucia were then selected as the two case-study countries. Appendix Table 1.1 details the matrix of Caribbean countries, criteria and ranking for country selection.

1.2.2.2: Criteria for Selection of Case Study Communities

It was decided to use available data and key informants to identify the two case-study communities in each case-study country based on the following criteria:

- Representative of the natural resource profile identified for the overall project;
- Representative of a significant poverty presence and natural resource dependence;
- Relatively under-studied.

The two communities selected in St Lucia were Praslin (population: 497) on the east coast and Anse La Raye on the west coast (population 1,877). In Belize, the choices were Sarteneja in the north (population: 1,650) and Hopkins in the south (population: 1,003).

The following two maps of St Lucia and Belize show the location of the selected case study communities.

BELIZE

1.3: Sustainable Development and Sustainable Livelihoods

This study addresses the issue of alternative, sustainable natural resource-based livelihood practices in the Caribbean land/water interface, with particular reference to poor people. It seeks, in summary, to evaluate the sustainability of existing livelihood practices and to identify alternative, sustainable NR-based livelihoods, especially for poor people. To conduct this study, researchers ensured familiarity with the key analytical constructs that inform the livelihoods perspective. In this Section, therefore, the

livelihoods issue is located within the larger framework of the literature on Sustainable Development (SD).

In the discourse on SD are three main components. First are definitions issues. Second are the indicators for measuring and monitoring the extent to which SD, as defined, is being realised in a particular place. Third are the strategies, policies, programmes and projects capable of shifting a society positively along a sustainable development path.

1.3.1 SD Definitions and Context

Sustainable Development is concerned with fairness or equity both within and between generations. The term became popularised in the aftermath of the 1987 Bruntland Report and the 1992 United Nations Conference on Environment and Development. Ten years later, the World Summit on Sustainable Development in South Africa captured the shift from a focus on environment and development to overall sustainable development.

1.3.1.1 SD Measurement Indicators

The economic literature identifies the overall SD goal as that of sustaining a positive level of aggregate capital accumulation (K). However, as opposed to conventional economics, four components of K are identified[1]:
K= Km, Kn, Kh, Ks.

Where:
Km = Man-made capital;
Kn = Natural capital or assets provided by nature;
Kh = Human Capital;
Ks = Social Capital.

Km is well-known and is the form of capital accumulation to which conventional economics pays most attention.

Kn has begun to be recognised in some countries with the addition of so-called satellite accounts to the national income accounts which seek to measure changes in natural capital. A distinction needs to be made between non-renewable K which is, by definition, depleted in use (oil, natural gas, bauxite, copper, etc) and renewable K which, if harvested optimally, can maintain its stock (fisheries, forestry, etc).

To capture the impact of depletion, some writers have developed the concept of "genuine savings", which elaborates on the satellite national accounts. Empirical research based on the "genuine savings" indicator has estimated, for example, that some countries, which are highly dependent on non-renewable natural resources, have been experiencing negative rates of "genuine savings"[2]. Such a trend also is applicable if countries exploit renewable resources in a non-sustainable manner.

---

[1] (*See Pearce et al, 1998, for elaboration on the measurement of SD*)
[2] *(See Hamilton, 1999, for a discussion on "genuine savings".)*

Kh stresses that since human knowledge determines the level of development, measurable changes in the human capital stock are a proxy indicator for the desired augmentation of human knowledge.

Ks is the most recently recognised component of aggregate national capital accumulation. Social capital comprises the network of voluntary organisations which hold a society together. The implication is that the thinner the density of social capital the more fragile and hence less sustainable it would be.

1.3.1.2 Strategies for SD

Strategies for SD should therefore seek to maintain aggregate real K or, if there are SD deficits, to realise a positive rate of capital accumulation. Since the non-renewable component of Kn will have a negative impact on aggregate K, there is need for a counterpart investment of the economic rents generated from their exploitation. The same holds for renewable resources in that their exploitation also generate economic rents[3], which should be utilised to maintain and/or enhance the stock itself, while also contributing to man-made, human and social capital.

SD strategies should result in the adaptation of macro policies—economic, social, cultural, political—to this larger SD framework, as informed by trends in the indicators of SD. Such macro policies must then be supported by sectoral strategies, policies, programmes and projects. It is therefore obvious that SD strategies need to take into account the country, countries or regions which can be regarded as similar in terms of the relevant issues. For a review of the literature in SD on small-island developing states, particularly in the Caribbean, see, for example, Pantin, 1994.

1.3.2 Sustainable Livelihoods (SL)

One critique of the SD literature is that it operates at too macro a level. An amendment has been to add "human" to the nomenclature—SHD. Another line of critique disputes need for a more disaggregated analysis to bring into sharp relief the human impacts. In this context, the term Sustainable Livelihoods can be considered a micro-level synonym for sustainable development.

A "livelihood" has been defined as that combination of assets, activities and entitlements which enable people to make a living. (Singh and Lawrence, 1997)

Some writers on SL view the concept as a tool or checklist of issues and a way of structuring analysis. Others consider SL an operational objective with the mission of improving the sustainability of livelihoods. A third perspective considers SL to be a set of principles applicable to any situation (projects or programmes).

The SL concept has a particular focus on poverty. Ashley and Carney note that "sustainable livelihood is a way of thinking about the objectives, scope and priorities for development, in order to enhance progress in poverty elimination. SL approaches rest on

---

[3] *Dixon et al, (1999), for example provide an analysis of the importance of capture of rents from the Caribbean tourism industry*

core principles that stress people-centred, responsive and multi-level approaches to development." (Ashley and Carney, 1999)

Sustainable livelihoods involve a set of complex and diverse economic, social and physical strategies. These strategies are activities by which people make a living.

The SL approach shifts focus from aggregate economic output to people.

"Livelihood" can therefore be described as the engagement in a number of activities, which at times neither require a formal agreement nor are limited to a particular trade. This differs from a "job" since it may not involve money, is self-directing and not based on income derived from jobs.

Activities: A key feature of the SL approach is recognising that the root of all human development and economic growth is livelihoods—not just jobs, but the wide and diverse range of activities people pursue to make their living, in the formal or the informal sector.

Assets: Assets are the resources upon which people base their livelihood, including:

- Natural/biological (land, water, common property resources, flora, fauna)
- Social and political (community, family, social networks)
- Human (knowledge, skills)
- Physical (roads, markets, clinics, schools, bridges).

Entitlements: The human, social and economic rights of an individual. Sen has identified:

- Trade-based entitlements;
- Production-based entitlements;
- Own-labour entitlements;
- Inheritance and transfer entitlements.

Sustainable livelihood deals with:

i. Income generation;
ii. Natural resource management;
iii. People's empowerment;
iv. Use of appropriate technology;
v. Financial services;
vi. Good governance.

Some of the identified benefits of sustainable livelihood include:

- Promotion of inter-generational and intra-generational equity for all races, genders, and ethnic groups;
- Equal wealth distribution;
- Stimulation of community investment;
- Connectedness in the local communities;
- Use of appropriate technology;
- Conservation of the environment;
- Social and economic returns.

1.3.2.1 The socio-cultural, political and economic priorities of sustainable livelihood are:

POLITICAL PRIORITIES

- Public participation and involvement in policy making at all levels to maintain government and political accountability;
- Political reform ensuring transparency of corporate lobbies and campaign contributions;
- Multilateral trade agreements and treaties etc should not violate the principles of social sovereignty;
- Government should support livelihood practices at the local level.

ECONOMIC PRIORITIES

1. Power must be rooted in localised economies;
2. Economic policy based on full-cost accounting;
3. Ranking of local needs over export marketing;
4. Support of renewable resource technologies and sustainable consumption and production.

SOCIO-CULTURAL ASPECTS

5. Education, health, arts and media should be based on cultural diversity;
6. Encouragement of indigenous and modern knowledge, wisdom and skills;
7. Transforming social and economic structures that perpetuate injustice, intolerance and inequity.

Four common elements can therefore be identified from these differing approaches to sustainable livelihoods:

- Analysis of the livelihoods of the poor;
- Explicit links between development activities and impact on people's lives;
- Inter-sectoral linkages identified;
- Macro-micro relationships detailed.

DFID has identified the following six core principles of the sustainable livelihoods concept:

- People-centred
- Responsive and participatory
- Multi-level
- Conducted in partnership
- Sustainable
- Dynamic

1.3.2. 2 Realising Sustainable Livelihoods

SL helps to identify the limitations of focusing on physical outputs or sectoral objectives at the expense of human livelihood and poverty reduction. SL is useful in the identification of development priorities and in the review of current activities; it is

appropriate at both field and policy levels. This people-centred perspective on policies and institutions is vital when planning pro-poor policy change and structural reform.

The different stages of SL include:

- Programme identification and design;
- Planning new projects;
- Reviewing existing activities;
- Monitoring and evaluation.

Sustainable livelihood has been used in identifying, designing and assessing new initiatives (projects and programmes) and also in re-assessing existing activities, informing strategic thinking and research.

Tables 1.1 and **1.2** which follow summarise the uses, advantages, challenges, strengths and weaknesses of SL in planning.

TABLE 1.1
USES, ADVANTAGES AND CHALLENGES OF SL IN PROGRAMME DESIGN

Ways of using SL	Advantages	Challenges
Identify explicit links between programme activities and livelihood priorities of the poor. Adapt the former to the latter and ensure coherence.	More effective contribution to lives of target groups	Takes resources to do the analysis. Not all partners have equal commitment to poverty elimination.
Identify and discuss policy constraints to livelihood enhancement.	Promotes systematic exploration of the main ways in which policies affect livelihoods.	Requires in-depth analysis of policies and institutions, using tools other than the SL framework.
Conduct broad-brush livelihoods analysis to feed into reform of sector policy	Encourage people- orientation and better cross-sectoral links	Proponents of sector approaches and SL may start from different perspectives- need to explore the overlap.
Build on SL analysis to identify new partnership opportunities	SL approaches can facilitate dialogue, provide a common 'language'.	Partners may be sceptical at first. May require significant capacity building.
Use SL framework to help identify high-payoff, priority entry points.	Helps ensure open-minded analysis of options and appropriate sequencing.	Other tools required for prioritisation. Sequencing issues often poorly understood.

Source: Livelihood Connect

TABLE 1.2
STRENGTHS AND WEAKNESSES OF SL IN PLANNING NEW PROJECTS

Use of SL to…	Advantages	Disadvantages
Understand the priorities of poor	Helps 'fit'project activities to priorities of the poor.	May reduce fit with donor's intended activity. Requires donor to be flexible
Identify links • Across sectors • Between field and policy level • Between urban and rural	Avoids isolationist mentality Helps ensure links are addressed elsewhere, if not by project	Cannot feasibly address all issues Have to prioritise
Generate a range of entry points	Questions traditional assumptions	Need to priotitise
Design project activities that: • Are appropriately sequence • Accommodate inter-community relations • And potentially conflicting interests	Provides analytical framework and structure	Not necessarily useful for detailed planning. Still need may other tools

Source: Livelihoods Connect

1.3.2.3 Common Tools already used in SL analysis:

- Environmental checklists—an effort to understand the relationship between the poor and their environment. Some areas covered can include health empowerment, security and livelihood opportunity.
- Gender analysis—to uncover the dynamics of gender differences such as social relationships, needs, access and control activities.
- Governance assessment;
- Institutional appraisal;
- Macro-economic analysis—fiscal, monetary, trade and exchange rate policies;
- Market analysis—analysis of the private sector;
- Participatory poverty assessment techniques—research to understand poverty from the perspectives of various stakeholders;
- Risk assessment;
- Social analysis;
- Stakeholder analysis;
- Strategy conflict assessment (SCA)— to understand conflict caused by new technologies, new government policies, growing consumerism, and commercialisation of common resources within a country or region;
- Strategic environmental assessment (SEA)—focusing on policy and planning, it provides for alternative strategic options;
- Secondary data including key informants;
- Individual and household case studies;
- Participatory methods—for investigative purposes and also for involving people in the processes that may affect their lives;
- Sample analysis—complementary to participatory methods, must entail initial qualitative overview of the community.

Methods of research, planning, implementation and evaluation appropriate to success of SL:

1. Methodologies for situation analysis:
These include:

- Participatory approaches: encouraging community participation and improving local governance; fostering priority in project proposals and developments of cultural, environmental and gender issues. Some disadvantages here include poverty and low levels of social capital.
- Stakeholder analysis: participatory and transparent, allowing people of different educational backgrounds to participate; small meetings, stakeholder workshops, individual interviews, in-depth discussions and focus groups help identify and explain stakeholder interest
- Poverty and dynamics: participatory poverty assessment (PPA) is helpful here.
- Sampling and focus: focus groups, questionnaires, interviews etc
- Sustainability: cost-benefit analysis, contingent valuation useful.
- Food security: household surveys to find proportion of consumption supplied through home agriculture.
- Policy and institutions: geographical information systems often used here to input information researched.

2. Policy formulation and action planning
Strategic Investment Planning, often in these stages: awareness raising and lobbying; diagnosis and stakeholder commitment; strategy formulation and action planning; implementation; follow- up and consolidation.

3. Technical tools
Structured planning, which provides a broad range for local decision-making and involves public participation, is the most appropriate tool for SL.

4. Participatory technology development
An unavoidable decision on the use of appropriate technology likely involves choosing between rural and urban technology.

5. Monitoring and evaluation
Many different methods are available to monitor and evaluate the SL and participatory methods implemented. For SL in urban and periurban agriculture in Dar Es Salaam, Tanzania, evaluation used the ward profile. Socio-economic impacts and contingency valuation are also helpful.

1.3.2.4 SL Policy Practice
SL has evolved from three decades of research, approaches and theories on poverty reduction. Previous research has linked poverty to environmental degradation. Identified as the solution, SL involves participatory management by all members of a community or a region. Organisations associated with SL research range from non-governmental

organisations to national and multilateral organisations such as DFID, UNDP and research institutes.

1.3.2.5. Conclusion on SLs

A note of caution: a focus on SL is useful as an approach to analysis but is certainly not a panacea. Nor should it be seen as something new to replace previous approaches and methodologies, such as stakeholder analyses. Rather, it should build on them.

SL can help focus on key poverty issues from a community viewpoint, and give policy issues a clear micro-level perspective. Emerging use of SLA (Farrington, 1999 et al) indicates a need for adapting language and concepts to local experiences and methods. Considerable effort and time are needed to engage local stakeholders in developing important joint understanding of analysis and approach, rather than imposing them as the latest development fad. This research project can only begin such a process locally. Though taking on important elements of the SLA, the project still faces a considerable challenge in turning analysis into practicable solutions.

APPENDIX TABLE 1.1
APPLICATION OF CRITERIA FOR SELECTION OF CASE STUDY COUNTRIES TO CARIBBEAN

Country	Target Habitats	Regulation of NR use - specifically target habitats	Poverty	Ownership/ control of coastal land	Right of access to coastline	Landlessness	Indigenous people	Governance
Anguilla (DT)	Reefs Lagoons Sea grass Beds Mangrove	Beach Protection Act; Marine Parks Act; Wild Birds Protection Act; Land Development Control Act	No Poverty data		Beach Control Act; Access to Beaches Act	No	None	
Antigua/ Barbuda (AS)	Reefs Sea grass Beds Mangroves Lagoons	Beach Protection; Maritime Areas Act; Marine Areas (Preservation and Enhancement) Act; Turtle Act; Fisheries Act; Forestry Act; Wild Birds Protection Act; National Parks Act; Land Development & Control Act	No Poverty data	Island of Barbuda is State/Communal Land	Beach Control Act	Yes Land Tenancy; Squatting	None	Barbuda Council
Bahamas (AS)		Fisheries Resources Jurisdiction & Conservation Act; Continental Shelf Act; Wild Animals Protection Act; Wild Birds Protection Act; Coastal Protection Act; Reclamation & Drainage Act; Town Planning Act	No Poverty data			Land Tenancy	None	National Trust Act
Barbados (IS)	Reefs Sea grass Beds Virtually no mangrove &	Beach Protection Act; Marine Boundaries & Jurisdiction Act; Territorial Waters Act; Marine Areas Preservation & Enhancement Act; Fisheries Regulation Act; Coastal Zone Management Act;	No Poverty data			Security of Tenure & Freehold Purchase Laws	None	National Trust Act

Country	Target Habitats	Regulation of NR use - specifically target habitats	Poverty	Ownership/ control of coastal land	Right of access to coastline	Landlessness	Indigenous people	Governance
	lagoon areas	National Conservation Commission Act; Town & Country Planning Act						
Belize (CS)	Excellent example of all 4 habitats	Forests Act; Private Forests Conservation Act; Forest Fire Protection Act; Protection of Mangrove Regulations; Fisheries Act; Coastal Zone Management Act; Wildlife Protection Act; National Parks System Act; Environmental Act; Land Utilisation Act; Housing & Town Planning Act; Ancient Monuments & Antiquities Act	Poverty data			Land Tenancy; Squatting; Refugees; Maya Land issue	2 groups – Maya & Garifuna	Belize City Council; 8 Town Councils & 180 Village Councils Village Councils Act 2000 Protected Areas Conservation Trust Act Umbrella NGOs BACONGO Land
BVI (DT)	All 4	Beach Protection Act; Marine Parks & Protected Areas Act; Fisheries Act; Turtles Act; Wild Birds Protection Act; Protection of Endangered Animals, Plants and Articles Act; Protection of Trees & Conservation of Soil & Water Act; National Parks Act; Land Development Control Act	No Poverty data			No	None	

Country	Target Habitats	Regulation of NR use - specifically target habitats	Poverty	Ownership/ control of coastal land	Right of access to coastline	Landlessness	Indigenous people	Governance
Cayman Ils (DT)	Reefs; Seagrass; Mangrove	Whaling Industry Regulations Act; Marine Conservation Act; Continental Shelf Act; Fisheries Zone Proclamation; Endangered Species Protection & Propogation Act; Development & Planning Act; Mosquito Research & Control Act	No Poverty data			No	None	National Trust Act
Dominica (IS)	4	Fisheries Act; Forestry & Wildlife Act; National Parks & Protected Areas Act; Town & Country Planning Act	No Poverty data		Beach Control Act 3 Chains Reserve	Squatting	Caribs	Carib Reserve Act Village Councils
Grenada	3	Beach Protection Act; Marien Boundaries Act; Fisheries Act; Birds & Other Wildlife Protection Act; Forest, Soil & Water Conservation Act; National Parks and Protected Areas Act; National Heritage Protection Act; Land Development Control Act	No Poverty data			Some urban squatting	None	National Trust Act
Guyana (CS)	1	Forests Act; Maritime Boundaries Act; Fisheries Act; Aquatic Wildlife Control Regulations; Sea Defences Act; Wild Birds Protection Act; Environmental Protection	Poverty data			Land Tenancy; Urban squatting; Land Tenure Regularisation Programme	Amerindians (several tribes)	10 Regional & 5 Municipal Councils Amerindian Lands Act; Amerindians

Country	Target Habitats	Regulation of NR use - specifically target habitats	Poverty	Ownership/ control of coastal land	Right of access to coastline	Landlessness	Indigenous people	Governance
		Act; Town & Country Planning Act						Act National Trusts Act
Jamaica (IS)	4	Fishing Industry Act; Morant & Pedro Cays Act; Black Coral Order; Black River Upper Morass Reclamation Act; Forest Act; Wildlife Protection Act; Watersheds Protection Act; Natural Resources Conservation Authority Act; Jamaica National Heritage Trust Act	Poverty data			Extreme Landlessness	None	Parish Councils Act 1973; 14 Parish Councils; Urban Corporations NEST
Montserrat (DT)	__	Beach Protection Act; Turtle Act; National Parks & Protected Areas; Forestry and Wildlife Act; Endangered Animals & Plants Act; Town & Country Planning Act	No Poverty data				None	National Trust Act
St. Kitts-Nevis (AS)	2	National Conservation and Environmental Protection Act; Fisheries Act & Regulations; Development Control & Planning Act	Poverty data			Village Freehold Purchase Act (St. Kitts)	None	Nevis Island Administration
St. Lucia (IS)	3	Beach Protection Act; Maritime Areas Act; Fisheries Act; Forest, Soil & Water Conservation Act; Wildlife Protection Act; Parks & Beaches Commission Act; Physical Planning & Development	Poverty data	*Cinquante pas de la reine* = State Land		Squatting; PROUD Programme	None	National Trust Act

Country	Target Habitats	Regulation of NR use - specifically target habitats	Poverty	Ownership/ control of coastal land	Right of access to coastline	Landlessness	Indigenous people	Governance
		Act						
St. Vincent & the Grenadines (AS)	Reefs Sea grass Beds	Beach Protection Act; Fisheries Act & Regulations; Forests & Forest Resource Conservation Acts; Wildlife Protection Act; Town & Country Planning Act; Town & Country Act; Ancient Monuments & Antiquities Act	Poverty data		3 Chains Act	Severe squatting	A few "Black Caribs"	National Trust Act
Trinidad & Tobago (AS)	All 4	Archipelagic Waters and Exclusive Economic Zone Act; Territorial Sea Act; Continental Shelf Act; Marine Areas (Preservation and Enhancement) Act; Fisheries Act; Turtle & Turtle Eggs Regulations; Malaria Abatement Act; Forests Act; Conservation of Wildlife Act; Environmental Management Act; Town & Country Planning Act	Poverty data		3 Chains (Tobago) Act	Severe squatting	A small "Carib" community	Municipal & Regional Corporations; Tobago House of Assembly National Trust Act; COPE
Turks & Caicos Islands (DT	2	Coastal Protection Act; Fisheries Protection Act; Wild Birds Protection Act; National Parks Act; Food & Environmental Protection Act; Physical Planning Act	Poverty data			Haitian Refugees	None	National Trust Act

CHAPTER 2

MACRO-ECONOMIC AND LIVELIHOOD TRENDS IN THE CARIBBEAN

CHAPTER 2

ECONOMIC, LIVELIHOODS, NATURAL RESOURCES AND POVERTY TRENDS IN THE CARIBBEAN

2.1: Introduction

Chapter One detailed the goals, objectives and approach of the study, and reviewed the literature on sustainable development and sustainable livelihoods. Chapter Two, a Caribbean-specific analysis, begins with an overview of macro-economic trends in the region, then highlights the livelihood practices which reflect the macro-economy.

This is followed by a summary of trends in environmental conditions in the region and a review of natural resource trends. In its third main section, this chapter stresses the human dimension, highlighting some key poverty trends in the region. The final sections review the issues earlier covered at the regional level but with specific reference to St Lucia and Belize.

2.2: Macro-Economic Overview

The Caribbean is made up of the island economies within the Caribbean Sea—the "insular Caribbean"—and the bordering mainland countries of Belize, Guyana, French Guiana and Suriname. Of the 28 distinct political entities, most are islands; 12 are dependent territories. The region's total population is 37 million[4].

Caribbean economies range in size from Cuba, with some 11 million people, and the Dominican Republic with 8.2 million, to 6,000 of Montserrat. The most populous and largest (in terms of area) Caribbean economies are in the northern Caribbean—Cuba, Hispaniola (Dominica Republic and Haiti), Puerto Rico and Jamaica—and in the southern Caribbean (Guyana with 215,000 odd square kilometers, but 780,000 population) and the 1.2 million in Trinidad and Tobago. The size of Caribbean economies (in population and area) decreases as one moves south of Hispaniola or north of Guyana and Trinidad and Tobago.

The many aspects of commonality among these individual economies derive from their post-Columbian history of colonisation by one or other European power for the initial, primary purpose of producing cane sugar for export. The first common point of Caribbean history is that of plantation slavery, together with the indentureship that followed the end of the slave trade and the subsequent abolition of slavery itself.

[4] *(Appendix Table 2.1 provides some relevant economic and demographic data on these individual political entities.)*

Abolition occurred by 1838 in the English-speaking Caribbean, following which indentured labourers were introduced from India, principally to Trinidad, Guyana and Suriname. The result has been the creation of multi-racial, multicultural and multi-religious plural societies, the legacies of which are evident today in the social, political, and economic systems in these countries.

The second main commonality and legacy shared by Caribbean economies is dependence on natural resources for the generation of export earnings. For their internal production, employment, income and consumption, these small, open economies were totally dependent on sugar exports. As cane producers shifted to newer territories and virgin soils, it was soil fertility that determined their fortunes.

Following emancipation and the collapse of the sugar industry in the 19th century, regional economies diversified by shifting to other agricultural exports—cocoa, coffee, citrus and, later, bananas. The 20th century saw the growth of mineral export dependence—bauxite (in Jamaica, Guyana, Suriname); oil and more recently natural gas (in Trinidad and Tobago). Moreover, with tourism important everywhere in the Caribbean, regional economies remain largely dependent on natural resources for their economic survival.

2.2.1: Current Economic Structure and Economic Performance

Caribbean economies continue to be dominated by their export sectors that, in turn, tend to be concentrated on one to three products based on the region's natural resource endowment. Regional economies vary in respect of the significance of non-export producing sectors. Domestic food production is the most common area of non-export production. Particularly in the more arid or limestone islands such as Aruba, Curacao and Barbados, however, little domestic agricultural production occurs. Manufacturing in some economies tends to be significantly dependent on imported inputs. Tourism has been the most dynamic and fastest growing industry in most economies, and is already the dominant industry in some.

2.2.2: Current and Projected Economic Challenges

Caribbean economies face a number of challenges. The first flows from the unravelling of preferential arrangements for traditional exports, a development linked to economic liberalisation. A second challenge is poverty and high unemployment, particularly among youth, and concomitant growing social deviance including violence, crime and drugs. A third major challenge flows from the fact that the Caribbean is marked by a relatively high degree of vulnerability to natural disasters (exacerbated by climate change). The region is also economically vulnerable, as shown by the negative fall-out from 9/11 on as important an economic sector as tourism. A fourth challenge inheres in the high levels of foreign indebtedness in some countries.

Finally, all challenges are leading to a discounting of the future, and hence of sustainability concerns. The result is that economic policy tends to focus only on Km (man-made capital). Economic policy disregards the importance of social capital. Further, it ignores the need to maintain renewable natural resources, capture the rents they

generate—including rents from non-renewable resources—and invest these to ensure intra-generational and inter-generational equity.

2.2.2.1: Preferential Arrangements

Despite substantial economic diversification in the Caribbean, traditional agricultural exports still loom large. Cuba, Jamaica, St Kitts, Trinidad and Tobago and Guyana continue to operate cane sugar industries that are particularly significant for employment. Some other Caribbean economies, particularly in the Windward Islands, are similarly dependent on banana exports. These exports still depend on long-established preferential agreements with the European Union under the Lome Agreement, which is a co-operation agreement between the EU and 71 African, Caribbean and Pacific (ACP) countries. Under the Lome Agreement some ACP products enter EU markets duty-free.

These preferential agreements are now under threat, bananas being the most serious. World Trade Organisation rulings have determined the preferential banana regime of the European Union for ACP countries to be in breach of this global trade agreement[5].

Already, the Caribbean banana industry has experienced significant decline. This is particularly evident among the four banana-producing countries of the Windward Islands of the English-speaking Caribbean. Between 1992 and 1998, Dominica experienced a 46% decline in the number of active farmers. The comparable decline in St Lucia was 36%, in St Vincent and the Grenadines 12%, and in Grenada, 80%. This dramatic decline in active farmers poses several risks to these island micro-states. First, it has led to growing unemployment and increasing social tension. Second, it poses the risk of leading to the kind of negative social behaviour adversely affecting other still-competitive sectors, such as tourism. Third, it has led to a shift in livelihood activities to other available natural resources, such as fishing, thereby endangering the long-term sustainability of the related natural resources.

The second most vulnerable sector is that of the sugar cane industry. With the exception of Cuba, Caribbean cane sugar producers benefit from the Sugar Protocol with the European Union. This protocol is considered to be independent of the Lome Agreement between the EU and the African, Caribbean and Pacific (ACP) countries. In addition, the Lome Agreement has been effectively extended for much of the coming decade under the Cotonou Agreement. It is difficult to assume, however, that both this Lome Agreement and the related Sugar and Rum Protocols will not soon come under the same pressure as did the EU's banana regime. A likely consequence is a repetition of the experience of the banana industry, with a dramatic drop in the number of active farmers and their related employment creation.

2.2.2.2 Adjusting to Liberalisation/Globalisation

The threat faced from a near-term collapse of preferential arrangements is exacerbated by the larger likely impact on small Caribbean economies of globalisation and its institutional expression in economic liberalisation. Globalisation may be defined,

---

[5] *(See Pantin, Sandiford, Henry and Preville (2004) for an analysis of the implications for the Caribbean of the collapse of the Banana Regime.)*

generally, as the increasing integration of the world economy. Liberalisation involves the negotiation by nations of binding contracts to remove barriers to the opening of their economies. The World Trade Organisation is the forum for these negotiations, many of which are reinforced by loan agreements between individual countries and the World Bank or International Monetary Fund.

One key issue in such negotiations is the time individual countries will be allowed to adjust to the demands of liberalisation. Countries such as the USA have been able to negotiate a decade-long transitional period to liberalise their markets for textiles and garments. The Caribbean, to date, has not had the negotiating clout to achieve similar results for some of its traditional export industries such as bananas.

Discussions are underway toward the formation of a Free Trade Agreement of the Americas (FTAA). In FTAA discussions the notion that small economies require special and differential treatment, including longer transitional terms, does not appear to have found favour, particularly with the dominant player, the United States[6].
The implications of globalisation/liberalisation include the impact of differential treatment for nationally-owned firms in the tourism, financial, agricultural and manufacturing sectors. According to some interpretations of the WTO rules, Caribbean economies may not be able to persist with requirements of significant or total local ownership of small hotels, tour operators, and the like. If this proves to be correct, then the share of national ownership in many Caribbean industries may come under threat. Though increased competition from foreign firms is not without benefits, a sudden and large-scale denationalisation of industry is likely to have substantial negative fall-out. A likely result is resentment of foreign ownership of major industries, especially those which were nationally owned. The commitment of such foreign firms to national developmental objectives is also likely to be weaker.

2.2.2.3 Unemployment, Underemployment, Crime, Drugs
The Caribbean context of the collapse of preferential arrangements and the rise of globalisation/liberalisation is the experience of substantial unemployment, underemployment and poverty throughout the region, particularly in the more populous economies. The data reveal a concentration of unemployment among the youth. It is not difficult to suggest a linkage between the frustration of unemployed youth and growing crime, notably drug-related. Trade and investment patterns are sensitive to national stability which, in small economies, can be disrupted by factors such as youth-based crime and general deviance.

2.2.2.4: The Debt Burden
Some Caribbean economies, especially those with the most significant socio-economic problems, face a constraint that stems from substantial foreign, and sometimes domestic, debt burdens that consume a large share of fiscal revenue. This is particularly true of Jamaica and Guyana and, to a lesser extent, the Dominican Republic and Trinidad and

---

6 *(A small-economies group, which has been set up in the FTAA negotiations, appears to be playing a role that is mostly cosmetic and symbolic.)*

Tobago. In fiscal 2003, for example, Jamaica was committed to expending 62% of its budget on debt service.
Facing the challenges noted above will require substantial fiscal allocations to fund programmes, including retraining of workers displaced in the process of globalisation/liberalisation, and upgrade of infrastructure (telecommunication) for new investment. Countries with significant debt burdens, however, are constrained to service prior liabilities before addressing future needs.

2.2.2.5: Risks Facing Non-preferential Export Sectors
The non-preferential and globally competitive export industries of the Caribbean will not remain unaffected by global trends. The larger question facing tourism, the most dynamic sector in the Caribbean, is that of its sustainability. By expansion of tourism beyond its eco-cultural carrying capacity, the Caribbean faces the danger of "killing the goose that lays the golden egg". The challenge is to develop sustainable tourism which is simultaneously within carrying capacity limits (whether socio-cultural, economic or ecological) while maximising the economic rents accruing from the sector.[7]

The offshore financial sector also faces the risk of decline in the face of changing metropolitan tax laws addressed to the alleged use of offshore centres for money laundering and tax evasion. In a recent OECD Report on "Harmful Tax Competition", 15 Caribbean countries are listed among the 47 with offshore financial services and nominal corporation taxes, said to be causing injury to OECD tax regimes. Offshore investment trusts, foreign sales corporations and offshore insurance companies have been identified in this report as instruments of such OECD tax losses, and are liable to be targeted by punitive changes in tax laws.

The information processing sector is dominated by low-end data entry activities subject to competitive erosion by the increasing automation which is facilitating use of non-English-speaking services in lower-labour-cost regions of the world, especially Asia.

2.2.2.6: Vulnerability to Natural Disasters/Climate Change
Table 2.1 and **Figure 2.1** show that between 1899 and 1999, Jamaica experienced the most natural disasters in the Caribbean—22 in all. St Vincent and the Grenadines experienced approximately 14 natural events with Antigua/Barbuda, Dominica and St Lucia about 11 disasters each over the 100 years.

The scenario changed over the period 1992-2002, when Antigua experienced six hurricanes, tropical storms, or extreme events. Over the same 10 years, the experience of the rest of the Organisation of the Eastern Caribbean States was just over one event per country.

One hurricane event sometimes affects several Caribbean countries simultaneously. This is an indication that addressing anticipatory adaptation to climate change, threatening to several economies, may best be done as a regional (or sub-regional) effort.

---

[7] . *(See Patullo, 1996, for a critical review of the state of Caribbean tourism; Pantin, 1999, for further elaboration of the sustainable tourism challenge.)*

The islands of the eastern Caribbean, including, St Lucia, Anguilla, Antigua/Barbuda, Dominica and St Kitts/Nevis, have borne the brunt of these hurricanes between 1992 and 1999. **Tables 2.2 –2.3** detail some of the economic impacts of these events.

Gray (1993) has projected that the sea-surface temperature in the Caribbean Sea could increase in the order of 1.5 degrees Celsius, leading to a greater number of hurricane activities.

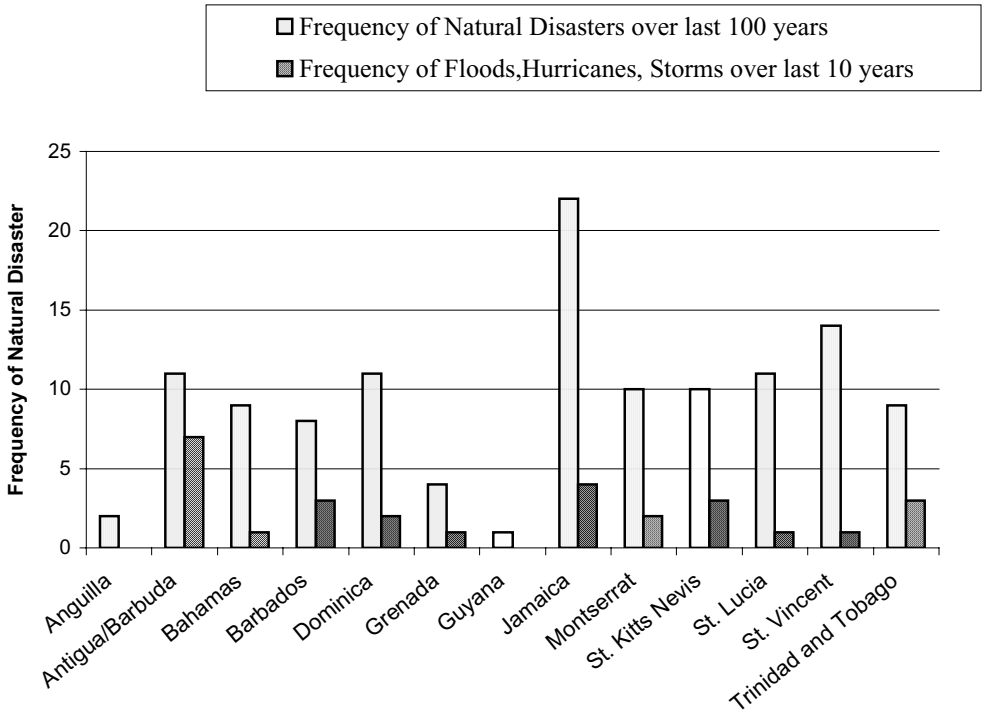
Another aspect of climate change which poses a threat to Caribbean countries is flooding and inundation caused by rising sea levels. It is predicted that global warming could result in a greater heating of water via thermal expansion. This thermal expansion, coupled with melting glaciers and ice sheets, could cause sea levels to rise. But the rise will not be uniform; it will be influenced by other factors such as currents, winds and tides.

TABLE 2.1
FREQUENCY OF MAJOR NATURAL EVENTS IN THE CARIBBEAN, BY COUNTRY – 1899-1999

Country	Frequency of Natural Disasters over last 100 years (1989-1999)	Frequency of Floods, Hurricanes, Storms over last 10 years (1992-2002)
Anguilla	2	0
Antigua/Barbuda	11	6
Bahamas	9	1
Barbados	8	3
Dominica	11	2
Grenada	4	1
Guyana	1	0
Jamaica	22	4
Montserrat	10	2
St. Kitts Nevis	10	3
St. Lucia	11	1
St. Vincent	14	1
Trinidad and Tobago	9	3

Source: http://www.oas.org/en/cdmp/document/insuranc.htm#A

FIGURE 2.1
FREQUENCY OF MAJOR NATURAL DISASTERS IN THE CARIBBEAN, BY COUNTRY: 1899 – 1999



Source: http://www.oas.org/en/cdmp/document/insuranc.htm#A

TABLE 2.2
COST OF DAMAGE TO THE FIVE COUNTRIES MOST SERIOUSLY AFFECTED BY HURRICANES LUIS AND MARILYN IN 1995, IN RELATION TO GDP (MILLIONS OF EC DOLLARS)

Country	Storm Damages (EC$ Mn)	GDP for preceding year (EC$ Mn)	Damage / GDP
Anguilla	245	166.4	147.0%
Antigua/Barbuda	810	1 143.9	71.0%
Montserrat	8.0	147.3	5.4%
Dominica	262	494.1	53.0%
St. Kitts/Nevis	532	505.6	105.2%
St. Martin	1,764		NA

Sources: CDERA: Report on the Economic Impact of the Recent Disasters in the Eastern Caribbean, 1998. ECLAC/CDCC: Selected Statistical Indicators of Caribbean Countries Doc. LC/CAR/G.535 Vol. X, 1997.

TABLE 2.3
SOCIO-ECONOMIC IMPACT OF SELECTED NATURAL DISASTERS IN THE CARIBBEAN 1979-2001

Year	Country	No. Persons Affected	Damage (US 000s)[8]
1979	Dominica	72,100	44,650
1980	St. Lucia	80,000	87,990
1988	Dominican Republic	1,191,150	n.a.
1988	Haiti	870,000	91,286
1988	Jamaica	810,000	1,000,000
1989	Montserrat	12,040	240,000
1989	Antigua, St. Kitts/Nevis, Tortolla, Montserrat	33,790	3,579,000
1991	Jamaica	551,340	30,000
1992	Bahamas	1,700	250,000
1993	Cuba	149,775	1,000,000
1994	Haiti	1,587,000	
1995	St. Kitts/Nevis	1,800	197,000
1995	US Virgin Islands	10,000	1,500,000
1998	Dominican Republic	975,595	2,193,400
2000	Antigua/Barbuda, Dominica, Grenada, St. Lucia		268,000
2001	Cuba	5,900,012	87,000

Source: CGCED Natural Hazard Risk Management in the Caribbean : Revisiting the Challenge, 2002, p. 2

[8] *Valued at year of event*

One IPCC projection suggests that sea level could rise by an average of five millimeters per annum.

Klein and Nicholls (1999) have suggested ways that sea level rise could affect natural coastal systems:

- Increasing the chance of frequency of floods.
- Erosion of beaches.
- Inundation of coastal areas.
- Rising water tables.
- Intrusion of salt water into groundwater sources.
- Biological effects—changes to ecological flora and fauna.

Additionally, Klein and Nicholls noted that, given the likely range of negative effects of higher sea levels, vulnerability studies to assess the socio-economic impacts should take cognisance of:

- Direct loss of economic, ecological, cultural and subsistence values through loss of land, infrastructure and coastal habitats;
- Increased flood risk of people, land and infrastructure; and
- Other impacts related to changes in water management, salinity and biological activity.

2.3: Sustainable Development and Sustainable Livelihoods in the Caribbean

Caribbean economies, as noted earlier, have always been dependent on their natural resources. Over time, an observable shift occurred from total dependence on arable soils for production of agricultural exports, to reliance on mineral exports and, increasingly over the last 25 years, on tourism in most countries. The natural resource-based export sectors generate the foreign exchange on which these highly import-dependent economies survive.

Varying proportions of the population and labour force, however, exist outside the formal sector based on the export industries, the public sector and the commercial enterprises. These comprise the marginalised and poor groups which vary from significant minorities to majorities across the region. Many of the poor live on the coast and/or engage in activities which either depend on the coastal natural resources, or impact on them, largely in a negative manner. These include deforestation by “slash and burn” untenured farmers, and disposal of untreated household sewage in rivers and streams, which quickly finds its way into the marine environment.

2.3.1: The Special and Contradictory Role of Tourism

The tourism sector deserves special attention since it is common to and the fastest growing industry in most Caribbean economies; it is already is the dominant industry in

several. Tourism depends largely on the environment[9] and there are increasing conflicts, as the two country case studies will reveal, between traditional natural resources users.

The growth of the tourism industry has increased the competition for coastal space and hence natural resource access and quality. The 2001 Travel and Tourism Satellite Accounts (TSA) developed by the World Travel and Tourism Council[10] estimate that by 2001 the economic impact of tourism in the Caribbean was greater than in any other region in the world. Tourism accounts for roughly 17 per cent of total Caribbean GDP, in contrast to 12 per cent for North America, Europe and Oceania. Second, tourism accounts for over 21 per cent of all Caribbean capital formation. Comparable figures for Oceania (13%) and North America/Europe (10%) are significantly lower. Third, Caribbean tourism accounts for nearly 20 per cent of total regional exports, in contrast to 15 per cent for Oceania and seven to eight per cent for North America and Europe. In 2001, tourism was estimated to absorb 2.5 million jobs in the region, or roughly 16 per cent of the total, compared to 12 per cent for Oceania, Europe and North America. In addition, the WTTC forecast was that the Caribbean would continue to lead the world in tourism economic impact over the next decade.

The Tourism Penetration Index (TPI) seeks to highlight the impact of tourism based on an unweighted three-variable index (See McElroy and de Albuquerque, 1998). This index conflates all major impact dimensions: economic in terms of per capita visitor spending; socio-demographic in terms of daily visitor density per 1,000 resident population; and environmental in terms of hotel rooms per square kilometer.

To gauge the impact of tourism in the Caribbean, McElroy has prepared an international sample of 47 small islands representing the Caribbean (21), Pacific (15), Indian (5), Mediterranean (3), and Atlantic (3). The results indicate that the most penetrated group is populated by highly developed Caribbean, Mediterranean and Northern Pacific destinations, with average per capita visitor spending over $8,000, and densities around 200 per 1,000 population. Tourists thus represent the equivalent of a 20 per cent increase in the daily island population year-round. These destinations are the most affluent, mature and promoted, as well as the most crowded with the largest-scale facilities, and the most ecosystem damage. They also exhibit the least seasonality—an indicator of their maturity and aggressive marketing—the shortest average length of visitor stay, and declining visitor satisfaction. Such characteristics collectively describe the Bahamas' high-density tourist concentration in the Freeport-Nassau complex. The Bahamas' overall intermediate score is largely due, however, to the archipelago's extensive land mass.

Intermediate destinations, the most dynamic and heterogeneous group, are normally typified by very rapid visitor growth and hotel/infrastructure construction. Many are experiencing planning pressures from resource-use conflicts as labour and capital migrate from traditional pursuits (farming and fishing) to higher-income opportunities in tourism. These 21 islands fall roughly into three subgroups. The top cluster contains a handful of

[9] *(See SEDU Report to the IDB for further details on environmental management issue in tourism. See Pantin et al, 2001*

[10] *(The WTTC is based in London, and the study was conducted in conjunction with a group of experts under the auspices of the World Tourism Organisation—WTTC, 2001)*

highly developed Lesser Antilles destinations projected to advance to most- penetrated status in the next decade. These include the Bahamas and Barbados, another mature destination. The middle intermediate subgroup includes several relatively developed Pacific and Indian Ocean islands plus another handful of Eastern Caribbean destinations including St Lucia, which has experienced rapid transformation and population growth over the past two decades.

2.4: Overview of Environmental Conditions in the Caribbean

The Caribbean inclusive of Latin America contains 40 per cent of the biodiversity on the planet "and is considered to have the highest diversity in the world" (UNEP, 2000:9). Today, however, the total region ranks second in the world in threatened bird, reptile and amphibian species, and third in endangered mammals and marine species (WCMC/IUCN, 1998). Environmental degradation has a long history in the region and is not limited to the impacts of tourism. Upland deforestation, and habitat destruction after decades of sugar and banana culture, plus the construction of large-scale condominium clusters on steep hillsides, have damaged watersheds, caused erosion and silted over permanent streams. Since 1980, arable and cropland in the Caribbean has risen 20 per cent, the annual loss of forest cover has averaged 1.7 per cent, and the freshwater fish catch has declined 12 per cent (UNEP, 2000: 116-117). Since 1980, urban growth, 50 per cent greater than population growth, has resulted in discharge of improperly treated waste. Only 39 per cent of the 140 small Caribbean industries surveyed in 1995 used some type of wastewater treatment (UNEP, 1999a). In 1991, only 10 per cent of the Caribbean population were served by a central sewerage system, and nearly 60 per cent of treatment plants in the Eastern Caribbean were operating inefficiently (Vlugman, 1992). Very little has changed since then.

Marine resources have also been altered by inland activity, coastal construction and over-fishing. Over 80 per cent of improperly treated municipal waste is discharged directly into the sea (UNEP, 2000). More than 10 million tons of eroded sediment is deposited every year in coastal waters of the wider Caribbean because of deforestation and poor agricultural land practices (UNEP, 2000: 44). As a result, Caribbean reefs, which represent 12 per cent of the world total, are in decline. A group from the Tyndall Centre for Climate Change Research at the University of East Anglia, UK, recent analysed data from 263 separate coral reefs sites in the Caribbean and concluded that hard coral cover on these reefs has declined from some 50% to 10% over the last three decades[11]

Today, 29 per cent of these reef areas are at significant risk from runoff and sedimentation, nutrients coming from hotel and vessel sewage, and construction projects and sand mining (Bryant and others, 1998). In addition, because of inadequate port reception facilities, a large number of pleasure yachts and cruise ships directly inject waste into Eastern Caribbean waters, that is, in the vicinity of those island destinations most aggressively promoting and dependent upon mass tourism.

---

11 *(T&T Newsday, 25 July 2003: 10).*

In Barbados, Jamaica and Haiti, protective reef systems have become degraded by eutrophication caused by faecal material from both land and sea-based waste (PNUMA, 1999). In combination, all these man-made environmental changes have been exacerbated by frequent, diverse, and increasingly destructive natural disasters. The Caribbean's colonial history of environmental neglect and present institutional weaknesses "suggest that the current trends of declining biological diversity will continue unabated over the next decade" (UNEO, 2000: 35), unless there is a major policy reversal.

2.4.1: Natural Resource and Environmental Impacts of Tourism in the Caribbean
Mass-tourism growth has altered insular ecosystems in the Caribbean and has directly or indirectly caused deforestation and erosion of upland forests for condominium developments and road works. Other consequences have been beach loss, lagoon pollution and reef damage from sand mining, dredging and cruise ship anchoring (McElroy and de Albuquerque, 1998).

In the United Nations Environment Program's most recent outlook for the future of the Caribbean environment, a 30-year forecast suggests some alarming trends and provides further justification for stronger policy (UNEP, 2002). Among those trends:

- Increased globalisation and trade will put further pressure on terrestrial and marine resources.
- Without significant policy reform, market forces will weaken long-run management practice for short-term commercial gain, and continued deforestation and erosion are projected.
- Marine resource degradation will continue with increased human settlement of coastal areas, the proliferation of tourist resorts, the discharge of wastes and lack of strong fisheries regulation and enforcement.
- Many endangered species will disappear. In particular, "the quality and quantity of water, and the disposal of solid waste, are particularly worrying in the small island countries and territories of the Caribbean." (UNEP, 2002).

According to this outlook, these trends can be mitigated or reversed through:

- improved management and monitoring of critical environments;
- a lower level of economic growth (or greener growth);
- improved ecosystem knowledge; and
- a conservation ethic born of an appreciation for environmental values—to be used for quality tourism as well as enhanced biodiversity for pharmaceutical uses.

Condominium clusters and road works on steep hillsides have damaged forests and watersheds causing erosion, silting over streams and wetlands, and polluting lagoons (McElroy and de Albuquerque, 1998). Mangrove forests and salt ponds also have been destroyed through the construction of large-scale resorts, marinas and infrastructure along shorelines, depleting endemic species, archaeological artifacts and reef systems already weakened by sand mining, yacht anchoring and sewage dumping (Wilkinson, 1989).

According to UNEP (1999:11), the most intrusive impacts of tourism development involve the construction phase and solid waste disposal and treatment. To this must be

added, particularly for small islands, tourism's demand for scarce water and power supplies. Recent research suggests these impacts are substantial [12]

The estimated water demand of tourism grew from 1,926 to 3,915 million gallons between 1990 and 1999. UNEP has pointed out that, as a result of tourism, the Caribbean has one of the highest per capita water withdrawal rates in the world, although its per capita water resource base is significantly lower than insular regions in the Pacific and Indian oceans (UNEP, 1999a).

Total energy consumption by the tourism sector is also estimated to have increased from 232 million KWh to 471 million KWh. Total solid waste generated is estimated to have doubled over the period from 32,104 tonnes to 65,252 tonnes. Such estimates suggest that the doubling of tourist activity during the decade of the 1990s also doubled the demand for water and power, and the supply of solid waste.

In Antigua and Barbuda, growth in tourist arrivals doubled twice between the late 1970s and 1980s. To accommodate these massive annual visitor flows, Coram (1993: 168) estimates that during the 1980s more mangrove swamps, salt ponds, and offshore reefs were damaged or killed than in all of Antigua's previous history. The result has been massive fish kills in the late 1980s at McKinnon's Salt Pond, and declines in reef life, fish and sea grass beds in adjacent marine waters. In the sister island of Barbuda, during the 1980s and early 1990s, barges of sand mined from Palmetto Point left almost daily. As a result, beaches were severely eroded and the freshwater aquifer damaged (McElroy and de Albuquerque, 1997).

In addition, in the early 1990s, the general solid waste dump, Flashes, located at the western end of the island heavily colonised with hotel rooms, had become so littered with domestic garbage and cruise ship waste that the area was plagued with flies. The plague caused wholesale hotel cancellations (Pattullo, 1996:109).

Infrastructure and hotel construction have negatively affected beach areas. In Tobago, the extension of the airport and the deep-water harbour at Scarborough in the 1980s was accomplished through sand mining. One of the affected beaches was severely altered. "Goldsborough beach…has already shown the effect of mining: the sand is black, the beach has narrowed and it is littered with dead and rotting plants and trees. No one, tourist or local, goes there anymore," reported a local newspaper. (Pattullo, 1996:109).

On the heavily built-up west coast of Barbados, hotel construction has involved the clearing of natural beach vegetation (which holds sand in place) to improve sea views and access for hotel guests. This has caused beach erosion and prompted the construction of groynes and jetties to staunch erosion. Sadly, these inappropriate structures further disrupt natural wave action and only accelerate beach erosion. As a result, some west coast beaches are reported to be receding at 1.5 meters per decade (Hamilton, 1992).

[12] *(See SEDU study on "Greening of Tourism and Adaptation to Climate Change", 2001*, Pantin et al.)

All across the region, reefs and reef life are being damaged by tourism and overfishing. Examples include snorkellers trampling reefs in Tobago; divers dragging anchors over coral in the US Virgin Islands; sailors dumping waste in the Grenadines; souvenir vendors ripping out shells, coral and sea horses in the Bahamas, and selling rare black coral jewelry in Grenada (Pattullo, 1996: 109-110).

One of the most egregious examples of marine destruction is the Bimini Bay development in the Bahamas. This involves the wholesale destruction by an American investor of a delicate mangrove fisheries nursery, to gain cheap construction fill. The dredging has severely damaged nutrient recycling in the adjacent lagoon and curtailed fish and shark production in what had formerly been a government-declared Marine Protected Area supplying large areas of the Great Bahamas Bank with fish. Fishermen who used to fish and gather conch in North Bimini Bay now must voyage much farther for their catch (Duncombe, 2001).

2.5: Study-specific Summary Natural Resources Profile of the Caribbean

For the purposes of this study, the natural resources discussion is confined to coral reefs, sea grasses, mangroves and the proximal coastal and marine areas at the study sites, in each case country (as per log frame R8135).

The coastal zone is defined by Brown et al (2002) as the set of landward systems, tending to be within the jurisdiction of one country, whose functioning and use directly affect the marine environment and the set of marine systems that exist in proximity to land. In Caribbean small islands, this land/water interface, where aquatic and terrestrial resources systems co-exist, may in effect define an entire island as the coastal zone. Caribbean coastal zones possess a number of natural resources which provide a wide range of goods and services, fuelling economic growth and development. Often, this zone is where the majority of economic activity takes place—extraction of oil and gas, fisheries, marine transport, and tourism.

Because of high population densities, poverty, and absence of sanitary facilities, the human impacts on these Caribbean environments are significant. For example, common agricultural practice (particularly shifting agriculture) is the major cause of deforestation, with directly negative effects on watersheds, rivers, mangroves and other coastal resources. Artisanal fishing methods damage Caribbean coastal and marine fishing grounds, while over-harvesting has led to the decline of wild stocks of some species in islands—*Tripneustes ventricosus* (white sea urchin) in St Lucia and *Megaptera novaeangliae* (humpback whales) in the Lesser Antillean waters.

Beach sand mining is the major human-induced cause of coastal erosion in the eastern Caribbean. Sand is regarded by people as a free natural resource. This has also led to loss of beaches, dunes and other coastal habitats.

Pollution and contamination in Caribbean coastal and marine environments is common to most of the islands: from agriculture (fertilisers and pesticides); domestic/municipal areas

(sewage, solid and liquid waste); tourism industry hotels/marinas (sewage, solid and liquid waste); shipping and marine transport (oil, solid and liquid wastes); and, in Trinidad, heavy industry (oil, liquid wastes and heavy metals).

These natural resources including inter-tidal ecosystems, beaches and sand-dune systems are inextricably linked and there are synergistic relationships that sustain the functioning of these systems. For example, there are many direct links between the extent and health of these habitats and the productivity of the inshore fisheries, which support human populations. The economic, ecological and social importance of these systems stems primarily from their goods, services and attributes.

In this respect, coral reefs rank amongst the most biologically productive and diverse of all natural ecosystems supporting as many as 3,000 species (Salm et al 2000) of organisms. In the Caribbean, they provide such goods as fish (food and ornamental); shellfish (lobsters, crabs, conchs); pharmaceuticals (from sea fans and sponges); black corals (for jewelry); and skeletal materials (used in ornaments and jewelry). Coral reefs are the basis of many coastal fisheries: they provide food and shelter for fish and shellfish. They also function as breakwaters which protect harbours, bays, lagoons and they limit the effects of erosion. Their attributes include a tourist attraction—an associated million-dollar industry. Most of the benthic (bottom-dwelling) fish species in the shallow nearshore waters of the Caribbean are associated with coral reefs as adults. Of the more than 300 species, an estimated 180 are landed for human consumption (Towle and Towle, 1991). Coral reefs are very important for subsistence and security to Caribbean coastal communities.

In the Caribbean, mangrove swamps and coastal lagoons provide goods such as construction materials; fuel—firewood, charcoal; tannins; fishery resources—finfish, shellfish and crabs; and wildlife resources—birds, caimans etc. They also provide a flood/flow control of fresh waters; storm protection and windbreaks; act as shoreline stabilisers, allow for nutrition retention, assist in water quality maintenance; and provide recreational/educational opportunities, including tourism.

The attributes of mangroves include increasing the biodiversity of the coastal waters; scenic landscapes, their uniqueness and aesthetic value. Many reef fish as well as conch and lobsters, use mangrove swamps and/or sea grass beds as nursery habitats in their juvenile stages.

Sea grass beds of *Thalassia testudinum* or turtle grass, *Halodule wrightii* and *Syringodium filaforme* occur throughout the Caribbean and increase the biodiversity of coastal waters. They provide grazing and foraging meadows for a variety of fauna which include turtles (*Chelonia mydas*), manatees (*Tricheus manatus*), parrotfish (*Scaridae*), snappers (*Lutjanidae*), grunts (*Scaridae*), and commercially important species of queen conchs (*Strombus gigas*), lobsters (*Panulirus argus*) and the edible sea urchin (*Tripneustes esculentus*). Seagrass beds trap and stabilise sediments along the coast, often preventing abrasion and burial of reefs during storm conditions. They also afford coastal protection by reducing wave action along the coast.

Degradation and contamination in the coastal zone
As noted earlier, degradation and contamination are common to most of the Caribbean territories, from industrial, urban and agricultural activities. Rawlins et al (1998) describe the practice of shifting agriculture as the major cause of deforestation, while fertilisers and pesticides are a major source of pollution. Fertiliser consumption in the Caribbean is extremely high (in St Lucia and in Martinique 14.0 metric tonnes per year). The tourism industry—hotels/marinas (sewage, solid and liquid waste); shipping and marine transport (oil, solid and liquid wastes); heavy industry (oil, liquid wastes and heavy metals); and domestic/municipal areas (sewage, solid and liquid waste); are the main sources of pollution reaching the coastal zone.

Pollution and degradation have direct negative effects (causing death and stress) on mangroves, coral reefs, sea grass beds and lagoons. This degradation and destruction are global ((IUCN/UNEP 1991, Wilkinson 1992/1998), with severe effects on the economies that depend on them (Salm et al 2000). It is common knowledge that a large proportion of the region's mangroves have been lost already to coastal development with many further areas "threatened" or "under stress" (Bacon 1990).

2.5.1: Fisheries
Capture fisheries in the Caribbean include subsistence fisheries (consumed by the local community), artisanal (small commercial operations) and industrial (sophisticated vessels and modern technology). Jackson et al (2001) suggest that fishing and, more specifically, over-fishing is a prime cause of coastal ecosystem degradation worldwide. Over-fishing causes depletion in fish stocks, such that the natural recovery of the fish is hampered. In addition, juvenile fish continue to be caught and their essential habitats for spawning are destroyed, thus further extending recovery time. Over-fishing reduces the grazers on coral reefs and allows algae to compete with corals for living space.

The natural response by fishers to reduced catches is to increase their effort. This tends to involve a greater investment of time and money, and they may use smaller meshes etc. This compounds the situation and leads to over-exploitation of the fish stock.

Many fishing vessels utilise destructive methods.

- Trawling—"bulldozing" or "dragging" the ocean floor; taking everything (all sizes)—destroys coral and rocky reefs, sponges, sea turtles etc. Turtle Exclusion Devices (TEDS) have still not been legislated for in many Caribbean countries.
- Long-lining boats which spool out miles of baited hooks in a single set, wipe out swordfish and billfish.
- Drift nets and "ghost nets" are left out for extended periods and tend to trap very large catches of all sizes, including turtles.
- Cyanide and dynamite are also indiscriminately used to "displace the fish" from their cover destroying coral reefs, rocks and other organisms.
- Commonly practised small-scale commercial and artisanal fishing methods (which include hand lining, gill net, seines, trawlers) also cause damage to Caribbean coastal and marine fishing grounds.

According to UNEP, the marine fish catch in the region is down 50 per cent in gross tonnage since 1984 (UNEP, 2000: 122).

2.5.2: Non-extractive uses of the Caribbean marine environment

Recreational activities (diving, swimming, boating etc) affect the state of these ecosystems. Coral reefs have been damaged by boat anchors and by tourists stepping on them. Other uses—for research and education, marine park developments, and as natural boat harbours—also have negative impacts on these systems.

Development in coastal areas has coincided with the influx of tourism. In Caribbean countries, this is a big threat to coral reef ecosystems, mangroves and sea grasses. In addition, the associated sewage and solid waste products generated by the tourism industry pose a serious threat.

The coastal zone is very fragile: it is here that a series of dynamic processes occur, and these are highly susceptible to anthropogenic activities. The coastal zone is a sink for receiving a myriad of effluents from land-based activities, which contribute to coastal degradation, pollution, eutrophication, and sediment and water quality decline (as identified above). It is very difficult to isolate a specific effect on the environment or resource, since it is often a result of a combination of few or many of these external factors. In addition, the inherent inter-linkages between the ecosystems increase the fragility of a particular resource. For example, deleterious impacts on a mangrove will affect adjacent coral reefs and sea grass beds, since they are often found in close association. The human impacts on these environments in the Caribbean are significant, because of high population densities, poverty and the absence of adequate sanitary facilities.

Coral reefs are very vulnerable to temperature changes since they live near the upper limit of their tolerance; small increases stress them and cause them to expel their symbiotic algae which provide their colour and nourishment. Global warming and associated climate change have already impacted on the status of coral reefs worldwide, and in the Caribbean. Natural damage and hurricanes have also injured coral reef ecosystems, and prolonged algal blooms (ref. CARICOMP…) caused extensive mortalities of reef organisms eg. *Diadema antillarum*. The massive climate-related coral bleaching event of 1998 (major el Nino 1997-1998) was the largest single cause of deterioration of coral reefs (Wilkinson 2000). On the Belize barrier reef, sea surface temperature, which rarely exceeds 29 degrees Celsius, reached 31.5 degrees and caused extensive bleaching.

2.5.3: Threats to target resources for this study

The following are threats that are common to the target resources:

2.5.3.1: Coral reefs

a. Over-fishing by commercial and subsistence fishers;
b. Uncontrolled anchoring of boats and ships, shrimp trawling, tourist activities;
c. Dredging, inland agricultural activities, coastal, residential and tourist developments;
d. Natural phenomena/global warming;
e. Pollution—oil (bilge/ships/boats)—agriculture, aquaculture, sewage.

2.5.3.2: Mangroves and coastal lagoons

a. Residential and hotel resort developments;
b. Dredging;
c. Natural disasters/hurricanes.

2.5.3.3: Sea grass beds

a. Shrimp trawling, dredging;
b. Removal for tourism activities;
c. Natural disasters.

2.6: Poverty Profile of Caribbean

During the past decade, official poverty studies have been conducted in nine English-speaking countries—Jamaica, Trinidad and Tobago, Guyana, Belize, Turks and Caicos Islands, St Vincent and the Grenadines, St Lucia, StKitts/Nevis, and Grenada. In the larger islands, the studies were conducted under the aegis of the World Bank; in the others, under the auspices of the Caribbean Development Bank. **Table 2.4** provides a snapshot of poverty estimates for six Caribbean countries between 1992 and 1995.

TABLE 2.4
POVERTY ESTIMATES OF SELECTED CARIBBEAN COUNTRIES

Country	Poverty Indicator			
	Extreme Poverty	Head Count Index (P0)	Poverty Gap Index (P1)	Poverty Severity (P2)
Belize	7.0	34.6	12.5	6.4
Guyana	29.0	43.2	16.2	8.2
Jamaica	n.a.	34.2	10.6	4.4
St. Lucia	5.3	25.1	6.5	3.5
St. Vincent & the Grenadines	20.4	37.5	12.6	6.9
Trinidad & Tobago	11.0	21.2	7.3	3.7

Source: Belize Survey of Living Conditions, 1995.
Guyana HEIS/LSMS Survey, 1993.
Jamaica Survey of Living Conditions, 1993.
St. Lucia Survey of Living Conditions, 1995.
St. Vincent and the Grenadines Household Budgetary Survey/Survey of Living Conditions, 1995.
Trinidad and Tobago Survey of Living Conditions, 1992.
n.a.: Not available

2.7 St Lucia-specific Case Study

2.7.1 Economic Profile

St Lucia has been traditionally dependent on banana production and export. Over the last decade and a half, however, tourism has been growing at a rapid rate.

2.7.2: The Banana Industry

The banana industry, for decades the mainstay of the St Lucian economy, has seen since the early 1990s a rapid decline in activity and output. This was brought about by the cash crop's vulnerability to drought and tropical storms and by extensive competition for the European Union markets which from1993 triggered new limitations on the preferential access of bananas from ACP countries.

As shown in **Table 2.5** below, over the nineties both production and exports of bananas declined at an annual average rate of minus 4.4 per cent. The levels achieved in 2000 were just about half of that recorded in 1990. The industry's contribution to Gross Domestic Product (factor costs) dropped steadily from 10.3 per cent in 1990 to 3.6 per cent in 2000. Banana export earnings also declined to just $EC82.5 million in 2000 from $EC186.9 million in 1990. The weakening euro, as well as continuing problems of fruit quality, have contributed to this decline.

According to a Government of St Lucia study, "Country Strategy paper for the Banana Industry, Agricultural Diversification and the Social recovery of Rural Communities", this fall-off in activity and output has resulted in depressed farmers' disposable income, massive farmer migration out of the industry and reduced levels of on-farm investments. The paper cited an estimate that some 49 per cent of farmers had left the industry between 1992 and 1997. The gravity of the social impact of such declines is apparent, given that the industry is estimated to have employed some 30,000 persons directly and indirectly—more than half of the employed labour force in St Lucia

TABLE 2.5
ST LUCIA: KEY INDICATORS OF THE BANANA INDUSTRY, 1990 – 2000

PERIOD	Banana Production (Tonnes)	Banana Exports To UK (Tonnes)	Banana Revenue From UK ($ECm))	Contribution to GDP (Factor Costs)	
				$ECm	Percenta
1990	135,367	133,777	186.9	97.7	10.3
1991	100,877	100,595	146.4	81.5	8.0
1992	135,291	132,854	184.8	102.5	9.1
1993	122,927	120,129	137.9	72.4	6.4
1994	90,909	90,119	115.7	58.4	4.9
1995	105,658	103,668	128.1	69.2	5.4
1996	105,547	104,805	125.8	55.9	4.3
1997	71,395	71,395	85.9	30.3	2.4
1998	73,219	73,039	91.7	34.1p	2.4p
1999	65,231	65,231	87.0	57.6p	3.8p
2000	70,281	70,281	82.3	55.6p	3.6p
Jan-March	17,970	17,970	n.a	n.a	n.a
Jan-March	12,383	12,383	n.a	n.a	n.a

Source: 1.Windward Islands Banana Development and Exporting Company
2.Government Statistical Office

2.7.3: Fisheries

Fishing is the other area of economic activity which grew significantly over the period. Fish landings increased at an average annual rate of 15 per cent over the decade. **Table 2.6** details. This represents a major turnaround from the five per cent rate of decline recorded over the preceding decade.

TABLE 2.6
ST LUCIA: ESTIMATED FISH LANDINGS (TONNES)

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Rate of Growth
573	1039	959	1114	883	983	1316	1312	1462	1718	1795	15%

Source: Ministry of Agriculture, Lands, Fisheries and Forestry

The sub-sector's contribution to gross domestic product, though small, increased from less than one per cent in 1990 to 1.6 per cent in 2000. Employment doubled between 1997 and 2000.

2.7.4 Tourism

Spurred on by Government policy thrusts as articulated in the Medium–Term Economic Strategy 1996-1998, tourism has been rapidly replacing banana as the main industry in St Lucia. As shown in **Table 2.7**, activity in the tourism sector has been steadily increasing over the period since 1990. Visitor arrivals (stay-over) grew at an average annual rate of 6.8 per cent between 1990 and 2000, while cruise ship passengers increased 15 per cent

per annum since 1997. The contribution of "Hotels and Restaurants" to GDP also increased steadily, reaching a high of 14 per cent in 2000. Employment in this sub-sector increased by 26 per cent between 1997 and 2000.

As a further indication of the increasing importance of tourism to the economy of St Lucia, the number of available rooms increased by 95 per cent (to 3,986) between 1988 and 1996. Total visitor expenditure also doubled from $US134 million in 1988 to $US268 million in 1996.

TABLE 2.7
ST LUCIA: TRENDS IN TOURISM ACTIVITY

	Visitor Arrivals		Hotels and Restaurants		
	Stay Over	Cruise	Contribution to GDP		Employment
			$ECm	% of Total	
)90	148,714		91.3	9.6	
)91	165,987		105.0	10.3	
)92	183,937		123.9	11.0	
)93	200,886		114.5	10.1	
)94	223,872		139.9	11.7	
)95	236,883		149.7	11.7	
)96	241,232		193.9	12.6	
)97	253,369	319,256	181.2	13.6	5220
)98	257,530	381,020	190.7	13.6	5260
)99	270,836	394,148	205.5	13.5	5710
)00	285,422	487,550	219.4	14.1	6585
rowth Rate	6.8%	15%			8.2%

Source: Government Statistical Office

2.7.5: Natural Resource Profile: St Lucia

2.7.5.1: Climatic Conditions

The island of St Lucia is an archipelagic state in the Caribbean, lying at 140 N latitude and 610 W longitude. St Lucia experiences a typical tropical climate with the main seasonal variation of rainfall occurring between the wet (late May to mid-December) and dry (late December to early May) seasons; with minimal precipitation during the dry. There are significant differences spatially in the annual rainfall amounts, highest in the mountainous south-central part of the country but relatively dry in the coastal plains and valleys (Caribbean Conservation Association, 1991). Overall for St Lucia, as for most of the other islands, there are only small seasonal variations in temperature, and significant spatial variation limited to a very small and localised basis. The near constant temperature is between 23 degrees Celsius and 28 degrees Celsius. The prevailing wind system is the Northeast Trades with a dominant direction from the northeast in the dry season and from the east in the wet.

2.7.5.2: Coastal resources

St Lucia's coastal attributes are typical of the Caribbean—beaches, rocky shorelines, coral reefs, mangroves and sea grass beds. St Lucia's 18 mangrove sites cover a total of 179.30 hectares.[13] Most of the mangroves have been declared marine reserves, of which the Mankote mangrove is the largest.

Sea grass beds, common along the coastline, are more extensive on the east coast than on the west. The two most common species are *Thalassia testudinum* (turtle grass) and *Syringodium filiforme (*manatee grass). *Halodule wrightii* (shoal grass) are less abundant. Sea grass beds increase the productivity and the biodiversity of the island in general, but especially foster a rich marine and coastal fishery.

Not much information is available about marine and coastal biological resources specific to the coasts of St Lucia. The Biodiversity Country Report for St Lucia (1998) presents the various species lists (fish, corals and reefs), but notes "it is difficult to currently determine threat categories for marine and coastal species in St Lucia since few relevant studies have been carried out and very little monitoring of marine/coastal areas takes place".

Coral reefs are present along both the west and east coasts, but are more extensive along the east. The healthiest (most diverse) reefs are along the central west coast, off Soufriere. The Biodiversity Report (1998) lists 29 species of corals, 333 (ray finned) species of landed fish, which includes reef fish.

The species and species diversities of marine invertebrates—crustaceans, lobsters, crabs, echinoderms, sponges—have not been well studied for St Lucia, although they have been included in some Caribbean-wide surveys (various OECS documents, CCA Environmental Profile 1991; Biodiversity Report, St Lucia 1998).

The most common turtle is the green turtle (*Chelonia mydas)*, while the leatherback (*Dermochelys imbricata*) is the least common. After increased restrictions on the traditional use of turtle resources, a moratorium on turtles was finally declared in 1996. To protect turtle nesting sites and fish nursery grounds, the Government of St Lucia declared a number of marine reserves in 1986 and in 1990. The Fisheries Act (1984) and Regulations (1994) forbid extractive activities in these marine reserves.

The commercial fishery of St Lucia is artisanal with a wide variety of species being exploited. The fishery includes: shallow shelf and reef fish, deep-slope, large pelagics, coastal pelagics, lobster, sea urchins, sea moss, flying fish and turtles. The seamoss (marine algae) species harvested in St Lucia are *Euchema sp*. and *Gracilaria sp*. The nearshore environment functions as a nursery for juveniles of many species, the adults of which are exploited collectively. The major fishing ports/landing areas in St Lucia are Vieux Fort, Castries, Soufriere, Gros Islet and Dennery.

[13] *UN Statistical Yearbook 42nd issue 1997; Bacon 1993.*

2.7.5.3: External and internal threats to the target resources

The activities affecting St Lucian coastal resources are typical of most of the Caribbean islands. They include over-fishing and illegal fishing, tourism/infrastructural development, improper waste disposal, excessive recreational use, farming, poor agricultural practices, deforestation, and sand mining. Illegal (sub-legal meshes, trammels, in marine reserves) and destructive methods by foreign and local vessels continue to plague the fish resources.

Tourism infrastructural development, which tends to be close to beaches, is growing. In addition to the generated waste products (sewage and solid) which enter coastal areas, destructive practices, such as clearing of mangroves, are often associated with tourism. Sewage pollution is a problem in St Lucia where many homes are non-sewered, and many sewage treatment plants not functioning. The UNEP (1995) report suggests that 46 per cent of sewage treatment facilities were in "good" condition while 54 per cent were in "poor" condition.

Fertiliser consumption figures for St Lucia were 7,000 metric tons for 1994/1995 (UN Statistical Yearbook, 42nd Issue, 1997). Water quality is poor in many coastal areas (CEHI 1996). The increased recreational use of coastal resources, driven by expanding tourism, has contributed to habitat degradation (and loss of biodiversity), and also perpetuated some social conflicts.

2.7.5.4: Impact on Coastal and Marine Resources of Tourism and Fisheries

The major implication of this spurt of growth in tourism and fisheries has been the impact on the country's coastal and marine resources. The Biodiversity Country Study Report argued that "the high demand for fish products and the rapidly growing tourism industry have resulted in a decline in the quality of coastal and marine resources"[14]. Continued "poor agricultural practices" inland have also been identified as contributing to this decline. The report cited "destruction of and encroachment onto coastal habitats and heavy exploitation of natural resources" among the foremost root causes of biodiversity loss in the fisheries/marine sector.

In 1995, Lorah et al, recognising the coastal resource degradation brought about by the "stresses associated with development and poorly managed growth", summarised the causes and effects of the major threats to St Lucia's coastal environment, as presented in **Table 2.8** below.

With respect to the mangrove areas, "uncontrolled use", mainly as a source of charcoal, and "indiscriminate dumping", have brought about degradation. So much so that, of the 14 mangrove areas covering some 200 hectares of St Lucia coastal land, only "two or three remain relatively intact" today. Sand mining has been identified as responsible for extensive damage.[15]

---

[14] *(Supra, Note 2)*

[15] *(See Lorah, Paul, Dennis Conway and Ed Jackiewicz, December 1995)*

TABLE 2.8
CAUSES AND EFFECTS OF DIRECT THREATS TO ST. LUCIA'S COASTAL ENVIRONMENT

THREATS	CAUSES	EFFECTS
1. Resort Development	Growth of beach oriented, high-density, high impact tourism sector.	Crowding, Habitat destruction.
2. Destruction of Wetlands/Mangroves	Sites for landfills/dumps, Charcoal.	Habitat destruction, Degradation of resource base, Aesthetic disaster.
3. Destruction of Sea grass Beds	Sedimentation, Biocides, Recreational boating.	Habitat destruction, Declining numbers of fish, black sea urchins and turtles
4. Degradation of Coral Reefs	Over fishing, Sport diving, pesticides, Eutrophication, Coral Collection.	Habitat destruction, Loss of fisheries and sport diving revenues.
5. Sand Mining	Sand used as an aggregate in the production of cement and masonry.	Beach loss, Increasing vulnerability to natural hazards, declining property values.
6. Depletion of Fisheries	Over fishing, Poor management.	Average marine catch declined 1.3% per year in St. Lucia during the 1980s (World bank 1993).
7. Municipal and Industrial Pollution	Discharge of municipal sewage, waste, Operational and accidental releases of oil, Dredging.	Increasing water-borne disease (typhoid, gastro-enteritis. World Bank, 1993), Damage to marine communities.
8. Agricultural Run off	Misuse and over application of highly subsidized pesticides and fertilizers.	Pollutes ground water and sea water. Harmful to human health and marine life.
9. Deforestation in Watersheds	Conversion of forest to agricultural uses; Inadequate property rights/ tenure insecurity farmers; Unsuitable logging practices.	Flooding of coastal lowlands, Siltation, Increase in suspended sediments that limit photosynthesis of coral reefs.

Source: Lorah et al, 1995, Supra Note 2

2.8: Belize Country Case Study

Belize is located in Central America, bounded by Mexico in the north, Honduras and Guatemala on the western Caribbean coast. Belize's Barrier Reef is the largest coral reef in the Caribbean and the second longest in the world. (It extends 220 kilometers along the coast, and covers 22,800 square kilometers.) This diverse and well-developed reef ecosystem represents the last extensive and flourishing reef environment in the Caribbean (Wildes, 1992).

There are three atolls (ring-shaped volcanic reefs—Lighthouse, Glovers and Turneffe) outside the reef and over 1,060 cays (islands formed from coral/sand debris) between the reef and the mainland. The Belize Barrier Reef contributes to tourism (18% of the GDP) and fisheries (4.5% of the GDP). Of Belize's 2.4 million hectares of territorial marine area, 6.9% has protection status. Of this, less than 10% is excluded from any extractive use (Programme for Belize, 2001).

2.8.1 Coastal Resources

The Belize Barrier Reef Reserve System (BBRS) is of great economic, ecological and social importance to Belize and was declared a World Heritage Site in 1996 with seven designated marine protected areas (MPAs).

The coast of Belize, with its numerous fringing reefs, patch reefs and the Belize Barrier Reef Reserve System form a range of habitats which support a high diversity of marine and coastal fauna and flora. The BBRS is rich in biodiversity—corals, fish, lobsters, conchs, known spawning banks, rich sea grass beds and nesting sites. They include over 600 species of reef fish, 247 kinds of reef flora (including sponges and sea grasses) and several species of reptiles (crocodiles, leatherback turtles, green loggerhead and hawksbill turtles). The BBR World Heritage Site is also home to 350 species of birds, 22 species of amphibians and 40 species of mammals including the endangered Jaguar *(Panthere onca*) and the West Indian manatee *(Trichetus manatus manatus)* (Programme for Belize doc. 2001). **Table 2.9** details further.

TABLE 2.9
BIOLOGICAL DIVERSITY IN COASTAL AND MARINE AREAS IN BELIZE (JACOBS 1998)

	COASTAL		MARINE	
Taxon	Genera	Species	Genera	Species
Fish	37	173	229	472
Invertebrates	29	45	296	456
Reptiles	17	124	5	7
Amphibians	6	22	-	-
Insects	152	240	-	-
Birds	128	177	34	47
Mammals	37	40	4	5
Plants	188	235	66	315
Totals	594			

(Source: Belize National Biodiversity Strategy, 1998)

Jacobs (1998a) suggests that, from qualitative data, it can be inferred that over 600 species of fish and 500 species of invertebrates may occur in marine systems of Belize. Only a relatively small number of these, however, have been positively identified. More than 317 reef species exist, with higher fish density on shallow reefs. The Coastal Zone Management Project (CZMAI Report 2000) says 65 coral species have been identified for Belize. *Montastrea annularis* and *Siderastrea radians* are common along the coasts. Dominant species at South Water Caye Reserve were *M. cavernosa, M. annularis, Agaricia grahamae, Diploria strigosa*, while at Glovers Reef it was *Montastrea, Diploria, Siderastrea* and *Porites*, *Agaricia sp*. and *Acropora cervicornis*.

Several studies are being carried out in Southern Belize involving fisheries and invertebrate surveys by the Smithsonian Institution and under the Caribbean Coral Reef Ecosystem Program—CORE. There have also been a number of independent studies by scientists and also from researchers of the University of South Carolina (on the mutton snapper at Gladden Spit).

Southern Belize's riverine and lagoon habitats are critical for the manatees *Trichechus manatus manatus*, while many of the cayes —Laughing Bird Caye, Southwater Caye, Coco Raye Silk Caye—are nesting sites for the turtles—*Chelonia mydas* (green), *Caretta caretta* (loggerhead), *Eretmochelys imbricata* (hawksbill).

2.8.2 External and internal threats to the target resources

Recently, the reefs of the Mesoamerican region have been subjected to natural and anthropogenic disturbances which have resulted in degradation. These include recent global occurrences (elevations in temperature), which caused the extensive, well-developed reefs on the Atlantic coast to experience massive coral bleaching and mortality (in 1995 and 1998), and increased frequency of hurricanes. Hurricane Mitch (1998) caused widespread destruction (State of the Coast Report 2000) and in 2000, Hurricane Keith (a high-category hurricane—135 mph winds) caused significant damage to land and coastal ecosystems. According to the State of the Coast Report (2000), "along the northern Cayes there was 40-48% mangrove leaf loss and numerous uprooted trees". The increased siltation caused extreme stress to the corals by smothering them and reducing photosynthetic light; in addition, there was mechanical damage (abrasions and tissue damage) to the corals. Hurricane Mitch (1998) caused massive destruction by eroding sediment along the windward sides of Ambergris Caye, Caye Caulker, Tobacco and South Water Cayes, and destroyed portions of the Barrier Reef Reserve System (CZMAI Report 2000).

These events heavily impacted reefs from the Mexican Yucatan to Honduras with losses in coral cover of 15-20% across the region, and as high as 75% in parts of Belize. Combined with other pressures (over-fishing, increased coastal developments, agricultural and industrial run-off, deforestation, land-use and sewage pollution), the effect was to leave the coral reefs and associated ecosystems in a very vulnerable state.

2.8.3 Marine Protected Areas

In Belize, competitive use for resources has become very intense, because of rapid population growth, high unemployment and poverty. This has led to resource-use

conflicts in many coastal areas. Belize has attempted to manage the use of their threatened coastal and marine resources by the designation of marine protected areas (MPAs). Although Belize is a small, developing country, it is engaged in some major conservation attempts in the form of protected areas with various active organisations. Presently, there are 12 MPAs: the Corozal Bay Wildlife Sanctuary, Bacalar Chico Marine Reserve and National Park, Blue Hole Natural Monument, Glovers Reef Marine Reserve, Laughing Bird Caye National Park, South Water Caye Marine Reserve, Sapodilla Caye Marine Reserve, Port Honduras Marine Reserve, Gladden Spit Marine Reserve, Half Moon Caye Natural Monument, and Hol Chan Marine Reserve.

Half Moon Caye Natural Monument was established in 1982 (the first reserve to be created under the National Parks System Act (1981). Half Moon Caye is located at the southeast corner of Lighthouse Reef (most easterly of the atolls). It is famous for its Red-footed Booby (*Sula sula*) colony which has an unusual pre-dominance (almost 98% of its total adult population) of a white colour phase. There are around 98 other bird species (frigate birds, ospreys, mangrove warblers and white-crowned pigeons). There are iguanas, lizards, and the beaches are known nesting sites for loggerhead (*Caretta caretta*) and hawksbill turtles (*Chelonia sp.).*

Hol Chan Marine Reserve was established in May 1987. It is in the northern section of the BBRS and is a "channel" or break in the reef which is about 15-30 feet deep. Hol Chan is rich in corals—*Siderastrea, Diploria, Acropora sp.,* various fish species and green moray eels. Within the Hol Chan Marine Reserve are three clearly defined zones:

1. The reef; no fishing/collecting; buoy moorings for use, entrance;
2. The sea grass beds; no spearing or netting of fish in the Boca Siega blue hole; fishing only under a special licence; and
3. The mangroves; plants and wildlife here cannot be collected or disturbed; fishing only under a special licence.

This MPA has effectively protected fish over the last 13 years, and there now appear to be more species, in greater abundance, and larger sizes of commercial species than in non-protected areas (Hol Chan Marine Reserve Brochure 2002).

2.8.4 External and internal threats to the target resources

The Belize Barrier Reef System is a fragile ecosystem because of the inter-connected ecosystems of the coastal area. As fishing and tourism industries in Belize expand, it faces a number of threats.

For the BBRS and coastal Belize, like the rest of the Caribbean, the natural threats are coral diseases, storms, hurricanes and global climate variations. Coastal developments for tourism—hotel construction, sewage and wastewater facilities, solid wastes, water sports/tourism activities, snorkelling and diving—also pose threats.

As do port and shipping activities—oil spills, pollution from hazardous cargo, collisions with manatees etc.

Other threats arise from the absence of land use plans, soil erosion from poor and unmanaged agricultural practices, inadequate waste disposal, industrial wastes entering the rivers, mangrove clearance, oil spills, unsustainable fishing practices, indiscriminate killings and hunting, poaching, tourism and residential development.

Increased coastal development over recent years in Belize is not limited to residential but includes industrial (tourism) and agricultural (aquaculture industry—primarily shrimp farms) development. Tourism in Belize is the major industry, outstripping fisheries, forestry and agriculture combined. Associated with tourism are increased hotel/rooms, residential homes, visitors to protected areas, coastal development activities—dredging, pier construction, water transport traffic, generation of solid and liquid wastes including sewage. Natural disasters such as Hurricane Mitch caused thousands of fish and lobster traps to be lost. The fisheries sector estimated a loss of over Belizean $1.2 million (Santos 1999). Weyman and Graham (2000) reporting on the fisheries of Southern Belize state that:

- The global and local fisheries resources are in a state of decline;
- Fishermen are working harder and landing less fish;
- Marine environments are being degraded by upland pollution, destructive fishing gears, anchor impact and increasing coastal development;
- Prices of gasoline, boats and fishing gear are increasing.

In Belize there are five types of sea grasses: turtle grass (*Thalassia testudinum*) which is most dominant; the manatee grass (*Syringodium filiforme)*; shoal grass (*Halodule wrightii*); midrib sea grass *(Halophila baillonis* and *Halophila beaudettei)* and two Caribbean species. In the Caribbean, Belize has the largest population of the Antillean manatee, which is a subspecies of the West Indian manatee *(Tricheus manatus manatus)*. The manatees live in salt and fresh waters in sea grass areas. The manatee population is small, less than 900 (CZMAI 2001) and considered threatened although they are protected (the Wildlife Protection Act No 4 1981). The manatee monitoring programme affords the CZMAI a database from which they are able to assess population changes after natural or anthropogenic disasters.

2.9 Incidence and Characteristics of Poverty in Belize

The Belize Country Poverty Assessment of 1996, using a per capita measure of poverty, reports that 33 per cent of the population and 25.3 per cent of the households were below the poverty line. The monthly poverty line was estimated at $105.82. This estimate places Belize's levels of poverty second only to Guyana's in the CARICOM region.

The incidence of poverty was assessed for each of Belize's six administrative districts. It varied from Toledo and Cayo, the poorest with 57.6 and 41 per cent of the population poor, to Belize and Stan Creek, with 18.6 and 16.1 per cent of the population poor. The lowest degree of inequality exists in Stan Creek with a poverty gap of 4.9, and the highest in Toledo with 21.8. Poverty is greatest in the southern part of the country.

The youthfulness of the poor, noted for St Lucia, is even more pronounced in Belize. Here, some 53.5 per cent of the poor are below the age of 14. In part, this high incidence of youth among the poor is a feature of the population structure itself. In Belize, 46 per

cent of the population is below the age of 14. Nonetheless, it is higher-than-average levels of fertility among the poor that have produced this preponderance of youth in a state of deprivation. Only 41 per cent of the non-poor population fall below the age of 14 years. Women constitute 49.5 per cent of the poor.

The association between unemployment and poverty is definite in Belize. Here, 27.7 per cent of the poor are unemployed, as opposed to 15.5 per cent of the non-poor. Unemployment among the poor was much higher in the urban than in the rural areas. The unemployment rate of the urban poor was 41 per cent, whereas it was 21 per cent among the rural poor. This compares with the urban non-poor who had an unemployment rate of 22 per cent and the rural non-poor with a rate of 15 per cent. The urban poor are mostly involved in the construction, wholesale/retail, and manufacturing industries. The rural poor earn their livelihoods through farming and fishing.

2.9.1 Gender and Poverty in Belize

The Gender-related Development Index (GDI) and the Gender Empowerment Measure for Belize are 0.755 and 0.496 respectively. The former measure is based on life expectancy, literacy and average income. It places Belize in position 59 in a ranking of 146 countries, and seems to suggest that, in global terms, a fair measure of discrimination against women exists in Belize.

Further, recent gender-sensitive research is said to have pointed to the existence of "inequities" related to "socio-political traditions" and the functioning of institutions that disenfranchise women in a systemic way.[16]

In the labour market, women are confined to a limited range of occupations and they find it more difficult to obtain employment than men; uncertified women are likely to have a particularly difficult time obtaining employment.[17]

Married women must have the sanction of their husbands to obtain loans from financial institutions; women are required have a man in the community as guarantor for any loan they might obtain.[18]

If women are owners of land, this provides them with some measure of autonomy. But they are less likely to inherit land than men, and experience greater difficulties than do men in obtaining land from government.

By social convention and cultural tradition, women are discouraged from going to sea to fish or dive for seafood. As one fisherman put it, "The woman's place is to be in charge of the domestic."

Although GDP in Belize has grown impressively in recent years, the poverty assessment exercise revealed levels of poverty that are high by Caribbean standards. If Belize's problem of inequitable distribution is to be addressed by providing better pay and

[16] *National Gender Policy: Belize, July 2000*
[17] *Carolyn Reynolds, Women's Issues Network of Belize.*
[18] *ibid*

employment practices, that is not necessarily helpful to women. For women are less likely than men to get jobs, tend to get the less well-paid jobs, and to be paid less than men for the same work.

APPENDIX TABLE 2. 1
GENERAL POPULATION STATISTICS ON THE CARIBBEAN

COUNTRIES	POPULAT-ION	AREAL SIZE KM^2	LANGU-AGE	POLITICAL STATUS
Anguilla	10000	96	English	UK Territory
Antigua & Barbuda	69000	440	English	Independent
Aruba	67000	194	Dutch	Netherlands Territory
Bahamas	293000	13878	English	Independent
Barbados	263000	430	English	Independent
Belize	230000	22700		
British Virgin Islands	19000	153	English	UK Territory
Cuba	11115000	114524	Spanish	Independent
Cayman Islands	35000	250	English	UK Territory
Dominica	75000	790	English	Independent
Dominican Republic	8232000	48400	Spanish	Independent
Grenada	85000 (1991)	344	English	
Guadeloupe	444000	1780	French	French Territory
Guyana	857000	214970	English	Independent
Haiti	7533000	27750	French	Independent
Jamaica	2539000	10990	English	Independent
Martinique	392000	1100	French	French Territory
Montserrat	6000	102	English	UK Territory
Netherlands Antilles	198000	800	Dutch	Netherlands Territory
Puerto Rico	3806000	9104	Spanish	US Territory
St. Lucia	136000 (1991)	620	English	Independent
St Kitts/Nevis	41000 (1991)	269.2	English	Independent
St. Vincent & the Grenadines	106000 (1991)	388	English	Independent
Suriname	443000	163820	Dutch	Independent
Trinidad & Tobago	1318000	5130	English	Independent
Turks & Caicos	15000	430	English	UK Territory
US Virgin Islands	102000 (1990)	342	English	US Territory

APPENDIX TABLE 2.2
VISITOR EXPENDITURE AS A PERCENTAGE OF GROSS DOMESTIC PRODUCT

Destination	1991	1992	1993	1994	1995	1996	1997	1998	1999
Anguilla	65.53	68.88	77.74	82.66	79.38	73.73	79.55	74.77	65.49
Antigua and Barbuda	87.47	67.36	71.47	69.25	59.47	57.08	55.28	49.13	52.43
Aruba	41.66	43.11	n.a	n.a	35.93	39.42	40.58	42.38	42.71
Bahamas	38.59	40.65	42.54	44.04	39.36	40.11	36.03	32.87	n.a.
Barbados	31.78	34.22	37.83	40.92	39.01	37.42	36.80	35.82	32.20
Belize	26.05	15.67	13.20	12.93	13.14	14.68	14.30	17.21	16.19
Bermuda	33.61	33.59	32.27	32.72	27.60	25.26	25.51	24.11	22.96
British Virgin Islands	76.61	n.a	78.59	74.21	76.76	n.a	n.a	n.a	46.61
Dominica	18.62	16.36	17.10	17.16	18.04	18.18	19.15	17.24	21.91
Dominican Republic	n.a	13.17	12.63	11.78	n.a	n.a	39.43	37.68	40.13
Grenada	22.74	22.82	26.27	31.34	29.90	29.66	28.41	27.62	27.45
Guyana	10.08	9.65	11.38	18.61	15.13	11.91	9.51	10.97	12.70
Jamaica	36.57	25.98	31.36	24.84	24.88	22.38	19.12	19.97	21.40
Martinique	6.88	n.a	n.a	n.a	8.51	n.a	n.a	n.a	n.a
Montserrat	21.24	27.85	32.82	43.22	38.57	23.15	16.92	25.24	31.20
St. Kitts and Nevis	47.77	43.71	41.75	41.06	33.49	32.44	30.30	31.24	27.85
St. Lucia	45.92	49.81	52.71	51.08	57.14	56.31	57.08	54.89	56.13
St. Vincent and Grenadines	30.01	20.65	21.70	21.49	18.38	27.08	28.63	27.70	28.56
Suriname	0.56	0.72	7.14	4.36	6.98	5.68	9.35	6.72	n.a
Trinidad and Tobago	1.97	2.08	1.86	1.93	1.47	2.14	3.55	3.39	3.10

Source: Central Statistical Offices, IBRD and CDB Reports

CHAPTER 3

MAIN FINDINGS: ST LUCIA

CHAPTER 3

MAIN FINDINGS: ST LUCIA

3.1: Introduction

This chapter begins the summing up the main findings of the study in the two case-study communities in St Lucia and Belize with those specific to St Lucia. Chapter 4 which follows does the same for Belize. Finally, Chapter 5 addresses the generic lessons and new knowledge products from all four communities in both countries.

St Lucia-specific Case Study

3.2 Summary Population Profile—Praslin and Anse La Raye

Praslin has a population of some 500, while Anse La Raye, the larger of the two selected case-study areas, has a population (2001 census) of 1,877. Some 54 per cent of the population are under 25 years old, but the corresponding ratio for the official labour force is about 27 per cent. This suggests either relatively high youth unemployment and non-participation in the labour force, or engagement of young people in their own unofficial livelihood activities. Only 19 per cent of the population has attained education above the primary level.

3.3 Natural Resource Profile of the two St Lucian Case-Study Communities: Praslin and Anse La Raye

Praslin is one of the most productive bays in St Lucia (Fisheries Dept 1997) because of the interactions of three ecosystems— mangroves, sea grasses and the coral reef.

3.3.1 Praslin Coral Reefs

At Praslin, the viability of coral reefs was described as “fair” in the Nature Conservancy (TNC) Report, 2002. This was due to the degradation in the physical and ecological conditions of the coral community and to the state of its landscape connections. Human activities in the source watersheds of Praslin have resulted in increased siltation, which leads to eutrophication and altered coastal and marine water quality. In addition to the overall degradation, the ability of the coral reef ecosystem to recover from normal disturbances—severe storms and disease—is compromised.

3.3.2 Sea grass Beds

The TNC survey (2002) described the sea grass beds at Praslin as having good viability. They are, however, being affected by increased sedimentation from poor agricultural

practices which cause increases in erosion and sediment loads in the freshwater discharges to the coast and the sea grass beds.

Praslin shares its coastal resources with other communities: Dennery for reef fish, pelagics, lobsters, sea urchins etc. Praslin fishers use the Dennery Bay landing site and storage/marketing facilities.

3.3.3 Praslin Mangrove

Praslin has a beach length of 243 metres, with the extent of sandy area, approximately 650 square metres, on the fringe of the Praslin mangrove which covers about 17.35 hectares—hardly any change between 1985 and 1997 (OECS/NRMU, 1999). The red mangrove (*Rhizophora mangle*) is dominant. Bordering vegetation consists of manchineel, shrub, grass, buttonwood *(Conocarpus erecta*) and some white *(Laguncularia racemosa)* and black mangrove *(Avicennia germinans)* (OECS/NRMU, 1999). The beach is used for recreation by the community, for pot and spear gun fishing and as a small fish landing site. Pirogues are moored here, and the beach is also used by the sea moss farmers during cultivation.

Praslin Mangrove is a declared marine reserve under jurisdiction of the Department of Fisheries. St Lucia's mangrove ecosystems (which are largely confined to the east coast) are important producers of organic matter for marine and coastal species, and provide protection against coastal erosion and pollution. In rural production systems, the mangroves have been traditionally important sources of wood for charcoal, fodder for livestock and other renewable goods and services. Although protected (Marine Reserve 1986), the Praslin mangrove areas continue to be encroached upon by banana growers (Biodiversity Report 1998). This is as a result of the lack of legal demarcation for marine reserves and the fact that many of them fall on privately owned lands. The coastal area of Praslin was also declared a Protected Landscape in 1990.

In the context of the project, the TNC report (2002) described mangrove viability at Praslin as good, but the landscape context of mangroves were "only fair" due to the loss of essential connectivity between mangroves and interior terrestrial habitats. Similarly, siltation caused by a variety of human activities has created a sand bar across the main channel of several mangrove forests. This impedes the circulation of both fresh and salt water and partially isolates these mangroves from coastal marine communities and ecological processes. Such silt bars have disrupted movements of fish between coastal waters and mangroves, both to feed and to spawn.

3.3.4 Marine algae

Sea moss or marine algae species—*Eucheuma sp.* and *Gracilaria sp*. are being farmed in Praslin Bay. Approximately 25 sea moss farmers engage in this activity.

3.3.5 Water quality

Not much information is available on the quality of coastal waters of St Lucia. Water quality in the immediate coastal areas of Praslin is, however, expected to be poor since

presently only 43.84 per cent are on a flush-toilet system with 56.16 per cent using pits (SLNT Census Results 1994). Much solid waste is also running off into the waters here.

3.3.6 Anse-La Raye: Beach Front

The village of Anse La Raye is on the central west coast of St Lucia. The Anse La Raye beach is 418 metres long, with approximately 8,045 square meters of sandy area. The beach is used for recreation and landing fish, with the bay being used mainly for net and pot fishing (OECS/NRMU 1999). The beach is a known nesting site for turtles and there are reef patches in the bay (Biodiversity Country Report for St Lucia 1998).

3.3.7 Anse La Raye coral reef, coastal and marine area, sea grass beds

The Anse La Raye coastal and marine area forms part of the Canaries- Anse La Raye Marine Management Area (CAMMA) which is a rich coastal area due to the interconnected ecosystems of coral reef with patches of sea grass beds. There are no mangroves proximal to the area. The area supports, among others, groupers, wrasses, snappers, grunts, squirrelfish, goatfish, boxfish and surgeonfish. Lobsters and conchs are also abundant in the area as are other coastal pelagic fish species (small jacks, ballyhoo and sardines) and migratory pelagics (wahoo, dolphinfish, king mackerel and swordfish).

Anse La Raye is a known turtle nesting site for the more abundant species *Chelonia mydas mydas* (the green turtle).

3.3.8 Anse La Raye water quality

Coastal water quality is generally poor in Anse La Raye; raw sewage has been observed entering the area. No recent surveys have taken place, but CEHI (1994, 1995) reported on high levels of faecal coliform in the area. The latter is due to the waste disposal practices: raw sewage (night soil) is disposed of directly into the bay and into the Anse La Raye river. The Anse La Raye area is drained by the Grande Riviere de Anse-la-Raye (8.9 square km) and the Petite Riviere de Anse La Raye (5.7 square km) catchment areas. The former is potentially at risk from agricultural practices—pollution, extraction of water, sedimentation. (See Categories of Pollution in Stream Biota in St Lucia Biodiversity Country Report 1998:p.317).

3.4 Poverty profile in the case-study communities

As a result of the preponderance of (unemployed) youth in their population, the circumstances of the two case-study communities resonate with the national profile of poverty in St Lucia.

Praslin is the more agricultural. Anse La Raye is more spatially compact and closer to the urban capital, Castries. Census data for 2001 indicate that some 50 per cent of the houses in Anse La Raye depend on a public standpipe for domestic water. In Praslin, the respective proportion is five per cent. As much as one third of the houses in Praslin are of concrete as opposed 12 per cent in Anse La Raye.

Both communities display signs of the downturn in the wider macro-economy. The downturn in export agriculture has obviously had a negative impact on Praslin, but affected Anse La Raye less since it is less agriculturally oriented. As long ago as 1981, for example, Carnegie described Anse La Raye as relying heavily on non-agricultural income sources. She cites remittances as a major source of income for this district.[19]

3.4.1 Anse La Raye

The Anse La Raye had a population of 1,476 (711 males and 765 females), according to the census of 1991. The population was spread across 462 households. In 2001, the population of the village had grown to 1,877 persons. This amounts to an annual growth rate of 2.4 per cent.

The population below 25 years old constitutes 52 per cent of the total. As much as 43 per cent of the total population of the village is either below 15 or over 65. This results in a high dependency ratio of 75 per cent.

High levels of fertility in this population are attested to by the relative size of the age groups 0-4 and 5-9 which are, respectively, the first and second largest age cohorts in the population. In low-fertility populations these two age groups would be smaller than the others.

According to the 2001 census, 72 per cent of the labour force had attended primary school only. More tellingly for socioeconomic status, 85 per cent of the heads of household had not gone beyond primary school in their formal education. Some 21 per cent of the labour force was unemployed. An equally important indicator of economic distress is the proportion of the working-age population outside the labour force. Among the young and able-bodied this is often an indication of frustration and discouragement.

According to the Poverty Map constructed using 1991 census data, the districts of which both communities are a part are the poorest in St Lucia. Both districts are ranked as "extremely poor". Within the district, both communities rank "bad" on a socioeconomic scale that ranges from "very good", through "good", "fair", "bad" and "very bad". The scale represents an index based on the possession of social infrastructure and other indicators of living conditions

3.5 Main Livelihood Practices in Praslin and Anse La Raye

The two communities share, at one level, the livelihood practices of farming, fishing and incipient tourist industries. There are some differences: sea moss is a relatively significant activity in Praslin; Anse La Raye has developed a dynamic Friday fish-night, which often attracts more people than are resident in the community. Further details are now provided below.

[19] *Carnegie, C, September 1981*

Both communities report declines in the stock of fisheries due to pollution of the immediate coastal waters, but Anse La Raye, with its greater traditional dependence on fishing and seemingly higher levels of marine pollution, appears to have suffered more in this regard. The CEHI report of 1996 tells of high levels of faecal coliform in the coastal waters due to waste disposal practices in the community. In Praslin, better waste disposal systems exist and mangroves act as natural protection against pollution.

Both communities have also been affected by downturns in the tourism industry associated with global political and economic changes.
Praslin, with its stronger tradition of farming, more clearly demonstrates the practice of occupational multiplicity than does Anse La Raye.[20]

3.5.1 Anse La Raye

Historically, the coastal environment has played an integral role in the livelihood strategies of the people of Anse La Raye. Fishing has always been important in the life of the community. More recent evidence suggests that, at least from the early part of the 20th century, the members of this community relied heavily on fishing as a source of livelihood.[21]

Currently, the economy of Anse La Raye is based on farming, fishing and cultural tourism. Of these, the last two involve direct use of the coastal and marine environment. Farming, on the other hand, is related to the coastal environment in a less immediate way. Given the small size of the island, inland agriculture affects the coastal environment through the run-off into the sea of chemicals and topsoil. The best known expression of cultural tourism is a Friday evening fish-fry attended by people mainly from outside the community, who buy the fish meals prepared by local vendors.

Accounts differ of the number of community people who earn their living from fishing. Official records indicate some 100 licensed fishers in the community. A veteran fisherman, however, reports that 300 persons go to sea on a regular basis. The discrepancy probably arises because many of those who go to sea do so as a part of an occupational multiplicity strategy, and therefore are not officially recognised as fishers. Numbers fluctuate, depending on the state of the wider economy. In effect, the natural resource- based livelihoods act as a kind of "shock absorber" for the formal economy.

3.5.2 Praslin

Farming exists but banana production has virtually disappeared.

3.5.2.1 Fishing

At Praslin, there are 21 registered fishing vessels—14 pirogues, six canoes and one transom (Fisheries Dept 2000). There are 52 full-time and 20 part-time fishermen registered for Praslin.

---

[20] *See interviews with Praslin residents in Annex Chapter 6.*
[21] *See excerpt from interview with Mrs James in Annex Chapter 7)*

3.5.2.2 Agro-industry

One significant agro-processor in Praslin buys product from area farmers, providing a good example of linkages.

3.5.2. 3 Eco-tourism

A trained tour guide serves as an agent for the St Lucia Heritage Tourism Authority and some residents are used as tour guides on nature trails.

3.5.2.4 Sea moss cultivation in Praslin: Case study

Sea moss represents an interesting new product developed within the community in recent years. The Nature Conservancy of St Lucia identified sea moss cultivation among the "eco-friendly", businesses established in Praslin as livelihood strategies alternative to the historical "near-shore fishing and agro-chemically intensive agriculture".[22]

The traditional activities were cited as sources of increasing threat to aquatic and terrestrial bio-diversity. Emerging alternatives, however, have remained marginal to date, and are in dire need of both technical and financial support, if they are to provide the economic incentive to effect a shift of the many producers away from traditional livelihoods.

Tenure, rights of access and security were also identified as key issues to be addressed if successful promotion of the alternative strategies is to be achieved.

Sea-moss cultivation in Praslin, started about three years ago with the support of CANARI, utilising a plant species imported from Belize. Praslin's sea moss cultivation is generally recognised as more advanced and better organised than a similar project in Point Sable which has been in existence for some 20 years. The activities in Praslin present a greater potential for progressing into an economically viable alternative livelihood strategy that can be the mobilisation point of related activities on the island.

In Praslin, the cultivation, processing and marketing of sea-moss are promoted and managed by a co-operative—the "Praslin Seamoss Farmers' Association". The co-operative is made up of some 20 members registered as sea-moss farmers, ranging in age from 25 to 50. Eight of the registered farmers are women with an additional three women operating farms for which their husbands are the recorded members.

The co-operative approach appears to be pursued only with respect to the processing and marketing activities. "Gel", an intermediary product of the processing activity is sold in bulk to the St Lucia Distillers and the co-operative markets a variety of flavoured, sea moss-based bottled drinks.

Institutional problems clearly affect the farming and harvesting levels. First, not all existing farmers are members of the association and those who are not experience difficulty in marketing their product. At the focus group session one farmer indicated that he had nine bags of harvested sea-moss sitting at home unsold for as long as 18 months.

[22] *"Nature Conservancy, April 29, 2002.*

Moreover, the view was expressed that the association was not really a co-operative since it is made up of individual and independent farmers. This suggests that even among members of the association, the co-operative approach is not pursued at the cultivation levels. The focus group was generally of the opinion that the association had become stagnant upon achieving some success with its venture into processing.

Farming and Harvesting

A detailed look at the economics of the vertically integrated operations of the co-operative suggests that the farmers who are members of the Association are quite prepared to return zero profits on the farming and harvesting end, in direct subsidy to processing, from which they each can eventually earn a share of the profits.

An average farm consists of 17 growing lines each 21 feet long capable of producing 77 kilograms of sea-moss (4.5kilogram/line) in one harvest. With 20 farmers this suggests a total production per harvest of 1542 kilogram.

Cost of production is estimated at $7.26 per kilogram—$1.36 (19 per cent) of which is accounted for by the purchase of planting material. Infrastructure and operational costs are therefore relatively high—some 81 per cent of total. The harvested sea-moss however, is sold to the processing plant at the same $7.26 per kilogram—suggesting zero returns to the farming end of operations. Only one farmer operates a farm large enough to enjoy economies of scale and return a cost of production of approximately $5.90 a kilogram.

The implication here is that potential exists for reducing production costs through collective or co-operative purchasing of both planting and infrastructure materials, as well as the sharing of other overheads that can bring about greater scale benefits to all the member farmers. This potential, and its implications for the institutional shortcomings cited above, need to be explored further with a view to uptake promotion.

Processing

The processing plant engages in three activities: drying, boiling and extracting, and blending and bottling of sea-moss based drinks.

(1) Drying

The co-operative recognises that current open-air drying is less than efficient and a source of major problems particularly during the wet season. Plans are in train and funding being sought for the construction of a “housed” drying plant utilising more modern techniques. Land, available at a rental of about $200 a year has already been identified. Technical assistance would be required with respect to the design of the plant as well as selection and acquisition of equipment.

(2) Extraction

Extraction effected through boiling, converts the raw sea-moss into a gel which is produced at varying levels of viscosity. At an average level of viscosity (8.06 gallons of gel to 1 kilogram of sea-moss), one gallon of finished gel weighs about 4.3 kilograms.

The cost of production of gel (assumed to be inclusive of the cost of purchase of sea-moss from the farmers) is estimated at $13-14 per gallon or $3.02-$3.26 kilogram. All the gel is sold to St Lucia Distillers (SLD) at $4 per kilogram, as quoted by SLD, generating a profit to the extraction process of at least $0.74 per kilogram of gel. (The Praslin Farmers' Association quoted the price at which the gel is sold to SLD at approximately $15 per gallon i.e. $3.49 per kilogram – suggesting levels of profit as low as $0.23 per kilogram).

SLD which utilises the gel to produce "Z-moss" an alcoholic drink based on sea-moss flavoured with coconut, argues that the price paid for gel is high, constituting some 50 per cent of their production costs. Moreover, while no specific information was forthcoming, the company claimed that quotations received indicated that gel can be obtained from Dominica, St Vincent and even Indonesia at cheaper prices. This clearly suggests the need for detailed expert examination of the potential for more cost effective operations at both the farming and processing levels at Praslin.

Currently, the St Lucia Distillers purchases 920 kilograms of gel from the Praslin Plant every six weeks from which 1,600 cases of Z-moss (7,948 litres) are produced. This is equivalent to 1,067 cases (5,299 litres) a month, the bulk of which, 1,000 cases (4,968 litres) is exported monthly to Barbados.

SLD claims that the potential exists for expansion of exports of Z-moss to Canadian and English markets, generating as much as three times the current levels. A potential of 3,000 cases (14,900 litres) of Z-moss suggests a requirement of 1,725 kilograms of gel on a monthly basis. With a storage capacity at the Praslin Processing Plant of 1,600 gallons (approximately 6,880 kilograms), the managers believe they can effectively supply all the future requirements of the St Lucia Distillers.

It should be noted here that the Nature Conservancy recommended that the Praslin Processing Plant can be the nucleus of a central facility that sources raw sea-moss from other areas of the country in particular Point Sable. The need for an additional boiler has also been identified.

Sea moss-Based Drinks

The Praslin Processing Plant produces and markets a variety of sea moss-based bottled drinks. Bottles are sourced from Miami and labels from Trinidad and Tobago. No details of cost of production or potential returns have been forthcoming in this regard. Both the managers of the Plant and the St Lucia Distillers, however, argued that significant potential exists for expansion into a number of sea moss-based products, including ice creams, desserts, fudges, jams and jellies.

St Lucia Distillers identified the St Lucia Livestock Development Company facilities, in existence for over 25 years, as capable, with little modification, of processing (including pasteurisation) and packaging of sea moss-based drinks. Carton-type packaging can be used. This potential needs to be technically explored further with all stakeholders, including the Ministry of Agriculture.

Funding
To date, the Praslin Farmers' Association has benefited from limited funding sourced from the St Lucia Rural Enterprise Project (SLREP) which financed the acquisition of labels for the bottled drinks. The Poverty Reduction Fund participated in financing the construction of the building which houses the processing plant.

Significant levels of funding are required for:

- Establishment (including equipment) of the proposed "housed" drying plant;
- Acquisition of an additional boiler;
- Acquisition of the equipment and facilities for producing and marketing the proposed new sea moss-based products.

Equally important, however, is the need for expert technical assistance at all levels of the operations being promoted by the Praslin Co-operative as a viable alternative livelihood strategy. Such assistance is needed to address questions of the rights of access and formal leasing of farmed areas, as well as security and protection from natural events such as rough seas, fresh water incursions and sea-weed spores. Technical assistance for institutional capacity building is also crucial.

St Lucia Distillers argues that the need for a national vision on the development of sea moss-based economic activity, and greater institutional pro-activity particularly on the part of the Ministry of Agriculture.

3.6 Main Livelihood and related issues in both communities

3.6.1 Anse la Raye

Anse La Raye, the larger community, is closer to the capital and employment opportunities. As a result, not all of the residents of this community depend on the natural resources of the area for their livelihood. Many commute to work daily in the capital region. The main livelihood practices in this area are also farming and fishing together, with the famous Friday night fish fry. There also is an incipient handicraft industry.

3.6.1.1 Fishing

There are contradictory perspectives on the reality of fishing in the village. The fish fry vendors claim that they cannot obtain fish from the resident fishers as a result of a virtual abandonment of the trade while fishers present at the focus group meetings deny this. The fishers also report on a conflict with tourist divers who sometimes release the fish in their pots. Need was also expressed for a functional jetty.

3.6.1.2 Fish Fry

This, as noted earlier, is a major recent livelihood practice which draws significant clientele on Friday nights. Among issues to be addressed to sustain this livelihood practice are the need for water, toilet and parking facilities. Incipient conflict has developed with parallel activities on Friday nights, involving young people from the community.

3.6.1.3 Infrastructure

This is a significant problem in the community, to the extent that a relocation plan has been drawn up but is reported to be mired in controversy over the distribution and cost of upland sites. Sewage and solid waste disposal are yet another problem.

3.6.1.4 Pollution

Pollution comes both from upstream sources (agriculture, de-forestation, waste disposal) and from in-situ waste disposal.

3.6.1.5 Financing

There was a clearly expressed need for financing of fishing including cold storage facilities and facilities and also for training in off-shore fishing techniques.

3.6.2 Praslin: Main Issues

3.6.2.1 Fishing

Another need identified is for storage facilities for catch, for addressing pollution in the coastal waters and for combating vandalism of gear and fishpots.

3.6.2.2 Sea-Moss cultivation

Marketing, provision of inputs, technical assistance for quality control are other concerns. Sea-moss producers complained about problems of marketing their product including availability of bottles and labels.

3.6.2.3 Credit Access

Concerns about credit access were linked to the problems of land ownership addressed further in Annex Chapter 7.

CHAPTER 4

MAIN FINDINGS: BELIZE

CHAPTER 4

MAIN FINDINGS: BELIZE

4.1 Summary Population Profile of the two Case-Study Communities in Belize: Sarteneja and Hopkins

As in the case of St Lucia, the two selected communities were of relatively different population sizes. Sartejena in the north has a population of some 1,700, and Hopkins 1,003.

4.2 Natural Resources in communities

4.2.1 Sarteneja and Hopkins Coral Reef, Coastal and Marine areas

The coastal villages of Hopkins and Sarteneja use various areas of the productive ecosystems of Barrier Reef, for their livelihoods. They fish in a variety of habitats—in the sea grass beds for conchs, on the reefs and elsewhere for lobsters, and along the marine and coastal areas for finfish—barracuda, bonefish, groupers, jacks etc. Livelihood practices are very different, however, for the two communities. There are no detailed scientific data on resource assessment in terms of declining stocks, but some coastal and marine species—conchs, groupers and manatees—have been listed as "threatened" (CSO 1999, Table 32A). The coral reef monitoring programme affords the CZMAI a database from which to assess changes to the coral reef after natural or anthropogenic disasters.

4.2.2. Sarteneja and Hopkins Water Quality

The water quality monitoring programme was established in 1992 by the CZMAI. This affords a database from which the CZMAI can now make assessments of changes to coastal water quality after natural or anthropogenic disasters. Little information has been published on water quality for Sarteneja and Hopkins. However, observations suggest that land run-off (eg. sewer outfalls) may be contributing to contamination of the coastal waters at both villages.

4.3 The Case-Study Communities: disparate traditions

In terms of historical political economy, Belize can be roughly divided into a northern region stretching from the Mexican border to what is now Belize City, and a southern region from that point to the border with Guatemala. Relative to the north, the southern part of the country has suffered neglect, especially in the areas of economy and social infrastructure. Thus, although both case-study areas are poor, remote rural communities, there are significant differences in terms of the regional political economy of which they are a part.

From the early historical period up to the first half of the 20th century, the main forms of economic activity were concentrated in the northern part of the country. A plantation-type economic organisation facilitated the exploitation of sugar and mahogany from this region. The forms of economic activity, social and infrastructural development and of integration into the wider global economy associated with this type of economic development were therefore a feature of the development of the northern section of the country.

These included the development of roads, schools and hospitals and the incorporation of the workforce into hierarchically structured wage relationships. The southern section of the country, on the other hand, experienced far less of this type of development. This type of polarised economic development is not peculiar to Belize. Langdon, describes a similar pattern parts of Africa.[23]

Belize is a multi-ethnic country. Sarteneja on the northern coast and Hopkins in the southern coastal region are representative of two of the main historical-cultural traditions of the northern and southern regions of the country—the Mestizo and the Garifuna. These two ethnic groupings have played a prominent role in fishing in the country. Their distinctive values and cultures have been associated with patterns of involvement with the marine environment that are quite distinctive.

Garifuna refugees fleeing political turmoil in Central America established Hopkins in 1940. The historical tradition of the Garifuna, in Belize, though, predates this by at least a century. The Garifuna, or Black Caribs, are originally from the Caribbean island of St Vincent. They are the descendants of Carib and Arawak Indians and runaway West African slaves. In keeping with the political economy of the southern region and their own cultural traditions, they developed a subsistence-type economy and social organisation based on the resources of the land and sea.

This approach to the exploitation of the natural resources has shaped to a large extent the ways in which this community has undertaken fishing as an economic activity. Fishing for these people has been, first and foremost, an integral part of their survival strategy, and quite independent of the need for economic gain. Historically, it has represented the reaping of the providence of nature to satisfy basic nutritional needs.

Of course, with the modernisation of the society and the increasing monetisation of the economy, income earning becomes an imperative. Even so, the Garifuna who now engage in fishing seem to do so in a less commercial manner. Fishermen in this community are reported, for example, to go to sea only when they are “out of cash”, but not on a regular and systematic basis.

Sarteneja belongs to a markedly different cultural, historical economic tradition. This community was established in 1854 by Mexican Mayan peoples fleeing persecution by the Spaniards in Mexico. Culturally, it is in many ways closer to Mexico than Belize. Nonetheless, the people are Belizean in their national orientation.

[23] *Langdon, 1999.*

Their interface with the commercial activity in the north of the country was associated with the development of a monetised economy quite early in their history. They moved from the sale of natural and agricultural produce to the development of fishing as their main commercial activity, in a way the Garifuna in the south never did.
Their fishing activity is not conducted in the immediate waters of the village. Rather, they utilise the marine resources stretching along the entire coastline of the country. Taken together therefore, the two disparate cultural traditions that we have described comprise much of the sociocultural traditions of the Belizean fishing industry.

4.4 Sarteneja

Sarteneja has the higher fertility rate of the two communities. In Sarteneja the total fertility rate is 5.3. In the case of Hopkins the rate is 3.8.

The disproportionate share of the population total held by the age groups up to age 14, in Sarteneja, is an indication of high fertility levels and the heavy dependency burden borne by the population of working age. Higher fertility rates in Sarteneja are related to the earlier age of marriage in this community.

Population growth in Belize is an interesting issue since the country is obviously underpopulated in terms of the existing overall land resources. However, much of this land resource is unavailable to the local Belizean population. This means that, relative to available land resources, the country is overpopulated.

4.4.1 Labour Market Characteristics

Census data indicate that the adult members of the community are not well equipped to function in the labour market. Some 94 per cent of the population had only gone as far as primary school. Of these, only 18 per cent had managed to attain a school leaving certificate. It points to the economic vulnerability of the community, the constraints that face them in their search for alternative livelihoods. This factor explains the heavy reliance on natural resources in their livelihood strategies. Often, persons outside the labour force are really discouraged workers, a high proportion of whom are women. (See **Table 4.1** for further details)

TABLE 4.1
LABOUR MARKET FEATURES OF SARTENEJA

	Sarteneja
% of Labour force with up to primary level education	94% (18% with Primary School certificate
Unemployment rate	14%
% of persons outside of the labour force who are female	82%
% of population less than who are less than 15 years of age	43%
% of population that is of working age	52%

Source: Belize Population Census, 2000/2001

4.4.2 Fishing and Livelihoods in Sarteneja

Fishing is the major economic activity for the people of Sarteneja. "Sarteneja is fishing and fishing is Sarteneja. Without fishing there is no Sarteneja," they say. The community originally made its living from the land through the sale of fuel wood and agricultural produce transported by boat to Belize City. About a generation ago, that activity declined and was replaced by fishing. At first, in the mid 1950s, this took the form of trap setting and line fishing, which was replaced by diving for conchs and lobsters.

In the early days livelihoods were made through a combination of fishing and farming. Today, one fisherman estimates, only 25 per cent of the fishermen of Sarteneja are also involved in farming. In the past, sail boats were used exclusively for sea transport. Today, these have been supplanted to some extent by "skiffs", or fibre glass motor boats. There are some 150-200 boats in the village and these are each manned by an average of five persons. Estimates of the number of fishermen in Belize range from 3,000 to 3,500. Fishermen from Sarteneja make up as much as one third of this number.

The sea as a source of subsistence

Fishing as a means of subsistence has declined significantly over the years, replaced by fishing as a commercial activity. Nonetheless, seafood is an important source of protein for some families. Community members estimate that it costs about $30 per day to provide basic nutrition for a family of six. Knowledgeable observers living in the community estimate that a small number of families, who are not able to obtain a daily source of animal protein such as fish or chicken, eat instead, corn tortilla or some such starchy staple. These persons, they suggest, only get this kind of food on the weekends. Increases in the cost of living make it impossible for them to afford basic foodstuff.

Some families consistently do not pay the school and exam fees of $3.50 per term. Four per cent of the children five to 14 suffer from extreme hunger. The major cost of living expense is said to be food.

4.4.3. Pattern of use by the poor of the marine environment

Environmental and socioeconomic structural constraints have brought about a heavy dependence on the sea for livelihood in this village. Geographical remoteness, the absence of any other major commercial activity to provide employment, and a broader macroeconomy dominated by primary economic activity, go a long way in explaining the villagers' dependence on the sea. In addition, limited education, limited access to credit, and a system of land tenure that alienates 80 per cent of private land into the hands of foreigners[24] are the other factors in this outcome.

Lack of access to financial capital prevents the fishermen from investing in fishing, and limits their ability to develop new economic activities. Compounding the factor of low education levels is the fact that the traditional language of the village is Spanish as opposed to the more commonly spoken English in the rest of the Belizean society. The result is to limit the range of labour-market options and the ability to interact with and make demands upon government institutions that regulate the marine environment.

[24] *SPEAR, 2000*

4.4.4 Estimates of the 'catch'

Fishing is thus the main labour-market activity for the village. Young men enter into it enthusiastically as a means of immediate income. They do so, in the main, via their family network. Each catch has to be divided between the boat, the captain and the men on the boat. Fishermen are at sea for nine months of the year. One fisher reports that he fishes for "fin fish" six months, and conch and lobster during the other three. Another, of 20 years experience, says he is at sea eight days out of every 14.

According to this fisherman, in the first two trips of the season, each fisherman will catch about 80 pounds of lobster after eight days. The boat will therefore have 400 pounds, if there are five crew members. Subsequently, the size of the catch declines to about 20 pounds per fisherman per trip. Yet another reports 600-700 pounds of fish caught each week. One fisher reports that when he goes with the sailboat he goes off in his dorrie and dives from 8 am to 3 pm. each day for 12 days. Each day they pay the boat one pound of lobster. They catch about five pounds of lobster each day. Hurricanes, he suggests, do most of the damage to the fishing activity. Since Hurricane Mitch in 1997, he reckons that there has been a fall in seafood stock due to the destruction of the lobsters habitat.

One fisherman of 26 years' experience reports that the lobster catch has declined during his time. He attributes this to the presence now of more fishermen. He also notes that the weather has become more volatile during this time, and that that has also had a negative effect on the size of the catch. Four years ago, at the opening of the lobster season, he used to catch 175 pounds of lobster. This has declined steadily: in the last two years, he has caught only 64-65 pounds at the opening of the season. At the October 2003 beginning of the season, he reports fishermen catching only 10-14 pounds of conch.

Discussions and interviews with those involved in the exploitation of the marine resources in this village yield the following:

- The people of this village rely heavily on the sea as a source of income and sustenance. The main drivers in this regard are increasing population size and lack of comparative non-marine earning activities.
- Overuse of the environment and restrictions on the scope of fishing activities have been associated with a decline in the per capita intake from the sea. Although this represents a threat to the villagers' current standard of living, it has not yet translated into significant declines in their material circumstances. Nutrition and health have not yet been adversely affected.
- Natural disasters in the form of hurricanes also seem to have had a devastating effect on the seafood stock.

4.5 Case Study 2. Hopkins

As in Sarteneja, the youngest age groups make up a disproportionate share of the population total. Again, this is an indication of high fertility levels and the heavy dependency burden borne by the population of working age. The lower total fertility rate

in Hopkins is probably related to mating patterns and the higher levels of education in comparison to Sarteneja. **Table 4.2** provides further details below.

TABLE 4.2
LABOUR MARKET FEATURES OF HOPKINS

	Hopkins
% of Labour force with up to primary level education	92% (46% with Primary School certificate
Unemployment rate	18%
% of persons outside of the labour force who are female	72%
% of population less than who are less than 15 years of age	45%
% of population that is of working age	48%

This table highlights the unfavourable labour market situation and economic vulnerability of the members of the community. It points to the constraints that face them in their search for alternative livelihoods, and provides some understanding of the reason for the heavy reliance on natural resources in their livelihood strategies. Persons outside the labour force are often in fact discouraged workers, a high proportion of whom are women.

4.5.1 Fishing in Hopkins

Fishing in Hopkins has been a part of the subsistence tradition of the people. This means that, in the main, it is artisan in character, pursued on a small-scale basis to meet daily needs rather than as a major business activity with the objective of wealth accumulation. One source estimates that for every 10 fishermen in Hopkins two are commercial and eight subsistence.[25]

Unlike in the northern part of the country the social structure of coastal communities such as Hopkins has not been traditionally shaped by commercialism and the unequal distribution of land associated with plantation agriculture. The result has been a flat social structure, with relatively low levels of monetisation, modified with the establishment of citrus and banana plantations in the areas immediately beyond the community, external migration, and the coming of foreign tourism investors.

Because of remittances from the Garifuna community in Chicago, USA, the community relies less on fishing. Since the early 1990s, the community has been modernised by the introduction of telephones, electricity, water and cable television, and road connection to the rest of the country. Tourism is now established— small guesthouses owned by the

[25] *Gaspar Martinez, former Hopkins resident and SPEAR, Community Empowerment Co-ordinator*

locals and larger facilities built by foreign capital—leading to less reliance on fishing. Many locals find employment in these foreign concerns. The young men work as maintenance workers, drivers, tour guides and the young women as domestics in the hotels.

4.6 Main Issues in both Belizean communities

The main common concern in both communities related to fishing, which had both a national and trans-border dimension. Concern was expressed that the declaration of Marine Protected Areas had been undertaken without the communities' full participation and involvement. Moreover, they were not involved in any co-management of these MPAs. A second significant concern was the impact of non-Belizean fishers on the stock of fish, including during the declared closed seasons for conch and lobster.

4.6.1 Hopkins-specific

A particular concern was with land availability for residents including that resulting from population growth. Residents also disputed some of the national data on the community, including the extent of available sewage facilities. A similar sentiment was expressed about the estimation of fish stock.

4.6.2 Sarteneja-specific

The participants in focus group and individual meetings seemed to recognise the need for alternative livelihoods but felt that they faced several constraints on this score. One was that Spanish was the common language, while training in tour guiding, for example, required a good grasp of English. The language problem also tended to be correlated with the educational levels, detailed further in Chapter 7.

CHAPTER 5

MAIN GENERIC FINDINGS AND IMPLICATIONS FOR NEW KNOWLEDGE

CHAPTER 5

GENERIC ISSUES AND IMPLICATIONS FOR NEW KNOWLEDGE

Introduction

Background

Considerable research and development has taken place in the Caribbean around specific environmental issues, among others, coastal pollution, the economics of the tourism industry, technical aspects surrounding production technologies, and even resource management practices. Several country-level poverty study reports also exist. Unfortunately, such research and development work tends often to stay "boxed"—sectorally or at the analytical stage.

The challenge in a situation of rapid global changes—climatic or trade-related—and more ingrained poverty issues is to identify the bigger picture, covering the policy and institutional environment, and understanding points of integration and opportunities in related or impinging sectors.

Suggested solutions and options arising, then, need to be brought to and thought through with stakeholders: resources users, practitioners like NGOs, and policy makers. This, which amounts to putting research effectively into action, needs to start with identifying the feasibility of priority options and the right tools to take forward complex multi-disciplinary and practical solutions.

Aims of study

With respect to alternative and enhanced coastal livelihoods, this study has set out to address the challenge of identifying main issues and options, and of putting the results into practice. Study R8135, looking at the feasibility of alternative coastal livelihoods, has sought to draw out information and knowledge directly relevant to understanding the constraints and the opportunities applicable to feasible alternatives.

The study was designed to explore this through the following outputs:

1. Assessing the demands for new strategies on alternative coastal livelihoods—what and where are the needs of the poor, and the sustainability of present coastal resource uses.
2. Understanding the strategic constraints to natural resource livelihoods: what are the limitations through use rights for example.
3. Understanding opportunities for enhancing livelihoods, including alternatives.
4. Identifying strategies to enhance the capacity of the poor to implement proposed alternatives.

5. Identifying indicators by which change agents may assess progress toward enhancing coastal livelihoods.
6. Distilling key messages and identifying pathways for bringing the messages to the change agents so that they provide real influence.

With the last two outputs in mind, this chapter has set out to summarise key messages, indicators and pathways to uptake. These will be further elaborated with local partner institutions through a follow-on project (R8325) starting in 2004.

The first four chapters of Volume I of the report provide a synthesis of the specific findings of this study based on the more subject-specific reports detailed in Volume II (Chapters 6 to 9), which follow.

In this chapter, the generic findings of the specific community and country case studies are distilled, together with their implications for new knowledge.

Site selection and methods of the study

The study took place through work in four sites in Belize and in St Lucia, carefully selected to provide a wider relevance in terms of geographic situation, ecosystems, socioeconomic conditions (especially of those living in poverty), resource ownership and governance.

The analysis of constraints and of opportunities to enhance coastal livelihoods in the study areas was done using a sustainable livelihoods approach (SLA). Participatory discussions, inherent to this approach, assisted in ensuring that analysis of issues reflected, as closely as possible, the multifaceted perspectives of resource users themselves, including issues of access, assets and the decisions the poor can make. In addition, working with key partner institutions—CZMA/I in Belize and the National Trust and Heritage Tourism Division in St Lucia—the study was able to examine broader policy and institutional constraints, and potential channels for overcoming them.

Stakeholder feedback workshops at the end of the study, where the overall results were presented, helped validate the analysis, priorities, policy relevance, and the feasibility of putting some of the findings into practice. These validations have been incorporated in the summary below.

Persons living in poverty and their needs

The study confirmed the range of issues of poverty in the coastal areas in the Caribbean: often a dependency on multiple incomes, the increasing limitations on direct resource use such as fishing, and lack of control over decisions by users. In addition, the most vulnerable tended to be the indigenous people, women, youth and those living on the margins, poorly served by decision-making processes, and services such infrastructure and credit. The findings pointed to improvements in the existing initiatives: in resource management and alternatives, such as resource conservation and tourism—rather than starting initiatives from scratch.

Main findings in terms of constraints, opportunities and strategies
Because of the strong linkages among constraints, opportunities and potential strategies under certain themes, for example, tourism, the following section identifies eight main generic findings.

1. **Need for improved information on credit access and use, and on new and innovative credit mechanisms**

The poor are acutely aware of the threats to their existing natural resource-based livelihoods. The more enterprising poor are searching for alternative ways of maintaining the same livelihood practices, or of shifting to alternatives—natural resource-based and other.

Two linked generic findings of the study relate to the role of credit in this process. On the one hand, the poor are not always aware of existing credit sources, or whether and how they can access them. Communication products are accordingly needed to ensure effective transfer of information on credit opportunities.

On the other hand, the very specific realities of the poor require innovative credit mechanisms. The issue of commonly owned land, for example, illustrates the difficulty in accessing credit found by many people who lack individual title to land. Creative and practicable alternative options—group-based micro-credit collateral systems— must be found for using land as collateral, drawing on lessons from across the region and from Asia and Africa.

2. Access to new knowledge of production techniques
Livelihood practices of the poor are many times constrained by limited knowledge of the most efficient and effective methods of production. In St. Lucia this was observed in sea-moss cultivation, harvesting and processing. Efforts to obtain new knowledge on processing techniques were stymied by the cost of obtaining such new knowledge. More generally, such knowledge limitations were identified across the board—in fishing, farming and agro-processing techniques.

3. Marketing Limitations
Even when the poor have surmounted the production requirements, they suffer from limited knowledge about getting their output to market. In the feedback from the communities, access to information at different institutional levels was cited as important. Information needs to be met range from technical information on aquaculture opportunities to prospects for capacity and skills development to enter the tourism industry. Marketing tools such as e-commerce, for tourism were not on their horizon.

4. Infrastructural Limitations
Almost by definition, the poor face challenges in terms of the availability of adequate infrastructure to reduce the transaction costs of their individual or group efforts at maintaining or enhancing their livelihoods. In Anse La Raye, St Lucia, groups, mostly women, have developed a successful Friday night fish-fry operation. However, the infrastructural base of the community—sewerage facilities and a propensity to flooding—

is weak. Inadequacies of road and transport access to Hopkins and Sarteneja in Belize also are evident alongside similar problems of sewage and solid waste disposal.

5. Policy framework specifically for small-scale, pro-poor tourism

Tourism is the most evident alternative, which is widely identified by the poor as the one which they wish to explore. Nevertheless, stakeholders often perceived limitations to their entry: land ownership, skills/capacity, etc. Also, the type of tourism (community tourism) that is more inclusive in terms of respecting local needs, as well as creating the right type of opportunities, requires considerable attention to define strategies, resources and specific information. Even with all the existing initiatives in St Lucia, potential tourist attractions remain to be promoted.

National tourism policies reflect this in only a limited way; the case-study countries are focused on the formal and familiar tourism sector. The Heritage Tourism project in St Lucia is, however, a model to be emulated. To support their effective participation in tourism, the specific needs of the poor, need to be recognised and accommodated in public policy. The needs include training, credit, marketing and promotional support, and equity participation.

Access to land as an asset emerged as important, to gain a foothold in building alternative options not only as collateral for loans (Point 1 above) but also as a base for tourism establishments.

The findings on tourism as a central source of opportunities for alternative and supplementary incomes tally with its overall importance in the Caribbean. The findings also indicate the challenges of tourism as an effective opportunity for the poor and marginalised NR users. Local skills and resources must be enhanced but, on a wider policy level, planning and regulation must also be adapted to the needs of poor people, implying longer-term work on influencing change (see Ashley, 2000, Box 5.1).

BOX 5.1
POLICY CONCLUSIONS ON PRO-POOR TOURISM

- Tourism development has not, to date, incorporated poverty elimination objectives. It remains driven by economic, environmental and/or cultural perspectives at national and international levels.
- Given the massive impact of tourism on many of the world's poor, how and how far pro-poor tourism can be promoted needs to become a central issue.
- Tourism makes a wide range of impacts on livelihoods of the poor—not just jobs or incomes—with differential costs and benefits.
- Participation by the poor in tourism, and the benefits they gain, depend on a range of critical factors including the type of tourism, planning regulations, land tenure, market context, and access to capital and training. Many of these can be influenced by changes in policy or external support.
- Plenty of unexploited scope exists for adapting tourism interventions to enhance livelihood benefits to the poor from tourism.
- Pro-poor tourism strategies must be commercially realistic. Although the private sector cannot be expected to prioritise poverty objectives, it must be included in the process of developing pro-poor tourism.

Source: Ashley 2000, "Pro-Poor Tourism: Putting Poverty at the Heart of the Tourism Agenda."

6. Governance in poor communities
The efforts of the poor require supportive systems including those of their own making, such as co-operatives. Yet the case studies revealed significant weaknesses in these voluntary governance systems and, as well, in more formal systems such as local government.

A good example is the continued destructive trawling in Belize, despite repeated requests for bans. Such fishing still allows room for some local livelihoods. Change from such NR use is thus a slow process which must go hand-in-hand with practicable and visibly feasible alternative livelihood options. In Anse La Raye, St Lucia, on the other hand, there is an incipient conflict between the fishers, the Fish Fry vendors and the youth in the community who host parties on the very night. No forum exists in which they can all work through their mutual interests and come to mutually agreeable arrangements, which provide all with some rewards. In Sarteneja, inter-party and inter-religious differences also impact on the capacity for community solidarity.

Options must therefore be examined in a quest for stronger decision-making frameworks through conflict-resolution processes and instruments for building local democracy.

7. Legislative framework
Each of the six generic issues noted above tends to have a legal dimension. Many specific laws governing natural resource use constrain common- policy frameworks. Land law lags behind the realities on the ground and also impacts on the credit system and law. Legal frameworks for tourism rarely address the specific need to ensure active, positive participation of the poor. Stronger pressures for decentralisation and devolution initiatives across the region also carry relevant implications.

A further need is to address the issue of wider land allocation policy its implementation in the transparency in land registration procedures.
8. Policy makers must integrate poverty analysis with sustainability and natural resource issues.

Each of these tends to fall under the remit of distinct public agencies, and also to coincide with differing disciplinary structures. The frequent result is limited contact with, or communication among, those responsible for pulling together the total package of policies which impact simultaneously on the poor and on sustainable use of natural resources. Many important concerns—particularly those of poor people—fall between the policy cracks. Belize has taken the very positive step of introducing Marine Protected Areas (MPAs). However, some local fishers have complained, perhaps incorrectly, that they have not been adequately consulted and are being unnecessarily deprived of access to a livelihood.

Policy makers must derive enhanced capacity for economic valuation of natural resources and for identification of policy instruments to ensure these values are reflected in policy decisions on user fees, fish permits etc.

Participants in feedback sessions raised important points about the influence of research which may have lost some credibility among resource users. (One example was the use of research as the basis for the unpopular ban on Nassau Grouper fishing.) A second consideration was the capacity of research to influence politicians to change policies and their implementation in a positive direction.

Participants argued research processes should contain room for flexibility, allowing follow-up actions to address community needs for information in, among other areas, disaster preparedness, or specific technology.

Overall, the community feedback highlighted the need for access to assets, information, and influence. The call is for research guided by a more concerted, but perhaps delicate, approach to examining not only political/power issues in natural resources management, but also in wider decision-making on local development. In all cases, the imperative is putting community groups at centre stage, to shape the type of information to be generated and the instruments which ensure communities obtain and use information effectively. This may mean strengthening the capacity of organisations to voice their needs and demands, and shaping strategies and research agendas around those demands.

Relevance of findings and emerging strategies

The feedback sessions, involving the "poor" and partner institutions, and the wider feedback to the Caribbean research and policy community, indicate that the findings have a wider relevance to the regional situation. The sampling process in the selection of study sites and the background literature further support this conclusion.

The present findings on the ground recall similar trends found under R7797 in Tobago and Jamaica on coastal NR dependents, their relationships to their local institutions and services, and their opportunities for alternative livelihoods. Further parallels are in the constraining factors: a multiplicity of policies and national programmes—extending beyond the fisheries sector, or environmental protection per se, such as land tenure and planning—affect the opportunities available for alternative livelihoods.

The findings here resonate strongly across the Caribbean (R7797), but also with wider issues on coastal livelihoods when examined under the SL approach. A study on coastal livelihoods in India, Bangladesh and Sri Lanka (IMM, 2002) brings up similar issues. This raises the possibility of more generically applicable findings and lessons about realistic opportunities for enhancing outcomes of coastal livelihoods. Strategic issues faced by coastal communities and support agencies when addressing realistic opportunities and strategies include:

- Alternative livelihoods are often proposed but few are suitable or viable. Supplementary incomes of various kinds may well be as important as alternatives.

- Sustainable approaches (SLA) are useful for understanding the diversity of poor people's needs, both group and individual needs. In these approaches, a locally developed and relevant terminology should probably be adopted.
- SLA also helps in starting to examine options for more profound policy change. One such change is to identify poverty concerns for indicators within ICAM policies and related legislation. This is a process that these findings can contribute to.
- The actual policy development processes are important: where and how, and through which representatives, communities can engage in policy processes that affect them, considering the multiplicity of ways and, often, the obscurity in which policies are implemented. Baumann and Sinha (2001) emphasise that the political engagement of communities (building their "political capital") should be further developed to take the important analysis of SLA to practicable action. This is particularly so since programmes for the poor tend to be captured by local or national elites.
- The IMM findings also point to further coastal parallels in respect of the need for disaster preparedness systems and the high- priority access and sharing information by communities and practitioners.

Implications for knowledge and change

After identifying eight key generic findings from the study, questions naturally arise about

a) the new knowledge necessary to address these findings and,
b) to whom this should be targeted.

Concerns relate to target audiences, types of messages and products.

Outlines of a communication programme

Some areas for consideration in the actual process of communicating, negotiating and delivering change in policy or in practice are:

- General ones pertaining to how policies are developed and with what information, how they are monitored and analysed.
- Resource management, particularly measures clearly linked to the needs of the poor which are often considered externalities, such as watershed management, and credit, which is frequently considered outside the sector.
- Alternative extractive (sea-moss) and non-extractive (tourism) coastal resources uses which can provide real opportunities, when they come together with appropriate capacity-building and supportive policies.
- Alternative uses on land (farming) add another dimension in terms of policy issues that need to be addressed under the rubric of land tenure.

All of these point to creative use and development of a knowledge management framework. Some of the areas to be addressed have to do with translating and sharing existing knowledge among users, in such a way as to be supportive to the poorest. Here, creative and peer-to-peer sharing systems are critical.

On another level, the challenge is to engage stakeholders in a real debate about the value of information and facts which lead to strong and pro-poor policy. Facts need to be credible to users; facts should not easily misused or ignored by policy formulators and politicians.

A communication programme should set out how the project's aims will be achieved using a range of targeted communication strategies to reach well-defined audiences. To ensure that the strategies are accepted and owned by policy makers and those in a position to influence the livelihood strategies of the poor in the coastal zone, the activities should aim to target relevant government and statutory agencies. In addition, local and regional NGOs and, in some areas, the local business sector should be targeted. The communities in which the research was carried out are also a target for relevant communication strategies.

To ensure ease of uptake by the poor in the coastal zone, the intention is actively to engage the identified target peoples and institutions in the promotion and implementation of the new strategies.

The communication programme and product and communication matrix developed (see below) capture the key information themes for taking forward such new strategies, and their applicability to different local stakeholders.

In this context, five types of new knowledge are identified; the first four are deemed particularly relevant to the project.

1. Knowledge which already exists in the case-study communities but which is not known to all those for whom it would be useful (production methods).
2. Knowledge which exists in the case-study country but not in the communities themselves (credit facilities).
3. Knowledge which exists in the Caribbean region but not in the case-study country (heritage tourism support).
4. Knowledge available in the rest of the world but not in the Caribbean (e-commerce promotion for the poor).
5. Knowledge on the latest innovations relevant to the livelihood practices of the poor.

Products for multi-level audiences; multi-level messages
The findings of R8135 are both specific to the communities studied and, by extrapolation, generic to the experience of poor coastal dwellers making their living from the environment. Some of these findings will require improvements in techniques or approaches at the community levels. They also require changes in the policy

environment, including provision of new or altered facilities so as to enhance the quality of the livelihoods under study.

Given that audiences include both policy makers and the poor users of marine resources, it is vital to plan communication strategies which can address the multiple perspectives of the same issue—for instance, the provision, as well as the effective use, of credit.

R8135 has found, for example, that the provision of innovative and appropriate credit mechanisms was a vital means of enhancing the natural resource-based livelihoods of the poor in coastal areas. Encouraging policymakers and the private sector to take appropriate actions to provide these mechanisms is therefore one important activity. However, it is also important to communicate, to the poor, the benefits (as well as the risks) of using credit to improve levels of operation. The poor should also be advised on the most effective means of utilising credit mechanisms.

A generic finding—the need to enhance production and marketing knowledge, towards improved product quality and a better livelihood—is rooted in a range of specific findings. The latter concern standards of hygiene within communities offering bed and breakfast and food services to visitors; production techniques in food services; and sea moss harvesting. Some of these findings can be addressed by direct interventions at the community level, and can be incorporated into products with application in other similar communities elsewhere. Related aspects involve interventions with policymakers and technocrats so as to ensure an encouraging policy environment and necessary infrastructural, fiscal and other provisions. For instance, training at the community level may enhance the offering of local tourism services. But infrastructure—roads, signage, sewerage, garbage collection and disposal—as well as promotion at the national level are also important in attracting visitors to what the community is offering.

The key, then, will be to choose those strategies which have greatest impact in changing the approach of policymakers, in changing the negative and in enhancing the positive elements of natural resource-based livelihoods of the poor. Given that it will not be possible to reach all potential audiences directly, it will also be important to incorporate strategies with the potential for a wider, long-term reach. Among these are the use of audio-visual material in training sessions; and as providing information to and through the mass media. Issues of cost-effectiveness within the established time-frames will clearly determine the ultimate spread of activities undertaken.

Practically, such issues as literacy levels, habitual language (Spanish or French Creole rather than English in some target communities), as well as attention span and access to electricity and other services, are important factors in assessing the effectiveness of communication products. It is thus important to factor in costs of producing Spanish and French Creole as well as English language versions of a proposed video aimed at enhancing product quality and marketing effectiveness. An assessment of what communication products already exist will also be necessary to avoid reinventing the wheel.

Target audiences
Three main target audiences are thus identified with some key means of communication:

First, **policy makers** at the national, regional and international levels, all of whose decisions impact, directly and indirectly on the livelihoods of the poor. (IMF, World Bank policies or DFID support systems, etc). Knowledge products useful to policy makers and communicating with are:

- Policy briefs and analyses
- Study findings in digestible formats
- Policy models, regional templates
- Workshops and seminars
- Innovative, rapid and easy-to-use analytical frameworks and methods

Second, **policy actors in both the public, business and other civil society institutions** (NGOs) whose direct action impacts on the livelihoods of the poor (tourism investors, environmental NGOs).

- Suggested guidelines and procedures for implementing policies and policy implications
- Skills and tools for communicating and negotiating with public
- Knowledge and information on systems for communication: electronic, direct, popular media
- Tools for training, teaching, distance learning
- Technical material for new livelihoods skills, techniques

Third, the **poor themselves** who are seeking, in their individual and co-operative capacities, to maintain and enhance their livelihoods.

- Leaflets, booklets videos to learn new techniques
- Community tele-centres for accessing information, as are being tested in South Asia
- Information flyers for understanding legislation
- Popular media tools for understanding and analysing political processes around them
- Skills and ideas for negotiation and communicating with policy makers,
- Networking and alliance building, organisational development to reduce transaction costs of accessing information

Maximising effects of communication
To maximise resources under short time-frames and to create an impact with target groups, an intensive approach would be appropriate. A format for this could be the research/communication team spending up to one week in a target country and with target institutions, delivering the main findings as well as validating messages to be incorporated in more long-term outputs. Clearly, preparation on the ground will be vital to the success of such an approach.

Local NGOs assisting in the workshops and participating in the discussions would also benefit from their integral involvement in the process.

It is also anticipated that the discussion generated during the meetings and workshops will help the research/communication teams to test and to validate findings drawn during the course of R8135; and thereby to enhance the relevance and utility of the communications products proposed.

The product and communication matrix presented below summarises the new knowledge, target audiences and appropriate media of communication for both the generic and the specific products identified for the case study countries and sites.

DFID R8135 – PRODUCT AND COMMUNICATION MATRIX

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers (Causal and Impact Factors)	New Knowledge to Maintain and/or Convert Practices re Sustainability and/or Alternatives	Relevant Decision Makers to Receive New Knowledge	Appropriate media of Communication of New Knowledge
GENERAL					
General to all livelihood practices	Integrated NR and poverty analysis	Limited appreciation of poverty, its causes and of policies to address same alongside NR management	New knowledge on the methods of poverty analysis and its integration with NR management	Policymakers at the Government; Statutory and NGO levels	R8135 Report, Policy Briefs, Workshops
FISHING					
Fishing	No	1. Pollution in coastal waters: (sewage disposal; deforestation; agro-chemical run-off) 2. Inappropriate fishing techniques by Nationals (gill net and harvesting of immature fish) and Transnationals (too small trawler fishing nets) 3. Natural disasters	- Eco-system and human health system impacts. - Community based reforestation - Education in alternatives to chemical use - Training in offshore fishing techniques and provision of credit to poor to facilitate - Devising effective strategy to ensure enforcement of laws in regard to trawling; Natural disaster preparedness incl. insurance	Policy makers Policy makers and community Community; Policy makers Policy makers Policy makers	R8135 Report, Policy Briefs, Workshops R8135 Report, Policy Briefs, Workshops

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives	Relevant Decision Makers to Receive New Knowledge	Appropriate media of Communication of New Knowledge
SEA MOSS (Praslin, St. Lucia)					
Cultivation/ Harvesting	Sustainable	1.Institutional facilitation; 2.Appropriate specie availability 3.Institutional structure (Co-op) 4.Market; 5.Security; 6.Access to Credit; 7. National Policy.	-Capacity building strategies at community (co-op) level. -Improved techniques -Potential for economies of scale in production - Effective Legislation/Improved Policing - New credit facilities available (public and private) - Vision and institutional pro-activity	Community Development Officers; Department of Co-ops; NGOs. Farmers; Co-op Farmers; Co-op Policy Makers; Authorities Farmers; Co-op Policy Makers	R8135Report; Policy Brief; Workshops, popular culture
Sea Moss Processing	Sustainable	1.Institutional facilitation; 2.Institutional structure (Co-op) 3.Market; 4.Access to Credit; 5.National Policy.	- Available land for 'housed' drying facility - Price competitiveness of "gel" product. - Potential for increased 'gel' market. - Use of facilities of the Livestock Development Company (LDC) for processing (incl. pasteurization) and packaging of drinks. - New credit facilities available (public and private) - Information on marketing product standards (content and labelling). - Vision and institutional pro-activity	Policy makers Farmers; Co-op Farmers; Co-op Farmers; Co-op; Ministry of Agriculture; LDC Farmers; Co-op Farmers; Co-op Policy Makers	R8135Report; Policy Brief; Workshops

TOURISM					
Livelihood Practice	**Sustainability Evaluation of Livelihood Practices**	**Drivers, Causal and Impact Factors**	**New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives**	**Relevant Decision Makers to Receive New Knowledge**	**Appropriate media of Communication of New Knowledge**
General	Sustainable	International & regional demand	- Sustainable Tourism policy including: a .policies to address competition from big capital; b .Education on ESOPs; c. Waste disposal	National policy-makers; NGOs; CBOs; Entrepreneurs; Community organisations (including youth)	R8135Report; Policy Brief; Workshops; Popular Culture media
Tour-Guiding: (Land and Marine)	Sustainable	International & regional demand	-Tour Guide Training; Credit access	Policy-makers; NGOs;CBOs	R8135Report; Workshops (incl use of pop culture media)
Bed & Breakfast/ Guest Houses	Sustainable	International & regional demand	- Hospitality Management; - Micro/Small Bus. credit access; - E-Commerce promotional support	Policy-makers; Credit Institutions; IT policy system	R8135Report; Policy Brief; Workshops; Mass media
Fish Fry (AnseL'Raye, St. lucia)	Sustainable	International & regional demand; Govt. initial support; Predominantly female-based entrepreneurial spirit	- Managing business expansion; - Community conflict resolution; - Waste disposal systems	Policy-makers: -re business man training; Conflict resolution techniques; Waste Management Entrepreneurs	R8135Report; Policy Brief; Workshops; Mass Media

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives	Relevant Decision Makers to Receive New Knowledge	Appropriate media of Communication of New Knowledge
FARMING					
Bananas (Traditional)	Not Sustainable	WTO-ruling on EU banana regime; Over-use of chemicals	- Shift to organic banana production Techniques; - Alternative livelihood opportunities	Policy makers (incl. diversification planning); Farmers (Incl. Associations)	Report; Policy Briefs; Workshops; Training modules in multi-media formats
Bananas (Organic)	Sustainable	Market demand	- Organic production techniques; - Market opportunities	Farmers; Public Policy makers especially re market promotion	Report; Policy Briefs; Workshops; Training modules in multi-media formats
Food Crops	Sustainable	Decline in banana production; Market and subsistence levels of demand	Extension services; - Market promotion training - Access to land	Min. of Agriculture Market promotion agencies Min. of Agriculture	Report; Policy Briefs; Workshops; Training modules in multi-media formats
Agro-Industry	Sustainable	Decline in banana production & fishing; Market potential	- Extension services; - Market promotion training - Access to land	Ministry of Agriculture Market promotion agencies Ministry of Agriculture	Report; Policy Briefs; Workshops; Training modules in multi-media formats

Indicators that may be monitored to determine success in Uptake and Sustainability of Changes in Livelihood Strategies

After outlining the constraints, opportunities and desirable strategies, and recommending an outline communication programme, milestones and indicators must be proposed for the assessment of progress in the change process.

The starting point here was to define the broad framework within which to develop indicators for measuring and monitoring the success of uptake and sustainability of proposed changes in livelihood strategies. The indicators had to be relevant to the Caribbean reality and, more specifically, applicable to the case-study sites, but with potential for scaling up.

Since the body of indicators is required to span from uptake to sustainability, the following three broad rubrics were proposed [26]:

A. Success of Uptake;
B. Implementation;
C. Sustainability.

Success of Uptake

Indicators to be developed here will address the issues of participation in the uptake mechanisms by the target communities; their requests for follow-up information and activities; and policy incorporation by relevant target institutions. These indicators are essentially "internal" in the sense that they are developed and tested "through participatory work with the local stakeholders". In terms of data collection, the indicators also seek to reflect social differentiations within target communities—gender, age and natural resource bases [27].

---

[26] *The framework developed drew from available literature on the measuring and monitoring success/failure of livelihood strategies of the poor. It drew particularly upon the DFID-supported research project on "The Effects of Policy on Natural Resource Management and Investment by Farmers and Rural Households in East and Southern Africa" (Project No. R7076CA). The focus was on two Working Papers from this project:*
• Working Paper No. 1 (Rigby et al, February 2000) Rigby, Dan; Howlett, David; and Woodhouse, Phil, A Review of Indicators of Agricultural and Rural Livelihood Sustainability, Sustainability Indicators for Natural Resource Management and Policy, Working Paper No 1, Institute for Development Policy and Management, University of Manchester, UK, February 2000; and
• Working Paper No. 8 (Bahiigwa et al, March 2001) Bahiigwa, Godfrey; Shinyekwa, Isaac; Rigby, Dan; Woodhouse, Phil; and Wowlett, David, Sustainability Indicators for Farming-Based Livelihoods in Uganda, Sustainability Indicators for Natural resource Management and Policy, Working Paper No 8, Institute for Development Policy and Management, University of Manchester, UK, March 2001

[27] *Issue highlighted in the Research Brief by Dr Virginia Nazarea, "Looking at the Landscape Through Local Lenses: Integrating Community Values and Variation in Indicators of Sustainability", Sustainable Agriculture and Natural Resource management Collaborative Support Programme (SANREM CRSP), No. 6, 2001.*

The following areas are identified for coverage by the indicators:

- Participation in uptake sessions (Numbers by gender, age and NR base)
- Involvement in Field Testing (Numbers by gender, age and NR base)
- Participation in Training Programmes (Numbers by gender, age and NR base)
- Request for follow-up information, workshops etc. (Numbers by gender, age and NR base)
- Policy incorporation activities (Relevant target institutions)

Implementation

The major areas of concern with respect to implementation are the institutional changes made to accommodate the new knowledge; and the access to the resources to effect the changes. The areas to be covered by these indicators are:

- Institutional changes made: for example, adoption of new polices related to pro-poor tourism, schemes for support coastal communities;
- Access to and allocation of resources (financial and other): ultimately new policies and institutions for credit, land allocation mechanisms, decision-making around MPAs, etc;
- Transition process: changes in the attitude and responses of decision-makers; improvement in satisfaction ratings in communities with regard to demand for changes in services etc.

Sustainability

Ultimately, the changes should be reflected in changes in the lives of the people living in poverty and in their direct livelihoods. The literature suggests that indicators of assets (wealth) are superior to those of income generation with respect to the measurement of vulnerability and poverty. On this premise, the indicators identified here seek to address the full range of capital assets—financial, physical, natural, human and social. The following relevant indicators can, therefore, be selected to effect coverage of the following areas of capital-asset accessibility:

- Financial: especially savings, and credit opportunities;
- Terms and conditions of credit access, especially for women and youth, and indigenous people;
- Market availability and access—new and strengthened channels for sea-moss products, fish products in new overseas markets, tourism market, etc;
- (In the longer term in sampled communities) physical assets; quality of life (housing quality and household assets); land ownership rights;
- Rights of access to natural resources: increased number of favourable access to resources; reduced conflict around NR; rights that are embedded in strong institutional structures;
- (Also in longer term): human: education, health, food security etc.
- Social; respect for gender and indigenous concerns, for example;
- Supportive community and local institutional structures, strengthened community organisations and networks, that are more active and have significant achievements in reaching out or demanding changes.

This template of indicators, however, requires further review in terms of their application to the Caribbean, in general, and to the case-study countries and communities, in particular. The process of establishing relevant indicators will be further elaborated.

Conclusions

In summary, the findings of the study R8135 on opportunities and constraints to enhancing coastal livelihoods of the people living in poverty in the Caribbean have provided a basis for identification and validation of the new knowledge required, together with the sketching of a change strategy for translating the new knowledge into action.

The findings confirm the existence of severe constraints to enhancing some existing use, such as fishing. The findings also suggest opportunities in taking forward and making more pro-poor sectors such as tourism. Significantly, strong indications point to not radical overhauls or innovations, but rather to the building on existing alternatives— sea-moss culture and community.

What these communities do need is considerable support for their efforts, in terms of the right policies, access to information and infrastructure, and appropriate credit. They also need the tools and skills, either technical or organisational, to demand those changes concertedly and with confidence.

The study therefore recommends a programme of communication, and a refinement of an existing outline of knowledge products and processes. This is to take research results, not only of this study but also from other relevant regional and global experiences, into the domain of policy making and policy practitioners, together with the coastal communities.

REFERENCES

Ashley, Caroline, Charlotte Boyd and Harold Goodwin, 2000. 'Pro-Poor Tourism: Putting Poverty At The Heart Of The Tourism Agenda.' Natural Resource Perspectives, Number 51, March 2000

Bahiigwa, Godfrey; Shinyekwa, Isaac; Rigby, Dan; Woodhouse, Phil; and Wowlett, David, Sustainability Indicators for Farming-Based Livelihoods in Uganda, Sustainability Indicators for Natural resource Management and Policy, Working Paper No 8, Institute for Development Policy and Management, University of Manchester, UK, March 2001

Baumann, Pari and Subir Sinha, 2001. 'Linking Development With Democratic Processes In India: Political Capital And Sustainable Livelihoods Analysis' Natural Resource Perspectives, Number 68, June 2001.

Beckford, George, 1972, Persistent Poverty: Underdevelopment in the Plantation Economies of the Third World. New York. Oxford University Press.

Best, Lloyd (1967): A model of pure plantation economy. Social and Economies Studies. Vol.17. no. 3. Sept.

Byron, Jessica (1998). The Association of Caribbean States: Growing Pains of a New Regionalism? Pensamiento Propio. No. 7, May-August Year 3, 33-57.

Carnegie, C (1981): The Rural population of Saint Lucia: A Preliminary Analysis. OAS Technical Report, Castries, St Lucia. Sept.

Farrington, John; Diana Carney, Caroline Ashley and Cathryn Turton, 1999. "Sustainable livelihoods in practice: early applications of concepts in rural areas". Natural Resource Perspectives Number 42, June 1999

Foreman, R.A. (1958): Land Settlement Scheme for Saint Lucia. British Government Colonial Office, Castries, 1958.

Gaztambide-Geigel, Antonio (1996) La invencion del Caribe en el Siglo XX. Las definiciones del Caribe como problema historico e metodologico. Revista Mexicana del Caribe. Ano 1, Num 1, 75-96.

Girvan, Norman: Reinterpreting the Caribbean. Lindahl, Folke and Brian Meeks(eds). New Caribbean Thought. UWI Press. 2001.

IMM, 2002. "Sustainable Coastal Livelihoods: Policy and Coastal Poverty in the Western Bay Of Bengal." Sustainable Coastal Livelihoods Project, South Asia, Main Report – FINAL, DFID.

IPCC(1998): Contribution of Working Group 1 to Second Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

Nazarea, Virginia, Research Brief, “Looking at the Landscape Through Local Lenses: Integrating Community Values and Variation in Indicators of Sustainability”, Sustainable Agriculture and Natural Resource management Collaborative Support Programme(SANREM CRSP), No. 6, 2001.

Pantin, Dennis A. (1994). The Economics of Sustainable Development In Small Caribbean Islands. UWICED.

---------- (1999) The challenge of sustainable development in small island developing states: case study on tourism in the Caribbean. Natural Resources Forum. Vol.23.v No.3. Aug.: 221-234

----------, Wayne Sandiford,Michael Henry and Claudius Preville(2004): Cake, Mama Coka or ? Alternatives facing the Caribbean Banana industry following the April, 1999 WTO Ruling. Study for Winfa, CPDC, OXFAM. Sept.

Payne, Ian, 2000. “The Changing Role Of Fisheries In Development Policy”. Natural Resource perspectives, Number 59, June 2000.

Pearce, David et al (1998) Measuring Sustainable Development.CSERGE WP

Rigby, Dan; Howlett, David; and Woodhouse, Phil, A Review of Indicators of Agricultural and Rural Livelihood Sustainability, Sustainability Indicators for Natural Resource Management and Policy, Working Paper No 1, Institute for Development Policy and Management, University of Manchester, UK, February 2000.

The Nature Conservancy (2002) Alternative Livelihoods and Ecotourism Assessment- the coastal/wetland Ecosystem Conservation and Sustainable Livelihoods project in St Lucia, April 29.

VOLUME II

DETAILED TOPIC ANALYSES

CHAPTER 6

NATURAL RESOURCES PROFILE

DR JUDITH GOBIN,
Environmental Scientist

CHAPTER 6

EXECUTIVE SUMMARY ACTIVITIES

Dr Judith Gobin, Environmental Scientist, addressed the following specific activities of the logframe:

Activity 1.1
Assessment of fragility of natural resources, particularly the target habitats, on which traditional livelihood strategies depend, including internal constraints of production systems and vulnerability to external threats (including pollution and natural disasters).

Activity 1.2
Assessment of sustainability of traditional NR-based livelihood strategies in the context of projected demographic trends, changing expectations of the poor, and the demand for alternative sustainable livelihood strategies.

Activity 3.2
Exploration of feasible alternative techniques for sustainable consumptive NR-use livelihood strategies, in target habitats, based on new knowledge and technologies.

Activity 3.3
Exploration of feasible non-consumptive NR-use livelihood strategies.

EXECUTIVE SUMMARY OF ENVIRONMENTAL REPORT

Prepared by Dr Judith Gobin, environmental scientist

The environmental report focuses on some aspects of the project as detailed in the log frame. Some Caribbean coastal areas are very productive due to the interactions of three main ecosystems—coral reefs, mangroves and sea grass beds. These ecosystems in addition to coastal lagoons were identified as the target habitats for the project's (R8135) consideration. This report addresses some specific activities (1.1, 1.2, 3.2 and 3.3 as above) which were explored in the two case-study countries, St Lucia and Belize, and also at a community level within each country.

The fragility of the natural resource (NR) was assessed by first describing the status of the NR in the overall Caribbean and then more specifically at each country level. The Caribbean coastal and marine area shares common global problems:

- reduction in natural stocks from overfishing;
- pollution and contamination from anthropogenic sources; and
- the 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 particular community (Praslin and Anse La Raye in St Lucia and Sarteneja and Hopkins in Belize).

The status of the NR in 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 and gillnetting with undersized meshes and illegal (in the closed season) harvesting—are commonly practised.

Some alternative techniques for sustainable consumptive NR use are suggested with the required "new knowledge or technology". Like most Caribbean territories, Belize and St Lucia, recognise the critical need for alternative livelihoods and/or new or improved techniques in NR use-practices. The countries have already undertaken initiatives and efforts (legislation, treaties, marine protected areas etc) towards management of these fragile resources.

The research findings of R8135 suggest that the most effective approach is to address the external and internal factors at a national (and regional) level first, and then at the community level. The initiatives suggested here are more directly toward *improvement* of policies (to guide management of target habitats) and legislation and, where the need arises, for enactment of new legislation (banning industrial fishers and/or trawlers). Where legislation does exist, enforcement measures (quotas, licences etc) need to be improved. Mariculture was suggested as a non-consumptive NR use which could be an alternative livelihood for coastal communities. The new knowledge applied here, again, was toward *improvement* in techniques ("sea moss" processing and marketing) rather than a new initiative.

Generic principles (arising from the activities dealt with here), which could be applicable to other Caribbean environments, are identified. Relevant target institutions are also identified for uptake of the research products.

ANNEX 6.1

Prepared by Dr Judith Gobin, environmental specialist

(DFID) Natural Resources Systems Programme (NRSP) Land Water Interface (LWI) Production Systems

Activity 1.1 **Important natural resources (and sources of pollution influencing them) in coastal zones and their contribution to livelihoods understood.**

Sub-activity 1.1.2 **Understanding of the opportunities for, and capacity of, natural resource based livelihoods in coastal zones to respond to change (vulnerability to internal and external influences)**

*Strategies for sustainable livelihoods based on NR use: Alternatives for utilising NR for enhanced livelihood outcomes.

Activity 1.1

Assessment of fragility of the natural resources (coral reefs, mangroves, sea grass beds and coastal/marine areas) in the overall Caribbean; their vulnerability to internal and external influences.

The coastal zone is defined by Brown et al (2002) as the set of landward systems whose functioning and use directly affect the marine environment and the set of marine systems that exist in proximity to land, and that tend to be the jurisdiction of one country. In small Caribbean islands, this land/water interface, where both aquatic and terrestrial resource systems co-exist, may in effect define an entire island as the coastal zone. Caribbean coastal zones possess a number of natural resources which provide a wide range of goods and services, fuelling economic growth and development in the countries. Often, this zone is where the most economic activity of the country takes place—extraction of oil and gas, productive fisheries, marine transport and tourism-related activities.

The human impacts on these environments are significant in the Caribbean, because of high population densities, poverty and absence of sanitary facilities. For example, common agricultural practice (particularly shifting agriculture) is the major cause of deforestation, which in turn has direct negative effects on watersheds, rivers, mangroves and other coastal resources. Artisanal fishing methods damage Caribbean coastal and marine fishing grounds; over-harvesting has led to the decline of wild stocks of some species in some islands —*Tripneustes ventricosus* (white sea urchin) in St Lucia and *Megaptera novaeangliae* (humpback whales) in the Lesser Antillean waters. Beach sand mining is the major human cause of coastal erosion in the eastern Caribbean; sand is regarded by people as a free natural resource. This has also led to loss of beaches, dunes and other coastal habitats. Common to most Caribbean islands are pollution and contamination in coastal and marine environments which emanate from agriculture (fertilisers and pesticides), domestic/municipal areas (sewage, solid and liquid wastes); tourist hotels and marinas (sewage, solid and liquid wastes); shipping and marine

transport (oil, solid and liquid wastes); and, in Trinidad, heavy industry (oil, liquid wastes and heavy metals).

For the purposes of this sub-activity, the natural resources discussion is confined to coral reefs, sea grass beds, mangroves and the proximal coastal and marine areas at the study sites, in each case-study country (as per log frame R8135). These natural resources, including intertidal ecosystems, beaches and sand dune systems, are inextricably linked and synergistic relationships sustain the functioning of these systems. Thus, many direct links exist between the extent and health of these habitats and the productivity of the inshore fisheries which support human populations. The economic, ecological and social importance of these systems stems primarily from their goods, services and attributes.

In this respect, Coral reefs rank amongst the most biologically productive and diverse of all natural ecosystems supporting as many as 3,000 species (Salm et al 2000) of organisms. In the Caribbean, they provide such goods as fish (food and ornamental), shellfish (lobsters, crabs, conchs), pharmaceuticals (from sea fans and sponges), black corals (for jewellery) and skeletal materials (used in ornaments and jewellery). Coral reefs are the basis of many coastal fisheries, they provide food and shelter for fish and shellfish. They also function as breakwaters which protect harbours, bays, lagoons and they limit the effects of erosion. Their attributes include a tourist attraction—and associated million-dollar industry. Most of the benthic (bottom-dwelling) fish species in the shallow near shore waters of the Caribbean are associated with coral reefs as adults. Of the more than 300 species, an estimated 180 species are landed for human consumption (Towle and Towle, 1991). Coral reefs are very important for subsistence and security to Caribbean coastal communities.

In the Caribbean, mangrove swamps and coastal lagoons provide goods such as construction materials; fuel (firewood, charcoal); tannins; fishery resources (finfish, shellfish and crabs) and wildlife resources (birds, caimans etc). They also provide a flood/flow control of fresh waters; storm protection and windbreaks; act as shoreline stabilizers; allow for nutrition retention; assist in water quality maintenance; and provide recreational/educational opportunities, including tourism. The attributes of mangroves include increasing the biodiversity of the coastal waters; scenic landscapes, their uniqueness and aesthetic value. Many reef fish as well as conchs and lobsters, use mangrove swamps and/or sea grass beds as nursery habitats in their juvenile stages.

Sea grass beds of *Thalassia testudinum* or turtle grass, *Halodule wrightii* and *Syringodium filaforme* occur throughout the Caribbean and increase the biodiversity of coastal waters. They provide grazing and foraging meadows for a variety of fauna which include turtles (*Chelonia mydas*), manatees (*Tricheus manatus*), parrotfish (Scaridae), snappers (Lutjanidae), grunts (Scaridae), and commercially important species of queen *conchs (Strombus gigas*), lobsters (*Panulirus argus*) and the edible sea urchin (*Tripneustes esculentus*). Sea grass beds trap and stabilise sediments along the coast, often preventing abrasion and burial of reefs during storm conditions. They also afford coastal protection by reducing wave action along the coast.

Internal and External threats

Internal constraints of production systems

Offshore marine production in Caribbean waters is generally low because of a relatively stable thermocline which, in the absence of significant upwelling, prevents the mixing of nutrient-rich deep waters with surface waters (Agard and Gobin 2000). In the shallower waters, however, the coastal and marine areas are areas of high production, associated with coral reefs, mangrove swamps and coastal lagoons, estuaries and sea grasses. The integrity of these ecosystems is important to maintain their productivity. Natural disasters such as tropical storms and hurricanes occasionally affect this productivity.

External threats

Three main types of interventions constitute external threats to these Caribbean ecosystems:

i. **Degrading** and/or contaminating activities which permanently alter ecosystems, perhaps from industrial, urban and agricultural activities;
ii. **Extractive** activities—harvesting of edible resources like shellfish and fish; construction materials (mangrove poles, coral blocks); ornamental (corals, shells);
iii. **Non-extractive** activities—recreation (diving, swimming, boating); research, education; marine park developments' use of natural boat harbours, coastal protection.

These are detailed below:

i) Degradation and contamination in the coastal zone from industrial, urban and agricultural activities are common to most Caribbean territories. Rawlins et al (1998) described the practice of shifting agriculture as the major cause of deforestation, while fertilisers and pesticides are a major source of pollution. Fertiliser consumption in the Caribbean is extremely high (in St Lucia and in Martinique, seven and 14.0 metric tonnes respectively per year). Hotels/marinas (sewage, solid and liquid waste); shipping and marine transport (oil, solid and liquid wastes); heavy industry (oil, liquid wastes and heavy metals); and domestic/municipal areas (sewage, solid and liquid waste) are the main sources of pollution reaching the coastal zone. Pollution and degradation have direct negative effects (causing death and stress) on mangroves, coral reefs, sea grass beds and lagoons. This degradation and destruction is global ((IUCN/UNEP 1991, Wilkinson 1992/1998), with severe effects on the economies that depend on them (Salm et al 2000). ReefBase (2001) suggests that much of the Caribbean reef areas are classified as "threatened", while it is common knowledge that a large proportion of the region's mangroves have been lost already to coastal development with many further areas "threatened" or "under stress" (Bacon 1990).

The NR-based livelihoods are marked by two kinds of methods—extractive and non-extractive. Extractive methods for the harvesting of coastal resources are critical to the status of the resources; however, it is within these activities, that a range of unsustainable practices are often employed in the Caribbean coastal zone.

ii) Extractive

Scientists warn that the world's oceans are headed for collapse due to massive overfishing by the global fleet of 3.5 to 4 million commercial fishing boats. Pollution and higher oceanic temperatures have contributed to reducing some fisheries but scientists agree that overfishing on a vast scale is the primary culprit (Pew Oceans Report, Dayton, Pauly et al 2000). Too many people are chasing after a declining number of fish: over the last 20 years the global fishing fleet has expanded dramatically to around four million boats (Dayton et al 2000). An FAO assessment (FAO 1997c) suggests that 35 per cent of the region's stocks are overexploited, and the sub-region also has the highest percentage discard—mostly as by-catch discard of shrimp trawling.

Capture fisheries in the Caribbean include subsistence fisheries (consumed by the local community), artisanal (small commercial operations) and industrial (sophisticated vessels and modern technology). Jackson et al (2001) suggest that fishing and more specifically overfishing is a prime cause of coastal ecosystem degradation worldwide. Overfishing causes depletion in fish stocks such that the natural recovery of the fish stock is hampered. In addition, juvenile fish continue to be caught and their habitats essential for spawning are destroyed, thus recovery time extends further away. Overfishing reduces the grazers on coral reefs and allows algae to compete with corals for living space. The natural response by fishers to their reduced catches, is to increase their fishing effort. This tends to involve a greater investment of time and money. They may utilise smaller meshes etc, which further compounds the situation and leads to over-exploitation of the fish stock.

Many fishing vessels also utilise destructive fishing methods. These include trawling, "bulldozing" or "dragging" the ocean floor; taking everything (all sizes) – thereby destroying coral and rocky reefs, sponges, sea turtles etc In addition, Turtle Exclusion Devices (TEDS) have still not been legislated for in many Caribbean countries. Long-lining boats which spool out miles and miles of baited hooks in a single set, wipe out swordfish and billfish. Drift nets and "ghost nets" are left out for extended periods and tend to trap very large catches of all sizes, and including turtles. Cyanide and dynamite, indiscriminately used to "displace the fish" from their cover, destroy coral reefs, rocks and other organisms. Commonly small scale commercial and artisanal fishing methods—hand lining, gill net, seines, trawlers—also cause damage to Caribbean coastal and marine fishing grounds.

iii) Non-extractive

Recreational activities (diving, swimming, boating etc) also affect the state of these ecosystems. Coral reefs have been damaged by boat anchors and by tourists stepping on them. The other users—for research and education, marine park developments like natural boat harbours—also have negative impacts on these systems. Development in coastal areas has coincided with the influx of tourism. This is a big threat to coral reef ecosystems, mangroves and sea grasses. In addition, the associated sewage and solid waste products generated by the tourism industry pose a serious threat to the Caribbean.

The coastal zone is very fragile since it is here that a series of dynamic processes occur and these are highly susceptible to anthropogenic activities. The coastal zone is a sink for receiving a myriad of effluents from land-based activities, which contribute to coastal degradation, pollution, eutrophication and sediment and water quality decline (as identified above). It is often very difficult to isolate a specific "cause and effect" on the environment or resource; it is often a result of a combination of these external factors. In addition, the inherent inter-linkages between the ecosystems increase the fragility of a particular resource. For example, deleterious impacts on mangrove will affect adjacent coral reefs and sea grass beds often found in close association. The human impacts on these environments in the Caribbean are significant, because of high population densities, poverty and the absence of adequate sanitary facilities.

Coral reefs are very vulnerable to temperature changes since they live near the upper limit of their tolerance; small increases stress them and cause them to expel their symbiotic algae which provide their nourishment and colour. Global warming and associated climate change have already impacted on the status of coral reefs worldwide and in the Caribbean. Natural damage and hurricanes have also caused damage to coral reef ecosystems and prolonged algal blooms (CARICOMP reports) have caused extensive mortalities of reef organisms such as *Diadema antillarum.* The massive, climate-related, coral bleaching event of 1998 (major El Nino 1997-1998) was the largest single cause of deterioration of coral reefs (Wilkinson 2000). On the Belize barrier reef, sea surface temperature which rarely exceeds 29 degrees Celsius, reached 31.5 degrees and caused extensive bleaching (Coastal Zone Report 2000).

Among the threats common to the target resources are:

Coral reefs

- Overfishing by commercial and subsistence fishers.
- Uncontrolled anchoring of boats and ships, shrimp trawling, tourist activities.
- Dredging, inland agricultural activities, coastal, residential and tourist developments.
- Natural phenomena/global warming.
- Pollution- oil (bilge/ships/boats), agriculture, aquaculture, sewage.

Mangroves and coastal lagoons

- Residential and hotel resort developments.
- Dredging, landfilling.
- Natural disasters/hurricanes.

Sea grass beds

- Shrimp trawling, dredging
- Removal for tourism activities
- Natural disasters

Fragility and vulnerability of production system for NR-based livelihoods in St Lucia (internal constraints of production combined with vulnerability to external threats).

Introduction

The conference on sustainable development of island developing states (SIDS) (1994), embraced the principles of the Rio Declaration on Environment and Development and Agenda 21 (1992). It further articulated that: "Small islands have sovereign rights over their own natural resources. Their biodiversity is amongst the most threatened in the world and their ecosystems provide ecological corridors linking major areas of biodiversity around the world."

St Lucia is an archipelagic state in the Caribbean chain of islands in the tropical belt lying at 14 degrees north latitude and 61 degrees west longitude (**Fig.1**). St Lucia has a population of around 135,685 people with approximately 53,000 living in the capital city, Castries. St Lucia experiences a typical tropical climate with the main seasonal variation of rainfall occurring between the wet (late May to mid-December) and dry (late December to early May) seasons; with minimal precipitation during the dry. There are significant differences spatially in the annual rainfall amounts, highest in the mountainous south-central part of the country but relatively dry in the coastal plains and valleys (CCA, Environmental Profile 1991). Overall for St Lucia, as for most of the other islands, there are only small seasonal variations in temperature and some spatial variation which tends to be on a very small and localised basis. The near constant temperature is between 23 and 28 degrees Celsius. The prevailing wind system is the Northeast Trades with a dominant direction from the northeast in the dry season and from the east in the wet season.

Coastal resources

Mitchell and Gold (1982) reported that over 30 per cent of the island's revenue is generated from the marine sector which includes fishing, tourism, sand-mining and transport. St Lucia's coastal attributes, typical of the Caribbean, include beaches, rocky shorelines, coral reefs, mangroves and sea grass beds. St Lucia has 18 mangrove sites covering a total of 179.30 hectares and extensive coral reef areas (UN Statistical Yearbook 42nd issue 1997; Bacon 1993). Most of the mangroves have been declared marine reserves, of which the Mankote mangrove is the largest **(Fig.1).** Sea grass beds are common along the coastline of St Lucia, with the more extensive beds on the East coast. The two more common species are *Thalassia testudinum (turtle grass)* and *Syringodium filiforme* (manatee grass). The sea grasses increase productivity and increase the biodiversity of the island in terms of a very rich marine and coastal fishery.

Information available on marine and coastal biological resources generally covers the OECS states (including St Lucia), but without much focus on the coasts of St Lucia. The Biodiversity Country Report for St Lucia (1998) shows various species lists (fish, corals and reef species). It suggest, however, that "it is difficult to currently determine threat categories for marine and coastal species in St Lucia since few relevant studies have been

carried out and very little monitoring of marine/coastal areas takes place."

Coral reefs are present along both the west and east coasts, but are more extensive along the east. The healthiest (most diverse) reefs are along the Central West Coast, off Soufriere. The Biodiversity report (1998) lists 29 species of corals, 333 (ray finned) species of landed fish, including reef fish species.

The species and species diversities of marine invertebrates of St Lucia, including crustaceans, lobsters, crabs, echinoderms, sponges etc have not been well studied. This despite the fact that they have been included in some Caribbean-wide surveys (various OECS documents, CCA Environmental Profile 1991, Biodiversity Report 1998). The most common turtle is the green turtle (*Chelonia mydas*) while the leatherback (*Dermochelys imbricata*) is the least common. After increased restrictions on the traditional usage of turtle resources, a moratorium on turtles was finally declared. The government of St Lucia declared a number of marine reserves in 1986 and 1990, to protect turtle nesting sites and fish nursery grounds. The Fisheries Act (1984) and Regulations (1994) stipulate that no extractive activities are allowed in these marine reserves.

The OECS Fisheries Management and Development Strategy (2000-2005) has as its goal: To make maximum use of the available resources to generate sustainable economic and social benefits for fishers and the entire population.

The strategy is detailed in its approach to "market diversification within the fisheries sector", "diversified and sustainable production base", "improved management of the national fisheries industries" and "improved regional capability for fisheries management". The strategy outlines objectives such as to "add value to fishery products through increased use of by-catch" and "add value to fishery products through improved post-harvest techniques"… "to encourage the move from artisanal type fisheries",… "reduce stress on near shore resources"… improve vessel and gear technology… and to improve enforcement of fishery legislation.

The commercial fishery of St Lucia is artisanal with a wide variety of species being exploited. The fishery includes shallow shelf and reef fish; deep-slope, large pelagics; coastal pelagics; lobster; sea urchins; *sea moss* (marine algae); fish and turtles. The nearshore environment functions as a nursery for juveniles of many species, the adults of which are exploited collectively from all the landing sites. The major fishing ports/landing areas in St Lucia are Vieux Fort, Castries, Soufriere, Gros Islet and Dennery. The *sea moss* species harvested in St Lucia are *Eucheuma* sp. and *Gracilaria* sp.

Marine Protected Areas

Competitive use for resources has become very intense, especially since because of rapid population growth, high unemployment and poverty. This has led to conflicts amongst resource-users in many coastal areas. St Lucia has attempted to manage the use of their threatened coastal and marine resources by the designation of marine protected areas

(MPAs). The Soufriere Marine Management Area (SMMA), officially established in 1995, has been successful in preserving Soufriere's natural assets while serving the needs of the fishermen, local people and tourists.

The SMMA was zoned into the following: marine reserve areas, fishing priority areas, recreational areas, multiple use areas and yacht mooring areas. This was done in such a way as to be "a place where people and nature can live in harmony" and where "natural resources can provide the basis of economic development now and in the future" (SMMA brochure 2000).

The activities of the SMMA include "scientific research on the natural resources; monitoring of reef, water quality and other environmental factors; public information and sensitization; provision of facilities for users; co-ordination of related socio-economic activities; promotion of technologies appropriate and tied to local environmental, social and cultural conditions; and patrolling and enforcement of the rules and regulations. In addition, "fishing is reserved exclusively for fishermen of St Lucia, the collection of marine organisms is prohibited and all forms of waste disposal and contact with reefs are also prohibited" (ENCORE 1998, case study-SMMA).

External and internal threats to the target resources

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. A UNEP (1995) report suggests that 46 per cent of sewage treatment facilities were in "good" conditions while 54 per cent were in "poor" condition. Fertiliser consumption figures for St Lucia were 7,000 metric tonnes for 1994/1995 (UN Statistical Yearbook 42nd Issue). In addition, many industries do not possess adequate treatment facilities, thereby exacerbating the problems. Various reports suggest water quality is poor in many coastal areas (CEHI 1994/95). The increased recreational use of coastal resources, driven by increased tourism, has contributed to habitat degradation (and loss of biodiversity) and perpetuated some social conflicts.

Praslin

Praslin is a very small community (on the central east coast) in which the main forms of livelihood are fishing and agriculture. Praslin is one of the most productive bays in St Lucia (Fisheries Dept 1997) because of the interactions of the three ecosystems present here—the mangroves, sea grasses and the coral reef.

Praslin Coral Reefs, coastal and marine area
At Praslin, the viability of coral reefs was described as *fair* in the Nature Conservancy (TNC) Report, 2002. This was due to the degradation in the physical and ecological conditions of the coral community and to the state of its landscape connections. Human activities in the source watersheds of Praslin have resulted in increased siltation, which leads to eutrophication and altered coastal and marine water quality. In addition to the overall degradation, the ability of the coral reef ecosystem to recover from normal disturbances (severe storms and disease) is compromised. Praslin shares its coastal resources with other communities—the village of Dennery, in terms of reef fish, pelagics, lobsters, sea urchins etc The fishers of Praslin use the Dennery Bay landing site and storage/marketing facilities there. The 21 registered fishing vessels in Praslin comprise 14 pirogues, six canoes and one transom (Fisheries Department 2000). There are 52 registered fishermen for Praslin—52 full-time and 20 part-time.

Praslin Sea grass Beds
The TNC (2002) survey described the sea grass beds at Praslin as "having good viability" (TNC Report 2000). Sedimentation, which comes from bad agricultural practices in proximal watersheds, however, causes increased erosion and increased sediment loads in the freshwater discharges to the coast, and the eventually the sea grass beds.

Praslin Mangrove
Praslin has a beach length of 243 metres with the extent of sandy area approximately 650 square metres. The beach is on the fringe of the Praslin mangrove which covers an area of approx. 17.35 hectares. No change in this figure was reported between 1985 and 1997 (OECS/NRMU 1999). The red mangrove (*Rhizophora mangle*) is dominant, with the bordering vegetation consisting of manchineel, shrub, grass, buttonwood (*Conocarpus erecta*). Some white (*Laguncularia racemosa*) and black mangrove (*Avicennia germinans*) are also present (OECS/NRMU 1999). The beach is used for recreation by the community, for pot and speargun fishing, as a small fish landing site and moorings for pirogues. The beach is often used by the farmers cultivating sea moss.

Praslin Mangrove is a declared Marine Reserve and the Department of Fisheries has jurisdiction over the reserve. St Lucia's mangrove ecosystems (which are largely confined to the east coast) are important producers of organic matter for marine and coastal species and provide protection against coastal erosion and pollution. The mangroves have been traditionally important in rural production systems, providing wood for charcoal, fodder for livestock and other renewable goods and services. Although protected (declared Marine Reserve 1986), the Praslin mangrove areas continue to be encroached upon by banana growers. This is as a result of the lack of legal demarcation

for marine reserves and the fact that many of them are located on privately owned lands. The coastal area of Praslin was also declared a Protected Landscape in 1990.

A survey at Praslin described mangrove viability as good, but the *landscape context* of mangroves as only fair due to the loss of essential connectivity between mangroves and interior terrestrial habitats (TNC Report 2000). Similarly, siltation caused by a variety of human activities has created sand bars across the main channel of several mangrove forests. These sand bars impede the circulation of both fresh and salt water and partially isolates these mangroves from coastal marine communities and ecological processes. Such silt bars have disrupted movements of fish, both to feed and to spawn, between coastal waters and mangroves.

Marine algae at Praslin
Sea moss or the marine algae species—*Eucheuma* sp. and *Gracilaria* sp.—are being farmed in Praslin Bay. There are approximately 25 sea moss farmers who engage in this activity here.

Praslin water quality
There is not much available information on quality of coastal waters of St Lucia. However, water quality in the immediate coastal areas of Praslin is poor since only 43.84 per cent are on a flush-toilet system while 56.16 per cent are still using pits (SLNT Census Results 1994). There is also much solid waste entering coastal waters here (**Fig.2**).

Anse La Raye

Anse La Raye (on the central west coast of St Lucia), has a beach length of 418 metres with the extent of sandy area approx. 8,045 square metres. The beach is used for recreation and landing fish, with the bay being used mainly for net and pot fishing (OECS/NRMU 1999). The beach is a known nesting site for turtles and there are reef patches in the bay (Biodiversity Country Report for St Lucia 1998).

Anse La Raye Coral Reef, Coastal and Marine areas
The Anse La Raye coastal and marine area forms part of the new Canaries-Anse La Raye Marine Management Area (CAMMA). This is a rich coastal area due to the inter-connected ecosystems of coral reef with patches of sea grass beds. No mangroves are proximal to the area. The area supports a diverse fishery which includes reef fish such as groupers, wrasses, snappers, grunts, squirrelfish, goatfish, boxfish and surgeonfish. Lobsters and conchs are also very abundant in the waters together with other coastal pelagic fish species (small jacks, ballyhoo and sardines) along with the migratory pelagics (wahoo, dolphinfish, king mackerel and swordfish).

At Anse La Raye the 53 registered fishing vessels comprise 33 canoes, 15 pirogues, one aluminum, one transom and three shaloops (Fisheries Department 2000). There are 100 registered fishers (Fisheries Department 2000) - 52 full-time, 46 part-time and 2 non-

fishers (who are boat-owners). The village of *Anse La Raye* contributes to this data directly since it is a landing site which is registered by the Fisheries Department.

Tourist attractions here include the Anse La Raye Waterfall which has a maximum height of 46.8 metres and is the second largest on the island. In addition, there is interesting diving at Anse La Raye Wall—a shallow wall below where fire corals, soft corals, purple vase sponges and fish such as jacks, Bermuda chub and spotted drums, can be seen. Two artificial reefs at Anse La Raye also make for interesting diving. The Lesleen "M" is a 165-foot freighter (sunk in 1986), and at the southern end of Anse Cochon, in Anse La Raye there is a sunken (1996) Japanese dredge.

Anse La Raye Water quality

There have not been any later surveys in the area but an earlier CEHI report (1994/5) recorded extremely high levels of faecal coliform. It is expected that coastal water quality is still unsatisfactory, in Anse La Raye as raw sewage was observed entering the sea from the drains, a result of villagers' common waste disposal practices. Raw sewage (night soils) is disposed of directly into the bay and also into the Anse La Raye River. The Anse La Raye area is drained by the Grand Riviere de Anse La Raye (8.9 square kilometers) and the Petite Riviere de Anse La Raye (5.7 square kilometers) catchment areas. The former is also at risk from agricultural practices—pollution, extraction of water and sedimentation (Biodiversity Country Report 1998).

Fragility and vulnerability of production system for NR-based livelihoods in Belize (internal constraints of production combined with vulnerability to external threats).

Introduction

Belize is located in northern Central America at 15 degrees to 18 degrees 30' north latitude and 87 degrees 15' to 89 degrees 15 west longitude. Belize is bordered by Mexico in the north and Guatemala to the west and south of the Caribbean Sea **(Fig. 3).** The Belize land mass includes more than 1,000 tiny islands known as "cayes" which total about 266 square miles.

The climate is subtropical with annual temperatures averaging about 80 degrees F and a rainy season between June and August. Belize is approximately 8,876 square miles in area, more than one-fifth of the total land mass dedicated as nature reserves.

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). There are three atolls (ring-shaped volcanic reefs—Lighthouse, Glovers and Turneffe) outside the reef and over 1,060 cayes (islands formed from coral/sand debris) between the reef and the mainland. 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).

The BBR system supports a profusion of reef formations with a great diversity of corals, sponges, reef fish and invertebrates; varying details of which have been previously described in both the scientific and dive tourism literature. For this reason, Belize is a mecca for divers, yachts people, water sports enthusiasts, scientists and conservationists.

Coastal Resources

The Belize Barrier Reef Reserve System (BBRS) which is of great economic (tourism and fisheries), ecological and social importance to Belize, was declared a World Heritage site (BBRWHS) in 1996. Within this were seven designated Marine Protected Areas (MPAs) at that time. The coast of Belize with its numerous fringing reefs, patch reefs and faros in the lagoon, and the BBRS, form a range of habitats which support a high diversity of marine and coastal fauna and flora. The BBRS is rich in biodiversity—corals, fish, lobsters, conchs, known spawning banks, rich sea grass beds and nesting sites. They include over 600 species of reef fish, 247 taxa of reef flora (including sponges and sea grasses) and several species of reptiles (crocodiles, leatherback turtles, green loggerhead and hawksbill turtles). The BBRWHS is also home to 350 species of birds, 22 species of amphibians and 40 species of mammals including the endangered Jaguar (*Panthere onca*) and the West Indian manatee (*Trichetus manatus manatus*) (Programme for Belize Document 2001). The Biological diversity of the Coastal and Marine areas as reported in the National Biodiversity Report (**Table 6.1** below) shows some of these details.

TABLE 6.1
BIOLOGICAL DIVERSITY IN COASTAL AND MARINE AREAS
(AFTER JACOBS 1998)

	COASTAL		**MARINE**	
Taxon	Genera	Species	Genera	Species
Fish	37	173	229	472
Invertebrates	29	45	296	456
Reptiles	17	124	5	7
Amphibians	6	22	-	-
Insects	152	240	-	-
Birds	128	177	34	47
Mammals	37	40	4	5
Plants	188	235	66	315
Totals	594			

Source: Belize National Biodiversity Strategy, 1998

Jacobs 1998a suggests that it can be inferred from qualitative data that there are over 600 species of fish and about 500species of invertebrates may occur in the Belize marine systems. However, only a relatively small number of these have been positively identified. There are more than 317 reef species with higher fish density on shallow reefs. The Coastal Zone Management Institute (CZMAI) Report (2000) lists 65 coral species which have been identified for Belize. *Montastrea annularis* and *Siderastrea radians* are common along the coasts. Dominant species at South Water Caye Reserve were *M. cavernosa, M. annularis, Agaricia grahamae, Diploria strigosa* was dominant while at Glovers Reef it was *Montastrea, Diploria, Siderastrea* and *Porites, Agaricia sp.* and *Acropora cervicornis*.

Several studies are being carried out in Southern Belize involving fisheries and invertebrate surveys by the Smithsonian Institution and under the Caribbean Coral Reef Ecosystem Program (CORE). A number of independent studies have been pursued by scientists and researchers of the University of South Carolina (on the mutton snapper at Gladden Spit).

Southern Belize's riverine and lagoonal habitats are critical for the manatees *Trichechus manatus manatus,* while many of the cayes —Laughing Bird Caye, Southwater Caye. Coco Raye Silk Caye—are nesting sites for the turtles—*Chelonia mydas* (green*), Caretta caretta* (loggerhead*), Eretmochelys imbricata* (hawksbill).

Marine Protected Areas

In Belize, competitive use for resources has become very intense since there has been rapid population growth, high unemployment and poverty. This has led to resource-use conflicts in many coastal areas. Belize has attempted to manage the use of threatened coastal and marine resources by the designation of marine protected areas (MPAs). Although a small developing country, Belize is engaged in some major conservation attempts in the form of protected areas with various active internal organisations. Twelve MPAs: the Corozal Bay Wildlife Sanctuary, Bacalar Chico Marine Reserve and National Park, Blue Hole Natural Monument, Glovers Reef Marine Reserve, Laughing Bird Caye National Park, South Water Caye Marine Reserve, Sapodilla Caye Marine Reserve, Port Honduras Marine Reserve, Gladden Spit Marine Reserve, Half Moon Caye Natural Monument and Hol Chan Marine Reserve.

Half Moon Caye Natural Monument was established in 1982 (the first reserve to be created under the National Parks System Act (1981). Half Moon Caye is located at the southeast corner of Lighthouse Reef (most easterly of the atolls). It is famous for its Red-footed Booby (*Sula sula*) colony which has an unusual predominance (almost 98 per cent of its total adult population) of a white colour phase. Some 98 other bird species include frigate birds, ospreys, mangrove warblers and white-crowned pigeons. There are iguanas and lizards and the beaches are known nesting sites for loggerheads (*Caretta caretta*) and hawksbill turtles (*Chelonia* sp.).

Hol Chan Marine Reserve was established in May 1987. It is in the northern section of the BBRS and is a "channel" or break in the reef which is about 15 to 30 feet deep. Hol

Chan is rich in corals—*Siderastrea, Diploria, Acropora* sp.—various fish species and green moray eels. Within the Hol Chan Marine Reserve, three zones are clearly defined:

i. the reef; no fishing/collecting, buoy moorings for use, entrance fee
ii. sea grass beds; no spearing or netting of fish in the Boca Siega blue hole. Fishing can only be carried out here under a special licence.
iii. mangroves; plants and wildlife here cannot be collected or disturbed, fishing can only be carried out under a special licence.

This MPA, having effectively protected fish over the last 13 years, it is suggested there are now more species, greater abundance and larger sizes of commercial species compared to non-protected areas.

External and internal threats to the target resources

The BBRS, a fragile ecosystem because of the inter-connected ecosystems of the coastal area, faces a number of threats as the fishing and tourism industries in Belize expand.

For the BBRS and coastal Belize, like the rest of the Caribbean, the natural threats are coral diseases, hurricanes and storms, global climate variations. Other threats:

- Coastal developments for the tourist industry—hotel construction, sewage and waste water facilities, solid wastes, water sports/tourism activities—snorkelling and diving.
- Port and shipping activities—oil spills, pollution from ports, hazardous cargo, collisions with manatees etc
- Absence of land use plans—soil erosion from bad and unmanaged agricultural practices; inadequate waste disposal; industrial wastes entering the rivers; mangrove clearance; oil spills; unsustainable fishing practices; indiscriminate killing and hunting, poaching; tourism and residential development.

The increased coastal development over recent years in Belize is not limited to residential but includes industrial (tourism) and agricultural (aquaculture industry—primarily shrimp farms) development. Tourism in Belize is the major industry, outstripping fisheries, forestry and agriculture combined. Typically associated with tourism are the following: increased hotel/rooms, residential homes, visitors to protected areas, coastal development activities—dredging, pier construction, water transport traffic, generation of solid and liquid wastes including sewage.

Natural disasters also play a part in this degradation. Hurricane Mitch (1998) caused thousands of fish and lobster traps to be lost with the fisheries sector estimating a loss of over $Bze 1.2 million (Santos 1999).

Weyman and Graham (2000) in their report on the fisheries of Southern Belize have listed as facts that:

- The global and local fisheries resources are in a state of decline;
- Fishermen are working harder and landing less fish;
- Marine environments are being degraded by upland pollution, destructive fishing gears, anchor impact and increasing coastal development;

- Prices of gasoline, boats and fishing gears are increasing.

Recently, the reefs of the Mesoamerican region have been subjected to disturbances (natural and anthropogenic) which have resulted in degradation. These include recent global occurrences (elevations in temperature) and the extensive well-developed reefs on the Atlantic coast experienced unprecedented massive coral bleaching and mortality (occurrences in 1995 and 1998) and increased frequency of hurricanes.

Hurricane Mitch (1998) caused widespread destruction (State of the Coast Report 2000) and in 2000. Hurricane Keith (a high-category hurricane—135mph winds) caused significant damage to land and coastal ecosystems. The State of the Coast Report (2000) described that "along the northern Cayes there was 40 to 48 per cent mangrove leaf loss and numerous uprooted trees". The increased siltation caused extreme stress to the corals by smothering them and reducing photosynthetic light. In addition there was mechanical damage (abrasions and tissue damage) to the corals. Hurricane Mitch (1998) caused massive destruction by eroding sediment along the windward sides of Ambergris Caye, Caye Caulker, Tobacco and South Water Cayes and destroyed portions of the BBRS (CZMAI 2000).

These events heavily impacted reefs from the Mexican Yucatan to Honduras with losses in coral cover of 15 to 20 per cent across the region and losses as high as 75 per cent in parts of Belize. This combined with other pressures (overfishing, increased coastal developments, agricultural and industrial run-off, deforestation, land-use and sewage pollution) leaves the coral reefs and associated ecosystems in a very vulnerable state.

Sarteneja and Hopkins

The coastal communities of Sarteneja and Hopkins utilise the extensive BBRS with its associated resources. These include coral reefs, sea grass beds, mangroves, coastal and marine areas (the target habitats). These communities share the resources to some extent and will be discussed together. In addition, biological data are scarce for specific coastal areas of Belize.

Sarteneja and Hopkins sea grass beds

In Belize there are five types of sea grasses: Turtle grass (*Thalassia testudinum*) which is most dominant; the manatee grass *Syringodium filiforme* ; *Halodule wrightii* (shaol grass); midrib sea grass (*Halophila baillonis and Halophila beaudettei*) and two Caribbean species *Halophila englemanni* and *Halophila decipiens* (McField et al 1996 Mumby and Harborne 1997). In the Caribbean, Belize has the largest population of the Antillean manatee, a subspecies of the West Indian manatee (*Tricheus mantus manatus*). The manatees live in salt and fresh waters in sea grass areas. The manatee population is small (less than 900, CZMAI) and considered threatened although they are protected (the Wildlife Protection Act No. 4 1981). The Manatee monitoring programme affords the CZMAI a database from which they are able to assess population changes after natural or anthropogenic disasters.

Sarteneja and Hopkins mangroves
Frost (1979) described the fauna of Belizean mangroves as not very diverse or abundant. But Zisman (1992) suggested the reason for this was the absence of complete inventories for any particular group of fauna or flora. No comprehensive mangrove flora inventory has been done for Belize, but there are some inventories of plants on particular cayes (Fosberg et al 1982). These include mangrove trees (*Rhizophora mangle, Avicennia, Conocarpus* sp.) and other typically associated species of grasses, sedges and succulents.

Mangrove timber is typically used for fuelwood, charcoal, poles to mark lobster pots, fish traps, camp construction and for scaffolding in construction. Zisman (1992) reports approximate species counts: 74—fish; 40—mammals; 30—reptiles; 11—amphibians; and 178—birds. The birds in the coastal areas including the wetlands have been well documented for Belize (Price et al 1990, Parker et al 1987). Fiddler crabs (*Uca minax*), tree crabs (*Ucides cordatus*) and *Cardisoma guanhumi* (the blue land crab) are common in the mangrove areas. Mangroves provide food resources which include crabs, mollusks, fish, waterfowl (for sport) and, often, nesting birds are killed for their eggs.

In Belize, many of the Reserves contain mangroves, but management has not been effective because of inadequate financial and human resources. In fact, much of the mangroves along the cayes are in fact under already designated Marine Protected Areas while some are being pursued (for designation) by Fisheries, CZMAI and Forestry. Mangroves are ecosystems critical to manatees (protected species) and the American and morelet crocodile, which are both valuable for their hides. Small-scale mangrove clearance for tourism and housing development has been reported in Hopkins by Zisman (1992).

Sarteneja and Hopkins Coral Reef, Coastal and Marine areas
Coastal villagers of Hopkins and Sarteneja use various areas of the productive ecosystems of Barrier Reef for their livelihoods. They fish in a variety of habitats—in the sea grass beds for conchs; on the reefs and elsewhere for lobsters; and along the marine and coastal areas for barracuda, bonefish, groupers, jacks etc For the two communities, however, livelihood practices are very different. In the absence of detailed scientific data on declining stocks, some coastal and marine species—conchs, groupers and manatees—have been listed as "threatened" (CSO 1999). The Coral reef monitoring programme affords the CZMAI a database from which they are able to assess changes to the coral reef after natural or anthropogenic disasters.

Sarteneja and Hopkins Water Quality
There has not been any continued water quality monitoring for coastal areas of Belize, to date. The water quality monitoring programme which was started in 1996 by the CZMAI (CZMAI Report 1999) will provide a database from which assessments of changes to coastal water quality after natural or anthropogenic disasters can be made.

Activity 1.2
Assessment of sustainability of traditional NR-based livelihood strategies in the coastal zones of St Lucia and Belize

The target habitats utilised

Sea grass beds
In St Lucia, sea grass beds are present in the inshore Praslin area where lobsters, conchs and sea eggs are harvested. A recent report (TNC 2000) describes some stresses to the sea grass beds at Praslin: changes in water quality and disruptions of the natural sedimentation regime; the landward connectivity; the natural nutrient regime; and the seaward connectivity. The report suggests that these conditions may be responsible for declining area of sea grasses as well as faunal populations. There are no sea grass beds in the immediate coastal area of Anse La Raye, but they are present in the SMMA.

The status of the sea grass beds along the inshore areas of the Belize Barrier reef is not very well documented. This area is fished (for conchs and lobsters) by villagers from both Sarteneja and Hopkins.

Mangrove*s*
In St Lucia, the mangroves at Praslin are under the Protected Areas (Marine Reserve 1986 declared), and therefore extractive use is minimal here. Although protected, the Praslin mangrove areas continue to be encroached upon by banana growers. The stresses to Praslin mangroves, as assessed by the TNC (2000), are again listed as the disruptions to the landward and seaward connectivity; increased sedimentation; and changes in water quality and nutrients. There are no mangroves in the immediate coastal area of Anse La Raye.

In Belize, the proximal mangroves to Sarteneja are within the Shipstern Reserve and are not used for extractive purposes by the villagers. At Hopkins, there are no mangroves in the proximal coastal area and villagers do not appear to engage in extractive activities at other mangrove areas.

Coral Reefs and the coastal and marine area
In St Lucia, at Praslin, fishing is mainly inshore. Fishing methods used are lines, gillnets and fishpots. Praslin shares its coastal resources with other proximal coastal communites—Dennery in terms of reef fish, pelagics, lobsters, sea urchins. Stresses to Praslin coral reefs were assessed by the TNC study (2000) and are again listed as changes in water chemistry, nutrients and disruptions to the connectivity to land and the sea.

At Anse La Raye fishers engage in mainly inshore fishing in the proximal coastal area and in the demarcated fishing zones at SMMA. Coastal resources in this area are also shared amongst coastal villages—Anse La Raye, Canaries, Soufriere. Fishing methods employed are lines, gillnets, pots, spear fishing and some dynamite. The coral reefs in the area are also fished and the villagers engage in tourism diving and sport fishing. The formation of the SMMA has resulted in a reduction of the available coastal and marine area for extractive purposes.

In Belize, at Sarteneja the main occupation is fishing. The villagers do not fish in the proximal coastal waters of Sarteneja, but off the various Cayes and coral reef areas of the Barrier Reef. Fishing (mainly lobster and conchs) is concentrated in these areas, and where the ecosystems of sea grasses and coral reefs are interacting, since those are very productive areas. The fishers of Sarteneja tend to fish mainly in the Glovers Reef area and further south for lobsters.

Six main fishing villages in the Southern district of Belize are Hopkins, Seine Bight, Placencia, Monkey River, Punta Negra and Punta Gorda. At Hopkins, fishing tends to be a part-time occupation unlike at Sarteneja. The majority of fishers in Hopkins use dories (ESTAP 1999). The ESTAP (1999) survey described the fishing gear used by the fishers of Hopkins to include hooksticks, hook and line, beach seines, gillnets, free dives, spear guns, trammel nets, cast nets and longlines. The finfish fishery consists of species like *Lutjanus* sp. and *Ocyrus* sp. (snappers), C*aranx sp.* (jacks), *Sphraena barracuda, Epinephelus sp, Haemulon sp.*(grunts). The fishers of Hopkins fish in the Cayes and off the reefs for lobster and finfish, and also in the immediate coastal area. A trawl fishery (not local to Hopkins) operates in the waters here, targetting mainly *Paeneus notialis* with some *P. duorarum,* sharks and turtles.

Assessment of traditional livelihoods and the carrying capacity of the NR in St Lucia and Belize

St Lucia

The coastal resources of many Caribbean territories are shared by a number of proximal coastal communities and often the landing site data are pooled. While Anse La Raye is tabled as a statistic of the Fishery Data, Praslin is listed under "Other" (**Table 2**).

Fish landed at Anse La Raye may not necessarily come from the proximal coastal area of Anse La Raye. It is therefore impractical to attempt to evaluate the fish catch or the specific impacts of the communities on a particular fishery. In this context, the status of the overall fishery for St Lucia is considered.

Much of this information is adapted from the "Plan for Managing the Fisheries of St Lucia" (MAFF 2000) report and Fisheries Sector Review for St Lucia (OECS/NRMU1999).

Shallow-shelf and reef fish
The major fishing effort is between June and December for these demersal resources. Fish caught are grunts (Haemulidae), hinds (Serranidae), snappers (Lutjanidae) and others using fish traps, hand lines and bottom gill nets. They are found on fringing and patch reef systems although they are present in sea grass and mangrove areas during juvenile stages. These species are considered to be over-fished (Georges 1998, Roberts et al 1995).

Deep slope and bank fish
The demersal resource is considered moderately exploited using long lines or palangue (concentrated offshore) mainly from August to November. This targets mainly the red snapper (*Etilis oculatus*), the status of which is not very well known. Coastal pelagics—an important source of income for west coast fishers, using beach seines and fillet nets—are fished throughout the year, targetting species such as ballyhoo (Hemiramhidae) and small schooling jack species (Carangidae). The decline in this fishery has been due to degradation of near-shore habitats. The large pelagic fishery comprises more than 70 per cent of the landings; they include the dolphinfish, king mackerel, wahoo, skipjack tuna, and yellowfin tuna. They are fished using pirogues, hand lines, trolling and recently, mechanised vessels. Although, the status is not well known, potential for exists for developing the offshore fishery, away from the degraded near-shore areas.

Lobsters, the Spiny (*Panulirus argus*) and spotted (*Panulirus guttas)*, locally known as "gwi gwi", are fished primarily by traps (pots) and free-diving, by hand or using wire loops. They are also illegally hunted by spearfishers. Lobster populations are considered over-exploited in near-shore areas of St Lucia, and fishermen report a scarcity in traditional fishing area areas. Fishing pressure is high, due to the demand for undersized or "plate-size" lobsters. The potential yield is high—80 metric tonnes a year (FAO Tech. Report) and the figure for catches in 2000 was a total of 24.9 tonnes (Fisheries Department 2000).

The queen conch *Strombus gigas is* fished by scuba and free divers at 20 to 50 metre depths. Most conchs are sold locally, but some are also exported to Martinique. Conchs are heavily exploited off the north and south coasts of St Lucia. They are susceptible to overfishing because they are sedentary and aggregate in specific habitats. In 2002, a total of 40.3 tons of whole catch was recorded (Fisheries Department 2002).

Mangrove oysters are harvested on a subsistence level and not much data are available on their status.

The white urchin (*Trypneustes ventricosus*) for which the gonads (sea eggs) are a delicacy are harvested close to shore and in sea grass beds in St Lucia. They are traditionally harvested by scuba divers. No estimate of the potential yield of this fishery is available. In 1995, 35,000 urchins were landed during the open season. The urchins are virtually immobile; they inhabit areas very close to shore and are therefore very vulnerable to overfishing. It is the very high demand for the species in St Lucia which led to its over-exploitation by the mid 1980s. A ban was imposed for three years, beginning in 1987.

Following the ban, the urchin stocks recovered and the fishery was again opened during 1990 with a limited entry and a co-management approach. The fishery was closed again in 1992-1995, and yet again in 1996-2001. The bans were imposed again due to poor recruitment and low adult abundance recorded.

At Praslin, the Seventh Day Adventist-dominant population have a preference for fish with scales and do not consume lobsters, conchs or sea urchins. In fact, the fishery (*Trypneustes ventricosus)* was often found under-fished here relative to other areas in St Lucia.

The overall decline in fisheries globally, regionally and locally are good indications of the need for alternative NR- based livelihoods. The overall status of the fishery of St Lucia suggests a need for alternative approaches to fishing and/or improved fisheries management.

The "St. George's Declaration of Principles for Environmental Sustainability in the OECS" was adopted in November 2000 by the OECS (Organisation of Eastern Caribbean States), Ministers of the Environment Policy Committee (EPC). The commitment: "The governments of the eastern Caribbean countries which form the (OECS) have recognised that environmentally sustainable development is essential for the creation of jobs, a stable society, a healthy economy and the natural systems on which this depends. The people and governments of the OECS region believe that everyone is entitled to a healthy and productive life in harmony with nature. The governments have adopted these principles and expressed their commitment to provide the resources required for their implementation."

Sustainable use of natural resources requires control of "the harvesting of individual species and/or communities". In addition, the ecosystems and habitats on which they depend need to be conserved. This ensures that their current and potential usefulness is not impaired. Management of coastal resources (mangroves and lagoons, coral reefs and sea grasses) is necessary to maintain the ability of the resource to renew itself. Maintenance of these land/water interface systems then will ensure biological potential and the associated long-term economic potential of coastal renewable resources.

Continued unsustainable practices and activities (see below) affect and will continue to affect the livelihoods of coastal communities. Overfishing affects the production system by compromising its ability to renew itself. Maintenance of productivity of fisheries therefore ensures a reliable food source and continued livelihood for fishers and others in the fishing industry (boat-builders, trap/net makers and retailers).

With or without conservation practices, people will continue to use these resources since many of them rely heavily on local resources for their livelihoods and subsistence. The loss of these natural resources will have tremendous social impacts related to loss of work/income and potential for coastal people. In addition, it will be a loss of an important food source and livelihood for many artisanal fishing communities. This will be detrimental to the multi-million dollar tourist and fishing industries.

Marine algae or sea moss harvesting
The marine algal (sea moss) species *Gracilaria* sp. and *Eucheuma* sp. are harvested in the wild in the coastal areas of St Lucia. Sea moss is used locally in the preparation of delicious drinks (pure and flavoured), puddings and as an additive (in rum) due to its gelling properties. Throughout St Lucia, natural stocks of sea moss have seen notable reduction. The wild stock harvesters tend to charge lower prices than that charged by the sea moss farmers or cultivators. The unmanaged harvesting of wild sea moss has led to a decline in the stocks of this natural resource.

BELIZE

The rich coastal resources of Belize are shared by a number of coastal communities and the landing site data are often pooled (as in the rest of the Caribbean). While Sarteneja is tabled as a statistic of the Fishery Data, Hopkins is not (**Table Fisheries Department Catch**).

It is therefore impractical to attempt to evaluate the fish catch or the specific impacts of the communities on a particular fishery. However, by virtue of the large numbers of registered fishers (>900) at Sarteneja, their impact can be estimated. In this context, the status of the overall fishery for Belize is considered.

The fishing industry of Belize is relatively small with the lobster fishery being dominant, followed by marine fish, conchs and shrimp. Lobster and conch contribute to 92.9 per cent of the marine export industry. The fishing industry, predominantly an artisanal one, is carried out mainly within the shallow protected waters of the main barrier reef —the reef flat and reef slope areas, as well as the atolls. Much of the following information is reproduced from the Capture Fisheries Statistical Report for 2001 (Fisheries Department).

The Lobster fishery (*Panulirus* sp) is a valuable fishery, being the highest income-earning artisanal fishery for Belize. It is an "open access" fishery for eight months of from June 16 to February 14. Most lobsters are caught by traps, or free diving and shades, or "casitas". However, some fishermen use baited "gill nets" or "lobster nets". This method is known to cause damage to reef habitats and create by-catch. Illegal harvesting during the closed season is also prevalent. These catches are generally sold in Guatemala together with under-size lobsters.

The conch fishery (*Strombus gigas),* second in commercial importance, is predominantly an artisanal fishery. It is seasonal, the "open season" generally coinciding with the "closed lobster season", but with some overlap. Fishers, therefore capture conchs during the "open season" (October 1 to June 30) and fish both during the concurrent season. This valuable fishery is operated exclusively by diving. Illegal harvesting is prevalent (between July 1 and September 30) and products are traded in Honduras and Guatemala. Appeldoorn (1996) suggests that the production average for conchs at 400,000, which has been the figure over the past few years, could possibly indicate the fishery might be fully exploited due to overfishing.

Belize has a trawl fishery consisting of industrial and coastal artisanal types. The trawl fishery is predominantly for shrimp—*Paeneus duorarum* and *Paeneus Schmitti.* The industrial fleet includes fishers from the Northern Co-operative and foreign vessels. In 2001, of the ten trawlers fishing in Belizean waters, two were from the Northern Co-operative, and the rest were from Honduras. Many are from the North Fishermen's Co-operative (which includes the fishers of Sarteneja). The industrial vessels are similar in design to the Gulf of Mexico-type trawlers. The much smaller artisanal shrimp fishery is, however, limited to the southern villages (including Hopkins) and is operated using small skiffs and canoes.

The Finfish fishery has only recently been recognised as valuable in Belize. The fishery includes both demersal (bottom dwelling) and inshore pelagics (free swimming) caught mainly with hand lines and sometimes nets. This fishery provides the snappers (Lutjanidae) which is the largest single family of exported fish (**Table 3**).

Aggregation fishing is very common in Belize and there is much information on one such fished species, the Nassau Grouper (*Epinephelus striatus)* of the family Serranidae. The Nassau Grouper is under severe threat throughout the Caribbean (including Belize), the species being on the IUCN's Red List. At Caye Glory, for example, in the 1960s fishermen caught two tons of fish each day (during the season); in 2001, only 21 fish were recorded at the site (Paz and Grimshaw 2001). Nassau Groupers are territorial and tend to be limited to certain areas of their parent reef, Glovers Reef being one. The Nassau Grouper is presently "overfished"; fisheries models indicate this level of fishing is unsustainable. If continued, the population will disappear by 2013, with commercial extinction occurring even sooner (Sala 2001).

The Shark fishery in Belize is mainly for the export market, to Mexico and Guatemala. Shark are exported either fresh or corned/salted and are not valued locally valued for its meat but for its by-products—skins, fins, and shark oil.

The following Table shows the various licenses issued between 1998 to 2001

TABLE 6.4
ISSUED LICENCES 1998 TO 2001

Licenses	1998	1999	2000	2001
Fishermen	1718	2137	1872	1707
Boat	759	728	750	1455
Replacement	?	?	?	0
Research	29	16	24	33
Processing Plant	?	?	?	9
Black Coral	0	16	24	18
Seafood Export Permits	?	?	?	2577
Fish Exporters	?	?	?	0

(From Capture Fisheries Statistical Report 2001, Belize Fisheries Department)

Main causal factors or "drivers" of the non-sustainability of the above NR-based activities

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.

Overfishing

Scientists warn that the world's oceans are headed for collapse due to massive overfishing by the global fleet of 3.5 to four million commercial fishing boats. Too many people are chasing after a declining number of fish. Over the last 20 years, the global fishing fleet has expanded dramatically to around four million boats (Dayton et al 2000). Over time, fishing gear and technology have improved, causing increased fish catches. At some point, though, the fish stock is unable to replenish the fish removed by fishing; that is, it cannot generate enough eggs to lead to sufficient mature fish. This is overfishing. Unfortunately, the natural response by fishers to "taking reduced catches" is to increase their fishing effort. This they do by investing more time fishing, and they may use smaller meshes, which compound the situation and leads to over-exploitation of the fish stock.

Very recent scientific information (Myers and Worm 2003) report that "industrialised fisheries have typically reduced community biomass by 80 per cent within 15 years of exploitation". The authors estimate that large predators (tuna, swordfish, marlin—open-ocean species) and large groundfish (cod, halibut, skates, flounders, tropical groupers) in oceanic and coastal regions have declined in terms of their biomass by approximately 10 per cent of "pre-industrial" levels. In simple terms globally we are in a real crisis situation with considerably less "big fish in the sea". Moreover, recent studies by Watson and Pauly (2001) suggest inaccurate fish-catch reporting by the single global source of statistics (the UN FAO), disputing the rising fish catches consistently reported for a number of years. Watson and Pauly (2001) further suggest that the artificially high FAO figures encouraged investment in fisheries and would have therefore contributed to the further collapse of the world's fisheries. The threat of reducing stocks is a threat not only to the fishing industry but to world food production since fish provides around 17 per

cent of the world's animal protein and is important to poor and coastal peoples.

This increased investment and fishing effort has (for some time now) severely impacted on the organisation of the coastal and marine ecosystems, since the few fish left will not have the chance to attain increased weights. In addition, many may never get the chance to reproduce and replenish stocks. Experts suggest that there is immediate need for international action to shrink industrial fleets and reduce catch quotas. This must be adhered to, in order to promote sustainable fishing. Myers (2003) suggests that a reduction of approximately 50 per cent in total fishing effort is necessary to avoid further declines of particularly sensitive species.
One area of focus of this project is, on the impacts of poor coastal communities on the major coastal resources—coral reefs, sea grass beds, mangroves and coastal lagoons. Overfishing at a regional level (as at the global level) has left the region's stocks in a reduced state. It is therefore necessary to identify the major offenders here: the "industrial fishers"; the long liners and trawlers, although artisanal fishers are also contributors. The long-lining method consists of boats which spool out miles and miles of baited hooks in a single set, wiping out fish like swordfish and billfish. Trawling consists of "bulldozing" or "dragging" a net along the ocean floor; taking everything, and all sizes. This method often destroys coral and rocky reefs, sponges, sea turtles. An FAO assessment (FAO 1997c) suggests that 35 per cent of the Caribbean's stocks are overexploited, and the sub-region also has the highest percentage of discard, mostly as by-catch discard of shrimp trawling. Shrimp trawlers also destroy habitats and nursery areas.

Pollution and degradation
Pollution and degradation in the coastal zone and the associated ecosystems is common to most of the Caribbean territories. A variety of land-based sources include industrial development, tourism development, urban, domestic, agricultural activities and oil. Fertilisers and pesticides are also major sources of pollution in the Caribbean, with fertiliser consumption in some islands being extremely high St Lucia eight metric tonnes per year). The tourism industry, hotels and marinas generate sewage, solid and liquid wastes; while the shipping and marine transport sector generates oil, solid and liquid wastes. Heavy industry generates oil, liquid wastes and heavy metals while domestic/municipal waste products include sewage, solid and liquid wastes.

This myriad of effluents reaching the coastal zone have direct negative effects on mangroves, coral reefs, sea grass beds and lagoons. They can cause death to organisms (flora and fauna) and certain species and/or cause stressful conditions to others. This degradation and destruction are global (IUCN/UNEP 1991, Wilkinson 1992/1998), with severe effects on the economies that depend on them (Salm et al 2000).

Reef Base (2001) suggests that much of the Caribbean reef area is classified as "threatened", while it is common knowledge that a large proportion of the region's mangroves are "threatened" or "under stress" from degradation and pollution (Bacon 1990). Coral reefs have been on the decline in recent years. A decrease in coral cover from 70 per cent (in 1977) to less than five per cent in 1993 has been reported for

Discovery Bay, Jamaica (Hughes, 1994).

Sea grass beds contribute a similar value (dry weight) of primary production, as do mangrove swamps. Where the three systems (mangroves, coral reefs and sea grasses) co-exist, very high levels of production are attained. Mangroves and sea grass beds harbour a diversity of fauna, provide important nursery grounds for prawns and fish. Their root systems also trap and stabilize sediments, and assist in preventing erosion. In this respect, the loss of sea grass beds and mangroves has led to increased turbidity of coastal waters. Turbid water reduces the photosynthetic ability and therefore the productivity of sea grass beds. Increased sewage inputs in coastal waters often leads to eutrophication and prolific algal growth which overwhelms other marine organisms by causing oxygen depletion. Algal growth and sedimentation are lethal to coral reefs, while increased sedimentation in coastal waters causes death to fish by clogging their gills.

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 reaching the coastal area and major infrastructural changes (see Annex by MM). 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” which will now be discussed.

Fishing

Artisanal fishers contribute to the overfishing of coastal waters in St Lucia and Belize. McConney (2002) suggests that most of the 51million fishers worldwide are artisanal and from developing countries. Artisanal fishers do actively engage in destructive fishing practices which have direct negative impacts on the resources. For example, drift nets or “ghost nets” are left out for extended periods and have very large catches of all sizes, and including turtles. Gill nets are set across river mouths and channels where fish have little chance of escape. Unfortunately, by the time the net is pulled up a large proportion of the fish are dead and/or not in very good condition. Often, a large percentage of the catch has to be discarded.

The negative effects of *artisanal trawlers* on habitats and nursery areas must also be addressed. Trawlers are commonly known as "bulldozers" since they clear everything (including juvenile and mature fauna) in their paths, they cause damage to reefs, sea grass beds and also mud-bottom habitats. Artisanal fishers must adhere to restrictions including trawler mesh size, some of which are already in place. This restriction would assist in reducing by-catch also.

Cyanide and dynamite are sometimes used to "displace the fish" from its cover, destroying coral reefs and rocks and other organisms. This practice clearly has a negative impact on the sustainability of the resources.

Aggregation fishing. Fishing during the spawning season (December and January full moons) by even a limited number of fishers for the aggregating fish—Nassau Grouper—can easily remove more than 10 per cent of the spawning population, while spear-fishing can remove a further 14 per cent (Sala 2002). Total closure of the spawning sites in Belize will ensure multi-species protection since other species (snappers, grunts, jacks, permits and groupers) also spawn (at different times) at these banks (Paz and Grimshaw 2001, Heyman and Requena 2002). Eight of the 14 sites are within Marine Reserves in Belize. The recommendation (Green Reef 2000) is that there needs to be implementation of new reserves or closure to the fishery at these other 6.

Illegal harvesting. In both Belize and St Lucia, the illegal (out of season) harvest of lobsters and conchs is detrimental to the sustainability of the resource.

Sea moss harvesting
The sea moss harvesting technique and unmanaged exploitation in the wild in St Lucia are causing a reduction in the natural stocks. This exploitation must not be allowed to continue.

Designation of Marine Protected Areas
The creation of a marine reserve or protected area is an attempt to conserve and protect coastal resources. A Marine Protected Area (MPA) may be defined as "any area of the intertidal or subtidal terrain together with its overlying water and associated flora and fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment" (IUCN 1988). MPAs are used as management tools to protect, maintain or restore natural and cultural resources in coastal and marine waters. MPAs are being used nationally and internationally to conserve biodiversity, manage resources, protect endangered species, reduce user conflicts, provide education and research opportunities and enhance communities and recreational activities (Salm et al 2000). Some MPAs are, however, reducing the area of available resource without compensating the users (many of whom are poor). Ideally, resource users should not be placed at a disadvantage with such designations.

St Lucia

In St Lucia, the Soufriere Marine Management Area (SMMA) has been described as a success. The SMMA has been described as positive and resulting in "increased sizes of fish", "increased stocks within the reserve area" and "increased biodiversity" (Roberts 2000). Designation of the Canaries/Anse La Raye Marine Management Area or (CAMMA) will affect the villagers of Anse La Raye. This since, within CAMMA, there will be demarcations of the Roseau Bay Fishing priority area (north of Anse La Raye) and the Anse Chastanet Fishing priority area (south of Canaries) **(See Figure 1**).

Belize

The natural resources of Belize have been well studied only in some specific areas, while others continue to be understudied. Subsequently, many of the MPAs (12 to date) in Belize do not appear to be designated based on sound scientific information—location, flora and fauna, threatened species or habitats. Rather, the designations appear to be based on the strength of advocacy of certain NGOs and/or conservation groups.

Jacobs (1999) suggests: "Much of the management measures under the Fisheries Act have been ineffective due to improper enforcement mechanisms, but also due to fundamental problems derived from lack of biological knowledge of the species being protected." There appears to be not much detailed scientific research on resource assessment in terms of declining stocks, although some coastal and marine species (conchs, groupers, manatees) have been listed as "threatened". In defence of its implementation of the MPA system, Belize is citing the Precautionary Principle or Approach which requires that "once there is the threat of environmental damage, action should be taken to control or abate this, even in the absence of scientific information" (information on the impacts of specific activities).

No formal system has been implemented in the management of the MPA areas except as established by PACT and the Hol Chan Marine Reserve Board of Trustees. In Belize, a number of committees together manage and regulate the use of coastal and marine resources. However, MPAs in Belize do not appear to be working efficiently because of a lack of commitment, lack of resources (managers, boats etc for monitoring) and an inability to meet the needs of all stakeholders.

This absence of truly managed MPAs is typical of the rest of the Caribbean where already 175 protected areas (marine and terrestrial), existed about 10 years ago (Putney 1992). Most of these are unmanaged, however, since although the political will may be strong, governments cannot meet the costs. They are often described as "paper parks" and are not truly recognised as even existing.

The general perception of the coastal communities, who depend on the reef for their livelihood, is that upon designation of a new MPA their extractive activities (harvesting of lobster, conchs, fish) becomes limited. They maintain that this is unjust since the "bigger offenders" such as the industrial fishers (trawlers) and wealthy developers are allowed to continue degrading activities, such as "bulldozing the bottom of the seas", and clearing mangroves for construction. In this respect, construction and development of big

hotels and facilities (the golf course on Caye Caulker) are highly visible in most of the Cayes. MPAs then are perceived as a threat to the livelihoods of poor people.

Activity 3.2
Alternative techniques for sustainable consumptive NR use based on new knowledge

Following the above, the initiatives which are suggested here for sustainable natural resource-based livelihoods should not be viewed as a threat to the existence of the poor.

1. **Overfishing**, on an industrial level has severe direct effects on the natural resources identified in this project. Scientists suggest the solution is simple but extremely difficult to put into practice, and they suggest that the recovery of the fishery, requires an overall reduction of fish mortality. This issue, must then be dealt with as a top, national-level priority. In this context, consideration should be given to banning "industrial fishers", such as longliners and trawlers, since they are major contributors to reduction in fisheries stocks (See Matrix below).

2. **Pollution and degradation** (at a regional and national level) have severe and direct negative impacts on the natural resources identified in the project. This issue must then be addressed as a top priority, at a national level. Pollution and degradation of coastal resources must be curtailed (See Matrix below).

3. **Destructive fishing methods** and techniques employed by local artisanal fishers must be banned (See Matrix below).

4. **Restrictions** on artisanal fishers should be imposed: among them, quota restrictions, closed seasons, licences/permits for fishers, registration of boats, mesh size limitations for trawlers (see Matrix below).

These measures, which could be implemented to manage fishing efforts, are often recognisably difficult to implement. Consideration must be given at a governmental level of the need to subsidise poor people's incomes if they are asked to reduce or cease fishing activities. An "alternative" income generator must be put in place for those who "fall out" here—some type of social security etc (See Chapter 7 and Chapter 9).

While some of these restrictions are already in place in both St Lucia and Belize, they are often not adhered to and/or enforced.

5. **Coastal Pelagic Fishery**. This is virtually untapped in Belize and St Lucia.

6. **Improved harvesting techniques** for sea moss. (See Matrix below).

7. **Improved Management and designation of Marine Protected Areas (MPAs).**

Management. Over a period of years, some of the region's marine parks have achieved and maintained financial self-sufficiency. Geoghegan (1994) reviewed these financially self-sufficient parks, which he identified as Bonaire Marine Park, Saba Marine Park and the British Virgin Islands system of marine protected areas. Major revenue sources for these parks included entry fees, scuba diver fees, yacht charters, yacht dockage fees, and

gift shop sales. Management of an MPA is difficult if the responsibility rests solely with a governmental department whose fees will all go directly into the consolidated fund and may never reach the park itself. Non-governmental organisations (NGOs) may not have adequate systems (resources—human or financial) to run an MPA efficiently.

MPA Funding. Partnerships between the two groups may be ideal—government for legislation, policy and financial oversight; the NGO being responsible for implementation of the revenue generation systems (Geoghegan 1994). Funding mechanisms should include government subventions; international agency assistance; foundation grants; donations and membership association; user fees; souvenir sales; concessions and trust funds.

MPA Monitoring. The MPA needs to be monitored to examine the success of the management efforts, for example, in protection of species. Salm et al (2000) shows the types of data which should be collected and how specifically local communities can be involved in a collaborative monitoring system of an MPA.

The government of Belize must create the conditions under which the costs of this type of management may be met. Although in St Lucia the SMMA has been successful to date, for continued success and higher achievements, the above recommendations can still be applied to SMMA and CAMMA.

Designation of MPAs should be based on scientific assessments which should inform the size, ecological boundaries and the demarcation of zones. Zones within an MPA are meant to confine a particular need or use to a specific area, where it does not conflict with other uses. In effect, it separates the incompatible uses (recreational— waterskiing versus snorkelling); sets aside damaged areas to recover; protects breeding populations (Nassau grouper); and demarcates no-take zones etc

In both Belize and St Lucia, designation of MPAs or reserves needs to be carefully considered to achieve the objectives, but not at the risk of compromising poor communities. In this respect, compensation of some form should be considered (See attached MPA presentation by JG and CTA).

Stakeholder consultation

Although management activities started in the Soufriere coastal area (St Lucia) since the 1980s, it was not until 1994 that the Soufriere Marine Management Area (SMMA) was established. This, after much of the resource use conflicts—competition for use of the fishing areas between seine fishers and yachters and between pot fishers and recreational divers. The SMMA is a management area comprising 11 kilometres of coastline and adjacent marine area to include marine reserves, fishing priority areas, recreational areas and yacht moorings (Renard 2001). The SMMA has had a number of problems from which other countries can learn. Renard (2001) identified one of the greatest threats to the success of effective participatory management as " the accidental or deliberate exclusion of one or more groups of stakeholders from the planning and negotiating stages".

The CAMMA designation appears now also to be steeped in controversy since the Anse La Raye villagers suggest that they were not involved in the consultations. This is one of the key issues echoed by the communities of Sarteneja and Hopkins with respect to some key MPA designations in Belize, at Glovers Reef (See Appendix on community meetings).

Monitoring of management: The processes of natural resource management take place in constantly evolving situations. Participatory planning and conflict management often suffer from the incorrect assumption that conditions are static. Between 1996 and 1999, some severe socio-economic and environmental changes occurred in St Lucia. Two major employers closed —a hotel and an agro-processing factory. Hurricane Lenny destroyed several reefs. Important changes such as these must be factored in if the participatory management approach is to be successful. In this respect, new conflicts may evolve.

Activity 3.3

Alternative techniques for sustainable non-consumptive NR use based on new knowledge

Mariculture—sea moss cultivation

Sea moss production in the Caribbean has been aimed at both the extraction industry (sources of phycocolloids— agar, gels etc) and traditional uses (drinks). The development of cultivation of the algal species used for food in the Caribbean began in 1981 (Smith et al 1984, Smith 1990). The approach taken was to develop low-cost, labour-intensive methods that could be transferred to people in coastal communities (Smith 1998). Sea moss cultivation (*Gracilaria* sp. and *Eucheuma* sp.) has been practiced in St Lucia since the late 1970s. The Praslin community has benefited from this practice since the following favourable conditions are all present:

- A firm substrate (such as sea grass beds or sand);
- Moderate wave action;
- Good water exchange;
- An offshore reef for protection from heavy wave action; and
- Water depth of at least one metre at low tide

Praslin has been described as one of the most productive bays in St Lucia (Fisheries Department 1997) because of the interactions of the ecosystems present here—the sea grasses, mangroves, the coral reef and the coastal/marine areas.

The cultivation methods are very basic consisting of durable stakes or poles which are anchored in the sediment and culture lines are tied across the poles. Attached to the culture lines are spores of the species. A raft system, which secures a number of lines, is another method. The species cultivated is originally from Belize (*Eucheuma* sp.) which is ideal since it is more resistant to epiphytic growth, siltation and additionally has a good gel quality.

The sea moss farming continues with reasonable success. Mr A Smith (personal communication) maintains that the presence of good water circulation and reasonable water quality makes Praslin an ideal location for sea moss cultivation. For this reason, Praslin continues to have the largest of the three sea moss farming areas in St Lucia; the other two are at Laborie and Aupiscon.

Overall, however, the techniques of cultivation, processing and marketing of sea moss being used by farmers at Praslin do not appear to be sustainable. Caribbean's sea moss expert Allan Smith (CANARI, St Lucia) has confirmed that an expansion of the sea moss farming is a very viable alternative at Praslin.

The marketing of products has also been recognised as a main problem plaguing the commercial enterprise at Praslin. The project team learnt (2002) that Barbados has initiated some discussion leading to a potentially good market, but the initial demands cannot be met by the sea moss farm/co-operative in its present state (See Matrix below).

With respect to the quality and standards of the products, The Saint Lucia Bureau of Standards has a Standard Specification for the Labelling of Commodities, Pt 3: Labelling of Prepackaged Food (LSNS 18 Pt 3: 1996) which is a compulsory national standard. At present, there is no product standard for sea moss drinks or jellies. The Bureau does offer advisory services and is willing to work with the farmers toward improving their products (**See Matrix below**).

Sea moss cultivation (*Eucheuma* sp.) started in Belize in the 1970s. It was not very successful because of hurricane damage (Deboer 1981), and was never continued. Smith (1999) also sees good potential for this NR activity in Belize and recognised that bad timing rather than lack of technical feasibility was the problem with the initial trials in the 1970s.

Sea moss cultivation cannot be recommended for Anse La Raye (or the west coast of St Lucia) because of the absence of the required favourable conditions (as above).

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives	Relevant Decision Makers to Receive New Knowledge	Appropriate media of Communication of New Knowledge
Extractive NR uses- Praslin, Anse La Raye, Sarteneja and Hopkins					
Consumptive (or extractive) NR (seas and coasts, coral reefs, mangroves, sea grass beds and coastal lagoons) uses	No	. Global and regional issues affecting: Overfishing- resulting in reduced fish stocks	Education on the status of global and regional fisheries and the coastal ecosystems due to Overfishing. Loss of important protein source.	Policy makers Government, Ministries	R8135 Report, Policy Briefs, Workshops
		. Pollution of the seas and coastal waters from land based activities: sewage, industry, agriculture and tourism	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.	Policy makers Government, Industries	R8135 Report, Policy Briefs, Workshops
		Fishing Inappropriate fishing techniques: Trawlers (dragging, bulldozing)	Impose total ban on industrial fishers- longliners and trawlers	Policy makers Government Fisheries	
		Harvesting (nationals) of juvenile fish (net mesh sizes)	Devising effective strategy to ensure enforcement of laws in regard to mesh sizes	Policy makers Government Legal Institutions	

		Transnationals (illegal fishing- out of season, undersized catches) Introduction of license and quota systems Offshore and pelagic fishing techniques Sea moss harvesting	Devising effective strategy to ensure enforcement of transboundary laws /use of the EEZ etc Devising effective strategy to ensure enforcement of laws in regard to these. Adhering with the license system, training in offshore fishing techniques. Provision of credit to poor to facilitate Educate, on the reduction of over-harvesting by improved techniques	Policy makers, Government, Policy makers Fisheries Policy makers, Fisheries, Community	

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives	Relevant Decision Makers to Receive New Knowledge	Appropriate media of Communication of New Knowledge
Mariculture- Sea moss at Praslin, St Lucia and suggested for Belize					
Cultivation of sea moss	Sustainable	Quality of coastal waters affected by Pollution of the seas and coastal waters from land based a activities , sewage ,industry, agriculture and tourism Unsustainable Techniques of Cultivation	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 release of toxic chemicals, sewage, industrial pollutants to coastal areas. Education on Human health impacts. 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)	Policy Makers Ministries, Government Institutions Community Development Officers; Department of Co-ops; NGOs. Farmers; Co-op Policy Makers; Authorities Farmers; Co-op	R8135Report; Policy Brief; Workshops, popular culture

Livelihood Practice	Sustainability Evaluation of Livelihood Practices	Drivers, Causal and Impact Factors	New Knowledge to Maintain and/or Convert Practices re Sustainability or Alternatives	Relevant Decision Makers to Receive New Knowledge	Appropriate media of Communication of New Knowledge
Sea Moss Processing	Sustainable	Processing techniques Institutional facilitation; .Institutional structure(Co-op); . Market; .Access to Credit; .National Policy.	Improvement in techniques to improve and increase production - Information on marketing product standards (content and labeling). - Available land for 'housed' drying facility - Price competitiveness of "gel" product. - Potential for increased 'gel' market. - Use of facilities of the Livestock Development, Company(LDC) for processing (incl. pasteurization) and packaging of drinks. New credit facilities available (public and private) - Vision and institutional pro-activity	Policy makers Farmers; Co-op Farmers; Co-op Farmers; Co-op; Ministry of Agriculture; LDC Farmers; Co-op Farmers; Co-op Policy Makers	R8135Report; Policy Brief; Workshops

GENERAL CONCLUSIONS

The suggested alternatives (Matrix above) are aimed at enhancing present livelihood practices toward sustainability. 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 also add to the problems.

The project recognises the measures in place in both St Lucia and Belize in respect of reducing 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. The project also recognises the various marine-related programmes which 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 (marine reserves) etc. Similarly, Belize has instituted a moratorium on aggregate fishing of the Nassau Grouper, and designated many MPAs within which are no-take zones.

Additionally, 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. Many of these, however, have little on-site management. Some of these will be supported through the Meso American Barrier Reef System (MBRS) Programme under the MPA component. Under this component (1), it is proposed that there will be improvements in the MPA and associated ecosystems protection and management with increased sustainability of these efforts. One sub-component will include activities specific to establishment of MPA data baselines, monitoring programmes, management plans, basic equipment and infrastructure for MPA plan implementation and trans-boundary co-operation in policy, protection and management of MPAs. Component 3 of the MBRS programme is for promoting sustainable use of the MBRS.

Under this component, incentives will be created for stakeholders to shift toward patterns of sustainable use of MBRS resources focusing on fishing and tourism. "Pilot activities have been successful in Belize, with the conversion of reef fishermen to recreational (fly fishing) and sea-kayaking tour operators. Other opportunities involving women, such as tour guides in adjacent coastal protected areas, in value-added processing of fish catch, in marketing of cultural amenities, and as small hotel or pension operators, will also be

explored and promising approaches scaled-up in subsequent phases. WWF (World Wildlife Fund) in the meantime has identified this area as one in which significant co-financing resources will be placed." A sub-component of this project will address some of the causes of overfishing by supporting:

- 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.

The above initiatives by neighbouring countries towards co-management of common resources, within the OECS, and with neighbours of Belize, are positive. Some generic principles (specific to the activities dealt with here) may be applicable to other Caribbean environments. The uptake of these research products may be facilitated through the relevant target institutions (**identified in Annex…).**

SELECTED REFERENCES

Agard, J B and Gobin, J 2000. In Seas at the Millenium: An Environmental Evaluation. Chapter 40: The Lesser Antilles, Trinidad and Tobago. Ed. C Sheppard, Elsevier Publications.

Bacon, P.R. 1993 Mangroves in the Lesser Antilles, Jamaica, Trinidad and Tobago, in Conservation and Sustainable Utilisation of Mangrove forests in Latin America and Africa regions, Part 1-Latin America, Mangrove Ecosystem Technical Report, International Socitey for Mangrove Ecosystems and International Tropical Timber Organisation, 1993. pp. 184-185.

Berkes, F., Mahon, R., McConney, P., Pollnac, R. amd Pomeroy, R. 2001. Managing Small-scale Fishing. Alternative direction and methods.

Biodiversity Country Study Report of St Lucia. 1998. Ministry of Agriculture, Forestry, Fisheries and the Environment, St Lucia. Technical Asssistance from UNEP/GEF.

Biological assessment (2002). The Coastal Wetland Ecosystem Conservation and Sustainable Livelihood project in St Lucia. Prepared by The Nature Conservancy (TNC).

Brown, K., Tompkins, E.L. and Adger, N. 2002. Making Waves. Integrating Coastal Conservation and Development.

Caribbean Coastal Monitoring Program (CARICOMP)

Caribbean Environmental Health Institute Environmental and Coastal Resources Project. Environmental Monitoring Component. Water Quality Monitoring at the St Lucia Local site. Report for 1994 and 1995.

Capture Fisheries Statistical Report 2001. Belize Fisheries Department.

Central Statistical Office (CSO) 1999. Environmental Statistics for Belize. 60p.

Clark, R.B. Marine Pollution 5th edition, Oxford University Press
Hughes, T.P. 1994. Science, 265, 1547-51.

Coastal Zone Management Authority and Institute (2001). State of the Coast Report 2000 (Belize) pp.61.

Department of Fisheries Draft Plan for Managing the Marine Fisheries of St Lucia. The Department of Fisheries, Ministry of Agriculture, Forestry, Fisheries and the Environment, St Lucia, 1997.

Environmental and Coastal Resources Project (ENCORE). Preliminary Assessment West Coast Nature/Heritage Tourism Potentials (1996). Prepared by Sproule, K.W and

Devaux, R.J.

FAO/UNEP, 1981.Conservation of genetic resources of fish: Problems and recommendations (FAO Fisheries Technical Paper 217). Report of the expert consultation on the genetic resources of fish, Rome, 9-13 June 1980. Rome: United Nations Food and Agriculture Organisation. 43pp.

Frost, M. (1979). Patterns of human influence on Landscape and Wildlife: Selected Case Studies in Belize. Department of Geography, San Bernadino, California, USA.

Geoghegan, T., Jackson, I., Putney, A. and Renard, Y. 1984. Environmental Guidelines fo Development in the Lesser Antilles., Eastern Caribbean Natural Areas Mgmt. Programme, St. Croix, U.S.A., V.I. 44p.

Heyman, W. and Graham, R. (eds)2000. The voice of the Fishermesn of Southern Belize. Toledo Institute for Development and Environment, Punta Gorda, Belize 44pp

IUCN/UNEP.WWF 1991. Caring for the Earth: A strategy for sustainable living. IUCN, Gland, Switzerland 228pp.

Jackson, J.B.C, Kirby, M.X. Berger, Bjorndal, W.H., K.A. Botsford, Bourgue, B.J., Bradbury, R.H. Cooke, R, Erlandson, J, Estes, JA, Hughes, T.P., Kidwell, S., Lange, C.B., Leninhan, H, S, Pandolfi, J, M, Peterson, C.H., Steneck, RS, Tegner, MJ and Warner, RR 2001. Historical overfishing and the recent collapse of coastal ecosystems. Science, vol. 293, pp 629-638.

Jacobs, N.D and Castenada, A. (1998a). The Belize National Biodiversity Strategy. Minstry of Natural Resources, Environment and Industry, Belmopan, Belize.

McField, M., Wells, S. and Gibson, J. (1996) (eds). State of the Coastal Zone Report. Coastal Zone Management Program, Government of Belize/UNDP/GEF Project No.Bze/92/G31.

Meso-American Barrier Reef System Program. Proposal…..
National report to the World Summit on Sustainable Development 2002. Ministry of Natural Resources, the Environment and Industry.

Mitchelle, C. and Gold, E. (1982). The integration of Marine Space in National Development Strategies of Small Island States: The Case of the Caribbean States of St Lucia and Grenada, Halifax. Canada.

Myers, R. and Worm, B. (2003). Rapid worldwide depletion of predatory fish communities. Nature 423, 280-283.

OECS/NRMU (Organisation of Eastern Caribbean States/Natural Resources

Management Unit) 1999. Beach and Mangal Systems of St Lucia. 24p.

Parker,J., Byers, E., and Bonaccarso, F. (1987). Aspects of the Population Biology of *Frigata magnificens* in Belize. American Birds, Vol.41, 11-19.

Paz,G.and Grimshaw, T. 2001 Status report on Nassau groupers fro Belize, Central America. Scientific report to the Green Reef Environmental Institute. San Pedro, Ambergris Caye, Belize 20p.

Price, A.R.G, Heinanen, A., Gibson, J. and Young, E. (1990). Draft Guidelines for developing a Coastal Zone Management Plan for Belize. Report to Coastal and Marine Programme, IUCN, Gland, Switzerland.

Programme for Belize Document (2001). Baseline Assessment of The Belize Barrier Reef Reserve System for the COMPACT Project. UNDP-GEF/SGP.

Proposed Praslin Protected Landscape: Results of Marine Study (1997). Prepared by Department of Fisheries. Funded by GEF/UNDP and SLNT.

Rawlins, B.G., Ferguson, A.J., Chilton, P.J., Arthurton, R.S. and Rees, J.G. (1998). Review of agricultural pollution in the Caribbean with particular emphasis on small island developing ststes. Marine Polltuion Bulletin 36, 658-668.

Reynard, Y. 2001. Case of the Soufriere Marine Management Area (SMMA), St Lucia. CANARI Tcehnical Report N1285.

Salm, R.V, Clark, J. and Siirila, E. 2000. Marine and Coastal Protected areas: A guide for planners and managers. IUCN. Washington, DC. Xxi, 371pp.

Smith, A. 2000. In *Seaweed resources of the world* Ed. Alan T. Critchley, Masao Ohno; Asst. Eds Danilo B. Largo, Russell D. Gillespie Chap. 29 The seaweed resources of the Caribbean pp 324 to 330.

St Lucia Environmental Profile, Caribbean Conservation Association, Island Resources Foundation and National Research Development Foundation, Government of St Lucia, 1991.

The Nature Conservancy, report, St Lucia 2002). The Coastal/Wetland Ecosystem Conservation and Sustainable Livelihood Project in St Lucia.

UN Statistical Yearbook 42nd Issue – data available as of 30 June 1997
UNEP 19… Urban population data UN ECLAC; Sewage Treatment Facilities data UNEP.

Watson, R. and Pauly, D. (2001). Systematic distortions in world fisheries catch trends.

Nature 414, 534-536.

Wildes, F.T. 1992. A resource Management Strategy for the Belize Barrier Ref System. Masters Thesis for Virginia Polytechnic Institute and State University.

Wilkinson, CR. 1992. Coral reefs of the world are facing widespread devastation: can we prevent this through sustainable management practices? In Richmond, R.H. ed. Proc. 7th International Coral Reef Symp, Guam 22-27 June 1992. Vol 1 pp11-21., with severe effects on the economies that depend on them

Wilkinson, C.R. 2000 (Ed). Status of Coral reefs of the world. Townsville, Australia, Institute of Marine Science.

Zisman, S. (1992). Mangroves in Belize: Their Characteristics, Use and Conservation.

CHAPTER 7

POVERTY AND SUSTAINABLE LIVELIHOODS IN THE CARIBBEAN

DENNIS A BROWN

CHAPTER 7

EXECUTIVE SUMMARY

This study examines the sustainability of current livelihood practices of the poor in the coastal environment in the Caribbean. This was done through research conducted in four case-study sites in St Lucia and Belize.

Against the background of a national poverty profile based on survey data, poor communities and individuals were identified using census data. The communities were identified as poor on the basis of their non-possession of social infrastructure. Within these communities, individuals were identified as poor on the basis of their labour market status. This included their employment status as well as their educational and skills certification levels. By use of these criteria, the greatest levels of impoverishment were found among women and youth.

The poor mainly engage with the coastal environment as a means of livelihood in fishing, sea moss cultivation and tourism. There was a gendered use of the marine resource that seemed to coincide with domestic roles. Men were the persons who mainly exploited the marine environment by fishing, with the control of the ventures in the hands of older men. Lacking control of capital, young men generally played subordinate roles in this activity. Women were involved in sea moss cultivation and certain aspects of tourism.

Of the uses that have been made of the sea, fishing proved to be the most unsustainable. Because of their dependence on the resource, poor people have had to bear the greatest share of the burden involved in attempts to correct it. This is even though they bear least responsibility for this state of affairs. This is particularly evident where the establishment of marine parks that has placed limits on their access to the natural resources of the sea.

The profile of the poor that emerges from the study is that of individuals with little or no education and very poor prospects on the job market. They live in moderate to poor housing in communities with non-existent, or poorly developed, social infrastructure. Across the case study sites, the strategies varied from total reliance on the marine resource to the practice of an occupational multiplicity that included the use of the marine environment. In all the communities, people recognised the limitations of harvesting the sea-life stock as a source of livelihood, and they consequently sought alternative livelihoods. One common demand in this regard was for tourism in a variety of forms, including heritage and eco-tourism. Other alternatives included sea moss cultivation and agriculture.

Factors operating at the institutional and personal levels placed constraint on the adoption of these alternatives. Among institutional factors were the absence of suitable credit facilities; land tenure (and distribution); a macro-policy framework tending to promote the interests of the rich and to neglect those of the poor; and under-developed physical

infrastructure. At the personal level, the constraints include low levels of education and training; single parenthood; and a heavy dependency burden on the population of working age.

Recommendations
Recommendations for the use of natural resources, including the marine environment, to contribute to poverty eradication include:

- The creation of administrative mechanisms that link macro level policies to the interests of the poor at the community level;

- The provision of credit and training for women and young people to allow their involvement in sustainable fishing; sea moss farming; agriculture and agro-industry; tourism; and the plans that are laid for them;

- The sensitisation of policy makers and NGOs to the need to put these mechanisms in place centred on these activities as well as agriculture;

- At the policy-making level, representation of the interests of women and youth in all the key decision-making settings, rather than being confined to a specific agency or unit.

POVERTY

Data Sources
Two major sources of data on poverty are used in this study: the 1995 and 1996 National Poverty Assessment Reports on St Lucia and Belize, and the decennial population censuses. The first data source provides information on poverty at the national, regional and community levels. It uses the household as the unit of analysis and measures living standards through an assessment of the consumption expenditure of the household. The population census provides information on basic infrastructure such as housing, sanitation and water supplies. It also provides information on the labour market status of the population.

In Belize, the national level poverty data were gleaned from a survey of approximately 1,200 households across the country over one month. A purposive selection was carried out of 10 of the poorest communities, and of two "escapee" communities.[1] (The "escapee" communities are perceived to have escaped from the grip of poverty and recently improved their standard of living.)

The communities were surveyed using a combination of quantitative and qualitative methods. Heads of households in the communities were surveyed using formal questionnaires. Focus group discussions and informal interviews with key community

[1] *The communities were selected on the basis of impressionistic evidence such as lack of access to basic social services and accessible information.*

informants also took place. Only one case-study community, Hopkins, was covered by the community studies. It was one of the two "escapee" communities.

For St Lucia, at the national level, a sample of 600 households was chosen from the 80 enumeration districts. For the community-level study, ten poor communities were chosen, using the procedure outlined above. Two "escapee" communities were also chosen on the same basis as in Belize. In these 12 communities, 300 households were selected using proportional sampling.

It was in the study of the communities that the second major source of data on poverty in the region was utilised. The population census provides the most comprehensive coverage of aspects of deprivation at this level.[2] It provides information on the private and social infrastructure of the communities. Census data also allow for the construction of a socio-demographic profile of the communities. This can be compared with the socio-demographic profile of the poor at the national level based on household data collected by the poverty assessment survey.

One *primary* source of data employed in the study consisted of qualitative interviews. These took the form of focus group discussions within the two communities, as well as interviews with fishermen and other individuals whose livelihoods are associated with the sea in that area.

The next section treats conceptual issues relating to the study of poverty. This is followed by an examination of poverty and environmental issues in the countries of St Lucia and Belize. These countries were chosen because of their contrasting representation of the environmental and social circumstances of the Caribbean. It is hoped that from the study of this wide representation of "Caribbeanness", general principles relating to poverty and the coastal environment in the region will become evident.

What is Poverty?

Poverty is a multi-dimensional phenomenon. This characteristic of the phenomenon has given rise to a complex debate about how to define and measure poverty. What adds to the complexity is the fact that the word "poverty" emerged in a particular societal-historical context to describe a situation that has changed over time and still varies from place to place.[3] One means of trying to capture this multi-dimensionality is to describe poverty as a system, or an abstraction with measurable properties. Proponents of this approach argue that conceptualising poverty as lack of income is simplistic and unrealistic since it ignores areas other than the purely economic.[4] Attempts to move away from an economically-based definition are, however, invariably fraught with conceptual and operational problems. One approach has been to define poverty in terms of relative

[2] *The data on poverty as measured by household expenditure do not extend to all of the communities in the country. These data are useful nonetheless since they provide a profile of income-based poverty against which the corresponding features in the two communities can be matched.*

[3] *Miller, S.M. and P. Robey, The Future of Inequality: Basic Books, N.Y.197?*

[4] *Wilber, G.(ed) Poverty: a new perspective:1974*

deprivation, rather than in terms of some need that is essential to the survival of the individual.[5] Relative deprivation allows for the consideration of non-material as well as material factors. It also contextualises poverty within a particular societal and cultural milieu, since one is poor relative to the possessions and style of life of some reference group within the community or society. A number of problems are associated with using this notion of poverty. One is whether deprivation should be defined in objective or subjective terms.[6] Is an individual poor who *chooses* not to have what the criterion group has?

Approaches to the study of poverty that define the phenomenon in terms of inequality and relative deprivation are perhaps more appropriate for countries of the advanced industrial world. In those countries, the likelihood of large sections of the population dying from want of food and shelter is somewhat remote. In poorer regions of the world, such as the Caribbean, basic needs are still issues of some significance for large sections of the population. An absolute measure of poverty based on some minimum requirement of nutrient, or other basic need, is therefore quite suited to the identification, measurement and study of poverty in this region. Along these lines, poverty can be defined as " the inability to attain a minimal standard of living measured in terms of basic consumption needs, or the income required for satisfying them".[7] According to this conceptualization, poverty is the failure of individuals and households to marshal enough resources to meet their basic needs.

In this study, though, we extend this definition of household and individual poverty to incorporate the community. This is done for the important practical reason that the national survey data on poverty based on household consumption expenditure do not extend in any comprehensive way to the community level. Another set of data has therefore to be used to provide an objective assessment of the material circumstances of the communities in our study. This data set tells of labour market status and private and social infrastructure rather than household consumption expenditure. It is provided by the population census. Fortunately, there are areas of overlap in the two data sets and we are therefore able to see to what extent findings at the national level are in keeping with those at the community level. Specifically, it is possible to compare the demographic profile of the poor derived from the national poverty assessment survey and the demographic profile of the community provided by the population census.

Poverty and Gender

Gender refers to the social relations between men and women. It is of relevance to this study to the extent that these relations (a) contribute to the impoverishment of either or

---

5 *Townsend, P. Poverty in the United Kingdom:a survey of Household Resources and Standards of Living, University of California Press, Berkley and Los Angeles, 1979. The term is used originally by Stouffer, S.A., E.A. Suchman, L.C.DeVinney, S.A.Star, R.M. Williams, American Soldier, Adjustment During Army Life, Princeton University Press, Princeton, 1949*

6 *AndreB, H, (ed) Empirical Poverty Research in a Comparative Perspective: Ashgate Pub.Aldershot, 1998*

7 *World Bank, 1990, quoted in A. Grinspun (ed), Lessons for the Poor: lessons from national poverty strategies:UNDP,2001,p.25.*

both of the sexes and (b) influence the ways in which they use the coastal environment to make their living, or the alternatives that might be proposed.

In the study of gender, it is women who have been identified as suffering the most from the relationship between the sexes. In this regard, gender has been defined in relation to women as "a pervasive set of obligations and limitations that saturate the entire being and make up of one's identity".[8]

Theoretically, the labour market has been identified as one major source of the disadvantage suffered by females in society. There are three broad categories of theory that treat with occupational segregation by sex:

- Neo-classical and human capital theories;
- Institutional and labour market segmentation theories; and
- Non-economic and feminist (or gender) theories.

The first two highlight economic factors as the cause of the disadvantage women suffer. The last pays particular attention to patriarchy reinforced through socialisation. It identifies patriarchy, as well, in its infusion into, and interaction with, economy, culture and systems of social stratification as the cause of the subjugation and subordination of women. [9] In studying poverty and its relation to sustainable natural resource-based livelihood strategies, the ways in which gender mediates this relationship will be an important part of our considerations. These will be informed by some of the issues raised by these theories.

ST LUCIA

Who are the poor: The incidence and characteristics of poverty in St Lucia

Poverty in St Lucia can be regarded as the outcome of recent structural changes in the economy and a legacy of historical practices and institutions that conduces to the neglect of the socioeconomic infrastructure and the underdevelopment of human resources. Recent economic downturns associated with structural changes in the global economy thus take place within a social context where a relatively high proportion of the population, having low levels of education, are dependent on the land, or some limited range of resources and opportunities. The implications for productivity, adaptability to new technology and situations, and for the management of these resources, have important bearing on the use of the coastal and marine environment.

Broader historical and economic forces establish the contours within which socioeconomic factors emerge and operate. Gender, employment status, labour market

---

[8] *Irma McClaurin, Women of Belize: Gender and Change in Central America: Rutgers University Press, 2000.*

[9] *See for example the work of Barrett and Phillips, 1992…. See also R. Lynch, Gender Segregation in the Barbadian Labour Market 1946 and 1980: Canoe Press, University of the West Indies, 199? For a good review of theories of gender and their application to the Caribbean labour market.*

characteristics, geographical location, and land tenure and land use mediate the relationship of the poor to the natural environment. They determine the ability of the poor to access and make effective use of environmental resources.

In the section that follows, Survey of Living Conditions and census data are examined in an attempt to demarcate the dispossessed, at the national and community levels along these lines. This will provide background to an examination of the relationship of the poor to the coastal and marine environment in two communities in St Lucia.

The Country Poverty Assessment (CPA),[10] using a per capita measure of poverty, reports that 25.1 per cent of the population and 18.7 per cent of the households were below the poverty line. The monthly poverty line was calculated as EC$156.37.

TABLE 7.1
SELECTED POVERTY INDICES BY GEOGRAPHIC REGION

Region	% of Population	Head Count	Poverty Gap[11]	$FGTP_2$	Mean Per Capita Consumption
ALL ST LUCIA	100.0	25.1	8.6	4.4	6,292
Castries Urban	19.0	15.2	4.4	1.7	7,929
Castries Rural	21.6	22.6	8.2	3.8	6,685
Other Urban	14.8	17.5	6.2	3.1	8,909
Other Rural	44.6	33.2	11.2	6.0	4,401
Total Urban	35.7	16.3	6.1	3.1	8,346
Total Rural	64.3	29.6	9.9	5.1	5,153

Source: St Lucia National Survey of Living Conditions, 1995.

Poverty in St Lucia has a decidedly rural bias. A greater percentage of the rural population, 29.6 per cent, than the urban population, 16.3 per cent, was poor. Furthermore, the depth of poverty in the rural area was greater than in the urban. In the rural area, it would take 9.9 per cent of average consumption to lift the poor out of poverty, but 6.1 per cent to raise the urban poor out of poverty. For the country as a whole, the figure was 8.6 per cent of average consumption.

In terms of indigence, 7.1 per cent of the population and 5.3 per cent of the households were unable to afford the cost of providing the foodstuff necessary to maintain proper health.

[10] *Caribbean Development Bank, 1995. St. National Poverty Assessment Survey*
[11] *The poverty gap and the FGTP2 measure the severity and intensity of poverty. They tell of the situation of the poor below the poverty line relative to the line and each other.*

Demographically, the youth were disproportionately represented among the poor. Thirty-seven per cent of the country's population was 14 years or younger, but 44 per cent of the poor were 14 years old or younger. In contrast, only 31 per cent of the non-poor were 14 or younger. This is in keeping with the thesis that the poor tend to have larger households and higher rates of fertility than the non-poor.

One feature of the poor household that follows from this is that the breadwinner(s) must take care of a disproportionate number of persons within the household who are unable to provide for themselves. In gender terms, the CPA found that although the proportions were not markedly different, fewer women than men fell below the poverty line, 49 and 51 per cent respectively. It should be noted that, among the poor, is a disproportionate incidence of female-headed households. According to the CPA….[12]

The poor had a higher rate of unemployment than the non-poor, 26.5 per cent and 14.1 per cent respectively. Most of the unemployed poor (some 81.3 per cent) were found in the rural area. There were higher rates of unemployment among the rural poor than among the urban poor, 27.8 and 22.2 respectively. The picture of poverty in St Lucia that emerges from the SLC data is that it is mostly rural; affects the youth disproportionately; is attended by higher than usual unemployment levels; and females head many of the households of the poor. The census data indicate that, from the standpoint of employment, the following socio-demographic groups appear most vulnerable (and therefore in most urgent need of consideration as far as livelihood strategies are concerned):

- Young women 15-24
- Young men 15-24
- Female heads of household.

These broad categories are perhaps the best to work with, given the absence of more specific data on poverty at the community level.

The case-study communities

Anse La Raye and Praslin are seaside communities located on the west and east coast of St Lucia respectively. They are a part of the wider administrative districts of Anse La Raye and Micoud respectively. The inhabitants of these regions traditionally rely on agriculture and fisheries and, more recently, on tourism. On two counts, their rural location[13] and the preponderance of (unemployed) youth in their population, their circumstances resonate with the national profile of poverty in St Lucia.

Praslin is the more agricultural of the two communities. Anse La Raye is more spatially compact and evinces signs of greater commercial activity and physical vibrancy than does Praslin. It is, however, Praslin that has the better housing stock and facilities. Population census data for 2001, for example, indicate that some 68 per cent of the

---

[12] *The CPA also makes the interesting point that female headed does not mean in most instances the absence of a man's support. The support though may be transitory and or sporadic.*

[13] *Anse-la-Raye is the closer of the two communities to the major urban centre of Castries and seems to evince less signs of economic malaise than Praslin.*

houses in Anse La Raye have no toilet facilities and 50 per cent of them rely on a public standpipe as the main source of their domestic water supply. In Praslin, the respective percentages are nine and five. As much as one third of the houses in Praslin are made from concrete, as opposed to 12 per cent in Anse La Raye. Still, both communities seem to display signs of the downturn in the wider macro-economy that has been outlined above. In the case of Praslin the downturn in export agriculture has obviously had a negative impact. This too would have affected Anse La Raye less since the community is less agriculturally oriented.[14]

Both communities report declines in the stock of fisheries because of pollution of the immediate coastal waters, but Anse La Raye, with its greater traditional dependence on fishing and seemingly higher levels of marine pollution, appears to have suffered greater in this regard.[15] Both communities would also have been affected by downturns in the tourism industry associated with global political and economic changes.

Praslin, with its stronger tradition of farming, more clearly demonstrates the practice of occupational multiplicity than does Anse La Raye.[16]

According to the Poverty Map constructed using 1991 census data, the districts of which both communities are a part are the poorest in St Lucia. Both districts are ranked as "extremely poor" (See Appendix). Within the district both communities rank "bad" on a socioeconomic scale that ranges from "very good", through "good", "fair", "bad" and "very bad". The scale represents an index based on the possession of social infrastructure and other indicators of living conditions

---

14 *Carnagie characterises Anse-la-Raye as having a heavy reliance on non-agricultural income sources. In this regard she cites remittances as a major source of income for this District. See Carnegie, C., "The Rural Population of Saint Lucia: A Preliminary Analysis," OAS Technical Report, Castries, Saint Lucia, September 1981 (mimeo).*

15 *The CEHI report of 1996, for example, tells of high levels of faecal coliform in the coastal waters due to waste disposal practices practiced in the community. This contrasts with Praslin where better waste disposal systems exist and mangroves act as natural protection against pollution.*

16 *See interviews with Praslin residents in appendix. The income inadequacy and uncertainty that prompts occupational multiplicity is probably related, in part, to the constraint on productivity and investment imposed by the 'family land' land tenure system. This system of land tenure dominates in Praslin in a way that it does not in Anse-la-Raye. For a discussion on land tenure and productivity see Foreman, R.A., "Land Settlement Scheme for Saint Lucia," British Government Colonial Office, Castries*, 1958.

ANSE LA RAYE

TABLE 7.2
FEATURES OF POVERTY IN THE COMMUNITY:
SOCIO-DEMOGRAPHIC FEATURES

Anse La Raye Village Population by Age Group & Sex			
Age Group	SEX		Total
	Male	Female	
0-4 Years	110	108	218
5-9 Years	104	102	206
10-14 Years	93	103	196
15-19 Years	106	94	200
20-24 Years	86	75	161
25-29 Years	66	68	134
30-34 Years	64	55	119
35-39 Years	53	63	116
40-44 Years	49	42	91
45-49 Years	50	32	82
50-54 Years	22	35	57
55-59 Years	31	23	54
60-64 Years	33	25	58
Over 65 Years	96	89	185
Total	**963**	**914**	**1877**

Source: St Lucia 2001 Population Census

The village of Anse La Raye had a population of 1,476 persons, according to the 1991 population census. This was made up of 711 males and 765 females. The population was spread across 462 households. In 2001, the population of the village had grown to 1,877 persons. This amounts to an annual percentage growth rate of 2.4. High levels of fertility in this population are attested to by the relative size of the age groups 0-4 and 5-9. Respectively, these are the first and second largest age cohorts in the population.[17] To a lesser extent they are also reflected in the fact that the population below 25 years old constitutes 52 per cent of the total population. As much as 43 per cent of the total population of the village is either below 15 years of age or over 65 years old. This results in a high dependency ratio of 75 per cent.

According to the population census of 2001, 72 per cent of the labour force had attended primary school only. More tellingly for socioeconomic status, 85 per cent of the heads of household had not gone beyond primary school in their formal education. Some 21 per cent of the labour force in the village was unemployed.[18]

[17] In low fertility populations these two age groups would be smaller than the others.
[18] An equally important indicator of economic distress is the percentage of the working age population outside of the labour force. Among the young and able bodied this is often an indication of frustration and discouragement. [labour force status by age and sex needed].

Anse La Raye
Historically, the coastal environment has played an integral role in the livelihood strategies of the people of Anse La Raye. Fishing has always been important in the life of the community. Evidence suggests that at least from the early part of the 20th century, the members of this community relied heavily on fishing as a source of livelihood.[19]

Currently, the economy of the village of Anse La Raye is based on three main forms of activity—farming, fishing and cultural tourism. The last two involve direct use of the coastal and marine environment. Farming, on the other hand, is related to the coastal environment in a less immediate way. Given the small size of the island, the agricultural activity that takes place inland affects the coastal environment through the run-off into the sea of chemicals and topsoil. Fishing is obviously sea-related and the most well known expression of cultural tourism is a Friday evening fish-fry in which people from mainly outside the community visit and purchase fish meals prepared by local vendors.

Accounts differ of the number of persons from the community who earn their living from fishing. Official records show approximately 100 licensed fishers in the community. However, a fisherman of many years standing reports that 300 persons go to sea on a regular basis.[20]

Social characteristics of fishers
Historically, the sea has acted as a provider of last resort for the members of the community. Fishing in Anse La Raye can be best understood to be a part of a multiple-occupational coping strategy employed by the poor in the face of the limited opportunities for socioeconomic advancement. Relatively few people who fish do nothing else for a living. One such is Fisherman Peter.

Case Study 1
Peter has been a fisherman for 33 years. He has done nothing else as a means of livelihood. He has raised four children, purchased a house and land and supported his parents from his income as a fisherman. He owns a motor boat, nets and other equipment. Peter's weekly catch varies between 200 and 1,000 pounds.

Peter estimates that there are 300 fishermen in the village. The majority of fishers, he says, are young men, most of whom earn income from other sources as well. Most of them are primary school-educated. According to Peter, "fishermen don't have all of that education. Our father and mother did not have money to send us to school."

He describes Anse la Raye as a fishing village, in which any young man who does not have educational certification resorts to the sea as a means of earning an income. Besides the locals, people from villages further inland come to Anse-la Raye and take up fishing.

[19] See excerpt from interview with Mrs. James in Appendix.
[20] *The discrepancy probably arises because many of those who go to sea do so as a part of an occupational multiplicity strategy and therefore are not officially recognized as fishermen. The numbers will fluctuate depending on the state of the wider economy. In effect, the natural resource based livelihoods act as a kind of 'shock absorber' for the formal economy.*

Main problems confronting fishing, as an industry in the village is lack of equipment such as nets and big boats. There is no money to buy these things. If they had money, his son would have his own boat and would not have to work on Peter's. More individual ownership of boats would expand the numbers of young men who would be able to go to sea as assistants. The cost of an engine and boat, he suggests, is EC$26,000. Other material would amount to about EC$3,000. He has never applied for credit because insurance companies will not insure their equipment. This means that the credit institution is reluctant to lend the individual money to purchase boats and equipment. BELfund he says asks too many questions and requires four persons to sign as guarantors. Most people are afraid to sign as guarantors. He knows of no fishermen who have received a loan from them.

Peter alternates between fishing far offshore and in the nearby bays—line fishing and net fishing. If Peter had a choice he would buy a bigger boat that would allow him to go farther offshore and stay for longer periods. Fish sensing equipment would be his equipment of choice. The fishers need equipment such as nets, lines and the absence of these things, he says, is holding back the productivity of the fishing industry in the village.

Some species of fish such as the sardine and ballahoo have to be left at sea because there is no ready market for them. Further, an absence of storage facilities means that fish have to be left at sea if they are encountered late in the day. He suggests there are enough sardine in the sea to provide the basis for a canning industry.

On a previous visit, I had seen Peter selling fish on the streets of the village with a youngster. The lad, it turns out, was Peter's son. He was 17 years old. He said that he had to leave secondary school in Form Four because of a lack of money. He now earns an income by going to sea on Peter's boat. He indicated that there were many more youngsters in his situation.

The usual situation is that the poor individual is confronted with limited economic opportunities that in and of themselves are only able to provide a partial means of subsistence. Even where a particular occupation may provide an adequate means of subsistence at some point, the tenuous nature of such economic activity makes it necessary to have an alternative as "insurance". Over the course of their working lives, individuals may be farmers, fishers and trades-persons at the same time, or pursue these occupations in sequence. And these activities may be supplemented by temporary migration during which yet another skill might be utilised to make a living.[21]

Case Study 2

Michael is 60 years old. He left school at 15 and earned an income by doing various things, including going to sea. He has no land for himself. He reports that he has been going to sea on a regular basis for the past 20 years. He decided to go to sea because he wanted "a better living". Prior to this he worked as a labourer, and travelled overseas. He

[21] See interview with Mrs. James in Appendix

goes to sea six days a week as a member of a six-man crew of a small fishing boat. He does mostly net fishing in the bays around St Lucia. Some days, he says, they catch no fish. On other occasions they catch 100 to 200 pounds of fish. When he makes no catch, he does without food or tries to earn money as a labourer. If he had a choice he would like to purchase an outboard motor and a boat. He has not attempted to obtain credit because of the uncertainty of income from the sea. He has lived in the village all his life. All his children are fully grown. He plans to keep on fishing for the rest of his working life, but would not be averse to farming orchard crops and vegetables if the opportunity presented itself. Although the income from fishing is uncertain he has stuck with it because he loves it.

Case Study 3

John is 34 years old. He attended primary school only. At 16 he started learning a skill, but by 20 he decided to go to sea as an assistant on a fishing boat. He has gone to sea on a regular basis since that time. He is unmarried with no children. Fishing is only one of the means by which he earns income. The others are "car washing, carrying water for people, and selling fish on the road". John reports that he has many relatives who are fishermen.

Those who have made their living from the sea have been persons of minimal means, possessing very little education and capital. This is related to the fact that, technologically, it is a low-level activity. It is therefore likely to be associated with low levels of productivity and returns. Fishing as practised in St Lucia is an arduous task that involves high levels of risk to physical safety, and uncertainty as a source of income. The fishermen are therefore poor, but enterprising and courageous individuals who value the freedom and independence involved in their work.[22] The non-poor involved in fishing have been owners of vessels operated on their behalf by poor people.

The most vulnerable individuals in the community are poor youth that have dropped out of high school, or only attended primary school, and are not properly equipped to participate in the labour market: female heads of household and their dependents and the elderly. Young men are involved in fishing as apprentices and assistants on boats owned by older men, or they "rent" these boats and other equipment that they pay for by sharing the catch with the owners. Some female heads are involved in the industry as vendors in the weekly "fish fry".

Gender

The features of fishing as a livelihood outlined above are partly responsible for its gender-specific character. Men undertake fishing in St Lucian society due in some measure to the arduous nature of the activity. Apart from the physical requirements of fishing, social convention and taboo dissuade those women who feel they would want to engage in fishing as a means of livelihood. The major arguments in regard to patriarchy and its role in labour market segmentation can be fruitfully applied to this situation.

[22] *See profile of 'Peter the Big Fisherman' in Appendix.*

Notwithstanding this lack of immediate involvement in fishing, poor women are important parts of this activity in other ways. Firstly, they care and nurture the children while the man is at sea. Secondly, they sometimes generate capital from supplemental economic activities that contribute to the maintenance of the household, or find its way into the economics of the fishing being conducted by her male partner. Thirdly, poor women are often involved in the formal and informal decision-making processes related to fishing. In this regard, two aspects worthy of note are the man's continued involvement in fishing given the relatively high level of risk it entails, and the marketing of the catch. The establishment of the fishing co-operative has lessened the need for involvement of the woman in marketing. Nevertheless, this is an area that warrants further research.

Poverty and Sustainability

From the standpoint of the community's interaction with the marine environment, the evidence seems to suggest that declines in the availability of fish are associated with the role of the coastal environment as receptacle. Silt, sewage, the run-off of chemicals from agricultural production and beach erosion from sand mining activities appear to have had a negative impact on marine life in the nearby coastal waters. Poverty has played a role in these activities. The rapid growth of the population of the village and the absence of toilet facilities in more than two thirds of the houses in the community speak for themselves. Still, other activities in which the non-poor are involved—agriculture and sand mining—are culpable in the degradation of the environment as well. It is not clear what the relative importance of the poor/non-poor contribution to the degradation of the environment might be. What is evident is that the poor have to carry a disproportionate weight of the negative consequences in terms of the decline in stock and the restriction of access to resources.

The use made of the marine and coastal environment in its role as receptacle rather than provider has led to a marked decline in its waters as a source of livelihood for the poor in Anse La Raye. It means that environmental degradation has played a causative role in the existence of poverty in the community. Certainly, the community has not been able to utilise the degraded marine environment as a livelihood for the poor in the way that it has done in the past.

Alternatives: Fishing

Alternatives are here taken to mean two things. The first are new strategies that lead to a more efficient use of the sea by fishers. The second refers to means of livelihood that do not involve the use of the sea. In the first instance, there is both a short term and a medium/long-term strategy that can be applied. The short-term strategy involves the provision of the capital and training to equip the fishers to work in deeper waters. This calls for the provision of credit in amounts beyond that loaned to the poor by institutions such as the James Belgrave Micro Enterprise Development Fund (BELfund).[23]

The medium/long-term strategy involves the restoration of the immediate coastal environment through the implementation of proper systems of waste disposal. This

[23] *Provides a maximum of EC$20,000, of which some 3,000 would be used as service charges.*

should lead to the return of substantial bodies of fish to the area and provide the basis for the greater involvement of the community in the activity of fishing. An integral part of both strategies is the collaboration of the Fish Fry vendors and the fishing co-operatives to ensure that the fishers have a ready market for their catch and the vendors have a reliable source of supply for their business.

The implementation of these strategies could result in employment for the young men and women now either unemployed or discouraged from participating in the labour force. Given the gender bias in fishing, women heads of household could become the owners of small boats and fishing equipment rather actual fishers themselves. This would place them in a position to employ young men to work in the nearby coastal waters. Lending agencies should be encouraged to make special provision for female heads. The credit institutions should also be encouraged to facilitate the attempts of the fishers to equip themselves.

Many youth are hindered from involvement in fishing as the owners of boats, or other equipment by the stipulations of the lending agencies such as the BELfund, which have been established to address the needs of the poor. The fishermen, for example, lament the need for four guarantors to obtain a loan from BELfund. They also complain of the stipulation that the equipment must be insured when the insurance companies refuse to insure fishing equipment. Given the stipulation regarding guarantors, this insurance provision could well be removed. Certainly for fishermen going to sea for 20 or 30 years, this stipulation ought to assume lesser importance.

Fishing co-operative could be improved and expanded upon so that it becomes a sort of credit union from which fishermen could be allowed to purchase shares.

Alternatives: Non-fishing

(a) Young Men

Young school drop-outs in the community often resort to drug dealing as a livelihood. To counter this, the government (Ministry of Social Transformation) has established a programme called ***Comfort 2000.*** Under this initiative, funds are given to community groups to embark on projects that build capacity, generate income, or are of a civic nature. This programme overlaps with those run by institutions such as the Basic Needs Fund or the Poverty Reduction Programme, but differ in that it is much more flexible. It is funded to the tune of EC$580,000. Communities are eligible to submit as many project proposals as possible. There are no stated limits on the amount that can be given to any one project. Existing programme in Anse la Raye consists of 25 young men who have formed an organisation called Lion's Heart. They aim to empower themselves and change the community's perception of them through civic endeavours that would be sustained by sponsorship from the private sector (e.g. the signposting of streets). There is also a plan for land (five acres) to be given to these youths for them to do organic farming.

Constraints faced by this project centre mainly on need for mobilisation/ motivation and training in planning and organisation of young people, in order for them to make effective use of this opportunity.

(b) Young Women

1. Young girls in Anse la Raye are largely unskilled, subject to high rates of teenage pregnancy, and at increasing risk of contracting HIV. Many of them are unemployed or discouraged workers. One possibility is for them to gain employment in the weekly Fish Fry as vendors, or as assistants to vendors.
   Constraint: Lack of training in business; lack of capital to start business.

2. There is a proposal to replicate a fish drying and packaging project among women in Dennery in Anse la Raye.
   Constraint: lack of capital and training.

3. Also there is an agro-processing (fruits to produce juices, jams and jellies, candied "five fingers", sauces,condiments and craft) proposal for the community. The project is titled "Anse la Raye Agro-Tourism Project". According to the project document, it has as its mission the empowerment of women in the area to augment their income-earning capacity and technical knowledge base, build their community, and preserve their environment through training, skills development and entrepreneurship". Brainchild of the Ministry of Community Development, the programme is being developed in collaboration with the Ministries of Health, Trade(SEDU), Agriculture, the Inter American Institute for Co-operation on Agriculture and the Basic Needs Trust Fund. Benefits over a ten-year period are estimated at US$4,960,730. Capital and training and organisation are of central importance to this project. Cost estimated at US$4,805,312. Of this amount US$129,100 takes the form of direct cash flows, with most of the remainder coming from internally generated funds. See project document re training needs.
   Constraint: Absence of an effective marketing strategy. This involves creation of new and unique products and an effective means of marketing them. Project has acquired land, started training, and building of factory space. Presently involves 25 women.

Praslin

This small community on central east coast of St Lucia is 60 per cent Catholic and 40 per cent Seventh Day Adventist. Main income earning activities are fishing, farming, craft and agriculture. Small numbers work outside the community for government and other organisations.

The sea is an important provider of livelihood for this community. Adult respondents report two generations of ancestors that made their living from fishing. Fishing and the growing of sea moss are the two main form of income- earning activities involving the sea. These activities though are very much a part of a multiplicity of occupational endeavours.[24]

[24] *See interview with Mrs. Stuart, Praslin resident*

Fishing
The two main forms of fishing are pot fishing, which is done closer to the shore and line fishing. Whereas many individuals do not go to sea on a full-time basis, the community might be heavily involved through the ownership of fish pots and boats that are worked by those who venture to sea.

A similar pattern socioeconomic features to the one outlined for Anse la Raye obtains in Praslin. One local fisherman with 13 years' experience spoke of coming from a poor family of fishers. He had primary school education only and had tried his hands at a number of ventures besides fishing. He was now involved in the top end of the fishing business as a retailer of fish who rarely went to sea himself, but hired others to do so.

Young women, unemployed and economically inactive, the most vulnerable grouping identified in the available data, did not seem to have any immediate involvement with the sea. Indeed, the young women interviewed expressed no interest in involving themselves in the industry. The same applied to poor female heads of households.

Sea Moss Farming
A small number of people from the community are involved in the farming of sea moss which, in most cases, is a supplementary income-earning activity.[25] These cultivators have established a sea moss farmers' association and a factory. This obviously has great potential to become a lucrative undertaking but is at present poorly organized. Those involved in this activity, which offers much potential as a means of income for the poorest, represent a wide cross-section of the community.

[25] *See interview with Mrs. Stuart, Praslin resident*

TABLE 7.3
SOCIO-DEMOGRAPHIC PROFILE

Praslin population by sex and age group			
Age Group	**SEX**		**Total**
	Male	**Female**	
0-4 Years	14	23	37
5-9 Years	22	28	50
10-14 Years	37	35	72
15-19 Years	21	22	43
20-24 Years	23	19	42
25-29 Years	22	18	40
30-34 Years	11	16	27
35-39 Years	17	19	36
40-44 Years	13	12	25
45-49 Years	13	16	29
50-54 Years	8	10	18
55-59 Years	8	12	20
60-64 Years	9	4	13
Over 65 Years	21	24	45
Total	239	258	497

Source: St Lucia 2001 Population Census

According to the 2001 population census, the population of Praslin numbered 497 persons. In 1991, the population of the village had been numbered at 352 persons. This change in numbers amounts to an annual percentage growth rate of 3.5. Most of this growth in population took the form of in migration rather than increased fertility. Still, some of the in-migrants were children (<15) and senior citizens (65+). As much as 41 per cent of the total population of the village is either below 15 years of age or over 65 years old. This results in a high dependency ratio of 70 per cent.

According to the population census of 2001, 56 per cent of the labour force had attended primary school only. More tellingly for socioeconomic status, 71 per cent of the heads of household had not gone beyond primary school in their formal education. Some 13 per cent of the labour force in the village was unemployed. Males constituted 66 per cent of the employed labour force.

When broken down by age and sex, young people out of primary and secondary schools who have not been equipped to effectively participate in the labour market stand out. Some young men drift into illegal activities in the informal economy. Some teenaged girls become pregnant. There is a high demand in this community for post-school skills training such as masonry. Recently, such a programme advertised for three young persons to be trained. It received 18 applications.

As in the rest of the Caribbean, these young people rely for survival on their parents to a great extent. Some eschew jobs that are below the level of the certification obtained from

school. This creates a kind of luxury unemployment and conveys a greater sense of economic distress than might actually obtain. Some have joined the British armed forces as an avenue of opportunity out of their limiting circumstances. The youth in this community do not express an interest in fishing as a livelihood. One reason for this is that there is a high capital cost to involvement in fishing and it is deemed an uncertain means of income.

The elderly in the community were also identified as a vulnerable group.

Female Heads of Household: Two Case Studies

Case Study 1

Faith is 41 years old. She has lived in Praslin for 17 years. She moved to the community when she married a man from it. The man left for the United States of America 16 years ago and has not maintained contact with her. She has five children, ages 22, 20, 18, 15 and 13, all but the last fathered by her husband. She does not now live with a male partner. She works as an assistant to a lady who bakes bread. Her pay she says is insufficient to feed her family. She earns $100 per week, and it costs approximately $500 to feed her family. She bridges the gap in part by keeping her diet simple, eating no meat, only fish and vegetables. She purchases the cheap variety of fish. She supplements this with copious amounts of peas which she plants in her garden and flour and ground provisions. Land is limited but she plants vegetables among her flowers.
Bus fare for her children to go to school in the nearby community of Dennery amounts to $80 per month. She obtains books through a book exchange scheme with other children who attend the same school as her children.

Faith uses her creativity and the bounty of nature in providing lunch for her two children who attend school. She makes juices from in-season fruits and cookies from oats and flour. She receives occasional help from the father of her last child, who works occasionally. Faith owns her own home. It is made from wood and concrete and has piped water as well as electricity. Asked how she meets her medical bills, Faith says that she prays to God to keep her and her children healthy and that he answers her prayers. Although diabetic, she pays only $9 a month for her medication.
Faith does not express any interest in making a livelihood from the sea. If she had a choice of occupation she would be a baker. She would make baked products and sell to the community.

Case Study 2

Susan is 38 and came to the community through marriage. She has four children and works as a janitor at a school in a nearby community. She earns between EC$300 and 400+ monthly. Her husband, she says, left her in a house with a mortgage to pay. She pays $100 as regularly as possible. She has almost completed payments. When she gets paid she “makes a little shopping”. Sometimes, though, bills take up all of her pay. She gets water and light from a neighbour’s house. For this, she pays them some money each

month. When she finds herself with no money to buy food, she says, “God sends a way for me.”

Thus, her father, or mother, she says, might send “something” for her. Her youngest sister works with a government ministry. Susan’s youngest son lives with her while he attends secondary school in Castries.

She gets fish from her father who buys it from the fishermen in the community. She has no other interaction with the sea because she is afraid of it, having once nearly drowned. Her children are aged 16, 12, 10 and five. All attend primary school in nearby Mon Repos except the son who attends school in Castries. Her children who attend school locally travel on a bus owned by Susan’s father. Her mother provides lunch for her children. To pay for her children’s schoolbooks, she takes a loan from the credit union of which she is a member.

Susan says if she had a choice of an alternative occupation, it would be farming. She plants peas at present and uses it to feed herself and her family. On an average day, she says, eats vegetables, peas and fish. For breakfast she has bread, vegetables and tea. She has three meals per day.

Poverty, sustainable livelihoods and the coastal environment

Non-sustainability of natural resource-based livelihoods practised by the poor in the coastal area can be deemed to be the outcome of factors operating at the macro and micro levels. At the macro level, the current neo-liberal policy orientation gives free reign to the activities of international capital and establishes the parameters within which causal factors operate at the micro level. Pollution, educational levels, labour force status, accessibility of credit, social assistance, gender and others are of most immediate importance in this regard. Operating at the global and local level these factors combine to produce a declining agricultural export sector which has reduced the already limited opportunities for employment and income growth in a population with fairly low educational levels. This situation both aggravates chronic or long-term poverty and creates new categories of poor people.

The scope of the research and the available data allow the two communities studied to be identified as poor on the basis of their (non) possession of social infrastructure. Within the community, the only available data that allow identification of specific groups of poor persons are those on the labour force status. When examined by age and sex, the categories, judged by their labour force status, that emerge as in the greatest economic distress, are the youth 15-25, female heads of household and the elderly. (Some categories of the youth, though suffering from limited opportunities, have the direct support of parents). Thus, the available data allow the identification of poor persons only in socio-demographic terms. This leads us to conclude that the majority of the population of these districts are in a situation of disadvantage in respect of at least one set of their basic needs. Within this group, the socio-demographic categories that have been identified are the most vulnerable. Furthermore, among the poor so defined, women tend

to suffer the greatest distress, from the standpoint of their labour market involvement and the nature of their immediate family responsibilities.

It is *not* absolutely clear that any of these categories of poor persons bear major responsibility for whatever degradation of the marine environment has taken place in these communities. However, since these persons rely heavily for sustenance on the marine environment, the degraded environment negatively affects their circumstances. In this context, they might have intensified their use of the resource thus contributing to its further degradation.

Alternatives

Agriculture
Apart from bananas, root crops are the main crops grown. One of the main constraints faced in this regard is lack of markets for these crops.

Agro-industry
Packaging of fish.

> This is an individual project undertaken by an enterprising individual in the village which has met with a fair measure of success. Constrained by lack of capital to buy machinery to cut up and to store fish. Has potential as an employer of labour in the community.
> Packaging of dried fruit has much potential for employment creation through backward and forward linkages.

Cashew nut processing

> This is a group project. Constrained by lack of funding. Hoping to get funds from Network of Rural Women. NRM though emphasises women in development. This might exclude the men involved in this project.

BELIZE

Who are the poor: the incidence and characteristics of poverty in Belize

The Country Poverty Assessment of 1996, using a per capita measure of poverty, reports that 33 per cent of the population and 25.3 per cent of the households were below the poverty line. The monthly poverty line was estimated at $105.82. This estimate places the Belize's levels of poverty second only to Guyana's in the CARICOM region. The incidence of poverty was assessed for each of the six administrative districts into which Belize is divided. It varied from Toledo and Cayo, the poorest with 57.6 and 41 per cent of the population poor, to Belize and Stan Creek, the least poor with 18.6 and 16.1 per cent poor. The lowest degree of inequality exists in Stan Creek with a Poverty Gap of 4.9, and the highest in Toledo with an equivalent figure of 21.8. For reasons that have to do

with the historical development of the country, poverty finds its greatest expression in the southern part of the country.

TABLE 7.8:
POVERTY INDICES FOR BELIZE

District	Poor Population	Poverty Gap	$FGTP_2$
ALL BELIZE	33.0	8.7	4.3
Corozal	26.7	5.5	2.3
Orange Walk	24.9	5.6	2.2
Belize District	24.5	6.7	3.4
Cayo	41.0	12.2	6.2
Stann Creek	26.5	4.9	2.0
Toledo	57.6	21.8	12.2

Source: CDB Country Poverty Assessment Report, September 1996

The youthfulness of the poor, noted for St Lucia is even more pronounced in Belize. Here, some 53.5 per cent of the poor are below age 14. In part this high incidence of youth among the poor is a feature of the population structure itself. In Belize, 46 per cent of the population is below 14. Nonetheless, it is higher-than-average fertility among the poor that has produced this preponderance of youth in a state of deprivation. Only 41 per cent of the non-poor population fall below the age of 14. Women constitute 49.5 per cent of the poor.

There is a definite association between unemployment and poverty in Belize where 27.7 per cent of the poor are unemployed but only 15.5 per cent of the non-poor. Unemployment among the poor was much higher in the urban than the rural areas. The urban poor had an unemployment rate of 41 per cent whereas rate of the rural poor was just more than half, at 21 per cent. This compares with the urban non-poor whose unemployment rate was 22 per cent and the rural non-poor, 15 per cent. The urban poor are mostly involved in the construction, wholesale/retail, and manufacturing industries. The rural poor earn their livelihood through farming and fishing.

Gender and Poverty in Belize

The Gender-related Development Index (GDI) and the Gender Empowerment Measure for Belize are 0.755 and 0.496 respectively. The former measure, based on life expectancy, literacy and average income, placing Belize 59th in a ranking of 146 countries, suggests that, in global terms, a fair measure of discrimination against women exists in the culture and society of Belize. This has been taken to the point where in

Belize women are said to be represented by men as minors and property.[26] Furthermore, recent gender-sensitive research is said to have pointed to the existence of "inequities" related to "socio-political traditions" and the functioning of institutions that disenfranchise women in a systemic way.[27]

These include the labour market where women are confined to a limited range of occupations and find it more difficult to obtain employment than men. Uncertified women are likely to have a particularly difficult time obtaining employment.[28] This factor is also at work in the financial institutions where married women need the sanction of their husbands to obtain loans and women must have a man in the community as guarantor for any loan they might obtain.[29] Of course, if they are owners of land, this provides them with some measure of autonomy. But they are less likely than men to inherit land, and they experience greater difficulties than do males in obtaining land from the government.[30] Certainly, with respect to the coastal and marine resources, women are excluded by social convention and cultural tradition from going to sea to fish or dive for seafood. As one fisherman put it, "the woman's place is to be in charge of the domestic."

Although GDP in Belize has grown impressively in recent years the poverty assessment exercise revealed levels of poverty that are high by Caribbean standards. This means that there is a problem of inequitable distribution of resources in Belize. Gender is likely to mediate this process. Women suffer in regard to employment practices and poor salary and wages, since they are less likely to obtain employment than are men, tend to be restricted to the less well-rewarded jobs, and also to receive less pay for the same work. [31] In most instances, they make up the majority of the unemployed in Caribbean society. Their role as nurturers also imposes economic burdens and disadvantages wage earners and consumers. This is especially the case with women who are single parents. These factors taken together mean that even if the incidence of poverty among women is not greater than among men they are likely to suffer greater severity of poverty. We will return to these issues in our examination of the communities.

The communities: disparate traditions

In terms of historical political economy, Belize can be roughly divided into a northern region stretching from the Mexican border to what is now Belize City and a southern region from that point to the border with Guatemala. Relative to the north, the southern part of the country has suffered neglect, especially in the areas of economy and social infrastructure. Both case-study areas are poor, remote rural communities, but there are significant differences between them in terms of the regional political economy of which they are a part. From the early historical period up to the first half of the 20th century, the main forms of economic activity were concentrated in the northern part of the country. A plantation-type economic organisation facilitated the exploitation of sugar and mahogany

[26] *Op.cit*
[27] *National Gender Policy: Belize, July, 2000.*
[28] *Carolyn Reynolds, Women's Issues Network of Belize.*
[29] *ibid*
[30] *ibid*
[31] *Recently for example there has been a campaign for equal wages for women who work as assistants and sales persons in shops spearheaded by WIN Belize.*

from this region. The forms of economic activity, social and infrastructural development and of integration into the wider global economy associated with this type of economic development were a feature of the development of the northern section of the country. The north thus saw development of roads, schools and hospitals and the incorporation of the workforce into hierarchically structured wage relationships. The southern section of the country, on the other hand, experienced far less of this type of development.[32]

The two communities chosen as case studies were Sarteneja on the northern coast and Hopkins in the southern coastal region. Belize is a multi-ethnic country and the two communities are representative of two of the main historical-cultural traditions of the northern and southern regions of the country—the Mestizo and the Garifuna. These two ethnic groupings have played a prominent role in fishing. Their distinctive values and cultures have been associated with separate patterns of involvement with the marine environment. Garifuna refugees fleeing political turmoil in Central America established Hopkins in 1940. The historical tradition of the Garifuna in Belize, though, predates this by at least a century. The Garifuna, or Black Caribs, are originally from the Caribbean island of St Vincent. They are the descendants of Caribs and Arawaks and runaway West Africans slaves. In keeping with the political economy of the southern region and their own cultural traditions, they developed a subsistence-type economy and social organisation based on the resources of the land and sea.

Fishing for these people has been first and foremost an integral part of their survival strategy, and quite independent of the need for economic gain. Historically, it has represented the reaping of the bounty of nature to satisfy basic nutritional needs. Of course with the modernisation of the society and the increasing monetisation of its economy, income-earning becomes an imperative. Even so, the Garifuna, who now engage in fishing, seem to do so in a less than economically rational[33] kind of way. Fishermen in this community are reported to go to sea only when they are "out of cash", rather than on a regular and systematic basis.

Sarteneja stands in a markedly different cultural and historical economic tradition. This community was established in 1854 by Mexican Mayan peoples fleeing persecution in Mexico. Culturally, it is in many ways closer to Mexico than Belize. Nonetheless, the people are Belizean in their national orientation. Their interface with the commercial activity in the north of the country was associated with the development of a monetised economy quite early in their history. They moved from the sale of natural and agricultural produce to the development of fishing as their main commercial activity in a way that the Garifuna in the south never did.

Their fishing is not conducted in the immediate waters of the village. Rather, they utilise the marine resources along the entire coastline of the country. Taken together, therefore,

---

[32] *This type of polarized economic development is not peculiar to Belize. Langdon, describes a similar pattern parts of Africa. See S.Langdon, Global Poverty Democracy and North South Change: Garamond Press, Toronto, 1999.*

[33] *The term is used in the Weberian sense*

the two disparate cultural traditions comprise much of the socio-cultural traditions of the Belizean fishing industry.

<u>Case Study 1.</u> Sarteneja

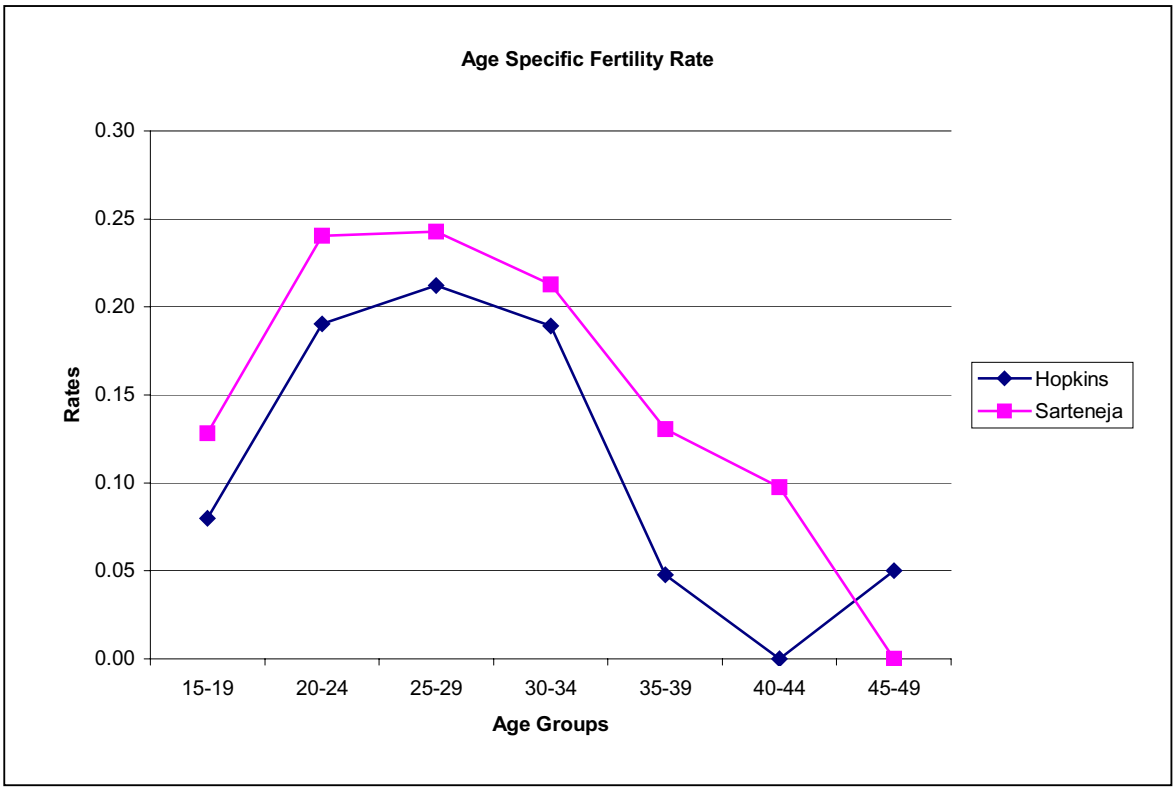
TABLE 7.9
DEMOGRAPHIC PROFILE

Sarteneja population distribution by age and sex						
	Sex					
	Male		Female		Total	
	N=	Row%	N=	Row%	N=	Col%
0-4	126	***49.6***	128	***50.4***	254	***15.5***
5-9	114	***47.1***	128	***52.9***	242	***14.7***
10-14	106	***48.8***	111	***51.2***	217	***13.2***
15-19	96	***55.2***	78	***44.8***	174	***10.6***
20-24	58	***42.3***	79	***57.7***	137	***8.3***
25-29	58	***45.3***	70	***54.7***	128	***7.8***
30-34	51	***52.0***	47	***48.0***	98	***6.0***
35-39	43	***48.3***	46	***51.7***	89	***5.4***
40-44	37	***47.4***	41	***52.6***	78	***4.7***
45-49	38	***56.7***	29	***43.3***	67	***4.1***
50-54	19	***57.6***	14	***42.4***	33	***2.0***
55-59	13	***59.1***	9	***40.9***	22	***1.3***
60-64	15	***60.0***	10	***40.0***	25	***1.5***
65-69	17	***50.0***	17	***50.0***	34	***2.1***
70-74	12	***57.1***	9	***42.9***	21	***1.3***
75+	13	***52.0***	12	***48.0***	25	***1.5***
Total	816	***49.6***	828	***50.4***	1644	***100.0***

Source: 2000/2001 Belize Population Census

Note should be made of the disproportionate share of the population total held by groups up to age 14. This is an indication of high fertility levels and the heavy dependency burden borne by the population of working age. (See figure 1.) Note that Sarteneja has the higher fertility rate of the two communities. In Sarteneja, the total fertility rate is 5.3. In the case of Hopkins the rate is 3.8. Higher fertility rates in Sarteneja are related to the earlier age of marriage in this community and the greater prevalence of stable monogamy and hence increased exposure to the risk of pregnancy on the part of these women. The issue of population growth in Belize is an interesting one since the country is obviously under-populated in terms of the existing land resources. The problem arises because much of this land resource is unavailable to the local Belizean population. This means that relative to *available* land resources the country is over-populated.

FIGURE 7.1
AGE SPECIFIC FERTILITY RATES OF SARTENEJA AND HOPKINS



Labour market characteristics

Census data indicate that the adult members of the community are not well equipped to function in the labour market. Some 94 per cent of the population had only gone as far as primary school; of these only 18 per cent had managed to attain a school leaving certificate. Low educational attainments underpin the economic vulnerability of the community and the constraints that face the people in their search for alternative livelihoods. A related consequence is the heavy reliance on natural resources in their livelihood strategies. Persons outside the labour force often are in fact discouraged workers. Note should be made of the high proportion of women in the group of persons.

TABLE 7.2
LABOUR MARKET FEATURES OF SARTENEJA

	Sarteneja
% of labour force with up to primary level education	94% (18% with Primary School certificate
Unemployment rate	14%
% of persons outside of the labour force who are female	82%
% of population less than who are less than 15 years of age	43%
% of population that is of working age	52%

Source: Belize Population Census, 2000/2001

Fishing in Sarteneja

Fishing is the major economic activity for the people of the village of Sarteneja. As they themselves put it, "Sarteneja is fishing and fishing is Sarteneja. Without fishing there is no Sarteneja." The community originally made its living from the land through the sale of fuel wood and agricultural produce to Belize City. These were transported by boat. About a generation ago that activity declined and was replaced by fishing. At first this took the form of trap setting and line fishing, but was replaced by diving for conchs and lobsters in the mid-1950s. In those early days livelihoods were earned through a combination of fishing and farming. Today, one fisherman estimates, only 25 per cent of the fishermen of Sarteneja are involved both in fishing and in farming. In the past, sailboats were used exclusively for sea transport; today these have been supplanted to some extent by "skiffs", or fibre-glass motor boats. The some 150-200 boats in the village are each manned by an average of five persons. Estimates of the number of fishermen in Belize range from 3,000 to 3,500. Fishermen from Sarteneja make up as much as one third of this number.

The sea as a source of subsistence

Fishing as a means of subsistence has declined significantly over the years in favour of fishing as a commercial activity. Nonetheless, seafood is an important source of protein for some families. Community members estimate that it costs about $30 per day to provide basic nutrition for a family of six. Knowledgeable observers living in the community estimate that a small number of families, not able to obtain a daily source of animal protein from fish or chicken, eat instead corn tortilla or some such starchy staple. Those who cannot afford basic foodstuff are unable to do so because of increases in the cost of living. Some families do not pay consistently the school and exam fees of $3.50 per term. Four per cent of the children age five to 14 suffer from extreme hunger. The major cost of living expense is said to be food.

Pattern of use of the marine environment by the poor

This village heavily depends on the sea for livelihood because of a number of environmental and socioeconomic structural constraints. Physical remoteness, the absence of any other major job-creating commercial activity, and a macro-economy dominated by primary economic activity, go a long way in explaining these villagers' dependence on the sea. In addition, limited education, limited access to credit, and a land tenure system that alienates 80 per cent of private land into the hands of foreigners,[34] are the other factors that produce this outcome. Lack of access to financial capital prevents fishermen from investing in fishing and limits their ability to develop new economic activities. Underlying this is the low educational levels. This is compounded by the fact that the traditional language of the village is Spanish. These factors together limit their range of labour market options and their ability to interact with and make demands upon the institutions that govern the country and regulate the marine environment.

Estimates of the "Catch"

Fishing is thus the main labour market activity. Young men enter into it enthusiastically as a means of immediate income. They do so, in the main, via their family networks. Each catch has to be divided between the boat (expenses and upkeep—there is an obligation to meet the boat's upkeep that becomes more onerous with the increase in the cost of inputs.), the captain and the men on the boat. Fishermen are at sea for nine months of the year. One fisher reports that he fishes for "fin fish" six months and conch and lobster during the other three. Another, of 20 years experience, says he is at sea eight days out of every 14. His catch varies over the season.

According to this fisherman, for the first two trips of the season, each fisherman will catch about 80 pounds of lobster after eight days. The boat will therefore have 400 pounds if there are five crewmembers. Subsequently, the size of the catch declines to about 20 pounds per fisherman per trip. Yet another reports 600-700 pounds of fish caught per week. One fisher reports that when he goes with the sailboat he dives from 8 a.m. to 3 p.m. each day for 12 days. Each day they pay the boat one pound of lobster. They catch about five pounds of lobster each day. Hurricanes, he suggests, do most of the damage to the fishing activity. Since Hurricane Mitch in 1997, he reckons that there has been a fall in seafood stock due to the destruction of the lobsters' habitat.

One fisherman of 26 years reports that the lobster catch has declined during his time. He attributes this to the fact that there are now more fishermen at sea. He also notes that the more volatile weather has had a negative effect on the size of the catch. He reports that four years ago, at the opening of the lobster season, he used to catch 175 pounds. This has declined steadily to the point where in the last two years he has only caught 64-65 pounds at the opening of the season. In October (the beginning of the season), he reports there are fishermen catching only 10, 14 pounds of conch.

[34] *SPEAR, 2000*

Discussions and interviews with those involved in the exploitation of the marine resources in this village seem to suggest the following:

- There is a heavy reliance on the sea as a source of income and sustenance by the people of this village. The main drivers in this regard are increasing population size and lack of comparative non-marine-based earning activities. Natural disasters in the form of hurricanes also seem to have had a devastating effect on the seafood stock.
- Overuse of the environment by these villagers, and restrictions on the scope of their fishing activities, have been associated with a decline in the per capita intake from the sea.
- Although this represents a threat to the current standard of living of the villagers, it has not yet translated itself into significant declines in their material circumstances. Nutrition and health have not yet been adversely affected.

Alternatives

Heritage tourism

This could be developed on the basis of trips to the nearby Maya ruins. This product is in need of promotion and development. This includes local accommodation.

Eco-tourism

Plans are well advanced for the development of an eco-tourism site in nearby forest. This project is a large one involving huge tracts of forest. It promises employment for most of the young people of Sarteneja. They would work as tour guides and in the maintenance and conservation of the forest. One approach to the running of this concern to address issues of empowerment, conservation, the generation of capital and workers involvement in the decision making process, is the employee share ownership plan (ESOP). The company would create a trust fund to which it makes an annual contribution. Shares from this would be allocated to individual workers on the basis of level of compensation, years of service or some other criterion such as gender or youth. This arrangement would mean that workers would be involved in the decision making process and would be motivated to take an interest, beyond income earning, in conservation of their environment. This arrangement would be of particular benefit to women and young people who are the most disempowered in the community. Credit facilities could be established to facilitate the creation of small businesses centred on tourism.

These two forms of tourism would provide the basis for the creation of hostels and guesthouses in Sarteneja. Other benefits would be the creation of a craft industry for the villagers.

Micro credit

For the members of the community to benefit from these activities, traditional approaches to the provision of credit need to be radically revised. A system of micro credit or financing should be devised and implemented. Basically, such a system differs from established financing practices in the type of activities that is its focus, the criteria for

loans and the target beneficiaries of the scheme. Such systems have met with a great deal of success in the developing and also in Caribbean countries such as Jamaica.

- **Focus**: Small to medium business activities concerned with but not confined to tourism-related developments in the community.
- **Criteria for loans**: In this system the usual collateral requirements are relaxed. Small items such as appliances are used instead of things such as land titles, houses etc.
- **Beneficiaries**: The poor or economically and socially disadvantaged. Loans are made to individuals who are part of a group of persons. For any individual to obtain a loan, the person who borrowed ahead of him/her has to repay the loan.

System to be administered by commercial banking interests at reduced rates of interest.

The proper promotion of this area and its attractions is of paramount importance if this project is to succeed. It is a particularly remote part of Belize. The budding tourist activity that presently exists in the community has been promoted through the Internet by the local people concerned. There is much scope for the development of e-commerce in this regard.

Training and participation in planning
The community should be a part of the proper planning of the development of tourism, and from as early as possible. Issues relating to the role of foreign capital versus local enterprise and ownership; the sale of beach-front land to foreigners; conflict between local culture and foreign lifestyles; and the fostering of drugs and prostitution by tourism; should be highlighted by the central government. The community should then be provided with training and guidance in dealing with these matters. One important mechanism in this regard is the establishment of co-operatives and the involvement of the village council with the Belize Tourist Board and other government agencies in planning the growth and development of the industry.

Boat building: This tradition exists in the village and offers the potential for further development.

Tour guiding:
Marine—in the event of tourism development taking place in the village, this activity has some potential given the sea-going ways of the villagers;
Terrestrial—would be integral part of heritage and eco-tourism activities.

Who are the stakeholders?
Fishermen, fishing co-operatives, women and young people of Sarteneja, Friends of Nature, COMPACT, PACT, UNDP/GEF Small Grant Programme, Belize Audubon Society, Belize Tourist Board, Ministry of Youth, Ministry of Rural Development, Women Affairs, SPEAR, Women's Issues Network of Belize. A women's and youth unit should be established in each of the government agencies to address cross-sectoral issues that affect these groups.

Case study 2. Hopkins

TABLE 7.3
DEMOGRAPHIC PROFILE

Hopkins population distribution by age and sex						
	Sex					
	Male		Female		Total	
	N=	Row %	N=	Row%	N=	Row%
0-4	81	***55.1***	66	***44.9***	147	***14.7***
5-9	62	***40.8***	90	***59.2***	152	***15.2***
10-14	78	***52.0***	72	***48.0***	150	***15.0***
15-19	67	***57.3***	50	***42.7***	117	***11.7***
20-24	35	***45.5***	42	***54.5***	77	***7.7***
25-29	22	***40.0***	33	***60.0***	55	***5.5***
30-34	26	***41.3***	37	***58.7***	63	***6.3***
35-39	15	***41.7***	21	***58.3***	36	***3.6***
40-44	24	***60.0***	16	***40.0***	40	***4.0***
45-49	19	***48.7***	20	***51.3***	39	***3.9***
50-54	8	***53.3***	7	***46.7***	15	***1.5***
55-59	11	***45.8***	13	***54.2***	24	***2.4***
60-64	11	***47.8***	12	***52.2***	23	***2.3***
65-69	12	***54.5***	10	***45.5***	22	***2.2***
70-74	8	***34.8***	15	***65.2***	23	***2.3***
75+	10	***50.0***	10	***50.0***	20	***2.0***
Total	489	***48.8***	514	***51.2***	1003	***100.0***

Source: 2000/2001 Belize Population Census

As in Sarteneja, the youngest age groups make up a disproportionate share of the population total. Again, this is an indication of high fertility and the heavy dependency burden borne by the population of working age. (See figure 1 above.) The lower total fertility rate in Hopkins is probably related to its mating patterns and the higher levels of education than in Sarteneja.

TABLE 7.4
LABOUR MARKET FEATURES OF HOPKINS

	Hopkins
% of Labour force with up to primary level education	92% (46% with Primary School certificate
Unemployment rate	18%
% of persons outside of the labour force who are female	72%
% of population less than who are less than 15 years of age	45%
% of population that is of working age	48%

Fishing in Hopkins
Fishing in Hopkins has been a part of the subsistence tradition of the people. This means that, in the main, it is artisan in character, pursued on a small-scale basis to meet daily needs rather than as a major business activity with the objective of wealth accumulation.[35] Unlike in the north, the social structure of Hopkins has not been shaped by commercialism and the inequitable distribution of land associated with plantation agriculture. This has produced a flat social structure with *relatively* low levels of monetisation. This, however, would have been modified with the establishment of citrus and banana plantations in the areas immediately beyond the community, external migration and the coming of foreign tourist investors.

The community is less reliant on fishing because of remittances from the Garifuna community in Chicago, USA. Since the early 1990s the community has been modernised by the introduction of telephones, electricity, water and cable television and connection to the rest of the country by road. Tourism, now established in Hopkins, leads to less reliance on fishing. Tourism has taken the form of a combination of small guest houses owned by the locals and large plants built by foreign capital. Many locals find employment in these foreign concerns. The young men work as maintenance workers, drivers, tour guides while the young women work as domestics within the hotels.

<u>Case study 1:</u>
Chambermaid, Jaguar Reef Hotel.

Susan was born in the nearby town of Dangriga and now lives in Hopkins, where apparently her father hails from. She is 28 years old and attended primary school up to age 14. She says she had to leave then because her parents had no money to send her further. She remained at home until age 20 when she had her first child. She left home and lived with her child's father and had a second child with him before they separated.

[35] *One source estimates that for every 10 fishermen in Hopkins 2 are commercial and 8 subsistence: (Gaspar Martinez, former Hopkins resident and SPEAR, Community Empowerment* Coordinator)

She came to Hopkins where she got a job with the hotel in 1999. She has entered into a new relationship that has produced a child of 10 months. Her new spouse works as a technician in a radio station. She worked previously as a housekeeper. She regards her job as "really good". "It helps a lot", she says, "although I don"t make a lot of money." She is paid on a hourly basis and her earnings are therefore dependent on the number of tourists that book into the hotel, so her income level varies with the season. In the slow period, from September to October, she might earn $100 or less every two weeks. During the high season, November to March, she might earn $500-$600 inclusive of tips every two weeks.

Susan says her living expenses are not high. She lives in a house that was given to her by her father. Her children are eight, five and 10 months old. Food costs $200 a week; light $100 a month. She is able to save a little sometimes.

Both her father and brother are fishermen, although her father has retired and does mainly farming on land he owns in Hopkins. She has five sisters and seven brothers. Three of her siblings are in the USA, and another is a soldier. One is a police officer and the other two are fishers.

Case Study 2:
John Bryan, 37,
Hotel employee and tour guide, Hopkins

John is a 37-year old employee of the Jaguar Reef Hotel in Hopkins. He had left Hopkins for Chicago to live with his parents at age 14. He travelled on the passport of one of his siblings and reports that in those days it was so easy to enter the USA that it was "pitiful". His parents worked as factory and domestic workers. John says his mother enrolled him in Catholic schools and even though he lived in areas with mixed populations he was often the only black person in his class. He says that America has much prejudice and discrimination and this made him dislike the place.

John says that he went to college in the USA, but lived a "wild life" that eventually culminated in a car accident that took him one year from which to recover. His recovery coincided with his parents' retirement and return to Hopkins, and he decided to return with them.

Since his return, he has worked in the areas of construction as a "tools clerk", and in a couple of jobs of similar nature. He gained employment as a "maintenance" worker, but does a number of other tasks, including chauffering the owner of the hotel and tour guiding. In the slow season, he returns to his role as maintenance man. His main job with the hotel now is tour guiding (marine and terrestrial). A job he qualified to do after taking the requisite course.

John says he likes working at the hotel. His meals are provided at his work place and he is five minutes from home. The only meal he has to worry about is the one at night. His immediate ambition is to own his own home. Following this, he would like to purchase a

boat for purposes of tour guiding. Even though the hotel offers tour guiding as a part of its package, some tourists like to deal with independent operators in the village. He feels that he would be able to cash in on some of this market. While he is establishing himself as an independent tour operator, he will have to remain employed at the hotel.

John reports that his three brothers and a sister have all remained in the USA and are all employed in middle- management positions. John has no intention of returning to the USA to live permanently. The lifestyle is much too exacting, and the people impersonal and uncaring.

Case Study 3

Paul is the owner of a small speedboat that he uses for tour guiding. He used to be a fisherman ten years ago, but fishes now only to provide a small supply to the restaurant his wife runs. Some of the hotels do not have tour boats, and when their guests require tours they use him to provide the service. He is also sometimes approached by individual tourists to provide them with the service. His boat carries five persons and is fully occupied for six months of the year. He left fishing because "it is hard work and the fish keep getting less each year." The decline in fish is due to trawling, too many fishers and the use of gill nets and fish traps. Marine reserves are therefore a good thing since they allow the fish to regenerate. Local fishers catch fish using lines with one or several hooks, diving, traps and nets.

Pattern of use of the marine environment by the poor

Villagers say five years ago fishing was lucrative in Hopkins. Grouper was the main catch and this used to be sold to the co-operatives as well as to locals. With the establishment of reserves and regulations governing size of catches, income has taken a significant fall. The fewer fishers these days are now more into conchs and lobsters caught by diving. Because of the combined commercial/subsistence approach to fishing estimates of the numbers vary. One suggestion is that 60 per cent of all young men in the community are fishers. This amounts to 100 or so. Another estimate is that there are only 30 serious full-time fishers in the community. This latter suggestion is in keeping with the notion of a divide between subsistence and commercial fishing. Today, the average fisherman from Hopkins stays three to four days at sea and returns with a catch of 300-400 pounds. This has to be divided amongst three to four men, fuel and the boat. Fish is sold for $3 per lb.

One villager suggested that there has indeed been a decline in the fish stock, but this is due to the trawlers and to a lesser extent the use of "gill" nets. The trawlers are said by locals to kill thousands of immature fish. In the past, locals used to be able to go just offshore and catch fish to feed their families. Since the trawlers have started working in the area, they have not been able to do so. In fact, the poor might be doing the least damage and paying the highest cost. One cost is that of loss of income. The shopkeeper in Hopkins estimates a loss of income for his shop of B$15,000 to 20,000 annually as a result of the establishment of the marine reserves. These have been created in response to a decline in the fish stock.

Alternatives
If poverty is to be reduced, this entails an improvement in the ability of the poor to derive both sustenance and income from the natural environment. As has been noted above, this sometimes involves curtailment of the ways in which they presently use these resources. This quite likely will be done on a short-to-medium-term basis, taking the form of conservation/resuscitation of the marine environment. In the meantime, alternative uses of the marine environment and new forms of use of other natural resources, have to be developed. For the Hopkins the following are some of the options that suggest themselves. All of these activities should be tailored to the needs of youth and women, two of the groups in the community that suffer most from limitations in regard to human, financial, social and physical capital:

Fishing
Much of the decline of fish and seafood stock in this community is due to the activity of fishing trawlers. Considerations relating to alternative uses of the marine environment have to be made in the context of correcting its misuse by the non-poor. The rights of the poor to enjoy the use of their resources have to be protected from abuse by the big business.

Tourism
Because of its marine resources and its interesting flora and fauna, and culture, Hopkins and its surrounding area offer the potential for the development of both sand, sea and sun tourism, nature tourism and cultural tourism (eco-cultural tourism). Not far away are Maya communities that could be included in the tourist itinerary.

Two types of tourist products seem to be emerging. The first is local or village-based and takes the form of local guesthouses run by the community members in their own homes and buildings. Micro credit facilities should be created to support this activity. The second is an upscale tourist product run by international tourist interests. Because of the pivotal place Hopkins occupies between the traditional/subsistence and the modern/market-oriented, there is much value in catering to both tendencies. Care should be taken not to promote the modern version at the expense of the local. At the same time, the modern should be encouraged because of the potential promotional and other progressive modernisation influences it can bring. The two tourism products should interface in a way that benefits both while allowing each to retain its integrity. (Negril, Jamaica is good model). Certainly, the all-inclusive type of tourism should be discouraged and even legislated against. In this way, the benefits from the industry will be more equitably distributed within the community.

An example of the benefits that can accrue from this activity for the disadvantaged within the community is the guesthouse that was until recently run by the Sandy Beach women's co-operative. This co-op is made up of women who used to be employed on the nearby banana estate under stressful and demeaning conditions that did not allow them any time with their family.

With the establishment of the guesthouse they were able to earn a decent income and were no longer time-poor. They made contributions to the community in the form of sponsorship of youth activities and other such activities.

This effort came to an end with a fire that destroyed the guesthouse. The disadvantages suffered by women in the society are demonstrated by the ways in which they were treated by the company they had insured with and the fact that they have not been able to secure a loan to restart their business.

In suggesting tourism as an alternative therefore, factors such as these have to be taken into account. Credit facilities have to be tailored to compensate for the disadvantageous situations (patriarchy, social isolation, lack of collateral, low levels of education) of women, youth and the people of the community in general. In addition, the negatives associated with "big business" tourism have to be addressed. These include pollution, exploitative labour relations, drugs and prostitution.

Lack of capital and the unregulated entry of foreign capital into the community will lead to the conversion of the independent, subsistence-oriented people of Hopkins into landless wage labourers in the service of foreign business interests.

Already much of the beach-front property in the village has been alienated into the hands of foreigners. The ultimate outcome of this process will be the destruction of the Garifuna community, its culture and way of life in Hopkins.[36]

Sports fishing
Area has potential to develop this activity. One company operates at present run by a returned migrant and his wife. Markets his product to CEOs and professionals through contacts in USA and Europe; provides accommodation on offshore islands. This activity provides employment for a number of young men in the community. In the off-season he does some fishing.

Tour Guiding
Many young people have been trained in this area, but lack the capital to purchase boats or land transportation. They have therefore not been able to become involved in the industry as entrepreneurs.

Sea Moss cultivation
Targeted at fishers who use the south marine quay reserve. To be trained in sea moss cultivation and marketing. Women should be included in this project as well.

Land reform and agriculture (including acquaculture).
Land ownership is an issue in this community. There is demand for land on the part of youth that have received training in agriculture. No land has been provided for locals yet land is available to foreigners. Extension services and assistance with irrigation and marketing are also in demand. Complaints are heard that the Ministry of Agriculture's

[36] *I. Boxill, et.al. (eds) Tourism, Natural Resources and Development in Belize…..*

policies and activities show a "big farmer" bias. Locals are involved in shrimp farming only as workers. Mechanisms should be put in place to ensure that they become part or full owners of this industry (Model—Sandy Bay Women's co-op).

Co-management of marine protected areas (IZMA, COMPACT)

Who are the stakeholders?
Sandy Beach Women's Coop, Hopkins Village Council, SPEAR, Friends of Nature, COMPACT/UNDP,GEF, Ministry of Rural Development, Ministries responsible for youth, women and the regulation and control of land, Belize Audubon Society, Belize Tourism Board, CZMA, CARD Ministry of Agriculture.

Conclusions

In considerations relating to poverty, what can happen is just as important as what is happening in the present time. In terms of the traditional point in time measures of absolute poverty, both communities do not fare so badly. Certainly, in Sarteneja, the research reveals a very good health status rating among the general population, and low levels of malnutrition among primary school children.[37] There is nothing to suggest that Hopkins suffers badly by comparison in this regard. Indeed, the subsistence tradition of the Garifuna has ensured that social reciprocities are a well entrenched part of the community's life. The school teachers report that malnutrition among school children in the community is just about non-existent.

Notwithstanding this, however, both communities can be described as suffering from socioeconomic deprivation. This is evidenced by low levels of education and training; high unemployment and the heavy dependency burden borne by population of working age; poorly developed social infrastructure and low levels of ownership of agricultural land. This places them in a less than desirable position of dependence on the marine resources for either income, or mere sustenance.

Both communities are consequently vulnerable to the effects of whatever changes to this environment might come from either natural or anthropogenic sources. Sarteneja seems to be the more vulnerable in this regard. Here, the dependence on the marine resource is almost total. If something were to go wrong with fishing in Belize, the short-term effects on this community would be catastrophic. There is also a danger that incremental changes to this resource over time will lead to a gradual erosion of the current standard of living. It is true that the historical experiences of these people have endowed them with some resilience and experience in commercialism. But given the institutionalisation of fishing in the life of the community, it would take some time to adjust their norms and institutional forms to new circumstances.

Hopkins is less dependent on fishing as a source of income. Remittances and tourism provide alternative sources of income that do not obtain in Sarteneja. Hopkins depends

[37] *See Appendix*

on the sea as a source of food and as a basis for tourism. In terms of the community's well-being there is a case to be made for diversification of economic activities. Certainly, the potential for community-based tourism needs to be fostered and developed through the provision of credit, training and changes in the culture of policy making, that reflects an awareness of the need to actively promote the interests of the socio-economically deprived.

In similar vein, agriculture should be encouraged and fostered through the provision of access to good agricultural land and support in the form of extension services. These suggestions do not represent a call for the abandonment of fishing, but rather a rationalisation of the use of the community's resources to improve its circumstances and build its resilience.

Recommendations

- Institute land reform and ESOP. Both of these ensure that the community has a greater share in the ownership of its resources.
- Facilitate the development of alternative means of livelihood through the provision of social infrastructure allowing for the development of village-level tourism and facilitating the marketing of agricultural produce
- Target women and youth in the provision of education and training. These two groups are the most disadvantaged in the population.
- Create micro credit facilities that will enable vulnerable groups to create businesses and get involved in alternative ventures such as community-based tourism, commercial activity and agriculture.
- Plans for the future must be sensitive to the needs of the vulnerable and must involve their participation in planning and decision making for the use of the natural resources.
- Control pollution sources in agriculture, housing and industry.
- Ban trawling and other destructive harvesting practices.

Generic lessons from St Lucia and Belize

The absence of point-in-time absolute measures of poverty at the community levels makes poverty evaluations done on the basis of existing data sources virtually impossible. Furthermore, it is a moot point whether measures of poverty centred on hunger, malnutrition and homelessness are appropriate for a study of at least one of the communities in Belize which has a strong tradition of subsistence production.

A more productive and useful approach uses population census data to measure physical circumstances and labour market capabilities of the community. This approach allows not only for a point-in-time assessment of the circumstances of the community; it also allows for an understanding of the extent to which the communities might be vulnerable to changed circumstances in the future. For the community's adaptability is a function of its present capabilities and entitlements. It allows us to ask the "what if" question and plan for eventualities.[38]

On the basis of this type of evaluation, all four communities studied can be said to be in a state of socioeconomic deprivation and vulnerability. In practical terms, this is given expression via a number of markers. The first is the labour market status of the population of working age. Low levels of education and training plague all four of the populations studied. They result in high levels of unemployment and discouraged workers. From labour market capabilities and experiences, it becomes evident that women, women heading households, their dependents, and young people in all four communities experience the greatest levels of economic distress, and are particularly vulnerable to unfavourable changes that might beset the communities.

The second marker is demographic. It tells of relatively high levels of fertility in all four communities, and a consequent heavy dependency burden on the population of working age. Improved health conditions in previous decades also means increases in average life spans and, therefore, that this burden is added to by the aged.

The third marker is productive. It tells of limited access to agricultural land by people in the communities studied. The final marker is infrastructural. It varies by country. The Belizean problem of lack of proper roads is not the problem of the communities in St Lucia.

There are commonalities, however. The first of these is garbage disposal. The second is sewage disposal. This problem plagues the communities in St Lucia and has only recently been corrected in one of the communities in Belize. The statistic for Anse La Raye bears repeating. Here, just in excess of two thirds of the households report no toilet facilities.

The implications for the practice of sustainable livelihoods are profound. In the first place, they result in a heavy economic and physical burden being placed on the marine environment in all of the localities studied. When it is considered that this resource is

[38] *One example in the recent past of the consequences that follow the failure to use this kind of approach to planning is provided by the experiences of the banana industry in St. Lucia.*

threatened by other social and natural forces, then the precariousness and vulnerability of the people in the Caribbean coastal zone is brought into sharp relief. The obvious recommendation is rationalisation and diversification. Both processes go hand in hand. Proper management of the coastal resources is going to result in fewer persons making a living from the exploitation of the sea life. The idea is that those who remain should do so in a more efficient and sustainable way. Those who leave fishing must be provided with alternative forms of livelihood, some involving the sea, others terrestrial resources.

A host of changes at the local, national, regional and international levels must accompany rationalisation and diversification. Detailed treatment of these falls outside of the author's immediate remit and are dealt with only in *passing* here. Fuller treatment is provided elsewhere in the document. Suffice it to say that they all demand a new role for the state. On a global level, during the past three or four decades, government's role in the life of the society has changed from one of total involvement to non-involvement. Since there is good reason to support lessened direct involvement of the state, these suggestions do not call for yet another reversal of roles. Rather, government's role must now be twofold—umpire and organiser. The first involves making sure that the forces of the market do not overwhelm the needy to the gain of the wealthy. The second entails the fitting of community need with civil society, or private sector provider. Furthermore, if these processes are fundamental to the building of capacity and resilience in the community, then empowerment and participation of ordinary citizens must provide the basis on which these endeavours are themselves constructed. Social capital, in a word, is indispensable to economic development and social order.

REFERENCES

AndreB, H, (ed) 1998 *Empirical Poverty Research in a Comparative Perspective*: Aldershot, Ashgate Pub.

Boxill, I. Pereira, A. and Maerk, J. Eds. 2002 *Tourism, Natural Resources and Development in the Caribbean*: Plaza y Valdes, S.A de C.V. San Rafael, Mexico

Caribbean Development Bank, 1995. St Lucia, National Poverty Assessment Survey. Bridgetown, Barbados, Caribbean Development Bank.

Caribbean Development Bank, 1996. Belize National Poverty Assessment Survey. Bridgetown, Barbados, Caribbean Development Bank.

Carnegie, C. *The Rural Population of Saint Lucia: A Preliminary Analysis*. OAS Technical Report, Castries, Saint Lucia, September 1981.

CEPAL/CELADE. 2002 *Sociodemographic Vulnerability: Old and New Risks for Communities, Households and Individuals*. Electronic Paper (LC/R.2086). CEPAL/CELADE Santiago, Chile.

Foreman, R.A., 1958. *Land Settlement Scheme for Saint Lucia*. Castries, British Government Colonial Office.
Government of Belize, July, 2000. *National Gender Policy: Belize*, July, 2000

Grinspun, A. (ed), 2001. *Lessons for the Poor: lessons from national poverty strategies*: UNDP

InterAmerican Development Bank. 2000. *Development Beyond Economics:2000 Report, Economic and Social Progress in Latin America*, Washington D.C. Johns Hopkins University Press

Langdon, S. 1999. *Global Poverty Democracy and North South Change.* Toronto, Garamond Press.

Lynch, R. 1995 *Gender Segregation in the Barbadian Labour Market 1946 and 1980*: Kingston, Canoe Press, University of the West Indies.

McClaurin, I., 2000, *Women of Belize: Gender and Change in Central America:* New Brunswick, New Jersey, Rutgers University Press.

Miller, S.M. and Robey, P. 1970 *The Future of Inequality*: N.Y. Basic Books.

Stouffer, S.A., Suchman, E.A., DeVinney, L.C., Star, S.A., and Williams, R.M. 1949. *American Soldier, Adjustment During Army Life*, Princeton, Princeton University Press.

Townsend, P. 1979 *Poverty in the United Kingdom:a survey of Household Resources and Standards of Living*, Berkley and Los Angeles University of California Press.

UNECLAC, Equity, Development and Citizenship

Wilber, G(ed). 1974 *Poverty: a new perspective:* Lexington : University Press of Kentucky

Appendix 1

Health Status of Sarteneja

The district nurse reports that most of the illness she sees is upper respiratory ailments in children 0-4 years of age. She reports that about 20 cases a month. The main illnesses in the adult population are the non-communicable diabetes and hypertension. This is in accordance with the national pattern.

There is a very low incidence of malnutrition among infants. In her quarterly reports, she records three to four cases. The people in the community are well nourished, she reports. The main diet consists of seafood and beans and vegetables. The latter are not grown in the community, but imported from overseas or from the Mennonite farmers in an adjoining community. Although there is some teenage pregnancy, the vast majority of this takes place within a stable union. Single parenthood is very rare in the community. The community enjoys a good health and nutritional status, and medical care and drugs are free.

A doctor is also resident in the community. There is no ambulance service. In a medical, private taxis charge approximately B$90 for the trip to the Orange Walk Hospital. HIV is present: six deaths from AIDS have occurred over the past two to three years. All the victims have been males, the eldest 31 and the youngest 18.
The only other major cause of death is old age.

It should be borne in mind that there would be lag time in the change of the health and nutrition status of a population due to economic adversity. This time lag would limit the usefulness of this variable as an indicator of economic downturn. Nonetheless, the health and nutritional status of the 0-4 age group, which responds fairly readily to adverse economic circumstances, is apparently good.

Research Objectives

Output 1
Improved understanding of demand for alternative sustainable NR-based livelihood strategies to enhance livelihood outcomes for poor people in the coastal zone in the Caribbean.

The research has contributed to this output by the identification of the circumstances and needs of the poor and the ways in which these affect their livelihood choices in the two case study sites. See pages 4-14; 17-20; 21-28; 33-36; 39-40;41-42.

Output 4
Improved understanding of the strategic constraints to NR based livelihood strategies faced by the poor.

This calls for an evaluation of the capacity of the poor to respond to change in NR based livelihood strategies. See pages 13-16; 20; 22; 28; 31-34; 36-38.

Output 6
Strategies to ensure development impact in comparable environments and sustained uptake by target beneficiaries and institutions identified.

This entails the extraction of generic principles that can be applied in comparable settings. See pages 1-2; 41-42.

CHAPTER 8

STRATEGIC CONSTRAINTS TO NR-BASED LIVELIHOOD STRATEGIES

Including Poor People's Rights of Access to NR in the Coastal Zone and Policy /Institutional Environments

CHRISTINE TOPPIN-ALLAHAR
Senior Lecturer (Part-Time)
University of the West Indies
St Augustine
Trinidad and Tobago

CHAPTER 8

INTRODUCTION

Renewable Natural Resource Research Strategy (RNRRS) focuses on the generation of new knowledge in the natural and social sciences and the promotion of the use of this new knowledge to improve the livelihoods of poor people in a sustainable way through better management of renewable natural resources. The goal of the Natural Resources Systems Programme (NRSP), one of several programmes funded under the RNRRS, is to generate benefits for poor people by the application of new knowledge to natural resource (NR) systems. The central focus of knowledge generation is on changes in the management of the NR base that can enhance the livelihood assets of the poor.

The NRSP covers all six NR production systems of DFID's research portfolio. One of these is the Land-Water Interface (LWI), located in regions where both aquatic and terrestrial NR systems co-exist. The purpose of this component of the NRSP is to generate benefits for poor people in targeted countries by the application of new knowledge to NR management in the LWI. This requires both an understanding of the livelihood strategies of the poor and the identification of means to implement NR management opportunities relevant to the poor.

The Caribbean is the target country for the coastal zone, with priority given to the aquatic environment, emphasising coral reefs and lagoons, mangroves and sea-grass beds. In addition, the research takes a wider approach to production constraints and considers land-use practices, in order to address impacts on the aquatic environment and to establish appropriate management actions to address all factors that may impact on the target habitats. Integrated NR management is therefore central to the research and requires both the adoption of a holistic view of the NR base and the dynamic nature of people's livelihood strategies and how these affect their decision-making and capacity to use and manage the NR base. The sustainable livelihoods approach therefore provides the linkage between NR systems research and DFID's goal of poverty elimination.

The core objectives of DFID's sustainable livelihoods approach include the promotion of more secure access to and better management of NR and the promotion of a policy and institutional environment that supports multiple livelihood strategies. Access is a determinant of the way in which NR assets are transformed into livelihood outcomes, hence constraints on access by the poor to NR may contribute to poverty, while unconstrained access to NR may be a cause of environmental degradation. In addition, as observed by Brown et. al. -

> *"Decisions about the conservation or use of coastal areas always raise conflicts of values interests and political power. In many ways these conflicts come down to whose values count in society. The conflicts over managing coastal zones are a set of trade-offs between values and*

interests, articulated through science and power, and resolved and mediated through institutions." [39]

The research questions that arise in this context are:

- Who owns and controls the terrestrial and marine NR at the LWI?
- Does the pattern of ownership and control limit access, particularly by the poor, to NR? In particular, to what extent does the protection of land and marine areas at the LWI affect NR-based livelihoods?
- What interventions, if any, are necessary to promote secure access by the poor to, and better management of, NR at the LWI?
- How and by whom are decisions about the management of the terrestrial and marine NR at the LWI made? In particular, how are NR-users involved in decision-making concerning the management, including protection, of NR in which they have a stake?
- What interventions, if any, are required to promote a policy and institutional environment that supports multiple livelihood strategies?

These questions have been addressed under R8135, on the basis of the existing literature, secondary data gathering and field investigations in two case-study areas in the Caribbean, St Lucia and Belize, with specific reference to the coastal communities of Praslin and Anse La Raye, in St Lucia, and Sarteneja and Hopkins, in Belize.

ST LUCIA

In terms of its small size and high man/land ratio, St Lucia is fairly representative of the islands of the Lesser Antilles, particularly the Windward Islands. However, St Lucia is unique in that the legal system is a mix of the British common law and French civil law systems. This impacts directly on poor people's access to NR in the coastal zone in two ways. First, there is throughout the island, other than in the two main urban areas, a reserve of coastal land vested in the State. Little attention has yet been paid to the impact of public ownership of all coastal land on coastal zone management. Secondly, there is an exceptionally high incidence of "family land" tenure in St Lucia, which is attributed to the rules of succession under the Civil Code. This pattern of land tenure has often been described as an impediment to rural development.

Overview of Land Tenure and Property Rights in St Lucia
Land in St Lucia is owned either by the Crown or by private persons. Thirty-eight per cent of St Lucia is Crown Land, which is administered by the Commissioner of Crown Lands in accordance with the Crown Lands Ordinance. The most recent survey of Crown

[39] *Brown, Katrina, Emma L. Tompkins & W. Neil Adger; Making Waves Earthscan Publications (2002) p.1*

lands, in January 2002, revealed that the extent of unreserved Crown Land is 14,000 acres, of which 1,300 acres are subject to annual agricultural leases.

As is generally the case in the Lesser Antilles, the bulk of Crown land in St Lucia is located in the hilly interior of the island and includes 37 watershed and forest reserves comprising 2,583 acres.

However, St Lucia is unique in that 13 per cent of all Crown land comprises the *Cinquante pas de la Reine* (the Queen's 50 Paces) also wrongly called the Queen's Chain, a coastal reserve of 186 feet measured from the high water mark in accordance with French colonial survey regulations of 1705. The ancient law relating to the tenure and use of this land is set out in Appendix II to the Civil Code of St Lucia. In summary, this land is reserved for the establishment of "towns, parishes, forts, entrenchments, batteries and other public and necessary works". The Crown's title to this land is inalienable and cannot be acquired by prescription (squatter's rights), but the Crown may grant other persons rights to the occupation and use of this land.

In common with other former plantation economies in the Commonwealth Caribbean, the major land tenure problem in St Lucia is the marked mal-distribution of property in land. **Tables 8.1 and 8.2** derived from the Agricultural Censuses of 1973/4, 1986 and 1996 show some de-concentration of landownership over the last quarter of the 20th century. The amount of agricultural land in large estates decreased from nearly 40 per cent to just over 10 per cent, while the amount of land in holdings of less than 25 acres has increased by from one-third to two-thirds of all agricultural land.

These figures are misleading, however, as over the same period there has been a 29 per cent decline in the total acreage in agricultural holdings, which is more than accounted for by the decrease in the acreage of land in large estates. This suggests that the dominant trend is a high rate of conversion of agricultural land in large holdings to non-agricultural uses, rather than the break-up of large estates and a redistribution of land ownership. In any event, in 1996 over two-thirds of all agricultural holdings in St Lucia were less than five acres and these small holdings occupied just over a quarter of the land in agriculture.

TABLE 8.1
NUMBER AND PERCENTAGE OF HOLDINGS BY SIZE

Size of Holding (in acres)	1973/74		1986		1996	
	#	per cent	#	per cent	#	per cent
Total	**10938**	**100**	**11551**	**100**	**13366**	**100**
Landless	502	4.6	850	7.4	1639	12.2
< 5	8558	78.2	8770	75.0	9166	68.6
5 - 9	1082	9.9	1191	10.3	1713	12.8
10 - 24	475	4.3	560	4.9	700	5.2
25 - 49	199	1.8	98	0.9	92	0.7

50 - 99	58	0.5	35	0.3	27	0.2
100 - 199	19	0.2	17	0.2	15	0.1
200 - 499	26	0.2	17	0.2	16	0.1
500 +	19	0.2	13	0.1	7	0.1

Source: 1996 Agricultural Census Report

One notable phenomenon related to the mal-distribution of land in the Eastern Caribbean is the number of landless livestock farmers. As **Table 8.1** shows, the number of landless farmers in St Lucia has increased from less than five per cent of all farmers in 1973/4 to more than 12 per cent in 1996. Persons falling into this category have at least one cow, or two pigs, goats or sheep, or 12 poultry or rabbits and many have much larger flocks. Although Le Franc (1993) describes the existence of a livestock minding arrangement between landless and landed persons in rural St Lucia, known as "half-half", in many if not most cases these livestock are left loose to forage along the roadsides or in public open spaces or to trespass on public or private land.

The environmental problems posed by loose or roaming livestock are well known and legislation for the impoundment of strays is common, although seldom enforced. St Lucia is unusual in that the Government Pasturage Lands Ordinance, Chapter 42, provides for the declaration of lands owned or controlled by the Government as pasturage lands, on which farmers may graze livestock by licence; however, it appears that this legislation is in disuse.

TABLE 8.2
AREA AND PERCENTAGE OF HOLDINGS BY SIZE

Size of Holding (in acres)	1973/74		1986		1996	
	Total Area (in acres)	per cent	Total Area (in acres)	per cent	Total Area (in acres)	per cent
Total	**72001**	**100**	**58016.5**	**100**	**51323.1**	**100**
< 5	10204	14.2	12350	21.3	13521.1	26.4
5 - 9	7068	9.8	7802.4	13.4	10898.7	21.2
10 - 24	6396	8.9	7763.1	13.4	9375.3	18.3
25 - 49	6299	8.8	3218.6	5.6	3072.2	6.0
50 - 99	4282	6.0	2338.0	4.0	1625.9	3.2
100 - 199	2690	3.7	2233.5	3.9	2076	4.0
200 - 499	8160	11.3	4881.0	8.4	5250.3	10.2
500 +	26902	37.4	17430	30.0	5503.6	10.7

Source: 1996 Agricultural Census Report

The most important respect in which the pattern of land tenure in St Lucia is unusual relates to the high incidence of family land. As shown in **Table 8.3**, more than 45 per cent of all parcels in St Lucia are classified as "family land". According to Bland et al (1978), "This compendious phrase is generally used to indicate that the portion of land in

question has owners too numerous to mention. The main incidents attaching to such land may be stated as follows –

1) It is inalienable;
2) It passes to all the children on the death of the ancestor;
3) Any member of the family through the name or through the blood has rights of use, which cannot be lost through non-exercise for any period.

The concept is however not recognised by the law of the territories in which it is found, despite the obvious 'binding' nature of the rules in between the members of the family." Family land is not unique to St Lucia, but is an unofficial post-emancipation form of communal tenure found throughout "Plantation America", including the USA. It is more common in St Lucia than elsewhere because St Lucia still adheres to the Napoleonic Code. Although there are cases in which family land was created by agreement or will, it generally comes into being by virtue of a series of unadministered intestate successions. Under the Code, all co-ownership is in the nature of tenancy-in-common and the surviving spouse and all children (male and female) are entitled to share in the estate of the deceased.

As noted by the Land Reform Commission (1981) there are two possible outcomes of this process—fragmentation or multiple-ownership of parcels of land. According to the Commission, the subdivision of land from generation to generation had by 1981, "long reached a stage where it impedes agricultural development…some holdings have become so small that agricultural production has been discontinued. …Where it has been agreed between the family that the land is to be worked as a single unit, then the fact of multiple ownership does not necessarily have an adverse effect on land use…the real problem arises where it is decided to subdivide the land to provide everyone who is entitled with his share."

TABLE 8.3
LAND TENURE IN ST LUCIA

Land Tenure	1986		1996	
	# of parcels	per cent	# of parcels	per cent
Privately Owned	3,611	26.7	4,709	30.4
Family land	6,132	45.3	7,096	45.9
Rented	2,100	15.5	2,241	14.4
Squatting	1,470	10.9	1,013	6.6
Other	217	1.6	418	2.7
Total	**13,530**	**100**	**15,477**	**100**

Source: 1996 Agricultural Census Report

As observed by Le Franc (1993), "There is an important implication of the kind of inheritance system described above: it is an expansive one. It constantly fuels the demand for land and is incompatible with a land shortage situation." Hence, as stated by Bruce (1983), family land is, "a perfectly rational response by heirs to the inappropriateness of the Civil Code's provisions on intestate succession, given present man/land ratios in St

Lucia." As he points out, while "legal and other reforms to abolish or reduce its incidence have been made by virtually every expert who has examined the phenomenon…there is certainly no ground swell for its abolition."

This is because the perpetuation of family land confers certain benefits on people operating within the system, including both the co-owners in possession of the land and those who are non-occupiers. In particular, the available data suggest that the existence of family land gives the co-owners in possession access to more land than they would be entitled to if the land were subdivided. Laville (1978) found that whereas 42 per cent of farmers on family land were willing to partition the land, 46 per cent were not. The chief reason given by those favouring subdivision was the desire for independence. The main reasons given for not wanting the land partitioned were the preservation of harmonious family relations; the fact that the farmer would get less land than he currently occupies; and the fact that the total acreage was too small to be partitioned amongst all the heirs.

In the words of the Land Reform Commission, "The problem [with family land] is one of negotiability of land and not of entitlement to land." The evidence given by commercial bankers before the Commission that the core problem of lending in St Lucia "lies in getting good title to land, particularly in family lands which are undivided", is consistent with the findings of Laville (1978) that "tenure seemed to be the predominant factor in determining whether [a small farmer applying for credit] was successful of not." These findings about credit are of course quite anachronistic and some of the recommendations made by the Land Reform Commission and previous experts for addressing the problem of the negotiability of family land have been implemented since 1981.

In particular, St Lucia now has one of the most modern and accurate systems of land records in the Commonwealth Caribbean. This is a cadastral-based Torrens system of compulsory land registration governed by the 1984 Land Registration Act, based on the adjudication of title to and the boundaries of all land in St Lucia under the 1983 Land Adjudication Act. The Land Registration Act deals with title to family land by providing that where more than four proprietors in common are co-owners of a parcel of land the first four named hold the property in trust for sale within the meaning of Article 2141 of the Civil Code of St Lucia, which empowers the trustees to sell the property.

The Act provides that a co-owner must sell his/her undivided shares to another co-owner, unless s/he has the consent in writing of the other co-owners, although this cannot be unreasonably withheld. Such land may be partitioned between the co-owners by common consent or by the Registrar on the application of any one or more of the co-owners or by any person in pursuance of a court order for the sale of an undivided share in land in execution of a decree. Further, where the land is incapable of partition, or partition would adversely affect its use or value, the Registrar may value the land and order that the co-owners be paid out pro rata in proportion to the value of their shares.

As Le Franc's study of the dynamics of family land tenure shows, however, family land in St Lucia is not farmed on a communitarian basis, and the "blurred nature" of family land ownership disguises a fairly advanced degree of individualisation. Persons who are

farming plots of family land on a part-time basis, and therefore have other sources of finance, are in a better position than full-time farmers who are dependent on family land, who are among the poorest in the community.

The legal reforms that facilitate the subdivision or sale of family land enhance neither the negotiability of undivided family land as collateral nor the credit-worthiness of the occupiers of such land. Where there are too many claimants to family land to allow for subdivision, therefore, innovative approaches to credit for small farmers and the occupants of house spots on family land, which do not require borrowers to have title to land as collateral, are essential for poverty alleviation.

Governance

St Lucia has a relatively complete and modern scheme of legislation for the management and regulatory control of natural resources at the land-water interface. The principal enactments include the

- Physical Planning and Development Act
- Fisheries Act
- Beach Protection Act
- Forest, Soil and Water Conservation Ordinance
- Land Conservation and Improvement Act
- Water and Sewerage Authority Act
- Crown Lands Ordinance
- Pesticides Control Act.

Generally, this legislation takes a command-and-control approach to natural resources management. However, some of these enactments contain novel and interesting measures, some of which have been put into practice. For example,

- The Forest, Soil and Water Conservation Ordinance provides for the protection of forests on private land and the remission of land taxes on lands declared protected forests.
- The Water and Sewerage Authority Act provides that the Authority may require the relevant authority to take action to enforce the Forest, Soil and Water Conservation Ordinance to control deforestation if it threatens watershed areas.
- The Fisheries Act allows for the establishment of Local Management Authorities, and the Soufriere Marine Management Authority (SMMA) established under this Act is a considered to be a model for co-ordinated natural resources management.
- The Physical Planning and Development Act provides for public participation in the land use planning process, the decentralisation of decision-making and the appointment of local advisory committees with respect to development control.

Some of the existing legislation—notably the 1992 Land Conservation and Improvement Act which provides for the designation of Conservation Areas; the appointment of Conservation Officers and the regulation of methods of cultivation; the control of slash-and-burn agriculture and the fragmentation of land within Conservation Areas, including Crown lands—is not being implemented.

The relevant legislation is administered by several agencies. This does not facilitate an integrated approach to natural resources management, and the existing laws need to be harmonised. Capacity building is also required if the laws are to be implemented as intended. As stated by Putney (2002): "In general, the scientific and technical expertise for the management of natural resources exists in St Lucia, though it is scattered through a large number of entities and tends to deal with individual resource issues. The problem is that this expertise is fully tied up with current demands from government functions and projects and generally does not approach resource management in an integrated fashion. On the positive side, there is often good co-operation at the field level between staff members of different agencies."

Until 1979, when local government elections were suspended, the system of local government in St Lucia operated in accordance with the Local Authorities Ordinance of 1947. There were 10 local government authorities—the Castries City Council, the Vieux Fort, the Soufriere and the Gros Islet Town Councils, and six Village Councils, including one for Anse La Raye. Local government authorities derived revenue from property tax, water rates, the sale and rental of public property and Parliamentary appropriations. They also had borrowing powers. They were responsible for the maintenance of physical infrastructure, open spaces and community assets, including water resources, land use planning and development control, the provision of sanitation services, and the regulation of areas of public assembly.

Following Independence, the role of local government authorities declined as many of their functions were centralized. The provision of basic services was made the responsibility of statutory corporations; other functions, including land use planning and development control, were taken over by central government. As a result, interest in local government declined, and local government elections were suspended in 1979. Interim Councils comprising nominated members were appointed by central government to conduct the affairs of Town and Village Councils.

In 1985, a decentralisation programme was introduced, but after four years of operation it was found that this programme had failed to meet its objectives for various reasons, including inadequate human and financial resources. Hence, in 1989, responsibility for local government activities was transferred to the Ministry of Community Development, and Community Development Officers were assigned responsibility for co-ordination at the local level.

In 1997, the Government embarked on a programme of local government reform. (See Box). No steps have yet been taken to implement the resulting proposals. Over the past two decades in St Lucia, however, significant experience has been gained in the management of specific NR at the local level. As noted by Putney (2002), the Caribbean Natural Resources Management Institute (CANARI) has played an important role in this process by raising awareness of specific NR management issues in the wider community and involving stakeholders—fishermen, charcoal producers, tourism operators and agriculturalists in the southern part of St Lucia—in NR management. These initiatives have resulted in a definite local focus with respect to NR management, backed up by

technical knowledge and experience. The two leading organisations through which civil society has been directly involved in NR management at the local level are the St Lucia National Trust (SLNT) and the Soufriere Marine Management Association (SMMA).

The SLNT is a national-level NGO established by legislation, the St Lucia National Trust Act, No 16 of 1975. The Trust's objects include the:

- listing of buildings, objects and monuments of prehistoric, historic and architectural interest and places of natural beauty with their animal and plant life;
- preservation of submarine and subterranean areas of beauty or natural or historic interest and their natural aspect, features, animals and plant life;
- promotion of the conservation of the flora and fauna of these areas, and raising public awareness of the value of this heritage.

SLNT was responsible for the preparation of the 1992 plan for a system of Protected Areas for St Lucia by a thoroughly participatory process that lasted four years. But the SLNT has no legal power to protect the designated sites. Putney (2002) notes that the status of the SLNT as a NGO allows it some independence, which provides it with great potential for the efficient and timely implementation of projects. This is, however, a potential capacity, and considerable institutional strengthening would be required to realise it. The SLNT is actively involved in the co-management of NR with CBOs in Praslin.

Local Government Reform

A Local Government Reform Task Force, comprising representatives of Government and civil society organisations (the private sector, youth groups, community-based organisations and political parties) was appointed and consultants were engaged to undertake a study to inform the work of the Task Force.

The key findings of the Consultants were that –

- The legal/institutional structure of local government is outdated and is not in keeping with current demographic and socio-economic patterns
- The nominated Town and Village Councils are afforded very limited independence and authority to make decisions
- There is no clear demarcation of functions and responsibilities between local authorities and agencies of central government
- Local government operations are chronically under-funded
- Support for local authorities from central government is very weak
- There is little community involvement in local government affairs

The Local Government Reform Task Force held public consultations in several communities, including Anse La Raye, between May and July 1999. This process resulted in the production of a Green Paper on Local Government Reform, which sets out complex proposals for a new system of local government.

The essential features of these proposals are that –

- There should be a two-tiered system of local government in which areas designated as Cities or Towns should have a Corporation and other areas should have Constituency Councils, responsible for the geographical areas (other than Cities or towns) within national electoral constituencies.

- Each local government authority should have an elected Executive Committee/Council and an administrative branch, including a Chief Executive Officer, a Financial Comptroller, a Director of Operations and an Internal Auditor. In addition, each local authority should have Advisory Committees comprised of nominated members drawn from civil society.

- Local government elections should not bee conducted on the basis of party politics.

Since property tax is now collected at the national level, local authorities should be funded by a combination of grants from central government and statutory agencies, local taxes levied on specific social and economic activities, and fees and charges for local government services. In addition, local authorities would have borrowing powers.

The SMMA (an acronym which is used interchangeably to refer to the Soufriere Marine Management Area and the Soufriere Marine Management Association) is widely held out as a success story in the co-management of NR. The Area extends from Anse L'Ivrogne (south of Soufriere) to Anse Mamin (north of Soufriere) and from the shore to the point where the depth of the sea is 75m, so the distance from shore varies according to the lie of the seabed. It includes areas designated as Marine Reserves, Fishing Priority Areas and Yacht Mooring Areas.

The story of the SMMA is one that began with the failure of the top-down designation of protected areas off the south-western coast of St Lucia in the 1986, following the enactment of a modern Fisheries Act in 1984. (See Box) It is noteworthy that the measures adopted with respect to the demarcation of parts of the protected area as no-take zones, involved the payment of compensation to fishers who were dependent on pot and gill-net fishing in the area for a year following the closure of the area.[40] The SMMA has recently been given responsibility for the management of the Canaries-Anse La Raye Marine Management Area (CAMMA) and has taken some initial steps for including the Anse La Raye community in this process.

[40] *Gobin, Judith & Christine Toppin-Allahar "An Examination of Marine Protected Areas in the Caribbean - St. Lucia & Belize" A paper presented at the 31st Scientific Meeting Of The AMLC, 14 July 2003.*

SMMA

In 1992 the Department of Fisheries (DOF) got together with CANARI and the Soufriere Regional Development Foundation, a tourism-oriented CBO, to undertake a participatory planning process from which the current zoning of the SMMA emerged.

Demarcation of this area was based on an agreement between the stakeholders in the area, namely the Soufriere Fishermen's Co-operative, the Water Taxi Association, Hoteliers, Dive Operators, and the Soufriere Development Foundation and the Fisheries Department. The Cabinet Conclusion followed negotiation of this agreement, which was done with assistance from the USAID-funded ENCORE project. The Soufriere Development Foundation was chosen as the original parent organisation for the SMMA in 1994/5, because it was properly constituted. The other stakeholders served on the Technical Advisory Committee. A management plan was prepared and funding was sourced from ENCORE and FFEM. This arrangement proved satisfactory for a while, but it provided an inadequate basis for control of the area and conflicts between stakeholders reappeared.

In 1997/8 the need to strengthen the SMMA was recognised. The stakeholders were formed into the Soufriere Marine Management Association (SMMA), a non-profit body that is designated to manage the area under the Fisheries Act and has law enforcement powers. The Board of the Association is constituted of the representatives of key government agencies and NGOs, namely DOF, the Ministries responsible for of Planning and Tourism, the St. Lucia Air & Sea Ports Authority (SLASPA), the National Conservation Authority (NCA), the Hotel Association, the Soufriere Fishermen's Co-operative, the Soufriere Water Taxi Association, & the (national) Dive Association. All the *ex officio* members are high-level representatives of their agencies (at the level of Permanent Secretary or Chairman). Only the President is appointed by Cabinet. The current President is a resident of Soufriere who qualifications in biochemistry and management and during his career served as PS in the Ministries of Agriculture, Health and Tourism. He retired from the public service in 1999. There is a stakeholders subcommittee of the Board, which meets to thrash out conflicts and arrive at a consensus before Board meetings.

The staff of the SMMA comprises a Manager (who has both technical and administrative responsibilities) and two 'departments' – the financial/administrative arm (comprising an accountant, an administrative assistant & very recently a PRO) and a technical arm (Chief Ranger and 3 Rangers). The post of Manager is currently vacant but applications for appointment have been received from viable candidates. The organisation is to be restructured soon to strengthen its technical capacity. The Rangers are responsible for the physical infrastructure of the SMMA, monitoring and scientific collaboration work, and patrols for enforcing compliance with the Act & Regulations. The Rangers do one week's basic training in diving, infrastructure maintenance and boating, and then attend the police school for one month to qualify for appointment as Special Constables.

The SMMA does not receive any appropriation from Parliament. It receives user fees from yachts, dive operators and snorkelers. Soufriere is an official port of entry into St. Lucia and fees are collected from yachts there and at anchor in the area. Dive and snorkelling permits are sold in lots to operators and Rangers monitor numbers of users. Additionally, the SMMA does marine work on contract, installing moorings, etc. Other funds are sourced from donors. FFEM funds items like patrol boats on a case-by-case basis. SMMA has also obtained US$50,000 for environmental education under ICRAM.

PRASLIN

The Parishes of Praslin and Anne La Raye were canonically established and recognised by the French Civil Law as Quarters in 1780, but Praslin is now within the Quarter of Micoud. The area was originally called Trois Islet but was renamed (Le Port de) Praslin after a French Duke who was Ministre de la Marine from 1766 to 1770. It was a place of some importance in the second half of the 18th century, but is now a quiet village located about half way between Dennery and Micoud, the two major settlements on the eastern or windward coast of St Lucia.

Four hundred and sixty-one people live in and around Praslin, 409 in Praslin and 52 in Mamiku. As **Table 8.4** shows, well over 90 per cent of all households in Praslin reside in dwellings that they own on freehold land. Whereas there are some arrangements for the occupation of houses and residential land on a rental or rent-free basis, there is no squatting. This is accounted for by the fact that the members of the community are predominantly from two families, Peters and Francis, and the majority of buildings in the village, both dwelling houses and non-residential structures, are located on about half a dozen moderately large parcels of family land. Only a few buildings are located on individual building lots, which have been excised from family land, with the requisite regulatory approval. Although the population census data indicate a high level of security of tenure in Praslin, this is misleading in the absence of information on the amount of freehold land owned as family land, as opposed to land owned by individuals. Some indication of the true situation with regard to the negotiability of land in Praslin can only be derived from the agricultural census data.

TABLE 8.4
PRASLIN: TENURE OF LAND AND DWELLING BY HOUSEHOLD 2001

Land Tenure			Tenure of Dwelling		
Type of Tenure	Households		Type of Tenure	Households	
	#	per cent		#	per cent
Freehold	71	95.9	Owned	69	93.2
Rented	1	1.4	Rented	3	4.1
Permission to occupy	1	1.4	Rent Free	2	2.7
Squatted	-	-	Squatted	-	-
NS	1	1.4	NS	-	-
Total	74	100	Total	74	100

Source: 2001 Population Census Data

According to the 1996 Agricultural Census, there are 167 agricultural holdings, consisting of 212 parcels of land in Praslin, indicating some fragmentation of holdings. All of these holdings are held by natural persons, 77 per cent by males and 23 per cent by females. In addition, there are 20 landless livestock farmers in Praslin. This amounts to 12 per cent of all farmers, which is consistent with the national pattern.

As **Table 8.5** shows, over 75 per cent of the number of parcels and of the total land area included in holdings is either family land or individually owned land. The number of parcels and the amount of land that is rented or occupied by squatters is approximately equal and comprises altogether less than 25 per cent of agricultural holdings.

A fairly high level of security of tenure therefore exists. As regards the negotiability of the land, however, over 60 per cent of the parcels, comprising nearly 40 per cent of the total area of agricultural holdings in Praslin, are family land. Only some 15 per cent of the total number of parcels are individually owned. It is evident that the average size of parcels of individually owned land exceeds the average size of parcels of family land, for individually owned land comprises over 35 per cent of the total area of agricultural holdings. Hence, only about one third of the land in agricultural holdings in Praslin is negotiable for credit purposes. This factor must act as a constraint on the development of the village, including both the capitalisation of agriculture and investment in other sectors.

TABLE 8.5
PRASLIN: NUMBER AND AREA OF PARCELS BY FORM OF TENURE 1996

Form of Tenure	# of Parcels	per cent of Parcels	Total Area (in acres)	per cent Area
Owned	33	15.6	173.45	35.6
Family Land	130	61.3	192.63	39.5
Rented/Private	16	7.6	34.13	7.0
Rented/Government	9	4.2	29.25	6.0
Squatting/Private	3	1.4	6.00	1.25
Squatting/Government	19	9.0	45.75	9.4
Other/NR	2	0.9	6.00	1.25
Total	212	100	487.21	100

Source: 1996 Agricultural Census Data

There are mixed views on whether family land, which predominates in the area, poses a problem. One woman was adamant that family land should never be subdivided as it belongs to "the heirs of the heirs" in perpetuity. This view was not shared by all the participants in the focus group meeting. One man expressed the view that family land should be cut up and shared out as the current form of tenure is a disincentive to investment in proper housing, since the credit union will only lend money for a wooden house if the land is family land. To finance the construction of a concrete block building one has to have access to cash.

One agro-processor indicated it was a problem since his factory is on family land and the bank was willing to finance his business only if he had title to the land. Another woman indicated this was not a problem as she had simply constructed her house (with a view to going into the bed- and-breakfast business) on the common property.

As the C*inquante Pas de la Reine* reserve runs along the coastline in this area, all the land within 186 feet of the High Water Mark is Crown Land. It appears some residential encroachment has taken place on this area of Crown land in the vicinity of the Community Centre, but the squatter regularisation programme (PROUD) does not include the regularisation of squatters in Praslin. To date, the section of the C*inquante Pas de la Reine,* lying between the main road and the beach, has not been committed to built development, although a jetty and some lockers for fishing gear are located in this area.

The marine resources in the Praslin area are primarily utilised commercially for fishing and sea-moss cultivation. Fishermen faced problems of theft of engines, fish pots and a reduction in the catch. One fisherman estimated an investment of some EC$10,000 in fishpots, with some going missing every day. One fish pot costs about EC$115 and one needs at least 15 pots.

This was occurring despite existence of a licensing regime for pot fishing and a moratorium on issue of new licences. The issue of ID for fishermen also was raised in the context of the ability of unlicensed persons to sell fish to wholesalers. The boat captain and every crew member must have a fisherman's ID. Additionally, a specific licence is also required to fish for lobster. Still, the regulatory regime is not helping fishermen to protect their livelihood.

Sea-moss farming is taking place in Praslin Bay, chiefly in the lee of Praslin Island. There is currently no legal regime for the protection of sea-moss farms or the regulation of sea-moss cultivation. Though the Fisheries Division has compiled a register of sea-moss farmers, they have no security of tenure or guaranteed right to use the seabed in the area where they are farming.

One of the objectives of the sea-moss farming project—the sustainable use of natural resources by the substitution of farming for the harvesting of sea-moss in the wild—has been frustrated by the fact that people from Anse Ger, outside the Praslin-Mamiku community, come into the area and harvest the naturally growing sea-moss, as they do all over the country. This is despite the fact that the Fisheries Regulations prohibit the harvesting of sea-moss in the wild without a permit and no such permits have been granted.

Much closer collaboration is needed between the Police Force (who deal with criminal offences), the Fisheries Division (fisheries offences in nearshore waters) and the Marine Police Unit (offences in waters more than three miles offshore).

Like everywhere in St Lucia, there is no formal system of local government in Praslin. The committee that manages the Community Centre is not elected by the community but selected by the Community Development Officer (Ministry for Social Transformation). However, Praslin is mentioned in the Green Paper on Local Government Reform as one of the areas where community-based organisations (CBOs) are more active and effective

than in most St Lucian communities where CBOs are described as weak and often not run along democratic lines.

Three factors appear to be at work in the community. At one level there is some internal conflict in the community based on the religion, because more than half of the residents are Catholics but a large minority are Seventh Day Adventists, and many activities in the community take place along religious lines. Both private businesses in the community that are providing alternative NR-based livelihoods in eco-tourism and agro-processing are run by Adventists. This raises the question of whether the "Protestant ethic" is a factor in entrepreneurship and dynamism in the community. Secondly, there is a collective self-help tradition called "koudmen" (*coup de main*), but Le Franc (1993) reports that this mode of labour-sharing is being displaced by reliance on hired labour. A third factor is the donor-driven efforts at capacity building in the community, including interventions by the St Lucia National Trust (SLNT) under its GEF-funded projects in the area.

In Praslin the SLNT has focused on two protected areas, Frigate Islands (which is classified as a "Scientific Reserve") and a stretch of the coastline around Praslin (originally classified as a "Protected Landscape", has been reclassified, following the change in the UNESCO categorisation, as a "Managed Resource Area"). This covers over 800 hectares of land along the central east coast between Trou Gras Point south of Praslin and Anse Sable to the north. It includes the Praslin mangroves, the Frigate Islands nature reserve and historic sites such as Praslin Island and ruins of forts and sugar mills. Praslin was one of three Protected Areas included in the SLNT's 2002 application for major GEF-funding for implementation of the 1992 Plan. The Project Appraisal Document has been amended at the request of the World Bank to cover all the OECS countries and it is unlikely that GEF-funding will become available for the Praslin site.

SLNT has contractual arrangements with a privately-owned local business, Eastern Tours, for management of the area. This business is run by Peter Ernest, a resident of Praslin who has qualifications in protected areas management. A fixed rental fee is paid by to SLNT by the operator. Also, under an agreement between SLNT and private landowners through whose property the trail passes, the landowner gets a $1/head user fee. All tourist visitations are booked through, and all monies paid to, SLNT. An entrance fee and a tour guide fee apply. The contractual arrangements spell out the formula for the sharing of income. Provision has also been made for lunch to be catered by people in the community. Employment opportunities were also created in the construction of the coastal trail and tour guiding.

During the 1994-1999 period, two projects in the area were financed by GEF small grants. The first was a waste management project (refuse was disposed of in the mangrove previously) covering both solid wastes and sewage disposal. The community also did a $40,000 water supply project. The second GEF small grant was for sea-moss farming, craft and coastal beautification. STABEX funds are being utilised for heritage tourism, and support has also come from the Heritage Tourism Programme. An initiative to develop bed-and-breakfast accommodation in the area waned without SLNT support.

In respect of capacity building at the local level, the SLNT's GEF small grants projects resulted in the formation of a CBO, the Praslin/Mamiku Development Committee (PMDC). According to the SLNT, the PMDC failed to keep in touch with the community, resulting in a lack of transparency. A Praslin Sea-moss Farmers Association (PSFA) has 27 members, but three years have elapsed since the election of the executive, which had been elected for one year. A new CBO, the Praslin Conservation and Development Foundation (PCDF) has recently been formed. This experience is symptomatic of a larger problem of the sustainability of CBOs involved in the co-management of NR in the OECS countries. Charles (2000) has attributed it in part to the dependence on voluntarism without clearly defined rewards. This is consistent with the experience under the GEF-funded co-management project in Belize.

ANSE LA RAYE

According to Lefort de la Tour who mapped St Lucia in 1787, Anse La Raye was named for the quantity of fish of this species (rays) found in the bay on which the town is situated. One thousand four hundred and seventy-six people live in the village, comprising 462 households. For the most part, the village is a planned settlement laid out in a grid pattern into approximately 300 rectangular building lots. They are located on flat land on ether side of the Castries-Soufriere main road, which runs through the village on a north-south alignment, parallel to and some 200 metres from the seashore. There has been considerable infilling, reflected by the fact that a large number of the original lots have been subdivided, some within the last decade, with the result that a number of plots lack frontage onto a road. Moreover, more than one building stands on many of the lots. This pattern of development probably reflects a high level of non-compliance with the regulatory controls on land development.

As **Table 8.6** shows, a majority in Anse La Raye dwell in houses they own sited on freehold land. More than 25 per cent of the houses in the village, however, are "chattel houses" erected on rented land. More than 10 per cent of all households enjoy rent-free accommodation, probably reflecting family arrangements, but a rental market operates for dwelling houses—more than 25 per cent of households live in rented houses. In contrast to Praslin, there is some evidence of residential squatting, the level of which may be disguised by the relatively high incidence of households for which the type of land tenure is not stated. The conclusions that can be drawn from this data are that, overall, the residents of Anse La Raye enjoy less secure tenure than the residents of Praslin. But a more sophisticated land market exists in the area, involving the rental of buildings and of building land.

The pattern of residential infilling suggests, however, that much of the freehold land in the village is owned as family land, which would limit the market in freehold land. It is difficult to come to a reliable conclusion about the negotiability of land in Anse La Raye. The agricultural census data indicate that in Anse La Raye the incidence of holdings comprising family land is very low.

TABLE 8.6
ANSE LA RAYE: TENURE OF LAND AND DWELLING BY HOUSEHOLD 2001

Land Tenure			Tenure of Dwelling		
Type of Tenure	Households		Type of Tenure	Households	
	#	per cent		#	per cent
Freehold	241	55.1	Owned	262	60
Rented	116	26.5	Rented	119	27.2
Permission to occupy	5	1.1	Rent Free	52	11.9
Squatted	8	1.8	Squatted	1	0.2
Other	6	1.4	Other	1	0.2
NS	61	14.0	NS	2	0.5
Total	437	100	Total	437	100

Source: 2001 Population Census Data

The existence of 279 agricultural holdings on 254 parcels of land in Anse La Raye implies more than one holding on some parcels of land. Seventy per cent of these holdings are held by males and 28 per cent by females, the other two per cent being held chiefly by partners, although one holding is held by government. In addition, the more than 50 landless livestock farmers in Anse La Raye amount to about 20 per cent of all farmers—appreciably above the level of landlessness for the country as a whole.

As **Table 8.7** shows, although there is a higher incidence of squatting in Anse La Raye than is the case in Praslin, less than 10 per cent of the land in agricultural holdings is held as rented or squatted land and over 90 per cent is held in secure forms of tenure. Nearly 45 per cent of the parcels involved, comprising some 70 per cent of the area included in agricultural holdings, are individually owned. The incidence of family land is below the national average as only just over 30 per cent of parcels comprising some 20 per cent of the land in agricultural holdings is family land. This means that the level of negotiability of agricultural lands in Anse La Raye is higher than in Praslin and St Lucia as a whole.

Table 8.7
ANSE LA RAYE: NUMBER AND AREA OF PARCELS BY FORM OF TENURE 1996

Form of Tenure	# of Parcels	per cent of Parcels	Total Area (in acres)	per cent Area
Owned	113	44.5	1275.92	69.6
Family Land	80	31.5	372.44	20.3
Rented/Private	12	4.6	64.45	3.5
Rented/Government	1	0.5	5.00	0.3
Squatting/Private	37	14.6	101.27	5.5
Squatting/Government	6	2.3	8.00	0.4
Other/NR	5	2.0	7.25	0.4
Total	254	100	1834.33	100

Source: 1996 Agricultural Census Data

All the land along the coastline lying within the *Cinquante Pas de la Reine* at Anse La Raye has been allocated by the Crown for the development of public facilities including a fishing complex, lockers, a vendors' arcade, a community centre, post office, petrol station, public bath, toilets and laundry. The location of some of these facilities, namely the fishing complex and lockers, along the shoreline of the village is justified by their marine character. Site selection of other facilities, such as the community centre and post office, appears to have been guided primarily by the fact that this was an available area of Crown land. This pattern of development of the land within the *Cinquante Pas de la Reine* adversely affects the village, denying it a "window to the sea". It is notable that even one of the beneficiaries of the vendors' arcade remarked that she missed the former beauty of the waterfront area.

The inclusion of the coastal zone at Anse La Raye in the Canaries-Anse La Raye Marine Management Area (CAMMA) established under the Fisheries Act is of significance in terms of community co-management of NR and the generation of alternative livelihood opportunities. The decision to protect this area is based on the fact that Anse Cochon, which lies between Anse La Raye and Canaries, is the best dive area on the coast. Anse Cochon is frequented by catamarans from the Point Seraphin area, bringing cruise ship tourists on day trips. Current use exceeds its carrying capacity and generates conflicts with fishermen, particularly when divers cut traps (fish pots). It is also the only major bay along the coast that is not the site of a village and is relatively inaccessible by land. As a result it is "unspoilt". CAMMA is based on the SMMA model, except that CAMMA will cover the whole watershed, much farther inland than is covered by SMMA.

DOF was to organise the CAMMA four years ago. One officer is supposed to be responsible for the area. FFEM provided funding for employment of that officer, but no office was established in the area. Hence there has been no practical result from designation of the area. Responsibility has now been transferred to the SMMA, because it is not practical to set up a separate organisation to manage CAMMA. It is anticipated that two persons, representing the Fishermen's Co-operatives of Anse La Raye and Canaries respectively, or one person representing the combined co-operatives, will be appointed to the SMMA Board. The villagers are aware that the CAMMA exists because two billboards (zone demarcation signs) have been erected in the Bay, but know little about it. As a first step, the SMMA and DOF held a public meeting in Anse La Raye early in 2003, which was attended by some 30 persons, but neither the Village Council nor the Fishermen's Co-operative was consulted. It was announced that an office for CAMMA will be opened in Anse La Raye and that two or three persons from the community who have the requisite qualifications will be employed as Rangers. It is reported that this was well received.

The reason that the DOF and SMMA did not involve the Anse La Raye Fishermen's Co-operative directly in the process is that the co-operative is virtually defunct, despite the fact that there are still about 50 fishers in Anse La Raye. When founded in November 1976 and duly registered, the co-operative had 97 members. It now has five active members—the rest do not turn up for meetings. The board has been dissolved; the president died and the predecessor resumed office. The co-op employs two persons, a

manager and a sales clerk (both women) to operate a gasoline station. The station sells fuel on the open market—not only to members—and receives a duty refund of 10 cents a gallon on the gasoline sold. Government pays the entire duty refund to the co-operative in a lump sum and they distribute the funds amongst members *pro rata* in proportion to the amount of fuel purchased by each individual.

The decline of the fishermen's co-operatives may be symptomatic of a more general problem, since it is reported that the community is politically polarised and lacks dynamic CBOs. The most active CBO is apparently the Anse La Raye-UK Association, a group of returned residents who source assistance from the UK for improvements to facilities in the village. An informally constituted committee organises the weekly "Fish Fry" involving some 36 vendors, primarily women. This event came into being in 1999 and is supported by the Heritage Tourism project.

The Anse La Raye Village Council is appointed by the Ministry of Social Transformation, which is responsible for Local Government, and the Village Clerk is an employee of the Ministry. The Village Council comprises nine persons, including the chairperson, six males and three females. Most councillors are political appointees. The chairperson receives a monthly stipend of EC$500; the other councillors receive EC$ 150. The chairperson (the senior teacher at the Anse La Raye Primary School) is male. Of the three females, one is employed as the secretary to the MP for the area in his constituency office and the other two are employed in Castries. One of the males represents the Anse La Raye Youth and Sports Council, which is affiliated to the National Youth and Sports Council. There are no fishers on the Village Council, however, one councilor is/was on the executive of the Anse La Raye Fishermen's Co-operative. There is one "grassroots" councillor (Andrew Popo) who is a bus driver and also operates a bar. The Council meets monthly and is responsible for sanitation, public health, revenue collection, sports and education. The Village Council is not consulted by Government with respect to the use and development of land in the village, including the *Cinquante Pas de la Reine*, and was not consulted by DOF and/or the SMMA about the establishment of the CAMMA.

BELIZE

In the Caribbean context, Belize is a relatively large, sparsely populated country. Twice the size of Jamaica, it has a population equivalent to that of Barbados.[41] The gross man/land ratio therefore favours the adoption of sustainable natural resource (NR) use strategies, but 48 per cent of the land area of Belize is protected. In addition to its land area, Belize includes a large marine area, enclosed by the Barrier Reef, which culminates in a line of Cayes lying from five to 25 miles offshore; however there are also 12 marine areas that are protected. The protection of large areas of Belize is perceived as a significant factor affecting the access of Belizeans, particularly the poor, to the NR of Belize and the viability of NR based livelihood strategies.

[41] *Area - 8,866 square miles; Population - 249,000; 44% Mestizo; 30% Creole; 11% Maya; 7% Garifuna.*

Overview of the Land Tenure and Property Rights Situation in Belize
As stated in *A History of Belize* (2002), given its low population density, "in Belize, a land scarcity is only possible if people are excluded from the ownership of land." The Constitution of Belize, Chapter 4, like that of other Commonwealth Caribbean countries, guarantees the rights of the individual to own and not to be arbitrary deprived of property, to equality before the law and to protection against discrimination on the basis of race, place of origin, political opinion, colour, religion or sex. No one in Belize, including women and indigenous people, can be legally excluded from the ownership of land.

Accurate data on land tenure are not available because the existing systems of land records do not facilitate analysis. It is estimated, however, that 45 per cent of the land area of Belize comprises National Lands, including reserves, while 55 per cent is privately owned. As Bolland and Shoman (1977) have shown, the geographical distribution of national lands and private lands in Belize, as well as the pattern of tenure of private lands, are explained by the history of Belize. National Lands are concentrated in the area of Belize south of the Sibun River, in the Districts of Stann Creek and Toledo and the southern part of Cayo District. Privately owned land predominates in northern Belize, in the Districts of Belize, Orange Walk and Corozal and the northern part of Cayo District.

The reason for this is that British settlement in Belize began in the north, within an area in which loggers were granted rights to extract logwood, also known as dye-wood, and subsequently mahogany, under several treaties with Spain from 1763 onwards. Although these treaties conferred on loggers only usufructuary rights to the locations of their logging works, these lands were sold, devised and dealt with among the settlers as private property, under the so-called "Location Laws" adopted by the Public Meeting, the form of self-government adopted in 1765 by Articles of Agreement among the settlers. The title of private persons to these lands was subsequently regularised by virtue of the enactment of the 1855 Laws in Force Act and the 1858 Act for Quieting Titles to Land, recognising the validity of titles to land appropriated under the Location Laws, including those not previously recorded, in accordance with the existing laws, and the 1861 Honduras Land Titles Act, dealing with the transfer of title to such land.

Although the colony of British Honduras was not officially established until 1862, the British asserted *de facto* sovereignty over Belize from 1786, when a Superintendent subordinate to the Governor of Jamaica, was installed to oversee the implementation of Britain's obligations under its treaties with Spain. The State's claim to the National Lands of Belize is rooted in an 1817 Proclamation issued by the Superintendent, declaring all unclaimed land as Crown Land and reserving to the Crown the right to make all future land grants. As virtually all the land within the treaty areas had been claimed by settlers under the Location Laws, almost all the land that vested in the Crown by virtue of the 1817 proclamation lay within the parts of Belize settled after 1798, when Spain ceased trying to assert its sovereignty over the area, namely the area between the Sibun and Sarstoon Rivers in southern Belize.

The unclaimed lands to which the Crown claimed title by virtue of the 1817 Proclamation included all the lands in Belize then occupied by the indigenous Maya and the Garifuna (Black Caribs) who, having been deported from St Vincent to Ruatan Island in the Bay of Honduras in 1797, had established settlements on the coast in the Stann Creek District before 1817.

From 1802 onwards, regular troops were engaged in battles with the Maya in northern Belize who were seen as a threat to the mahogany resources, because of their traditional system of shifting cultivation, and who actively resisted the incursions of loggers into the area. Nevertheless, up until 1857 when the Garifuna were required to apply for leases of the house spots and agricultural lands they occupied in the Stann Creek District, under which they became annual tenants of Crown Lands, the Maya and Garifuna continued to occupy the lands deemed by the Proclamation to be Crown Lands, in accordance with their own systems of land tenure.

Upon enactment of the Crown Lands Ordinance in 1872, however, Indian (Maya) and Carib (Garifuna) Reserves were established in the Toledo District and on the coast of the Stann Creek District respectively. Land within these areas was reserved for occupation by the Maya and Garifuna, but remained vested in the Crown. Any Maya or Garifuna wishing to occupy land within a Reserve had to obtain the permission of the Crown. Hence, the establishment of the Reserves appears to have been intended to limit the areas that Maya and Garifuna might occupy, rather than to recognise or confer on the indigenous people any entitlement to the land. The 1913 Stann Creek Carib Reserve Ordinance provided for the grant or lease of lands to Garifuna, conferring upon them secure titles to their lands. But it also empowered the Crown to dispose of any land within the Carib Reserves not yet allocated to Garifuna in the same manner as other Crown Lands. The Carib Reserves were ultimately de-reserved in the 1930s. However, Mayan land rights, the major land tenure issue in Belize, is still undetermined, and has over the past decade been the subject of litigation and negotiation between the government of Belize and Maya leaders (See Box).

Current data on the distribution of land in private ownership are not available, but it is known that the pattern of land ownership is very skewed. Data compiled from the Land Tax Rolls in 1971, given in **Table 8.8**, show that 91 per cent of all landowners owned one per cent of the freehold land in Belize in small parcels, while three per cent of all landowners owned 95 per cent. The same study showed that 90 per cent of all freehold land and 93.4 per cent of private landholdings over 100 acres in extent were foreign-owned. With few exceptions, land holdings in excess of 1,000 acres (400 ha) are underutilised, although it is said that good agricultural land is becoming relatively scarce in Belize. (Belize Country Report 2003)

TABLE 8.8
DISTRIBUTION OF FREEHOLD LAND IN BELIZE 1971

Size in Acres	Owners		Estimated Acreage	
	#	Per cent	#	per cent
0-20	2702	75	23,871	1
21-100	586	16	28,260	
101-1000	215	6	82,615	4
1001-10000	75	2	228,746	10
10001-25000	32	1	459,724	19
25001-50000	4		139,894	6
50001-100000	4		393,567	12
Over 100000	1		138,518	6
BEP Co. Ltd.	1		994,626	42
TOTAL	3620	100	2,389,821	100

Source: Bolland and Shoman (1977) Table 4.2

MAYAN LANDS

The Maya, who comprise 11% of the population of Belize, are the poorest segment of the society. The Reserves set aside for occupation by the Maya are governed by Toledo Indian Reserve Rules made under the Crown Lands Ordinance, which were continued in force when the parent legislation was repealed in 1985. Land within the Reserves is not vested in the Maya as communal property, but remains National Lands. Under the Rules, the Maya require permission from the Commissioner of Lands & Surveys to occupy lands within the Reserves, although the Mayan Alcaldes have duties and powers under the Rules with respect to the resolution of boundary disputes between the occupiers. The Rules reserve the right of the Government to sell, lease or grant licenses over any unoccupied land within the Reserves and no compensation is payable to the Maya with respect to land alienated in this way. The Maya regard the land within the Reserves as only part of their ancestral lands. (See: Toledo Maya Cultural Council (TMCC) & Toledo Alcaldes Association (TAA), *The Maya Atlas: The Struggle to Preserve Maya Land In Southern Belize*, 1977).

Between 1993 and 1995, the Government of Belize (GOB) granted logging concessions, including large concessions to Malaysian companies, to over 500,000 acres of forested land in the Toledo District. In 1996 the TTMC filed a case in the Supreme Court of Belize asserting Mayan rights to the land and challenging the authority of the GOB to grant logging concessions in the area. (See: S. James Anaya *"Maya Aboriginal Land and Resource Rights and the Conflict over Logging in Southern Belize"* Yale Human Rights and Development Law Journal, 1998). In 1997, whilst this case was pending, the GOB granted a foreign oil and gas company an exploratory permit to 750,000 acres of land in the Toledo District. On 10th August 1998, the TMCC filed a petition with the Inter-American Commission on Human Rights (IACHR) challenging the legality of the logging and petroleum prospecting concessions in an effort to get the GOB to recognise Mayan land rights. On 25 October 2000, the TTMC won the first round in the matter when the IACHR made a preliminary ruling that the case was admissible in that the TMCC had made allegations which, if proved, would constitute a violation of Belize's obligations to protect human rights.

In an effort to settle the domestic litigation out of court, a 10-Point Agreement was signed by the GOB and the Maya Leaders Alliance (MLA), which includes the TMCC, on 12th October 2000. This agreement provides for the acceptance of a Regional Development Plan for Toledo and the establishment of a Toledo Development Corporation (TDC) to implement the plan. By Article 6 of the agreement the GOB recognised that Maya people have rights to lands and resources in Toledo, based on long-standing use and occupancy. The GOB also committed itself to develop, in collaboration with the MLA, a programme to address the land needs of the Maya, within 4 months of signing the agreement, and to review all applications for logging and oil concessions in partnership with the MLA. The TDC was established by Act No.32 of 2001, however, there has been little progress on the implementation of the other points of the agreement. Although the domestic litigation against the GOB is in abeyance, the case has not been formally withdrawn, and the petition to the IACHR is still active. (Interviews with Jose Cardona, Legal Counsel GOB, 01/10/02, and Gregory Choc of the TMCC, 09/10/02)

An attempt to alter this pattern of land ownership, by bringing about the development or sale of idle land was made with the enactment of the 1966 Land Tax (Rural Land Utilisation) Ordinance. This legislation was adopted on the technical advice of a UN expert, in an effort to stimulate rural development. It imposed a progressive tax on idle rural land within two miles of a trafficable road. It applied only to holdings of over 100 acres and included measures to ensure that the tax could not be evaded by the subdivision of large land holdings. Provision was also made for exemptions to be granted on a case-by-case basis, and this provision was used to subvert the impact of the law, as well over

half the taxable land in Belize was exempted from payment of the rural land utilisation tax. This legislation was eventually repealed in 1983.

Since the attainment of internal self-government in Belize, every government of Belize has made the issue of land redistribution the cornerstone of its development strategy. This began with the rural-based People's United Party's (PUP) Land Reform Programme of 1968-1977, designed to give every Belizean a piece of land, and continued after the achievement of Independence in 1981.

The compulsory acquisition and redistribution of private land under the Land Acquisition (Public Purposes) Act Chapter 184, provides the machinery for this process, although this necessitates the purchase of land at its open market value. Although no data are available on this programme, it is said that it has had the greatest impact on making lands available to large numbers of Belizeans, as lands in many areas of Belize have been expropriated from major landlords and redistributed. (Belize Country Report, 2003).

In the context of the acute maldistribution of private land, the fact that nearly half of the land in Belize is State-owned assumes added importance for national development. Between 1817 and 1964, the colonial government did not manage Crown Lands with a view to creating a more equitable distribution of land in Belize or providing opportunities for socio-economic mobility. (Bolland and Shoman 1977).

The management of the National Lands of Belize is now governed by the National Lands Act Chapter 191, under which National Lands other than Forest Reserves are classed as either town lands; suburban lands; rural (including pastoral) lands; mineral lands or beach lands. The Act provides for the appointment of an Advisory Committee to give the Minister general guidance on land administration and for the appointment of local committees to assist in the consideration of applications for land.

It is estimated that some 11 per cent of National Lands are under lease and that at any time about one per cent of National Lands are in the lease allocation process. It is the practice of the Government of Belize to convert National Lands (both agricultural land and housing land) to freehold, by way of a hire-purchase system. Many beneficiaries are, however, in occupation of National Lands without proper title documents.

Although leases are accepted by financial institutions as collateral for loans in Belize, which is unusual in the Commonwealth Caribbean, beneficiaries are constrained in dealing with the land. No data are available on the geographical distribution of National Lands under hire-purchase leases, or on the ethnicity or gender of beneficiaries. It is said that to date few leases have been granted to spouses as joint tenants, as it has not been government policy to promote co-ownership of leasehold land by men and women, which is thought to be contrary to the conventions of some groups in the society.

The repeated political commitments to land reform have been addressed unsystematically and sporadically, and no government has been able effectively to translate election promises into a coherent policy while trying to respond to popular pressure to deliver on

them. (Belize Country Report 2003). The National Lands Advisory Committee (NLAC) appointed by the Minister under the Act comprises representatives of every Ministry and two community-based organisations, including the Land Alliance for National Development (LAND), an umbrella organisation for 20 NGOs committed to the goal of the introduction of a fair and transparent land policy for the benefit of all Belizeans.

However, the NLAC is inactive. This is attributed to a lack of interest by some NLAC members who have no relevant knowledge or experience. It may also reflect the fact that no stipend is paid to members for attendance at meetings. Although provision has been made under the IDB-funded Land Management Programme for support to NLAC, LAND fears that, because this is the final element of the work plan, it will not be done.

One of the factors inhibiting land reform, and the efficient operation of the real estate market, has been the problem of antiquated land records and inadequacies in the institutional capacity for efficient land administration. There is a considerable backlog of land surveys. It is also reported that there are lengthy delays with respect to the issue of leases of National Lands and that the difficulty in searching the records has resulted in significant errors, such as the duplication of grants/leases to land and the allocation of lands within protected areas.

As is the case in several other Commonwealth Caribbean countries, land in Belize is held under one of three systems of recording title, namely a Torrens System of Registered Title or Land Registration, a system of Deeds Registration for land held under Deeds of Conveyance, and Record Books of grants and leases of National Land. The Registrar of Lands and Deeds is legally responsible for all these records. Approximately one third of the land in Belize on the Land Register and the rest is held under Deeds, including the land in both of the communities studied, Sarteneja and Hopkins. Until recently, all these records were compiled and accessed manually and many titles were not based on land surveys or accurate land surveys. These issues are being addressed under two related IDB-funded projects (See Box), the general objectives of which are to create an enabling environment for development through enhanced security of title and accountability in land management in Belize. It is anticipated that these projects will have a significant impact on the poor, by giving low-income rural people documentation clearly defining their rights to land, enabling them to use their land as collateral.

IDB-FUNDED LAND ADMINISTRATION/MANAGEMENT PROJECTS

The US$ 900,000 Land Administration Project, which has been completed, had three components, (1) Land records management, through computerisation of lease, title and financial records; (2) Land tenure adjudication, through implementation of the 1994 Land Adjudication Act; and (3) A review of legislation on land and capital gains taxes and the preparation of a new standard form of National Lands Lease.

The US$ 7 million Land Management Project, which is in progress, has four components (1) National cadastre and property rights registration, including (a) Tenure clarification and property rights registration of 15,000 rural parcels, (b) Surveying 21,300 urban parcels in 4 urban areas; and (c) Supporting a public-awareness campaign; (2) Expansion of Land Administration Services, including (a) Integration and/or consolidation of 3000 land registration records into the Land Registry; (b) Improving land valuation and taxation processes; (c) Developing a national parcel-based Land Information System; and (d) Strengthening the departments of the GOB providing land administration services; (3) Land Use Planning and Development Review, including (a) Development of a decentralised national land use planning framework; and (b) Preparation of local land use plans and delineation of village boundaries; and (4) Land Policy Reform and Institutional Strengthening, including (a) support for the National Land Advisory Committee and (b) Complementary institutional strengthening of the Ministry of Natural Resources, Environment and Industry.

The fragmentation and use of lands outside of the urban areas is governed by the Land Utilisation Act, Chapter 188. Under this Act, permission must be obtained from the Land Subdivision and Utilisation Authority (LSUA) for the subdivision, for the purposes of alienation, of any land to which the Act applies. The Registrar is prohibited from registering a title to a lot of land created by subdivision unless such permission has been obtained.

The LSUA is an inter-sectoral board comprising the Commissioner of Lands and Surveys, the Chief Engineer, the Chief Forest Officer, the Chief Agricultural Officer, the Assistant Secretary to the Ministry responsible for lands, the National Co-ordinator for Disaster Preparedness and Response, and two other persons appointed by the Minister. The Minister may make land utilisation regulations under the Act, governing the demarcation of water catchment areas, soil conservation, the construction of buildings, including setback distances, the felling of trees or the clearance of forests, or the demarcation of Special Development Areas (SDAs) and the control of development within those areas.

Ten areas have been declared SDAs under the Act. The village of Sarteneja lies within the SDA of Corozal East, hence land use in this area is governed by the development plan for the area made under this Act. However, the LSUA does not have the institutional capacity to monitor and control development at the village level, and it is said that there is a great deal of political intervention in the exercise of the powers of the LSUA. The village of Hopkins is not located within a SDA.

Ownership and Control of Marine Resources

The Maritime Areas Act, Chapter 11, provides that Belize has *sovereignty* over its Internal Waters, which includes the marine area on the landward side of the baseline of the Territorial Sea, and the Territorial Sea, including the airspace, seabed and subsoil. The baseline of the Territorial Sea is defined by the low water mark on the mainland and the coast of the islands and Cayes forming part of Belize, and their fringing reefs. The Territorial Sea generally extends 12 nautical miles beyond the baseline, except in the south (between the Sarstoon River and Ranguana Caye) where its extent is limited to three nautical miles, pending the negotiation of a definitive agreement with Guatemala. (See Box). The Act also provides that Belize has *sovereign rights* over the resources of its Exclusive Economic Zone (EEZ). These provisions are in keeping with the UN Convention on the Law of the Sea (UNCLOS) to which Belize is a party.

The Maritime Areas Act does not expressly vest in the State *ownership* of any living or non-living resources of the marine areas under the sovereignty of Belize, including the seabed and subsoil. The ownership of these resources is therefore governed by the rules of the Common Law and international law. There is some legal authority (*R. v. Keyn (1876) 2 Ex D 63)* for the proposition that the seabed and subsoil within Internal Waters are vested in the State, but in the absence of an express statutory provision to this effect, the seabed and subsoil in the Territorial Sea are not. However, the living resources of the sea, while alive in the wild are incapable of ownership, and are non-property or open-access resources. Hence, the capture or harvesting of these resources is only restrained to the extent that the regulatory framework expressly so provides.

The Fisheries Act, Chapter 210, governs the taking, breeding, producing, killing or capturing of "fish", which means any of the varieties of marine or fresh-water animal or plant life, within Belize. This Act therefore applies to the marine areas over which Belize has sovereignty, but not to the Exclusive Economic Zone (EEZ). Fishing within the EEZ is governed by the Maritime Areas Act. Under the Fisheries Act, every boat engaged in commercial fishing must be licensed and any person engaged in commercial fishing must have a fisherman's licence. Regulations may be made under the Act restricting the kind, size and weight of fish that may be caught or prohibiting areas or seasons within which fishing may be carried out, or prohibiting or restricting the methods or means by which fishing may be undertaken, including the form and dimensions of nets and mesh sizes, or controlling the transportation or dealing with fish, fish processing and the import and export of fish. However, the Act makes no provision for the imposition of conditions on fishing licences, and in particular does not provide for the limitation of allowable catches by means of a quota system, or for the transfer or trading of licences.

Regulations have been made, establishing fishing seasons for various species, and minimum sizes and prohibiting fishing with certain devices, including fish pots, in the vicinity of the Barrier Reef. Power to enforce the law is vested in public officers appointed as fisheries officers and policemen. However, provision is also made for the appointment of any member of the management committee of a fishing co-operative as a fisheries officer for the purpose of enforcing regulations. There is therefore scope under

the law for users to be involved in co-management of marine living resources, but it does not appear that advantage has been taken of this provision to date.

The other important piece of legislation with respect to the management of marine resources is the 1998 Coastal Zone Management Act, Chapter 329. This Act establishes the Coastal Zone Management Authority and Institute (CZMA/I), the principal Target Institution (TI) for R8135 in Belize. The functions of the CZMA include advising the GOB on coastal zone policy, promoting public awareness, developing guidelines for development in the coastal zone in consultation with other stakeholders, and assisting in the implementation of programmes and projects for the sustainable development of the coastal zone. The CZMI functions include the conduct of research on the marine environment and marine resources, to act as an information centre for the collection and dissemination of information, and to advise on the optimum utilisation of the marine and coastal resources of Belize.

Central to the mission of the CZMA/I is the preparation of a Coastal Zone Management Plan for Belize, inclusive of proposals for land use in the coastal zone, the designation of protected areas, the prohibition of certain activities, and enhanced public participation in the management of coastal resources. The Act provides for the CZMA/I to be advised by an Advisory Council inclusive of representatives of all the relevant departments of the GOB, two NGOs, two private sector representatives and the University of Belize Marine Research Centre. This legislation is therefore premised on a philosophy of including stakeholders in the management of marine resources.

THE BELIZE-GUATEMALA TERRITORIAL DIFFERRENDUM

On 16th September 2002 the Facilitators appointed by the Organisation of American States (OAS) to assist the Governments of Belize and Guatemala to resolve their territorial differences, submitted their completed proposals, with maps. The proposals, as they deal with the maritime issues, of necessity include the Government of Honduras as a party to the process. As respects the marine areas, it is proposed that the Territorial Seas of the parties will be delimited on equidistance principles, on the basis of the acceptance by all the parties of specified baselines. Guatemala will be granted (1) an access corridor, over which it will have unrestricted navigation rights, extending north-eastward from the triple equidistance point in the Gulf of Honduras for 2 miles on either side of the Belize-Honduras equidistance line, out to the limit of their Territorial Seas and (2) an EEZ of 2000 square nautical miles lying between the EEZ's of Belize and Honduras from the eastern end of that access corridor out towards the triple equidistance point between Belize, Honduras and Mexico.

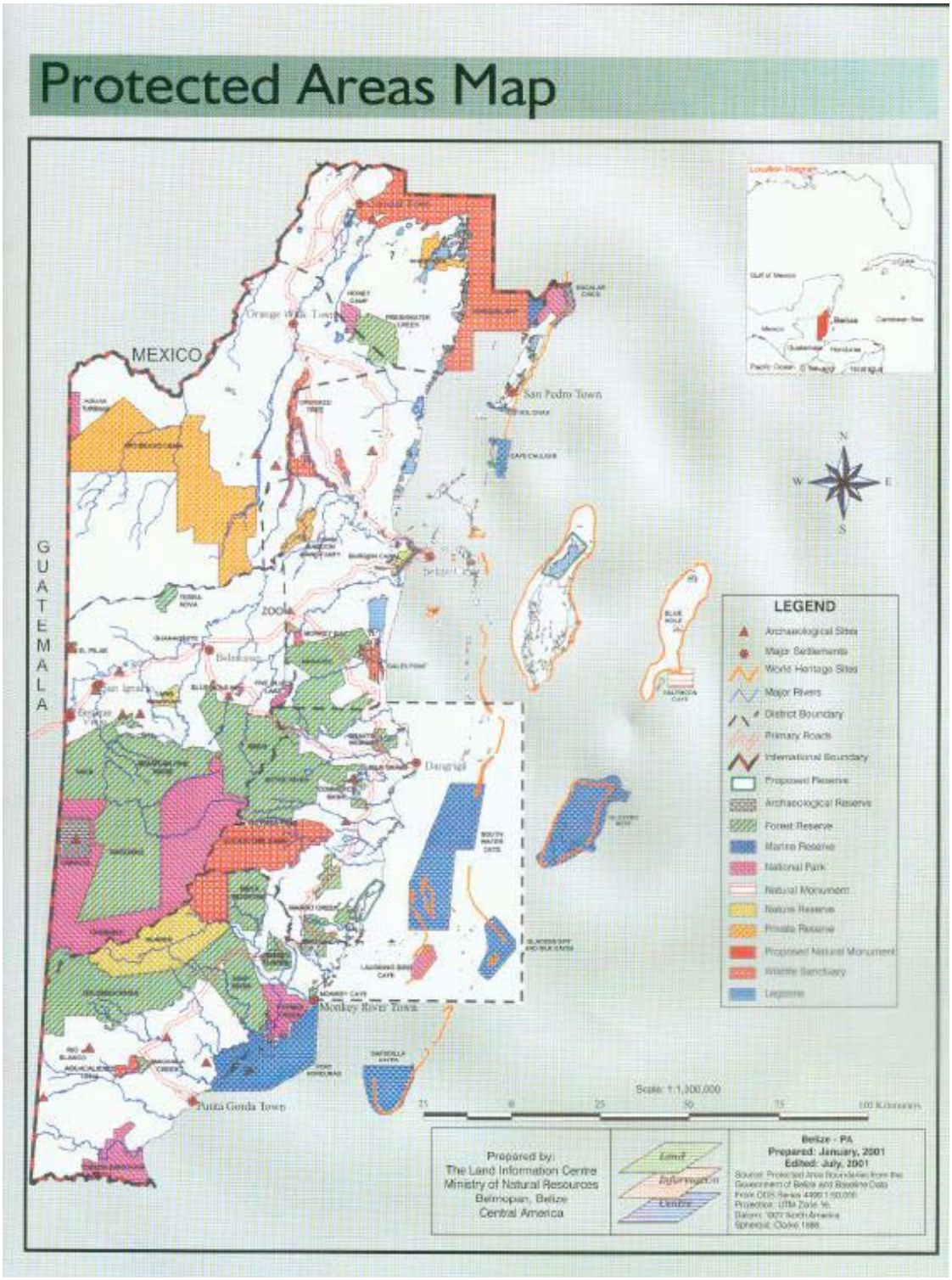
It is proposed that a Tripartite Regional Fisheries Management Commission (TRFMC), under the rotating Chairmanship of the three parties, will be established for the management, long-term conservation and sustainable use of straddling and highly migratory fish stocks located in the EEZs of the parties. Decisions of the TRFMC, including allocations of allowable catches, are to be made by consensus. Belize will have the right to a reasonable portion of the allowable catch, in preference to third States on the Belizian side of the Guatemalan EEZ and Honduras will have the same right on the Honduran side, while the exploration and exploitation of any natural resources of the seabed and subsoil within the same areas will be carried out jointly by Belize and Guatemala or Honduras and Guatemala, as the case may be.

An Ecological Park, inclusive of parts of the coastal, insular and maritime areas of Belize, Guatemala and Honduras will be established, for the purposes of conservation and the development of sustainable ecotourism. The Sapodilla Cays, which are within the Internal Waters of Belize, are included in this area. The parties are to enter into a collateral agreement with respect to the management of the Ecological Park. The development and protection of the Ecological Park is one of the purposes of a Development Trust Fund, in the sum of US$ 200 million, to be established with subscriptions from the international community and administered by the Inter-American Development Bank.

By virtue of the provisions of sections 3(3) and 7(4) of the Maritime Areas Act, the Government of Belize must put these proposals to the electorate in a referendum before they can be accepted. In the continuing absence of agreement, Belize does not have an uncontested right to assert its authority over its waters in the south-western Bay of Honduras, where there is a trans-boundary fishing problem.

Protected Areas

The **Protected Areas Map** shows several classes of protected areas (PAs) in Belize, including Private Reserves, one of which, the Shipstern Nature Reserve, is adjacent to Sarteneja. The PAs other than the Private Reserves have been designated under several pieces of legislation. This has implications with respect both to the use of natural resources in those areas and stakeholder participation in their designation and management. Most significant with respect to the LWI are the Fisheries Act and the National Parks System Act.


Protected Areas Map
MEXICO
GUATEMALA
Orange Walk Town
San Pedro Town
Belmopan
San Ignacio
Dangriga
Monkey River Town
Punta Gorda Town
ZOOM
LEGEND
Archaeological Sites
Major Settlements
World Heritage Sites
Major Rivers
District Boundary
Primary Roads
International Boundary
Proposed Reserve
Archaeological Reserve
Forest Reserve
Marine Reserve
National Park
Natural Monument
Nature Reserve
Private Reserve
Proposed Natural Monument
Wildlife Sanctuary
Lagoons
N
W
E
S
Scale: 1:1,300,000
Prepared by:
The Land Information Centre
Ministry of Natural Resources
Belmopan, Belize
Central America
Belize - PA
Prepared: January, 2001
Edited: July, 2001

The Fisheries Act provides for the declaration of Marine Reserves. These may include adjacent land areas for the purposes of protecting aquatic flora and fauna and their natural breeding grounds and habitats; allowing for natural regeneration in depleted areas; scientific study and research; and the preservation of natural beauty. Fishing and the removal or destruction of any flora and fauna in these areas, without a licence, is prohibited. The Minister is empowered to make special Regulations for the control of Marine Reserves. Eight areas, including Glovers Reef (See Box), the main area used by fishers from Sarteneja, have been designated as Marine Reserves. Some public consultation appears to have taken place before these areas were reserved, but the Sarteneja fishers were not consulted on the reservation of Glovers Reef. It appears that the consultations were conducted on a narrow geographical basis, with the result that key resource users were excluded.

GLOVERS REEF

Under the 1993 Glovers Reef Marine Reserve Order, the Reserve is divided into 4 zones, a General Use Zone, a Conservation Zone, a Wilderness Zone and a Seasonal Closure Zone. The 1996 Glovers Reef Marine Reserve Regulations restrict the right to fish in the General Use Zone to fishermen traditionally using the area, subject to the grant of licences to do so. The use of fish traps, nets or long lines is prohibited, as is the casting or dragging of anchors. In the Conservation Zone, with the exception of subsistence fishing by residents of Glovers Reef under special licence, only non-extractive recreational activities, including diving and catch-and-release sports fishing, are allowed, and boats must ties up to an official mooring. Dive charters must obtain licences and all divers must be registered before with the Reserve Manager before entering the Zone. No fishing, sport fishing, diving or other water activity, and no motorized boats are allowed in the Wilderness Zone. The Seasonal Closure Zone is closed from 1st December to 1st March and a special licence is required for fishing in this Zone in the open season. All licenses are annual and are not transferable. Contravention of the Regulations is punishable by a fine of up to BZE$ 1000 and 6 months imprisonment.

The 1981 National Parks System Act, Chapter 215, is the cornerstone of the PAs system. This Act provides for the declaration of any specified area of "land" as a National Park, Nature Reserve, Wildlife Sanctuary or Natural Monument. The PAs that have been declared under the Act include both land and marine areas. In addition to the eight Marine Reserves established under the Fisheries Act, four other PAs are in the waters off Belize, including the Corozal Bay Wildlife Sanctuary, on the shore of which Sarteneja is located.

No restriction is placed on the classes of land that may be included in a PA and no provision is made for public consultation before the designation of any area or for the payment of compensation to persons whose interests are injuriously affected by the designation of specific lands. Designation of the existing areas was reported to be a "top-down" process that did not involve stakeholder consultations but involved the dislocation of certain communities. A Mayan community was relocated from the Cockscomb Wildlife Sanctuary to the village of Maya Centre, near Hopkins.

The system under this Act is ostensibly one of strict protection. A permit is required to enter any of the PAs and no use of the flora or fauna of a National Park or Nature

Reserve, or of the fauna in any Wildlife Sanctuary, or any disturbance of the natural features of a Natural Monument, is allowed. However, an exception is made with respect to fishing in National Parks, Nature Reserves, Wildlife Sanctuaries, under which the Minister may grant permits, subject to such conditions as he thinks desirable, for fishing "where such activity will not destroy or seriously distract from those values that were the principal reason for the establishment of the unit". Provision is also made for the Administrator in charge of any PA to issue written authorisation to anybody to carry out each and every activity that is prohibited in PAs, including fishing, cultivation, grazing, quarrying, logging, hunting, and even the construction of residential buildings. Additionally, the Minister is empowered to alter or vary the limits of or wholly de-reserve PAs. There are no criteria to be met with respect to de-reservation and there is no requirement for public consultation. It is reported that these powers are frequently employed, with the result that several areas have been de-reserved and all manner of non-conforming use is allowed in PAs.

Before the coming into force of the National Parks System Act, provision existed for the designation of Archaeological Reserves under the 1972 Ancient Monuments and Antiquities Act, Chapter 330, and the creation of Forest Reserves on National Lands under the Forests Act, Chapter 213. As is the case with fisheries in Marine Reserves, authorised forestry operations are permitted in Forest Reserves. The only forest resources that the coastal people traditionally utilise are the Palmetto Palm and game, primarily the Gibnut (Agouti). With the exception of the species listed in the Wildlife Protection Act, Chapter 220, which includes all whales and dolphins, the otter, the Caribbean Monk Seal, the manatee and crocodiles, six species of birds and 17 species of land animals, hunting is permitted under licence.

No data are available on the extent to which poor people, traditional users of natural resources in PAs, have been displaced by their designation. Designation of the Corozal Bay Wildlife Sanctuary, which is intended for manatee conservation, does not adversely affect the fishers of Sarteneja, but they are lobbying for the de-reservation of the Half Moon Cay Natural Monument on Lighthouse Reef, although this occupies only three per cent of Lighthouse Reef and they are free to fish on the remaining 97 per cent of the Reef. It is noteworthy that the total area of "no take" zones within Marine Reserves and other PAs amounts to only about one per cent of the waters of Belize, but the fishers claim that the PAs always target the best fishing grounds. Hence, the impact of the prohibition on fisheries in the PAs on poor people deriving their livelihoods from fishing clearly depends upon the significance of these particular areas in ecological terms.

Governance

Responsibility for the development of NR management policy and the administration of laws relating to NR are vested in agencies of the central government, mostly departments of the Ministry of Natural Resources, Environment and Industry (MNREI). This Ministry enjoys a very restrictive budget, amounting to only 1.6 per cent of the national budget in 2002-2003. The Fisheries Department is responsible for administration of the Fisheries Act and the Forestry Department for the administration of the National Parks System Act in addition to the Forests Act. Neither department, however, has the institutional capacity

to discharge fully its responsibilities. Although 45 per cent of the land area of Belize is within the PAs system, the PAs programme of MNERI receives only 0.5 per cent of the Ministry's limited budget.

In this context, the tremendous reputation that Belize has attained as an eco-friendly country, which is central to its major industry, tourism, depends almost entirely on the innovative co-management and funding mechanisms that Belize has adopted with respect to the management of PAs. The four co-management modalities in operation in Belize are

1. Co-management of public PAs between the GOB and NGOs;
2. Co-management of public PAs between the GOB and NGOs, with CBO participation managed by the NGO;
3. Co-management of public PAs between the GOB and CBOs; and
4. Co-management of private reserves between the landowner (usually an NGO) and the GOB.

Co-management of public PAs between the GOB and NGOs has existed since 1982. The Belize Audubon Society (BAS), which manages eight PAs, including the Half Moon Caye Natural Monument on Lighthouse Reef, has the longest and most extensive history of this form of co-management in Belize. Besides BAS, two NGOs are involved in the co-management of Marine Reserves—the Toledo Institute for Development and Environment (TIDE), which has been managing the Port Honduras Marine Reserve since 2000; and the Toledo Association for Sustainable Tourism and Empowerment (TASTE), which manages the Sapodilla Cayes Marine Reserve.

BAS has been pioneering co-management of public PAs between the GOB and NGOs, with CBO participation, under an EU-funded project aimed at community income generation through co-management. This process has been in progress for the past two years in five communities in the buffer zones of PAs. Although all are at different levels of readiness to participate in the programme, these communities have been given leadership training and are now supportive of the process.

CBOs' participation is via Local Advisory Committees, the composition of which is site-specific. Although the role of CBOs is largely advisory, community members are also being trained to participate in monitoring and enforcement activities. Income generating projects, including a craft centre, a bee-keeping project and a cashew cultivation project, have been developed in three communities. Community cohesion, the absence of inter-personal conflicts and political divisions, is seen as a critical factor in determining the sustainability of CBOs.
BAS reports that the process is a lengthy one; it takes at least two years to build trust on the part of the CBO. This is consistent with the experience of the OECS-NRMU in St Lucia.

Co-management of public PAs between the GOB and CBOs has been taking place since 1995. In some cases, this involves co-management between the Fisheries Department and a CBO; in others, between the Forestry department and a CBO; in the case of Caye

Caulker, both Fisheries and Forestry and a CBO. For a CBO to qualify for a co-management agreement, it must be a legally constituted organisation; it must demonstrate an interest in managing a PA by writing to the relevant department; letters of recommendation must be provided by the Area Representative, the Village Council, any tourism association and any existing groups in the village; and three well-advertised general community meetings must be held.

A three-year US$825,000 medium-size GEF project for the development of a new strategy for co-management of public PAs between the GOB and four other CBOs was completed in 2002. It was found that the critical barriers to effective co-management of PAs by the GOB and CBOs remained basically unchanged. These were identified as

- Lack of capacity of the Forestry Department to implement their responsibilities related to the co-management of PAs;
- Lack of capacity on the part of CBOs related to the co-management of PAs;
- Inadequacies in the legal and policy framework for PAs and the lack of express legal provision for co-management of PAs;
- No adequate mechanism for review of PA management plans;
- The fact that CBOs must pay over 10 per cent of revenue from PAs to the GOB, which goes into general revenue and is not earmarked for PAs, and 20 per cent to PACT;
- Lack of a clear model for co-management between the GOB and CBOs, providing for
    - —The respective roles and responsibilities of the GOB and CBOs;
    - —The organisational structure for CBO involvement in co-management;
    - —How the structure should function and with what resources;
    - —Financial flows and mechanisms required for security and viability;
    - —Staffing requirements; and
    - —Collaborative requirements to ensure technical soundness in PA planning and management.

It was found that the single most important factor actuating CBOs to engage in co-management of PAs was the prospect of deriving financial benefits from tourism which, for some PAs, was an unrealistic expectation. The Leadership Training component of the project was considered to be the main success, and translated into community development, it did not translate into biodiversity conservation action. One reason was that most of the CBOs' work was done on a voluntary, part-time basis, and consisted primarily of collecting user fees. While some project funding was used to pay stipends to Rangers, the employment of Rangers was not sustainable, as financial viability of the operations of the PAs has not been achieved. From this, one can conclude that, sustainable funding arrangements are essential to CBO co-management of PAs and if such arrangements can be made for the management of PAs in Belize, conservation activities *per se* could generate a significant amount of NR-based alternative employment at the community level.

The principal source of continued domestic funding for NR-management in Belize is the Protected Areas Conservation Trust (PACT). PACT, which was established in 1995 by

the Protected Areas Conservation Trust Act, Chapter 218, is an umbrella organisation for pooling and distributing funds for conservation in Belize. To date, PACT's principal sources of revenue have been a BZE$7.50 conservation fee that is payable on departure from the country; 20 per cent of cruise ship passenger fees; and 20 per cent of entrance, recreational licence and concession fees from public PAs.

Grants are made for PA conservation and management; PA promotion and development; environmental education and awareness; and community development around PAs. Revenue in the financial year 2001-2002 totalled BZE$ 1.476 million, but grants disbursed (net of unspent funds) amounted to only BZE$ 163.4 thousand. This was appreciably less than the operating costs of PACT, which amounted to BZE$ 478,000, nearly one third of revenue.

The aim of PACT is to grow its revenue to BZE$5 million, limit its operating costs to 20 per cent of revenue, put 20 per cent on its Endowment Fund, to ensure the sustainability of PACT, and distribute 60 per cent in grants. Its legislation was amended in 2002 to give PACT greater political independence, in order to make it more attractive to donors and to facilitate debt-for-nature swaps. The first debt-for-nature swap agreement was signed in 2001. This provides for the cancellation of half of Belize's debt to the USA, $8.5 million, on the condition that, over the next 26 years, the GOB pays the same amount to PACT and three other NGOs, BAS, TIDE and the Programme for Belize (PfB), in two annual installments. This is very promising.

In the context of alternative livelihoods for the poor who are dependent on NR, however, there is a concern that, although the amendments to the Act enlarged the board of PACT, the provision previously made for a representative of the Village Councils to sit on the Board was deleted. The Village Councils are elected under the Village Councils Act, Chapter 88, and are responsible for the good government and improvement of villages in rural areas. This Act was passed in 1999 after nationwide public consultation. Under it, Village Councils have a number of specific duties, including making recommendations to the Ministry responsible for lands with regard to the distribution of lots and lands within the village. The Act also provides that agencies of the central government that intend to make any decision affecting a village must consult with the Village Council and take its views into account, as far as practicable. Although its implementation is still in its infancy, this legislation ought to give communities a greater voice in the management of the NR on which their livelihoods depend.

SARTENEJA

Sarteneja, originally called Tzaten-A-Ha (meaning "the place with a spring"), is a Mestizo village located on the north coast of Belize. It was founded in 1854 by refugees from the Caste Wars in the Yucatan (See Box). As shown by **Table 8.9**, the village is characterised by a much higher incidence of freehold land ownership than occurs in the Garifuna village of Hopkins, although the level of home ownership is equivalent. This

reflects the differences in the history of land tenure by these two ethnic groups in the districts of Corozal and Stann Creek respectively.

In this context, what explains the number of leasehold properties in the village appears to be that private lands adjacent to Sarteneja were compulsorily acquired by the GOB to provide for village expansion. The expansion of the village is constrained by the fact that it is sited on the coastline, which is to the north, and it is bounded by mangrove swamp on the east and the Shipstern Nature Reserve to the west, but with privately owned agricultural land to the south. None of the land in the village is currently held under registered title, but Sarteneja is one of the areas to be surveyed and brought on the Land Register in the early phase of the IDB-funded LMP.

Some 20 per cent of the residents of Sarteneja may still own agricultural land, in tracts of 5-10 acres, although some of that land is in a block straddling the road to Sarteneja between Warree Bight and the Shipstern Reserve, an appreciable distance from the village. To provide for their families, some of the over-50 group of fishers engage in subsistence farming, as well as commercial fishing. Following closure of the sugar factory at Libertad, which had provided an assured market for small farmers' cane, farmers have been selling out their lands. That Warree Bight development was able to buy 12,000 acres of land on the local market for resort development suggests the land market is working well. On the other hand, this trend also means that the villagers are losing the option of reverting to agriculture, if fishing is curtailed.

TABLE 8.9
SARTENEJA: TENURE OF LAND AND DWELLING BY HOUSEHOLD

Land Tenure			Tenure of Dwelling		
Type of Tenure	Households		Type of Tenure	Households	
	#	per cent		#	per cent
Freehold	124	37	Owned/Hire Purchase	269	80
Leasehold	120	36	Leased	0	-
Rented	25	7	Rented - Private	28	8.4
Permission to cultivate	0	-	Rented – Government	2	0.6
Sharecropper	0	-	Rent Free	37	11
Squatter	0	-	Squatted	0	-
Family Member	0	-	Other	0	-
Other	0	-	DK/NS	0	-
DK/NS	67	20	Total	336	100
Total	336	100			

The neighbouring Shipstern Nature Reserve does not have a good relationship with the Sarteneja community and does not try to better it. But there is little indication that, with the exception of some villagers, who were relocated to Sarteneja from Shipstern Village when their lands had been compulsorily acquired, the establishment of the Reserve impacted negatively on the community of Sarteneja. These villagers were granted 10,000

acres of agricultural land at Fireburn in lieu of their original farmlands. Fireburn is about 10 miles south of Sarteneja as the crow flies, but is separated from Sarteneja by the Reserve and accessible from Sarteneja only by a circuitous and lengthy route through Warree Bight and Cowpen. Shipstern is now trying to acquire these lands which, because of their inaccessibility, the relocated villagers do not farm.

The village is deeply divided politically. The loyalties of the opposing factions are asserted publicly by the display of political party flags on virtually every house. Only the young people, who are not committed to one party or the other, are open to mobilisation on a community-wide basis. Political polarisation has major implications for the viability of CBOs and even the formal structure of local government. The Parliamentary Representative for the area (which includes Chunox, Copperbank and Progresso in addition to Sarteneja) has refused to recognise the elected Village Council and instead deals with the members of the former Village Council. Members of the community, who have political and/or social connections with "the powers that be", are reported to benefit disproportionately from initiatives to provide technical or financial assistance to the village.

Villagers feel that they do not have a voice in the management of the marine resources on which their livelihoods largely depend. The single CBO in Sarteneja, Amigos de la Bahia, is a candidate for involvement in co-management of natural resources in the coastal zone. Most of its members are males. For co-management of the Corozal Bay Wildlife Sanctuary with Amigos de la Bahia, BAS has prepared a proposal for GEF funding under the COMPACT programme. However, the Amigos group is not yet sufficiently organised to enter into relations. A Peace Corps Volunteer once assigned to work with the group, which was afflicted by internal problems, was withdrawn.

MESTIZO LAND TENURE

Thousands of Mestizos fled into Belize as a result of the 1848 Maya uprising against the Spanish Creoles in the Yucatan, known as the Caste Wars. These refugees had for the most part been small-scale cultivators in the Yucatan. Up until the time they entered Belize, there was virtually no commercial agriculture in Belize, because agriculture, other than the cultivation of subsistence crops in connection with logging works, was prohibited under the treaties with Spain. This was reflected in the conditions of grants of Crown Lands.

The Mestizos settled on idle private lands in the Corozal District, as land tenants, and successfully cultivated tobacco, rice, corn, vegetables and sugar cane. By 1857 there were 28 Mestizo villages in the north and sugar was being exported from Belize. Once the viability of sugar cultivation was established, the landlords took over the industry and put many of the Mestizo *rancheros* out of business, reducing them to wage labourers on big estates. By 1868 there were 10 large sugar estates with factories, but there were still 32 small farms comprising altogether 1000 acres in sugar cultivation. The Mestizos remained land tenants and share-croppers as they did not qualify to own land in Belize until 1894. The steep decline in the fortunes of the sugar industry led to the "repeasantization" of the area in the 1880s.

The Libertad factory was established in 1937. By 1954 Maya and Mestizo small farmers were supplying almost twice the amount of cane produced by the large estates and in 1959 the Cane Farmers Association was established to negotiate contracts on behalf of members. The Association led the struggle for the *cañeros* to become landowners. The 1962 *Land Reform (Security of Tenure) Ordinance* conferred some security on land tenants and by 1972 Tate & Lyle sold off most of its cane lands to farmers.

HOPKINS

Although the village of Hopkins is situated on land within the area formerly designated as the "Carib Reserve", it was established in 1942 by Garifuna refugees from Guatemala. Some highly educated, prominent Belizeans come from this village.

As **Table 8.10** shows, land in the village is mostly leasehold land. It is said some of this is "family land", but the incidence of this form of tenure cannot be ascertained from the available data.

None of the land in the village is held under the system of registered title, but it is not proposed that the land will be surveyed and registered under the IDB-funded LMP. It is reported that some land in the village is been sold to foreigners, but the National Garifuna Council does not have a position on the alienation of Garifuna lands.

Insecurity of tenure is not perceived to be a contributory cause of the failure of business ventures in the village. There may be a generational difference in this respect, however, since the land is vested in the older generation, and the youth do not have collateral for loans.

TABLE 8.10
HOPKINS: TENURE OF LAND AND DWELLING BY HOUSEHOLD

Land Tenure			Tenure of Dwelling		
Type of Tenure	Households		Type of Tenure	Households	
	#	per cent		#	per cent
Freehold	29	15	Owned/Hire Purchase	155	79
Leasehold	123	62	Leased	2	1
Rented	0	-	Rented - Private	11	5
Permission to cultivate	0	-	Rented – Government	0	-
Sharecropper	0	-	Rent Free	29	15
Squatter	0	-	Squatted	0	-
Family Member	0	-	Other	0	-
Other	2	1	DK/NS	0	-
DK/NS	43	22	**Total**	**197**	**100**
Total	**197**	**100**			

The Garifuna have a history as subsistence farmers as well as fishers, but Hopkins is not considered an agricultural village. A few men in the village are commercial farmers. They have leases of agricultural land situated in the Silk Grass Creek area, some miles from the village, on which citrus is cultivated. An18-member Peanut and Cereal Co-operative, comprising men and women, has since 1985 been cultivating 50 acres of leasehold National Land, one mile north of the village.

Hopkins is within the sphere of the three-year-old Community-initiated Agricultural and Rural Development (CARD) project. CARD has not been very successful. The project is geared to a "bottom-up approach" to rural development. But the executing agency, the Ministry of Agriculture (MOA), evidently not converted to that philosophy, has not fully taken ownership of the project which also appears to be donor-driven. Though the project design may be flawed, since no follow-through is reported with respect to the marketing of products, lethargy on the part of Hopkins villagers, observed by both the MOA and SPEAR, is a stumbling block to the success of the CARD "bottom-up" approach.

There is no indication that the livelihoods of the villagers of Hopkins has been adversely affected by the establishment of any particular PA. But a general perception holds that the establishment of PAs is responsible for declining catches. The Hopkins fishers were consulted before the designation of PAs, but feel that their views were ignored. In particular, restrictions on the fishing of Nassau Grouper impact on the customary way of life. The National Garifuna Council is seeking to have the fishers of Hopkins exempted from the Grouper restrictions. The villagers are not opposed to the temporary closure of traditional fishing areas, or the imposition of moratoria on harvesting particular species, but they do not accept the necessity for permanent prohibitions. Though social support exists for the enforcement of fisheries regulations, it is felt that prosecution is very selective as there are insufficient patrols. Villagers argue that prosecution of buyers of illegally harvested marine species would be a more equitable and effective method of enforcement.

None of the several CBOs in Hopkins, notably women's groups, is engaged in the co-management of natural resources, but several are actively involved in the development of livelihood options for villagers in agriculture and tourism. However, the fishers of Hopkins have benefited from COMPACT-funded Dive Master training programmes run by a Placencia-based NGO Friends of Nature which is involved in co-management of Laughing Bird Cay Marine Reserve.

There is a high degree of social cohesion and it is said that the Village Council speaks for the community. Still, villagers voiced some concern about to the Village Council's effectiveness in representing their interests. The most productive people from the village have migrated either to the urban centres in Belize, or abroad, particularly to Chicago. Still-resident villagers do not have a sophisticated understanding of how to access the opportunities available under various projects and programmes. To empower the villagers to make better use of existing opportunities, SPEAR has been trying to build capacity at the Village Council level.

CONCLUSION

Several lessons have been learned from the examination of the research questions with respect to St Lucia and Belize. As regards poor people's access to NR in the coastal zone, the pattern of land tenure is a problem both in the land-rich continental country of Belize and in the land-scarce small island of St Lucia. In both countries, the State is a major landowner, and the redistribution of land is a general policy objective. But land policy is not well articulated.

In St Lucia, where the State owns all coastal land outside of the major town, ownership this land has not been recognised as providing a unique tool for coastal zone management, including guaranteeing public access to coastal resources. Although the available data are inadequate, it appears landlessness impacts most severely on women, young adults and (in Belize) the indigenous people. For the generation of alternative livelihood opportunities, this suggests that specific attention must be paid to the provision for poor people of credit facilities that are not based on land title as collateral.

The issue of access and/or resource use rights in marine areas is not generally recognised. In particular, the impact of the protection of marine areas on the livelihoods of the poor has been largely ignored. Only in the St Lucia SMMA has provision been made to compensate fishers when restrictions have been placed on fishing. Even with the SMMA, the compensation paid was very small. Moreover, where, in Praslin, an alternative livelihood, in mariculture (sea-moss farming) has been introduced, no measures (notably leases of the seabed) have been put in place to protect the poor.

Formal structures for local government are weak. Although changes in this respect have been in train in both countries, poor communities do not have an effective voice in decision-making concerning the NR on which their livelihoods depend. Although participatory methods and "bottom up" development projects have been introduced in both countries, there is no sense of empowerment at the village level. It appears that the commitment to participatory modalities of many NR management institutions is quite superficial. One of the most striking findings of the project is that, although the SMMA is held out as the leading success story in the participatory management of coastal resources in the region, a "top down" approach has been taken to the development of the CAMMA, which is to be administered by the SMMA.

In both countries a number of innovative attempts are being made to involve NGOs and CBOs in the NR management process. The creation of the PACT in Belize as a vehicle for the sustainable funding of NR conservation is noteworthy, although there are continuing concerns about the proportion of the revenue of the PACT that is translated into conservation action. One of the problems of this approach is the weakness of civil society organisations, particularly CBOs. In both countries, it was noted that CBOs cannot be sustained on the basis of voluntarism. The assumption that the gains from alternative livelihoods in tourism will be adequate to support NR conservation is misconceived. Sustainable sources of funding must thus be found for the creation of conservation-based direct employment opportunities. The numbers to be employed as

Rangers at the CAMMA suggest, however, that this form of alternative employment would absorb only a small percentage of existing NR users.

In both countries, many constraints on the generation of alternative livelihood opportunities for poor people in the coastal zone have been recognised. A number of initiatives are underway to address these constraints. However, most of these initiatives must be restructured to ensure that the needs of vulnerable groups are addressed, and that poor people have an effective voice in the making of decisions that affect them.

SELECTED REFERENCES

ST LUCIA

Beckford, Dr George (Chairman), St Lucia Land Reform Commission: Final Report, Castries, St Lucia (1981) 140p.

Beckford, Dr George, (Chairman) St Lucia Land Reform Commission: Proceedings of Public Hearings of the Land Reform Commission, Castries, St Lucia (1980) 4 vols.

Beckford, Dr George, (Chairman) St Lucia Land Reform Commission: Written Evidence of the St Lucia Land Reform Commission, Castries, St Lucia (1980) 239p.

Besson, Jean "A paradox in Caribbean attitudes to land"; in Besson, Jean and Janet Momsen (Eds), Land and Development in the Caribbean, Warwick University Caribbean Studies, Macmillan Caribbean (1987) pp.13-45.

Besson, Jean, "History, Culture and Land in the English-speaking Caribbean" Workshop on Land Policy, Administration and Management in the Caribbean, POS (2003)

Bland, A.J., N.M. Forde, M. Gibson, E. John-Charles and N.J.O. Liverpool, Report and Recommendations, Vol. I, in Liverpool and Emmanuel (1978)

Bruce, John W., Family Land Tenure and Agricultural Development in St Lucia, Research Paper No.79, Wisconsin Land Tenure Centre (1983)

Charles, Embert, Options for the Participation of Civil Society in Environmental Management and Sustainable Development, Technical Paper No.3, Natural Resources Management Series, OECS-NRMU (2000)

D'Auvergne, Ira, St Lucia Legal Report, Assistance in the Development of Land Use Planning and Agricultural Production Zoning in the OECS, FAO (2002)

Green Paper on Local Government Reform, Ministry of Community Development, Culture, Co-operatives and Local Government, St Lucia.

Jesse, Rev. C. Outlines of St Lucia's History, (4th Ed.) St Lucia Archaeological and Historical Society (1986)

Laville, Ben, "Land Use and Credit Facilities in St Lucia as applied to the Small Farmer" Appendix VIII in Liverpool and Emmanuel (1978) Vol.2 Country Reports.

Le Franc, Elsie R-M., Rural Land Tenure Systems in St Lucia, ISER Working Paper No.40 (1993)

Legal and Institutional Review of Environmental Management in St Lucia, OECS-ESDU (2002)

Liverpool, Nicholas J.O. and Patrick Emmanuel (Comps) Legal and sociological survey of land use and tenure in Antigua, Belize, Dominica, Grenada, Montserrat, Nevis, St. Kitts, St Lucia and St. Vincent, U.W.I., Cavehill. (1978) 3 vols.

Putney, Allen D. "Institutional Specialist Consultant Report", Project Appraisal Document for a GEF Grant for Coastal/Wetland Ecosystem Conservation and Sustainable Livelihoods, St Lucia. SLNT (2002)

1996 St Lucia Census of Agriculture: Final Report, Planning and Statistical Unit, Ministry of Agriculture, Lands, Fisheries and Forestry, St Lucia (1996)

St Lucia Natural Resources and Agricultural Development Project: Proposals for Implementation of a Land Registration Project, Executive Secretariat for Economic and Social Affairs, Department of Regional Development, OAS (1986)

BELIZE

Bolland, Nigel and Assad Shoman, Land in Belize 1765-1871, ISER, Jamaica (1977)

Cubola Productions, A History of Belize: A Nation in the Making (2002)

Herrera, Nimmi "Towards A Land Policy for Belize" BAS Newsletter Vol 33 No.3 (Dec. 2001)

Iyo, Dr Joseph, Patricia Medoza, Jose Cardona, Armin Cansino and Raymond David, Belize Country Experience, Workshop on Land Policy, Administration and Management for the Caribbean, Port of Spain, Trinidad (2003).

Laws of Belize [Revised Edition 2000]

Organisation of American States (OAS), "Belize-Guatemala Territorial Differendum: Proposals from the Facilitators", (Sept. 2002)

Protected Areas Conservation Trust (PACT), PACT Annual Report 2001-2002

Ravndal, Virginia, "Community Co-Managed Park System for Belize: Final Evaluation" UNDP (Sept. 2002)

Shoman, Assad, Thirteen Chapters in the History of Belize, Angelus Press, Belize (1994)

CHAPTER 9

LAND USE, THE POOR AND SUSTAINABLE LIVELIHOODS

MICHELLE MYCOO Ph.D
Lecturer
University of the West Indies,
St Augustine
Trinidad and Tobago

CHAPTER 9

Acknowledging that land is an extremely important asset, the fundamental question that needs to be answered is whether the poor in the land water interface (LWI) of the Caribbean are capable of accessing and utilising land as part of their natural resource-based activities, to achieve sustainable livelihoods. Livelihood strategies require a specific quantum of land in the right location to have any meaningful impact on the poor. In this context, therefore, land use issues are discussed in relation to livelihood strategies of the poor in the LWI.

In keeping with the log frame, the activities addressed are 2.1, 2.2, 3.1, 3.2, 3.3, 4.2 and 6.1.

The report examines NR-based livelihoods in agriculture, forestry and tourism under sections that deal with:

- **An improved understanding of strategic constraints to NR-based livelihood strategies;**
- **Causal factors of non-sustainability;**
- **Threats to achieving sustainability;**
- **New knowledge in achieving sustainability; and**
- **Generic lessons distilled from the two case studies of St Lucia and Belize.**

IMPROVED UNDERSTANDING OF STRATEGIC CONSTRAINTS TO NR-BASED LIVELIHOOD STRATEGIES

AGRICULTURE

ST LUCIA

The poor are engaged in agricultural practices in the LWI, often including hillsides, given that the coastal zone is very narrow as the land rises steeply a short distance from the coast. Although the island has fertile volcanic soils, because of mainly topographical constraints, only 28 per cent (17,360 hectares) of the total land area is suitable for agriculture (Government of St Lucia, 1998). Additionally, the growing demand for an already limited supply of land places tremendous pressure on St Lucia's agricultural lands.

The Agricultural Census of 1996 estimated the total area under agricultural holding as 20,771 hectares, which reflects a decrease of 2,709 hectares, or 12 per cent, since the census of 1986 (Government of St Lucia, 1998).

McGregor (1995) notes throughout the Caribbean high rates of natural soil erosion arising from the combination of sloping terrain, thin and highly erodible soils, and the intense nature of tropical rainstorms make slopes vulnerable to landslides. The Government of St Lucia (GOSL, 2000) in its report on the Convention to Combat Desertification drew attention to the landslide prone sub-soil in some regions of St Lucia.

The evidence presented below reveals that physical characteristics and human activity such as poor land use practices contribute to land degradation and ultimately undermine agriculture as a sustainable livelihood for the poor. The very resource the poor are dependent upon for a livelihood is also being destroyed through mismanagement.

A symptom of unsustainable agriculture in St Lucia is watershed destruction, the root cause being the manner in which the country's key natural resources (land and forest) have been utilised in the past. A report prepared by Hunting Technical Services and Mott MacDonald (1998) on protecting St Lucia's watersheds noted the following unsustainable practices that effectively undermine agricultural productivity:

- Clearing forest on slopes has stripped the natural cover that best protected vulnerable land;
- The planting of bananas on land with too great a slope leads to erosion, and it is estimated that 300,000 tonnes of soil is being lost each year as a result of inappropriate banana planting and management; [42] and
- The introduction of annual crops on sloping land is exacerbating erosion, especially in the absence of good management.

[42] *Indications are that bananas in the Windward Islands including St. Lucia are grown on slopes exceeding 20 degrees (WINBAN, 1993).*

The GOSL (2000) found that the system of land ownership was a major contributor to land degradation. A significant percentage of agricultural lands in St Lucia are owned as family lands originating from the use of the Napoleonic Code in which all family members can lay claim to the land. Lacking outright land ownership, poor farmers adopt agricultural practices by are damaging; they tend to plant short-term crops and raise livestock that have deleterious impacts on the environment. With no incentive to maintain that which is not owned, the victim becomes the agent of environmental degradation.

There are different perspectives on the effectiveness of family land in limiting land fragmentation. Three decades ago Finkel (1971) observed:

> *The "rights" to (family) land are equally shared, and the legacy of the land becomes the communal property of the entire family. Thus, for example, if one of the heirs clears a field and plants a crop on it there is nothing to prevent all other members of the family (including brothers, sisters, nephews, and nieces) from harvesting the crop when it is mature. This arrangement of communal land rights within the family serves as a strong deterrent to agricultural development since the more ambitious and enterprising farmers feel that it is not worthwhile planting crops under these conditions.*

Le Franc (1993) views family lands as having some inherent dangers that can lead to land fragmentation or multiple-ownership of land parcels and the inheritance system then becomes expensive constantly fuelling the demand for land, which is incompatible with a land shortage situation. Research by Laville (1978) refutes this premise in that while each heir has the legal right to demarcate and subdivide his/her inheritance, few such subdivisions take place. Laville (1978) found that whereas 42 per cent of farmers on family land were willing to partition the land, 46 per cent were not. On smallholdings the subdivision process is frequently more expensive than the value of the land. On large holdings, where the size of the inheritance might justify the cost, land is frequently maintained intact through will provisions or by agreement of the heirs according to the Organisation of American States (OAS, 1986). Laville (1978) noted the other reasons given by farmers for not wanting to sub-divide the land were the preservation of harmonious family relations, the fact that the farmer would get less land than currently held, and the total acreage was too small to be partitioned among all the heirs.

In 1986, USAID sponsored a land registration and titling project (LRTP). This was an initial phase of a wider agricultural structural adjustment programme, aimed to clarify and privatise land titles of family landholdings to individual fee-simple holdings, establish a modern registry, and thereby facilitate the efficient operation of the land market. The long-term objective of the registration and titling project was to increase export crop production through the intensification and expansion of banana-producing areas and to facilitate crop diversification (USAID 1983). As a result of administrative problems and resistance to privatisation by family landholders, family land was not converted into freehold title at the end of the project (Land Tenure Centre, 1988). The Land Tenure Centre's survey conducted in 1987 found that almost half the respondents who owned family land said it would be possible sell their land to non-family members

and another fourth said it would not be likely. Stanfield (1989) notes despite official encouragement, one third of the parcels in the new registry at the end of the LRTP were still individual family holdings.

Dujon (2000) observes that the economic dislocation caused by the termination of the traditional preferential access for bananas to the United Kingdom will require experimentation and the taking of risks. State-led programmes designed to sustain the economy during the transition period between the loss of protected trade and the successful implementation of an alternative development strategy will take time to have positive impact. It is argued by Dujon (2000) that under these conditions family land provides stability, it mitigates risk and provides a buffer against adverse economic circumstances, particularly for the marginal classes. In more recent work Dujon (2002) argues that in contrast to standard atomistic economic models, the family land institution is based on reciprocity that fulfils the various levels of economic need, serves as a basis for capital accumulation and functions as a safety net for all when export markets falter. When unemployment is high, formal social security scarce, and the economy vulnerable to external shocks, family land is a good buffer.

It can be concluded that family land is not obsolete. It is indispensable to the groups already marginalised or about to be marginalised by economic threats both endogenous and external.

Agriculture in Praslin

Agriculture remains one of the major land uses in Praslin, although banana cultivation, the major activity at one time, has drastically declined. Banana cultivation was done on a commercial basis, but since the collapse of the industry farmers have shifted into subsistence agriculture, and have diversified crop production to survive economically. Praslin Estate is the largest area under agriculture. Elsewhere, individual farmers cultivate sea moss, cassava, hot peppers, fruits and vegetables on small plots for subsistence or on a small-scale commercial basis. Sea moss cultivation became a substitute economic activity in the aftermath of the demise of the banana industry. In Praslin Bay both onshore and offshore, 25 to 30 farmers are sea moss cultivation. Bees are also kept on a small scale for honeymaking.

Villagers noted the main constraints to agricultural productivity were the lack of irrigation and of access to a guaranteed market. In particular, Praslin farmers complained of having a glut of peppers and no guaranteed market to sell their produce.

Agriculture is in conflict with environmental management because the use of agro-chemicals to improve crop yield and minimise loss from pests, contributes to land runoff and pollution of Praslin Bay.

Agriculture in Anse La Raye

As in Praslin, lands under banana cultivation have declined and only one banana farmer remains in the whole of Anse La Raye. The Venus Estate in the hinterland area is

cultivated by villagers in and around Anse La Raye. Peppers are grown for commercial purposes for the manufacture of pepper sauce that has more value added than raw peppers.

The system of family lands has influenced short-term crops and marijuana cultivation, further exacerbating land degradation. Additionally, praedial larceny is a major problem affecting agriculture in Anse La Raye.

In an effort to shift agriculture from the hillsides, a project under ENCORE was established and financed by the German Government. The project was not undertaken in the village of Anse La Raye, but in the village of Millet located in the interior quarter of Anse La Raye. Chickens were raised and eggs produced under the ENCORE project, the community undertook prawn culture, and several individuals at one time did small-scale tilapia breeding. Up to 2001, the prawn culture continued and proved a feasible income-earning alternative to crop cultivation.

Women were targeted since they were more interested in land-based than in marine-oriented livelihoods. It was also said by one of the interviewees that the ENCORE project focused mainly on women because they were by far more organised than their male counterparts and the project results were anticipated to be more sustainable. However, the project did not succeed once the donor agency withdrew, which raised a valid concern of how to make projects sustainable once the donor retreated. It was argued that the time was too short to develop and empower communities, and the resources committed to this exercise were a small percentage of the overall budget.

BELIZE

Constraints in Agriculture

It is estimated that Belize has approximately 343,982 hectares of arable land and of which slightly over a half (186,155 hectares) are used for agriculture (King *et al*. 1993). The land judged to be most suitable for agriculture is located in hard-to-access remote areas. King *et al*. (1993) determined from land resource assessments conducted by the Natural Resources Institute from 1989 to 1992 that only 16 per cent of the land in Belize is suitable for sustained agricultural production without skilled management (See **Table 9.1**). Most of the high potential land is already cultivated (33 per cent) and the rest is undeveloped public or private land (67 per cent). Spatially, the majority of the latter is located north of the Western Highway where there is only limited land pressure. At the time this study was done, it was reported that only 2,833 hectares of viable agricultural lands existed in the protected areas.

TABLE 9.1
AGRICULTURAL POTENTIAL AND AREA UNDER CULTIVATION IN BELIZE (1989 –1992)

Class	Agricultural Potential	Area (sq. km)	% of Total Land Area	Area (sq.km.) already in cultivation	% Area already in cultivation
1	High income potential	990	4	321.24	32
2	Good chance of financial success	2,790	12	949.44	34
3	Success subject to skilled management	4,480	20	327.52	7
4	Marginal, even with skilled management	4,670	20	323.15	7
5	Steep Slopes	10,040	44	167.39	2
Total		**22,970**	**100**	**2088.74**	

Source: King *et al* (1993)

The Community Initiatives for Agriculture and Research Oriented Projects (CARD) under the auspices of the Ministry of Agriculture, Fisheries and Co-operatives utilised funding from the Caribbean Development Bank and International Fund for Agricultural Development to focus on micro-enterprises. Through this funding arrangement, small Belizean farmers can now access loans up to Bze$5,000.

Aquaculture is regarded by some investors as more promising as an income-generator than agriculture. It can employ 20 persons per 0.40 hectare and mainly women have been targeted to benefit from employment in this sector. Big enterprises have been investing in shrimp farming which covers a land area of 2,023 to 2,428 hectares. Because start-up capital is high, poor people cannot pursue this as a form of self-employment, so many are absorbed as labourers.

Agricultural Constraints in Sarteneja

The population of Sarteneja some 30 to 40 years ago was involved in agricultural production though mainly sugar cane farming. Sartenejans in the early days cultivated crops and transported produce by sea to settlements inaccessible by land. However, technological and infrastructural transformations influenced a shift from agriculture to fishing. Improvements in road transport allowed other competing agricultural areas to grow more crops and transport produce to markets. Today, young people of Sarteneja have little or no interest in, or knowledge of, land cultivation, as the focus group meeting revealed.

For reasons of poor infrastructure, poor land capability, lack of technological knowledge, and politics, agricultural land use is minimal in Sarteneja. Water shortages, particularly in

the dry season, have seriously hampered agriculture. The land capability in Sarteneja is said to be low for the lands are composed of limestone. At various times, however, sugar cane, papaya and peppers have been grown.

An agricultural project aimed at the cultivation of onions was promoted as an alternative livelihood, and grants ranging from Bze$5,000 to Bze$15,000 were made available. The project failed as, in the absence of monitoring by grant officers, “farmers” instead built or renovated their houses.

Declines in agricultural land use are also evident from the land tenure patterns and inaccessibility. Some 20 per cent of the residents of Sarteneja still own agricultural land, although the land is distant from the village.

The Government compulsorily acquired the lands of villagers and granted them 4,047 hectares of land at Fireburn, which are currently not farmed because of inaccessibility. Additionally, two-to-four-hectare parcels of state land have been leased for subsistence agriculture.

However, nepotism and political favouritism are alleged as the grounds on which land has been granted to some and agricultural loans to others. The meeting with villagers revealed that the population was not made aware of the land redistribution or loans offered as incentives to become involved in using the land for agriculture.

Additionally, a decline in agricultural land in Sarteneja arises from its conversion to housing. Foreigners have entered into sub-leasing agreements with villagers and have transformed land use from agriculture to non-agricultural purposes. This has been exacerbated by the repeal of the Alien’s Landholding Act, to allow the sale of land to non-Belizeans. Between 1998 and 2001 the Physical Planning Unit received three applications for conversion of agricultural lands for residential purposes, all of which were approved.

Agricultural Constraints in Hopkins

Small-scale mainly subsistence agricultural production is typical of coastal settlements like Hopkins. Some lands are under the production of citrus, rice, peanuts and ochro. Success in diversifying crop cultivation and commercialising agriculture has been limited because of the failure of peanut and cocoyam production, and returns from the sale of citrus at Bze$2 per bag are insufficient to support expenses. Marketing is problematic and the best prices are not secured for the small farmers. An 18-member co-operative was established to cultivate 20 hectares of land north of the village leased from the Government since 1985. The land was used to grow peanut, onions and rice. Limited success is attributed to low returns although there is a guaranteed market for peanuts in Jamaica. A pump costing Bze$800 to Bze$1000, to draw water from an existing well and a Bze$3,000 electric hammer to grind the peanuts remained out of reach. At the focus group meeting the villagers said they had no access to credit. Perhaps they were not aware of credit facilities available to small farmers.

Although only a few persons in Hopkins engaged in agriculture, in recent times there is a decline of agricultural lands arising from its conversion to housing. As in Sarteneja, foreigners have made sub-leasing agreements with villagers and have transformed land use from agriculture.

CAUSAL FACTORS OF NON-SUSTAINABILITY OF AGRICULTURE

Research by Pemberton *et al* (2002) confirm what has long been suspected about constraints faced by the poor in the LWI in achieving a sustainable livelihood in agriculture, namely that small, undercapitalised farms have:

- Access to mainly sloping lands;
- Low input technologies; and
- Produce multiple cropped, annual, arable crops.

To this list can be added inadequate irrigation and drains, the lack of access to credit for purchasing equipment, the absence of agricultural extension officers to assist in advising potential farmers, and poor marketing arrangements that have all significantly impacted on livelihoods in every village community.

Land-use intensity is excessive on small farms and leads to natural resource degradation especially where farming is on hillsides that require conservation measures. Small-scale subsistence farming provides least protection against natural resource degradation, considering that crops grown have limited canopies, and are seasonal in nature, leaving much of the soil exposed to erosion.

The reason marginal lands, especially sloping lands, are being used for agricultural purposes stems from a dysfunctional land allocation system. Lands are allocated with little reference to its suitability for the intended purpose. The amount of land issued often far exceeds that which can be reasonably be expected to be developed and the result it to put more pressure on existing land resources. Land scarcity in certain areas has resulted in the increasing use of marginal land for agricultural purposes.

The techniques used in agricultural production have serious environmental impacts that are well documented. The use of nitrogen in banana and vegetable production even by poor farmers results in high nitrogen loss that is unsustainable (Deare *et al*., 1992), for it contributes to eutrophication in Caribbean coastal waters. Heavy use of pesticides in banana cultivation to control soil-borne pathogens has adversely affected the broad spectrum of soil fauna, including useful species, such as earthworms and other organisms involved in the carbon and nitrogen cycles. It is argued that this retards the recycling of nutrients, requiring increasing use of fertilizers, which compounds the chemical load of the environment, with implications for associated hazards.

Another casual factor of non-sustainable agriculture is that project funding is seeded initially by development banks and agencies. But the life of agricultural projects is short-

lived once these actors depart, and there are no in-built mechanisms during the early project life to assist farmers in making continued success of their endeavours.

THREATS TO SUSTAINABLE LIVELIHOOD IN AGRICULTURE

Existing pressure on land is compounded by threats from climate change that is expected to reduce the access of the poor to land suitable for agricultural production. Research by Gray (1993) revealed potential temperature increases in the Caribbean, decreases in rainfall, increases in surface wind speeds and increases in evaporation, would collectively increase erosion through overall decreases in vegetative cover. Schapiro (1982) suggests regional temperature increases would increase the frequency of hurricanes, and violent ones at that. If scientific predictions are accurate these climatic changes favour accelerated soil erosion and intensification of land degradation in upland farming areas. Poor coastal communities of St Lucia and Belize have been devastated by hurricanes and flooding over the last ten years. St Lucia was seriously affected by Hurricane Debbie in 1994, the Wave in 1996, Hurricane Lenny in 1999 and tropical storm Lili in 2002. Hurricane Debbie cost St Lucia EC$230 million, the Wave cost EC$12 million in damages, and tropical storm Lili cost St Lucia more than EC$20m in 2002 (GOSL, 2003). In 2000, Belize suffered damage from Hurricane Keith and in 2001 Hurricane Iris struck.

Globalisation also threatens agriculture as preferential prices on Caribbean commodities are removed. The devastation of trade liberalisation has already been felt by banana producers and is expected to manifest itself further in the price other crops can fetch in the future. Small farmers in the LWI are already feeling the impacts. They have not been sufficiently geared up for livelihood shifts, despite knowledge that the winds of change were threatening in international trading arenas a decade ago.

STRATEGIC CONSTRAINTS OF LIVELIHOOD IN FORESTRY

Forestry in St Lucia

The total land area of St Lucia is 61,500 hectares of which forest covers 23,157 hectares, rainforest 16,621 hectares, dry scrub forest 7,515 hectares and grass and open woodland 2,666 hectares. The Government Forest Reserve consists of 7,500 hectares located mainly in the mountainous interior, the majority of which is natural forest (6,607 hectares), and the remainder is under plantation (263 hectares). Within the Forest Reserve is a 4,500-hectare parrot sanctuary.

Approximately 1,560 hectares of Crown Lands are under natural habitat and forested private lands are an estimated 14,170 hectares. In all forest reserves constitute 11 per cent of the total land area of St Lucia. Moreover, most of these areas are under private ownership, which poses land management challenges for the state if use is in contravention with environmental conservation goals, especially watershed management.

Squatting in forested areas has been a perennial problem but since the Forestry Act was amended it has decreased. In an attempt to address degraded areas, and protect and manage watersheds, squatters have been relocated to alternative lands with the option of lease to purchase, as was the case of the Mabouya Development Valley Project started in 1989. The project's focus was the rehabilitation of the Castries Waterworks Reserve that had been seriously degraded by agricultural squatters. The re-afforestation exercise has taken the form of replanting, among others, the Caribbean Pine, Honduras Mahogany, Blue Mahoe and Gemila Herborium. However, selective logging continues and a license costing EC$10 is issued.

Most of the timber felled occurs on private land and is used for construction and charcoal production. Non-timber products include Latanier for broom production, L'Encens for incense production and bamboo in the construction industry. The Maube bark was cut for charcoal, which was unsustainable.

The forest provides opportunities for ecotourism and trails have been used to promote tours, including an 11-kilometre nature trail within the rainforest with a guided tour provided by the Forestry Department. These trails generate the largest share of revenue for the Forestry Department; in one good year, revenue reached EC$18,000.

Tour guides earn US$10 or EC$25. One guide is assigned per group of 15 visitors and one per group of five birdwatchers. A carrying capacity is now being conducted to determine how many visitors can be tolerated without causing disruption to the forest ecosystem. Hunting mainly for leisure has been an activity in previous years. The impact of Hurricane Allen on wildlife, however, has forced a moratorium to be instituted from 2000-2003.

Forestry in Praslin

Forest covers a significant area of Praslin's hinterland stretching into the Dennery Waterworks Forest Reserve. At one time, timber felling near Pelouze was customary as canoe-builders selected the Gommier trees, a well known source of high-quality canoe construction material at a relatively low price.

Illegal logging has triggered multiple environmental impacts, among them watershed degradation, siltation of Praslin Bay, coral reef destruction and lowered sea moss production. Previously, most households used timber as fuel wood. Villagers indicated that only three charcoal burners are currently operating explained by the shift from charcoal as a source of fuel to substitutes like liquid petroleum gas (LPG) and electricity. The bakery, which produces bread for local consumption and exports to surrounding settlements, still uses two wood-fuelled "clay ovens" that depend on commercial scrap wood. The conversion from charcoal production to LPG and electricity has reduced pressure on upland-forested areas as a source of wood supplies and has aided watershed management through lowered denudation of the forest.

Forestry in Anse La Raye
A few people own most of the agricultural lands in Anse La Raye. Poor individuals have tended to encroach illegally on the watersheds located in the hinterland of the village of Anse La Raye, which is under forest and woodlands. Quarrying and harvesting pumice; banana and marijuana cultivation; and tree removal for charcoal threaten the vegetative cover and watershed management.

The stripping of vegetation from the slopes exposes the soil to rainfall, which leads to sedimentation of river courses, existing drains and the coastal waters. The making of small-scale wooden craft items such as canoes and basket weaving imply no significant demand on trees in the forest. Bamboo removal for the manufacture of craft items also occurs, but soil erosion and sedimentation impacts are not known.

Forestry in Belize
The forest cover of Belize is fairly extensive, and based on research findings, relatively intact. Approximately 18 per cent of the land area of Belize is covered by forest reserves. The GOB (2002) in its National Report to the World Summit on Sustainable Development emphasised the role of the forests as important to watershed management, slope stabilisation, carbon sequestration, biodiversity and critical habitats. Forests also make a significant contribution to the tourism sector and are marketed by Belize as a major aspect of the ecotourism experience. As tourism revenue is on an upward path, the value of forest conservation is well recognised, and the land area of forest under protected area status has increased.

Variations in the estimates of deforestation rates are wide ranging from 0.7 per cent during the period 1981 to 1985 and 0.2 per cent from 1985 to 1990 (WRI, 1992; 1994). The approximate current land conversion caused by agriculture suggests deforestation rates of between 0.7 per cent and one per cent, which is high in light of the low population density of Belize. Rough estimates of land conversion stemming from milpa farming are up to 2,873 hectares of forest per year, and smaller farmers and commercial agriculturists up to 2,023 hectares of forest per year. These calculations suggest that agricultural expansion results in the likely conversion of forestlands rather than other land types.

Given the small percentage of good agricultural lands under protection, and knowing that a land shortage may develop in the future, the Forestry Department has considered de-reserving forests for agricultural use. The World Bank (1995) argues that this exercise should be informed by appropriate planning.

CAUSAL FACTORS OF UNSUSTAINABLE FORESTRY

Watershed management has been the primary reason for the establishment of forest reserves in the Caribbean. Despite the designation of these reserves the lack of proof of land ownership; the absence of an integrated system of planning; inadequate legislation to

control land development; and an inadequate capacity to monitor development and pursue enforcement action, have collectively weakened watershed protection and forestry management.

Deforestation in Belize has been linked to, among other factors, the lease-to-purchase system and land pricing. The lease rate in 1996 was extremely low, at Bze$2 to Bze$3 per 0.40 hectares per annum. Furthermore, the formula for setting the purchase price had the perverse effect of higher prices for small parcels as opposed to larger parcels, and the price for large parcels was lower than market prices. The low land prices induced excess land demand, which had the effect of pushing poor people, who were unable to participate in the formal land market, to encroach on forested areas.

Deforestation is the result of poverty among farmers; lack of access to other income sources; inadequate land management; weak tenure rights; lack of access to appropriate technologies for cultivation under fragile ecological conditions; and a biased price incentive structure that promotes land-intensive crops.

Management constraints such as human and financial resources are hampering efforts to minimise threats from logging, agriculture and squatting. Pressure for land arising from the population's demands is increasing, as seen in the expansion of smallholder agriculture, shifting cultivation and commercial agriculture. The emphasis on expansion as opposed to intensification has brought about deforestation. This is not the only source of deforestation because logging, both legal and illegal for fuel wood or simply land clearing to establish property rights, have also contributed to forest cover loss.

THREATS TO SUSTAINABLE FORESTRY LIVELIHOODS

Threats to sustainable livelihoods in forestry include hurricanes, bush fires, squatting, the designation of protected areas and pressures from ecotourism, if carrying capacity studies of visits to the rainforest are not undertaken.

STRATEGIC CONSTRAINTS TO TOURISM LIVELIHOODS

Tourism in St Lucia

Constraints in tourism exist at the macro-level and the micro-level. At the macro-level the livelihood of the poor is geographically dispersed, so that it is not unusual for villagers to be employed by resorts in other parts of St Lucia. Job security of the poor in the tourism sector is in jeopardy if the damage inflicted on the environment by resort operations is not tackled. The United Kingdom Centre for Economic and Environmental Development (UKCEED) conducted a "destination audit" for British Airways Holidays in 1997 to assess the impact of tourism in St Lucia with a focus on all-inclusive resorts. The study concluded that St Lucia's transitional phase from low-density to high-density, mass-market tourism has been associated with increasing environmental stress. A summary of the main findings relevant to this report is as follows:

- Land consumption, habitat loss and disturbance to ecosystems for site and infrastructure development;
- Destruction of coral reef through increased sedimentation from land clearing for construction of hotels and roads and artificial beach maintenance;
- Water pollution as a consequence of hotel wastewater plants not working or operating below optimal capacity; and
- Inadequate solid waste management and disposal systems, which have led to the leaching of pollutants from landfill sites.

An interesting conclusion was that all-inclusive resorts were generally found to be associated with significant environmental impacts primarily because they are larger-scale resorts, which occupy land on the beachfront, but that similar impacts were noted from conventional hotels of a comparable size. The report went on to note that the all-inclusive resorts had the advantage of improving environmental management on the basis of well-developed management systems, higher technical expertise, financial resources, and economies of scale arising from high year-round occupancy rates.

Renard (2001) notes that over the past decade, many actors have argued that tourism can potentially bring more equitable and sustainable benefits to people, and a number of experiments have been tried to achieve these objectives. However, as Renard (2001) points out, such experiments failed to break the dominant culture and patterns of organisation within the tourism industry, and had no significant positive impacts on people and host communities.

In response, the St Lucia Heritage Tourism Programme (SLHTP) was initiated. The programme has undertaken product development and management, marketing, capacity building, awareness and communication, policy and programming. The Ministry of Tourism is promoting heritage tourism as a complementary product to nature tourism. A Department of Heritage Tourism has been developed with its own programme and a Board appointed by the Minister for three years. The Board focuses on:

- Policy development (including linkages with culture and agriculture);
- Capacity building for all institutions in the tourism sector; and
- Financing for sustainability including re-orientating the banking sector's interface with small tourism enterprises.

The sustainability of community-based tourism is uncertain, considering that the SLHTP is jointly funded by the European Commission and the Government of St Lucia. It was initiated with a total budget of EC$5.8 million in 1998 and was to operate over a three-year period, which has since been extended.

To facilitate access to credit by small entrepreneurs, the SLHTP is working with a non-traditional financial institution, the National Research and Development Foundation (NRDF), to provide soft loans to these micro-businesses. However, experience with other donor-funded projects is that with the withdrawal of the donor, the projects lose their dynamic and the sustainability of the project is compromised.

The sustainability of small-scale, community-based tourism in St Lucia's coastal villages is also questionable. Although this type of tourism consumes less land than large-scale resorts, negative environmental externalities deter visitors from over-nighting and spending in the communities. These environmental impacts are not necessarily the result of the tourism activity per se; they are traceable to overall infrastructure deficiencies within the coastal villages, for example, inadequate water and sewerage infrastructure. Whereas the upscale resorts have both financial and technical resources to correct the environmental stresses, these small, community-based tourism ventures like guesthouses are less well endowed, and are in not so favourable a position to attract stay-over visitors. SLHTP has been working on developing criteria for the suitability of village accommodation.

Tours are conducted for visitors as a means of generating income, but there is some conflict arising from competition among the public and private tour operators including small communities. For instance, the Forestry Division operates tours, which compete with small community-based tour guides. Big private tour operators also compete with small community tour guides. Heritage Tours has, however, incubated community tour operators for the three years that it has been in existence.

Tourism in Praslin

The St Lucia National Trust (SLNT) has been heavily involved in promoting tourism through several initiatives in Praslin. In 1988, Praslin was designated by the National Trust as a Protected Area, using the International Union for the Conservation of Nature's classification. The SLNT focused on two protected areas in Praslin, the Frigate Islands Scientific Reserve and a Managed Resource Area along Praslin's coastline.

The Praslin protected landscape covers 800 hectares of land along the central east coast of St Lucia where two rivers reach the sea. The defined area runs from Mandele to the north of Praslin to Praslin Bay, with most preservation and protection work being done along the coastline. Among the protected areas are the Praslin mangrove (red fringing mangrove), the Frigate Islands Nature Reserve, and Historic Sites such as Praslin Islands, the ruins and sugar mills.

The area offers eco-tourism products such as several hiking trails constructed in the hinterland to allow visitor access to the rich biodiversity of the forest. Praslin is also a leatherback turtle nesting site although illegal poaching has drastically reduced the numbers that come upon the beach to lay eggs, despite a EC$5,000 penalty for slaughtering the turtles. Coastal beautification has been embarked upon by the SLNT in conjunction with the community. Although Praslin has the potential to develop heritage tourism, using the archaeological ruins where the Battle of Guadeloupe was fought, no such endeavour has been pursued because this requires product development and marketing.

Economic benefits have occurred from efforts at promoting tourism in the coastal community, although there is much room for improvement. Employment was generated through the construction of trails, but the sustainable livelihood possibilities were

weakened by limited staff to market the trails.

It costs EC$1,500 to train a tour guide but not all are able to find jobs.

Twelve persons from Praslin were trained and so far only two have been employed. One member of the community is employed by the National Trust to conduct trail tours.

A fixed rental fee is paid to the SLNT by the operator and a charge of EC$1 per visitor goes to the landowner of the trails. New contractual arrangements are in place with the privately owned Eastern Tours, whereby an entrance fee of EC$10 to EC$15 is charged, and the tour guides charge a fee of EC$40. All bookings are done via the SLNT. Lunch catered by members of the community can also be obtained.

The SLNT was quite active in assisting Praslin in developing ecotourism in the early 1990s. However, with the withdrawal of the SLNT, community participation declined, transparency disappeared, a leadership crisis developed, and conflicts emerged within the community.

Visitor accommodation is available at two guesthouses. Several bed and breakfast workshops have been organised in Praslin by the SLNT. A bed and breakfast operation was unsuccessfully tried on an experimental basis. Requests have been made by community members for a feasibility study to be done on such small-scale enterprises. The main constraint to developing a booming guesthouse market is that individuals have no access to loans in the absence of collateral, which is the peculiarity that exists given the family land situation.

A tourism proposal covering 202 hectares of land was submitted to the planning department including an environmental impact assessment. The proposal was forwarded to Cabinet but remains undetermined. Another proposal envisaging 90 eco-lodges closer to Mamiku was approved in 1997. The proposal to build the Praslin Bay Resort, involving dredging of the bay and mangrove destruction, was rejected on environmental grounds.

A key deterrent to the development of tourism in Praslin is religious conflict. Half the community are Catholics and the other Adventists who do not approve of alcohol use or work on the Sabbath. To promote tourism there must be the sale of some alcoholic beverages and a willingness to serve visitors if they should arrive on a Sunday.

Another constraint is that tourism on the east coast of St Lucia is not well marketed and therefore not as many visitors are drawn to the east coast villages as to those on the west.

Tourism in Anse La Raye

Anse La Raye has natural assets that can make tourism a feasible alternative income-generating activity for the poor. These include the Anse La Raye Waterfall, the second largest on the island, interesting dive sites at Anse La Raye Fall and artificial reefs. Two viewing sites have been designed at both entrances of the village. The village also has a

museum and sugar mill that are marketed as visitor attractions. However, heritage tourism, using the seafood night, has been most actively promoted to induce economic opportunities.

The impetus for developing a fish-fry activity in Anse La Raye, using the Oistins model in Barbados, came from the political directorate (GOSL, 1999). In 1998, the Ministry of Tourism determined that the seaward frontage of Anse La Raye had potential for development given the strategic location of the village on the tourist route on the west coast. The goal of the Ministry of Tourism was to use the fish fry activities for employment creation in the fishing, catering, entertainment and crafts sector.

The St Lucia Heritage Tourism Programme set out to develop a complementary product based on cultural tourism that could be integrated into more conventional tourist packages, so as to encourage tourists to spend more in the local communities rather than in the resorts. Existing international tourists are the target market, but the aim is to broaden the market to include domestic tourists.

Fish fry in Anse La Raye is an important economic activity involving some 36 vendors, mainly women. Renard (2001) found that approximately 15 vendors benefit directly form this venture, as well as the bars and nightclubs. The Anse La Raye seafood night, according to Renard (2001), had become the most popular activity of its kind in St Lucia. This has changed, as field interviews in 2003 found and the reasons for this will be discussed under the section on new knowledge.

There is no permanent space allocated for vending. Instead, the main street is blocked off on a Friday evening to allow for a pedestrianised area lined with fish fry vendors. It is estimated that an average of 1,000 people visit the fish fry event each Friday. Parking space is a constraint given the narrowness of the streets and the number of vehicles transporting persons to the village. Car thefts have been noted in Ashley *et al* (2001) report. Existing waste disposal facilities are inadequate. Anse La Raye consequently faces new competition from Vieux Fort, which is launching a fish fry.

The village centre is well laid out with public buildings along the main streets. However, outside the nucleus of the town, housing, generally of poor quality, is haphazardly laid out **(See Fig 9.1).** Family lands have contributed to this unplanned siting of houses. Individuals have security of tenure, but the lands cannot be sold on the open market, and must be subdivided among each generation of individuals. Squatting does not exist, but settlement resembles that of organic, informal development. In many instances, two houses have been built on a single parcel of land, increasing housing density. Furthermore, individual access to property is impossible, and access roads cannot be built without relocation of some properties.

Spontaneous settlement and haphazard subdivision of family land compromise infrastructure provision and upgrading. The 2000 census revealed many residents have septic tanks, or no facilities at all, disposing night soil into canals. Public toilets have been recently constructed along the coast to make access to facilities better. The poor

visual quality and deficient basic infrastructure make Anse La Raye unsuitable for stay-over visitors (See Appendix 1, Figure 3).

FIG 9.1. The Village of Anse La Raye

The development of tourism in Anse La Raye is faced with serious infrastructural deficiencies. Poor drainage and the non-existence of sewage treatment facilities give the town a noticeably bad odour. Unsightly clogged drains; the stench of untreated sewage; an architecturally unattractive waterfront; and haphazard layout, make it difficult to market the town as a tourism attraction with an ecotourism focus; hence the emphasis on cultural tourism. Although the jetty was rehabilitated after destruction by Hurricane Lenny, the newly constructed jetty is not used by charter boats. Prospects for beach tourism are very limited, given the poor aesthetic quality and the pollution caused by sewage entering the bay.

Environmental degradation is a possibility in the town and marine area, given clogged drains and the lack of sewage disposal facilities. The Caribbean Environmental Health Institute reported that the coastal water quality is poor owing to high levels of faecal coliform arising from waste disposal practices—the dumping of night soil into the Anse La Raye River and the bay. Poor drainage exacerbates flooding, which poses more problems for public health given the lack of sewerage facilities. The damage to the coral reef arising from ground seepage of liquid effluent remains unknown.

The Cinquante pas de la Reine, a 57-metre coastal reserve, is allocated for village development by law. In Anse La Raye, the Government has utilised this coastal land for communal facilities such as the health centre, police station, fire station, community centre, public toilets, washing facilities, the fish depot and craft market. Since the land use has not been adequately planned and rationalised in terms of priority uses, the outcome has been disorderly development.

Before Hurricane Debbie, this area was an open space with almond, coconut and flamboyant trees, benches and picnic tables.

In 1999, tourism and marketing consultants, Wave Communications, prepared a tourism development plan for the Anse La Raye Waterfront. Among suggestions for improvement of the aesthetics and infrastructure of the village were:

- Re-paving the sidewalks using decorative elements as in the rehabilitation of Castries sidewalks;
- The widening of drains, particularly significant widening of Petit Ravine, one of the main drains that joins the sea;
- A comprehensive sewerage system for the village;
- Rationalising the location of the boats and separating them from the vending booths; and
- Relocation of the infant school on the southern end of the beach to build facilities such as a restaurant and accommodation facilities.

In 1999, a proposal for establishing a botanical garden on 522 hectares centred on the Venus Estate was discussed at the consultation at Anse la Raye. A pre-feasibility study on the development of St Lucia's first botanical garden, funded by the Organisation of American States, determined that Anse La Raye presented a number of opportunities as a potential site. The assessment was based in part on the predicted expansion of the cruise sector and the consequent increased demand for half-day tours. The project was expected to stimulate the village economy, particularly handicrafts and catering, and the development of a local accommodation sector. The constraint to development highlighted in the report was the lack of good road access.

The St Lucia Heritage Tourism reported that the consultative session held in 1999 revealed divisions on the basis of generations, families and political parties in the Anse La Raye community so that further dialogue was necessary before substantial investments in project implementation were made.

Tourism in Belize

Compared with its neighbours in the Caribbean and Mexico, Belize is a newcomer to tourism; it established a Ministry of Tourism in 1984. The World Bank (1995) reported that fear of social and environmental consequences of mass tourism, already manifest in the wider Caribbean, delayed public support for tourism in Belize. In the 1980s, declining international sugar prices; unease over the dismantling of trade barriers and the threat to Belize's protected US and European Union markets for agricultural products prompted the Government of Belize (GOB) to diversify the economy into light manufacturing and tourism.

The GOB obtained financing for a new airport outside Belize City and major road improvements, which stimulated private sector investments in hotel construction and related tourism facilities. The Southern and Hummingbird Highways were designed to

serve as a catalyst to tourism development to the south of the country, including places such as Hopkins.

Belize has a unique blend of tourism products among Caribbean countries. They include reefs, good beaches, rainforests, nature sanctuaries and significant cultural assets. With the second longest barrier reef in the world, and numerous archaeological sites, mainly Mayan ruins, the country has positioned itself on the tourist map. Belize is part of a five-nation marketing effort to draw tourists to village communities and archaeological sites that form part of "El Mundo Maya" (on the Ruta Maya). Relative to the rest of the Caribbean Region, Belize has a small share of the tourism market, so that a closer look at promoting its unique products is warranted. A Tourism Strategy Plan has been prepared by the Belize Tourism Board to provide the basis for investment and development.

Belize does not attract many large groups or charters because of the small size of most hotels, and most of the charters it receives go to Belize City where the largest hotels are located. Belize is on the itinerary of multi-destination travel packages, mainly geared to archaeology in Central America and Mexico, which tend to be smaller charters that attract high-income visitors.

The lack of mass tourism and charters; small hotels, two demand peaks in winter and summer; significant troughs for only two months; and a variety of dispersed nature and cultural tourism attractions are seen by some sector specialists as appropriate characteristics, given the fragile natural assets on which the country's tourism is based. However, the small number of visitors relative to its coastal assets, and wide variety of inland natural and cultural assets, allow Belize to expand tourism without degrading the environmental assets that draw tourists.

Protected areas are used in Belize to satisfy non-consumptive demands such as tourism, recreation, research and education. Non-consumptive uses are not necessarily in conflict with conservation objectives once they are well managed and disturbances are minimised and concentrated. It is estimated that tourists visit on average three protected areas during their stay in Belize.

An estimated 214 archaeological sites in the coastal zone include Mayan trading posts and settlements, as well as relics and historical monuments of the colonial era. Threats to these sites arise from housing development, road construction, land clearing, looting, and inappropriate excavation techniques. These assets have become the focus of several community-based tourism initiatives, combining income generation with preservation.

France and Wheeler (1995) found that over 90 per cent of coastal development in Belize is under foreign ownership and there are no plans to restrict foreign land ownership since overseas investment is needed (Cater, 1992). Belize recently dismantled its Aliens' Landholding Act and this move has severe consequences for land alienation of locals.

Belize generally attracts "comfortable naturalists" who prefer the big hotels. Recognising therefore the poor communities were not gaining from the increase in tourism trade, the

GOB in 1994 identified 26 communities which had plans to establish facilities or activities for receiving visitors. Sproule (1994) noted that the GOB had supported the approach because it was considered an improved way of broadening the distribution of financial gains from tourism; it generated income in otherwise depressed rural areas; the activities had no gender bias; and community tourism diversified the national tourism product.

Specific similarities were identified among successful community initiatives as follows:

1. In the early stages of development, community- based tourism initiatives have been assisted by persons originally from cultures outside the local community.
2. As community-based tourism appears to be developing in rural, rather poor areas, quite small amounts of income can make the difference between viable and not viable for the beneficiary population; but in most cases tourism was simply a welcome source of additional cash.
3. The most successful ventures started out small and gradually expanded.
4. The communities need assistance with marketing of their product to enhance the visibility of their activities and to increase the number of visitor arrivals.
5. Protected areas with community-based tourism initiatives have developed into research sites as well.

Tourism in Sarteneja

The Corozal District East Special Development Area (SDA) was declared in 1991 to determine the development potential of the area and guide land use in and around Sarteneja. The land covered by the SDA is predominantly coastal wetland, though there are areas with agricultural potential dispersed around the swamps. The villagers indicated they were not consulted on the SDA Plan. Further, Cabinet appointed a committee in the 1990s to prepare a Development Plan for Sarteneja with an emphasis on tourism development, but the absence of progress to date may be explained by a lack of human and financial resources.

Proposals received and approved by the Planning Department for Sarteneja over the last five years are residential-and-resort, and residential (See **Table 9.2**). Moreover, the environmental impact assessment for the Warree Bight has been accepted, which if implemented by the developer will have significant impact on tourism in Sarteneja.

TABLE 9.2
APPLICATIONS FOR LAND USE APPROVALS IN SARTENEJA (1998 TO 2002)

Location	Size of land	Type of Development	Status of Application
Warree Bight	1257 hectares	Housing and Resort	Provisional Approval
Southwest of Sarteneja Village	1.79 hectares	Residential	Final
Sarteneja	11.49 hectares	Agricultural Subdivision	Final Approval
West end of Sarteneja Village	6.83 hectares	Residential	Final

Source: Physical Planning Department 2002.

Tourism in Sarteneja has never taken root in spite of numerous incentive loans offered by the international community and the Belizean government. This stands in contrast to statements by some villagers in the focus group meetings that improved access to loans could help stimulate the involvement of more persons in tourism. The Belize Tourist Board had also provided free tour guide training. Despite these initiatives, tourism has not taken off. Several reasons were identified as constraints to developing the sector:

- The product being offered was not properly defined and guest houses were just built.
- Sarteneja does not attract stay-over visitors because there is too little to see and do in one day.
- Access is limited due to the poor roads. A ferry service from the southern end of Corozal, transporting visitors and their vehicles to Sarteneja, Shipstern Nature Reserve and Lagoon, and Warree Bight, takes approximately 90 minutes.
- The infrastructure of Sarteneja is in need of upgrading, particularly the poor road condition from Orange Walk to Sarteneja; low voltage in electricity; and the break down of the pump which affects water transmission.
- Sea front land is sold out.
- Mosquito infestation because of swamplands has retarded the success of tourism.

In one success story in Sarteneja tourism, a young entrepreneur created a website to market the family's seafront guesthouse. Local and international visitors have visited, but poor road infrastructure is seen as a deterrent to a success. Boat transport used by visitors to the guesthouse is seen as the only feasible alternative to land travel at the present time.

Employment in tourism is geographically dispersed and the focus group meeting confirmed that about 10 Sartenejans work in the resorts as cleaners and cooks in San Pedro or as boat. To enhance income-earning opportunities Sartenejan fishers have been targeted beneficiaries of a newly approved COMPACT project for training as marine tour guides. As found in other case studies, however, training may not lead to improved income.

Resort development has been proposed in Sarteneja for some time now, including the Warree Bight. Lands acquired by the GOB for Sartenejans for agricultural production. The project failed because of poor soils, and lands were sold to Ministers of Government. Since then, there have been political conflicts over access to land among the people of Sarteneja, the GOB and the Shipstern Company.

Warree Bight bought approximately 4,856 hectares of land on the local market. The different investors in the company have distinct interests including eco-lodges and golf course construction. In phase one, 20 to 25 lodges will be built and will employ persons from Sarteneja in construction.

Infrastructure constraints were identified, in particular access to potable water, which is drawn from wells, although there are water-table constraints. Water recycling will be used to irrigate the golf course; Sarteneja is very arid. The airstrip at Sarteneja is currently closed and is not of international standards. Light small aircraft use a dirt road as a landing strip. However, the US tourism market will be targeted and it should be easier to bring clientele to Chetumal, have them processed at the border, and allow them to commute by sea to Sarteneja.

The relationship between the Shipstern Nature Reserve and the people of Sarteneja is strained, one reason being the complusory acquisition of the villagers' lands by the GOB for the establishment of the reserve. The displacement is exacerbated by recent moves by the Shipstern Nature Reserve to acquire lands abandoned by Sarteneja farmers.

The Sarteneja Marine and Lagoon Estate Limited applied to the Physical Planning Unit in 1998 for approval to develop 1,257 hectares of land for tourism, housing and recreation. Final approval has been deferred because the proposal is not in conformity with the Corozal East Special Development Area Plan.

Participants of an assessment of Community Management of Protected Areas from Sarteneja would like to engage in income-generating activity closer to home (Palacio, 2002). Tourism was seen as a viable alternative to fishing and specific recommendations were advanced:

- Establish a marine museum;
- Plan a cultural/heritage fiesta throughout the year;
- Establish a manatee sanctuary;
- Birding;
- Revive the butterfly production for export; and
- Promote sailing.

Tourism in Hopkins

Hopkins people identified tourism as having income-generating possibilities more than a decade ago. However, it did not take-off because of a persistent migration of young people to Belize City or overseas. Most investment is now coming into Hopkins via foreigners and returning Garifunas previously residing in Chicago, USA. In Hopkins there are guesthouses owned by villagers, and foreign-owned resorts such as the Jaguar

Reef Lodge (partially destroyed by fire in 2003) and Hamanasi Dive and Adventure Resort, located within the coastal zone. A major issue is that lands belonging to Government of Belize and the Garifuna are being sold or leased to foreigners and returning Garifunas from Chicago. This is driving up land prices beyond the reach of the local villagers, and limiting the amount of land that will be accessible to younger generations of Hopkins people.

Young people of Hopkins have expressed an interest in tourism for it is seen as having faster income-earning opportunities than traditional natural resource-based livelihoods such as fishing or farming. However, in the past young people could not access credit for training or the purchase of equipment, for unlike some older villagers, they had no collateral. As result of training, some youth are already engaged in tourism as tour guides, boat captains, and dive masters. To facilitate the transition to alternative sustainable livelihoods, fishers from Hopkins have been selected for training as dive masters and instructors under a recently approved COMPACT project. The other types of activity regarded as income generators in the sector are arts and craft for which the Garifuna people are noted. Local gift shops sell crafts manufactured by skilled local craftsmen. At present some Hopkins youth are contracted as musicians to the hotels, along with the Ligemeri Youth Group, which performs indigenous dances periodically at the local resorts. Tour guide activity was also seen by young males as a related income generator. The older fishers, having expressed little or no interest in learning new skills to shift their livelihood to tourism, were therefore becoming marginalised.

Women were already working as cooks and cleaners in the guesthouses and resorts. A bed-and-breakfast operation was set up by the Sandy Beach Women's Co-operative. CARD has assisted the Sandy Beach Women's Co-operative in establishing restaurants, and handicraft making. The venture never really worked since the women are not making much income from "lower end" tourism. It is believed that these operations are unsuccessful because the women are not driven to make cash, but see these ventures as cooperatives in which, on the equity principle, everyone shares in the proceeds. Even if it does not generate much income, it is seen as a welcome opportunity to spend time away from their homes, doing something which engages their time and energy.

Infrastructure constraints were observed on the field visit and confirmed by the chairman of the Village Council. The main inadequacies were lack of water and sewage disposal facilities. Some tourism facilities had sewerage treatment deficiencies but with political intervention it was difficult for the planning department to enforce against the operators. The road to Hopkins has recently been upgraded, as noted on the field visit in 2002. CARD is promoting the idea of Hopkins as a potential cruise ship destination, which will require cruise ship-berthing facilities.

Tourism was seen as seasonal and in low season locals patronise Hopkins. As a survival strategy, many villagers return to other occupations such as fishing and less so farming.

OVERALL CONSTRAINTS TO PRO-POOR TOURISM (PPT)

In both St Lucia and Belize tourism policy is not designed with a pro-poor focus but as part of an overall development drive. The poor in the focus groups have listed factors with some bearing on why tourism is not succeeding as an income-generating activity of the poor. These are broadly in keeping with those summarised by Ashley *et al* (2001):

- Limited access of the poor to the tourism market which is dominated by well-established and connected elites;
- Lack of marketing;
- Product quality is not to international standards that would attract tourists in search of luxury and pampering;
- Existing policy framework rigidities, including land tenure, regulatory context, and the planning process; and
- Implementation challenges—lack of skills, managing costs and expectations, and maximising collaboration across stakeholders.

Access of the poor to markets

The poor are unable to fully and effectively participate in tourism because they lack understanding of the onerous demands of a very complex market. Vertical linkages primarily among hotels, tour operators and airlines make it near impossible for the poor in coastal villages to compete. As Renard (2001) has remarked, the doors are hard to open. For example, the prospects of the poor penetrating the dive tourism market were deemed bleak by CANARI since most divers stay at the all-inclusive resorts in St Lucia, and entry costs into the market are generally high.

Although Renard (2001) points out that only large businesses succeed in entering the system, economic elites are not necessarily large-scale operators that penetrate the market. As was found in the case studies, they can be small entrepreneurs such as in Praslin, Sarteneja and Hopkins who historically have dominated business in these villages, or have social networks that exclude poorer members of the community. Generally, however, the poor face a virtual monopoly by the economic elite which understands the advantages of economies of scale, is able to work with the existing regulations, and capitalises on incentives that in any event favour large operations, as the incentive legislation is biased. Women have a difficult time breaking into these markets because gender traditions make their involvement in enterprise particularly difficult. The status quo is unlikely to change in the near future given the inability of poor people to compete in a very complex market.

Lack of Marketing

Marketing is a definite constraint to the poor. Overcoming this requires establishing linkages with private operators, getting the support of the national tourism board, and improving marketing skills of the poor through intensive training. The UK Tour Operators noted only four out 21 tour operators had heard of the St Lucia Heritage Tourism Programme, and their representatives at the time did not know of the heritage products. Besides, most of the tour operators said their clients were interested in sun, sea

and sand and not in cultural tourism. Success stories in attracting visitors to Sarteneja and Hopkins were linked to Internet advertising by the independent small entrepreneurs.

Product Quality
The quality of the product offered by the poor has to be exceptionally high to meet international standards. Many of the tourists that visit St Lucia and Belize are high-income visitors who expect a premium-quality product. The quality of lodges is still not of the standard that would satisfy the high-end market, and infrastructure is still too rudimentary in the coastal villages to support tourists wishing to overnight. While cultural tourism is a good product to market in the Caribbean, the amenities and ancillary facilities at the village level are too unsatisfactory to make the product attractive. Foul-smelling drains, lack of bathroom facilities, and uncollected litter are a "turn-off" for tourists of a certain calibre. The souvenirs also need to demonstrate value added. The commercial sustainability of tourism initiatives in the coastal villages is at risk if the demand for quality cannot be fulfilled. Ashley *et al* (2001) have found that in St Lucia, there have been problems over meeting international standards for product quality and, as noted by Swarbroke (1995), tourists want value for money.

Policy Framework and Planning Process
Government commitment and capacity for providing an enabling policy framework unlocks opportunities for the poor. There is a high level of St Lucian Government commitment to assist the poor to enter the tourism market, following the collapse of the banana industry.

Still, existing legislation and incentives favour big business and present entry barriers for the poor. The Tourism Incentive Act of 1991 has tax holidays for 15 years for new hotel construction and 10 years for renovations. The minimum number of hotel rooms to qualify for incentives is six, which dampens initiative to develop small guesthouses. The Tourism Incentive Act is to extend the existing 15-year concession for hotels by an additional year for each EC$10 million invested up to a maximum of 20 years, as announced by the Prime Minister in the budget of 2001-2002. As Clauzel (2001) observes there is "deafening silence on the incentives for the informal sector, and financing for micro-enterprises in tourism." Ashley (2001) contends this is critical, as many governments remain conservative in viewing tourism as a generator of foreign exchange rather than as a means to alleviate poverty.

Policies beyond the tourism sector are equally important and must address land tenure, the lack of spatial planning, and infrastructure deficiencies that are noticeable in the poor coastal villages of the Caribbean.

Implementation Issues
Constraints to successful tourism in poor coastal villages arise from failure to implement programmes that develop skills and build capacity among individuals and the community and stimulate collaboration at all levels. Numerous expectations look like wish lists which do not reflect the reality of the tourism sector. For tourism to work at the village level, the poor must have access to these physical assets (electricity, roads, and water),

which they simply cannot finance. Costs are not necessarily high, as the Anse La Raye fish fry demonstrates, and there are benefits from limited investment.

Sustainable tourism, on the whole, however, requires substantial funding, especially if the location needs infrastructure and amenities. Government alone cannot provide all the funding, so that this must be sought from NGOs and donors. As with so many development projects, donor funding does not exist in perpetuity; once the donor has withdrawn, the sustainability issue is raised.

Village politics divides communities and undermines efforts at sustainable livelihoods including tourism, as all four case studies demonstrated.

THREATS TO SUSTAINABLE TOURISM

Sustainable tourism is threatened by global events and changes. The impact of global terrorism has negatively affected air travel and holidaying, although the Caribbean seems to be a comparatively safer destination.

Global warming accompanied by sea-level rise is forecasted to affect islands and countries with coastlines. Increased frequency and intensity of hurricanes, also anticipated, will destroy tourism facilities along the coast (**See Figure 1**)

FIGURE 9.1.
Hurricane damage in Caye Caulker where tourism is the main revenue generator for residents

Globalisation and the removal of trade barriers, including the dismantling of the Aliens' Landholding Act and the sale of freehold land or sub-leasing to foreigners, pose serious threats to sustainable tourism. In Belize, Commonwealth citizens are not regarded as aliens and thereby gain access to Belize's land. St Lucia is also considering dismantling its Aliens' Landholding Act. These amendments have already allowed coastal lands and beachfront property in Hopkins to change hands from local to foreign. Changes will threaten investments in tourism and certainly impact on the potential of the poor in the LWI to make any investment.

STRATEGIC CONSTRAINTS TO AGRO-PROCESSING/MANUFACTURING

Praslin

A limited quantity of land is under industrial use because the economy of Praslin has traditionally been based on agriculture and fishing. The shift to secondary activity has been more recent with the demise of the banana industry. A few Praslin residents have diversified into micro-industries such as agro-processing, bread making, craft making, and broom making. The main agro-processing products are sea moss, pepper sauce, condiments, honey, farine and sweets. Demand is so high for sweets produced by Frootsie that the market absorbs all the produce.

The growth of agro-processing industries in Praslin raises three main land use planning issues. Firstly, industrial land use is not segregated from other land uses, as there are no specially designated zones for industries. The pattern of land use is mixed, tending to be both housing and industrial. A second issue is the establishment of cottage industries without adherence to planning guidelines and approval from the Physical Planning Department, posing public health and safety threats to surrounding residents. A third issue is the carrying capacity of existing infrastructure to accommodate industrial demands. Although industrial operations are small-scale, they nevertheless place demands on existing infrastructure, especially water to support commercial agro-processing enterprises. Additionally, the capacity of drainage and waste disposal infrastructure to handle liquid effluent and solid-waste generation from these small-scale plants is inadequate, and receiving water bodies such as rivers, streams and coastal waters may be under stress. These agro-processing industries may therefore be affecting the other livelihoods of the poor of Praslin, for example, fishing.

The water infrastructure in Praslin has been upgraded since 1997 bringing water supply to the village from a pipeline located at the water intake on the Fond River. The water intake, which falls in a protected area, is threatened by cultivation in the watershed above it, and by 700 feral pigs that roam freely in the watershed. Such activities are a potential source of pollutants and may be the cause of high coliform of an estimated 250 counts in the water at source, measured by water quality tests. Research done by Pemberton et al (1995) point to the impact of livestock waste which is washed into rivers or waterways resulting in sedimentation of water courses, foul odours, destruction of the water habitat, and the general pollution, making it an inadequate source of potable water for industrial (such as agro-processing), or domestic use.

The water transmission main was extended from Mamiku to Praslin using a community-based approach in collaboration with two partners, GTZ-CEHI and WASCO, and facilitated by the St Lucia National Trust. Sponsorship was provided through a basic needs fund under the Praslin Community Development Programme amounting to EC$40,000.

The project made possible access to water by all households in Praslin, providing connections to those willing to pay for a metered in-house tap service. The level of defaulting customers is in the region of 20 to 25 per cent, and a strict disconnection

policy is enforced. Hence, some poor households in the community have no house tap or yard tap service and still rely on public standpipes. The sea moss factory is metered and charged commercial water rates.

These questions arise:

1) Are water rates too high for low-income households, and should cross-subsidisation be introduced to allow access to a basic service even though customers are willing but unable to pay?
2) If households engage in agro-processing, how will they sustain this livelihood if they are unable to afford current water charges and are disconnected?
3) How can commercial users such as the sea moss manufacturers compete with big business, if they are charged commercial rates for water, as well as electricity?

The answer to these questions is in the use of cross-subsidisation of the poor by the wealthy commercial users through price differentials. This pricing structure should apply at the national level and not at the village level per se.

A waste management project with two components, solid waste and sewage, was also undertaken using GEF Fund because refuse was being dumped into the mangrove. The lack of integrated infrastructure provision in Praslin threatens human health and environmental damage because, although water infrastructure has been provided, wastewater disposal facilities have not been supplied.

Anse La Raye

Land under industrial use is insignificant because the population has only recently diversified from agriculture and fishing to light industrial activity on a limited scale. Several small-scale operations manufacture pepper sauce, seasonings, clay pots, baskets and wooden canoes. A shortage of bottles for pepper sauce is affecting marketing, and options for local sourcing are unknown. These are cottage industries that operate out of the houses of individuals. The capacity of existing drainage and waste disposal infrastructure to facilitate these operations is limited, and it is suspected that waste enters streams and the marine environment.

NEW KNOWLEDGE TO ACHIEVE SUSTAINABLE LIVELIHOODS

The new knowledge presented here is not necessarily new wine in new bottles. Some of it is vintage wine in new bottles and is restated so that policymakers see the validity of earlier insights that have even more relevance to the Caribbean's poor in the use of natural resources in the LWI.

Agriculture

An emerging debate is the future of agriculture in reducing the plight of poor people in the LWI of the Caribbean. The long-term global fall in agricultural commodity prices and trade liberalisation have undermined the profitability of agriculture as a business. This scenario is combined with a declining agricultural resource base that requires new insights. A "do nothing" approach will certainly not alleviate poverty in the Caribbean. Further, the small individual farmer cannot be expected to transform the agricultural sector through more responsible natural resource usage in the short term. More drastic measures are needed at higher levels of policymaking and implementation, without which poverty in the LWI will persist. There remains much doubt, even if high-level interventions are made, whether the poor, and therefore vulnerable, can compete in increasingly complex, competitive markets brought about by trade liberalisation.

A highly relevant question is whether small farms have any future viability. This point is made at a time when the small-farm model has persisted as the big strategic idea in rural development over the last half century (Ashley and Maxwell 2001). There is need to rethink old paradigms that bigger farms resulting from land consolidation generate economies of scale. Another caveat is that redistributive land reform should be carefully weighed against the reality that, given labour and technological constraints, part-time small holders may be unable to work more land, even if it were available.

Viability of Small Farms

One of the first issues that policymakers must address is whether the new generation of poor people in the LWI want to engage in natural resource-based livelihoods such as farming. The implicit assumption that, by removing barriers and improving access to land, the landless will become long-term agricultural producers, must be considered in the context of the age structure of the landless. Not all the rural population all willing to engage in full-time farming, or farming at all. The focus group meetings revealed that young people are interested in wage labour in urban areas. Though not discussed in the meetings, a shadow economy is emerging of which the cash crop is marijuana, and drug trafficking has become a faster means of earning income than agriculture, which is labour-intensive and slow in providing income.

Advantages of Land Fragmentation

The debate on land fragmentation should also be revisited, for there are lessons to be derived that may help poor farmers who have been told about the demerits of land fragmentation. A limited degree of land fragmentation provides security and reduces underemployment. Researchers have long discovered it also allows farmers to work discrete parcels of land in locations with different rainfall regimes and soil quality, thereby allowing a wider range of crops to be grown. Additionally, the spatial discontinuity of land in a holding gives some assurance that if crops on one parcel are damaged by disease or pests, or hurricanes with heavy rain and violent winds, then the farmer may reduce risks by having other safe plots.

Technological Choices
A major concern is the long-term ability of the poor in the LWI to respond adequately to population pressures, growing international competition and agricultural commercialisation. Research elsewhere in Mexico, Central America and Brazil has shown that small farmers forgo the benefits of specialisation and scale economies. If the smaller commercial farmers in the Caribbean region are to compete in a highly complex and competitive market, the choice of technology will be such that they must be labour-saving. The subsistence or semi-subsistence farmers have a different choice: technology that yields more per unit input; is adjustable to the seasonal demand of labour and food; is robust against climatic risk; and less material cost-intensive (Ashley and Maxwell, 2001).

It has been found that the most direct contribution of agricultural growth is from generating higher incomes for farmers. However, when output increase is due to technical innovation, benefits to the poor may be limited for several reasons (Irz *et al*, 2001). Adoption of new technologies by the poor may be limited by the lack of access to inputs and to the necessary knowledge, as well as by a scale bias in the new technology. Secondly, it can be explained by imperfections in the market or policies that limit access of small farmers to inputs, including credit. Poor farmers are more risk-averse than rich ones and therefore unlikely to adopt techniques that increase the variance of yields.

Environmentally Friendly "New" Technologies
The contribution of agriculture to sustainable development of poor communities is often seen in the context of generating and delivering new agricultural technology. This in recent times is seen in a new context of environmentally friendly "new" technologies. Conway (1997) argues that agricultural technology must not only contribute to more efficient food production, but must also address concerns of environmental protection and be compatible with policies that support diverse households for rural development. The major types of technology as discussed by Tripp (2001) are genetic innovations, physical inputs and management techniques. Genetic innovations would be in the development of new varieties that address disease resistance, environments or markets. A wider range of physical inputs would include environmentally friendly chemicals and biological inputs for soil and water conservation. The use of new management techniques would focus on resource conservation and integrated approaches to farming. In one form or other, these have been practised by small farmers in the Caribbean region.

Conservation Techniques: Agro-Forestry
The poor have used conservation techniques for quite a while and with some success. The Caribbean is replete with examples of indigenous agronomic techniques, such as "food forest" adopted by small farmers, and their perception of erosion and erosion control techniques. Lal (1990), however, points out that the usefulness of agro-forestry in controlling erosion on tropical steep lands has been demonstrated for only a few soils and environments. The use of agro-forestry will have to be case-specific to the territories. New knowledge suggests adaptive forms of shifting cultivation, incorporating lengthy fallow periods, might reduce land degradation. But the feasibility of this approach is questionable given the limited arable land in the region and challenges of youthful, growing populations which generate new demands for land. Sheng (1972; 1981) has

suggested there are few options for successful management of soil erosion on steep sloping terrain and the only feasible ones are agro-forestry and forestry. These possibilities are constrained by the extensive areas that are now designated as protected areas such as national parks, for watershed management and conservation purposes. Income generation from agro-forestry is limited under these circumstances. So the other feasible option is to involve the poor in national park conservation activity.

Technical and scientific advances are important to the advancement of the Caribbean in the transition to sustainable agriculture, yet Pemberton *et al* (2002) and McGregor (1995) argue that, in the formulation of sustainable agricultural practices, much can be learned from indigenous knowledge systems. The need to avoid agricultural systems that lead to the disruption of social and cultural norms is urged by Pemberton (2002) because this has consequences for the loss of vital information from indigenous knowledge on natural-resource sustainability. For instance, too much emphasis has been placed by policymakers and extension officers on mono- cropping as a commercially viable option for poor small farmers. Indigenous systems have proven that mixed cropping has fewer risks, which is exactly what is the needed by the poor whose risk-bearing capacity is low. A number of alternative techniques of sustainable agricultural production, identified by Pemberton *et al* (2002), are worth highlighting (see Box 1). Yet the limits to the efficacy of technological improvements must be acknowledged in the context of steep hillsides in the humid tropics, and fragile soils. Few production options have good economic returns unless population densities are lower.

BOX 9.1
ALTERNATIVE TECHNIQUES OF SUSTAINABLE AGRICULTURAL PRODUCTION

Green Manuring and Organic Mulching:
Green manuring refers to the cultivation of legumes and other plants in order to fix nitrogen and then incorporate into the soil for the following crop. Organic mulching refers to crop residues that are left on the surface of the soil that have the beneficial effects of moisture retention, weed control, moderating soil temperature, and increased availability of nutrients. These have had significant improvements in total and marketable yields of vegetables.

Conservation Tillage
It is long known that systems that require minimum tillage in which the seed is placed directly into the soil, reduces the amount of soil disturbance and therefore reduces run-off and loss of sediments and nutrients. This practice has been discontinued but needs to be re-introduced among poor farmers. Besides less environmental impacts, this technique requires little preparatory cultivation and less technology.

Intercropping
Inter-cropping involves the cultivation of two or more crops simultaneously on the same piece of land and has long been known to small peasant farmers in the Caribbean as a sound agronomic practice, which places few demands on soil nutrients. The crops not only provide nutrients to each other, but also provide biological control of pests and weeds. This sound traditional cultivation approach has been replaced by the wide promotion and adoption of monocultural systems, especially in export crop production. A return to this once successful technique is fundamental to small-scale farmers if they are to achieve sustainable agricultural livelihoods.

Alley Cropping
Alley cropping is the inter-cropping of food crops within hedgerows of woody specie such as leguminous or multipurpose trees. Kang *et al* (1988) found that this system of cropping reduced soil erosion and run-off, leading to improved soil water and nutrient use.

Biological Control
For quite awhile it has been noted among researchers that biological control using natural enemies, parasitoids and predators successfully controls pests. The shift to the use of pesticides has been expensive for small farmers and environmentally costly and but has been unfortunately promoted by extensive officers. A return to indigenous biological control techniques should be reconsidered.

Source: Pemberton et al, 2002

Land Banking
Land banking is a means of finding land to relocate farmers cultivating excessively on steep slopes. Relocation will necessarily involve either land swaps or financial compensation. The latter historically is a protracted experience in the Caribbean and the former is therefore more pragmatic.

Changing the Status Quo
Thorough research into the dynamics of Caribbean agricultural systems, and the feasibility of applying appropriate farming techniques were once seen as the panacea to improved natural resource usage by the poor. McGregor (1995) argues that this has already been done for many years in Jamaica, at the Smithfield experimental station, but there has been little diffusion of perceived successes from the experimental plot to the Jamaican hillside. Similar experiences in the failure to disseminate best practices have been common in the region. Yields can be higher but old paradigms are being used. If they are operating in the public sector where innovation is stifled, technocrats are unwilling or not motivated to try innovative techniques. Or they may be too busy with administrative matters and multi-tasking to spare the time to communicate new ideas to farmers. The status quo must change. The input suppliers are the innovators and they should be challenging old paradigms and linking up with agricultural extension officers to get the new message across. The lack of political will to get the message to the poor who need it most has stymied the success of sustainable livelihoods in agriculture.

Role of Public Institutions, Donor Agencies and Partnerships
Any transformation of agriculture in the LWI that brings benefits to the poor will require improvement in services, infrastructure, and marketing. This necessarily involves public agricultural institutions. Tripp (2001) argues that the rubric of "small farmers" must change, in favour of strategies that recognise the vital role of agriculture to rural incomes. There is strong justification for a reinvigorated and efficient public agricultural research and extension system. Further, the lethargy of state enterprises in marketing small farmers' produce must be overcome. One possibility is to foster partnerships in marketing between the public and private sectors.

Lending agencies and governments are also seeking to revive agriculture, to the benefit of small farmers. In 2002, such initiatives were taken up. Banana cultivation has been the mainstay of St Lucia's economy and, in the wake of banana's demise, the Caribbean Development Bank (CDB) will provide financial assistance for a banana production project amounting to US$4.5 million as part of a broader reconstruction programme for St Lucia. CDB will provide technical, managerial, agronomic and financial support to improve banana productivity. These enhancements are expected to improve the competitiveness of the industry, allow it to capitalise on existing preferential market access prior to the year 2008, when trading arrangements for Caribbean bananas are anticipated to be less favourable than those which currently exist.

To ensure new knowledge is filtered to the farmers, CDB has agreed to grant US$0.08 million in technical assistance. These funds will finance a farmer/public education programme informing farming communities in general, and banana growers in particular,

about the GOSL initiative to improve commercial banana production and productivity, and to capitalise on existing marketing opportunities in traditional and new markets.

Pro-Poor Policies to Disintegrate Monopolies
Exclusion and elitism are still dominant characteristics of the agricultural sector in the Caribbean. The status quo is preserved through the same elites' being committee and board members for decades. This exclusion makes the voice of the poor farmers mute. Even when grants or loans are made available for farming, the powerful families in the community monopolise them, as discovered in Praslin and Sarteneja. Pro-poor policies must be formulated to break the monopoly enjoyed by the privileged and the powerful.

Political Will to Implement Changes
Ultimately, given the few alternatives that may be offered, and a failure to implement innovative ideas, serious consideration should be given to subsidising small farmers for social and environmental reasons. The lack of political will to introduce change, despite new knowledge in improving resource usage in agriculture, is the crux of the matter.

NEW KNOWLEDGE IN ACHIEVING SUSTAINABLE TOURISM

Given the bleak short-term prospects for agriculture as a sustainable livelihood for the poor in the LWI, other income-generating alternatives must be given prime attention. In any event, the poor are often multi-functional households that strategically reduce risks by not putting all their eggs in one basket, as the case studies revealed. International and regional research has shown that farming makes up only a small fraction of their total income. There is no longer such an individual called a full-time farmer. Tourism is an alternative, non-consumptive, natural resource-based livelihood that offers alternative feasible options, though difficulties must be overcome if the poor are to benefit from any stimulus in this sector.

The challenges in tourism originate from the bifurcation within the sector of high-return activity for large commercial resorts with access to capital and or skills, and low-return activities and limited social capital of the poor. Start (2001) has observed that existing patterns of inequality tend to reproduce themselves as new opportunities become available. The new knowledge on approaches and strategies for sustainable livelihoods in tourism in the Caribbean is articulated below.

Product Diversity
The diversity of the tourism product is important to reduce vulnerability among the poor. Apart from promoting heritage tourism, the ecosystem assets of coastal villages should be exploited to improve product diversity marketed to tourists. Fishers can use their sea-craft to provide water-taxi services in the marine parks (Clauzel, 2001). Also, protected areas can be used to satisfy non-consumptive demands such as tourism, recreation, research and education. Non-consumptive uses are not necessarily in conflict with conservation objectives once they are well managed and disturbances are minimised and concentrated.

Product Quality
Quality is important in all aspects of the tourism product. Visitor surveys give souvenirs available in Belize their lowest ranking for "good value for money". Development of souvenirs—handicrafts, garments, jewellery—requires technical assistance capable of transforming local products and talents into high-quality items visitors will want to purchase.

Reducing Infrastructure Constraints and Mitigating Environmental Impacts
Capitalising on opportunities for tourism development involves ridding coastal villages of constraints. Upgrading physical design and infrastructure is crucial. Mitigating environmental impacts is an important response to natural resource degradation by the poor in the LWI. The Anse La Raye Fish Fry does have impacts on the marine environment because much of the garbage from the Friday night event does not always get collected, and ends up along the watercourses leading to the beach area. Noise, cleanliness and the provision of adequate bathroom facilities have been identified as specific challenges. Infrastructure upgrading and architectural interventions are crucial in redesigning the spatial elements of the coastal villages

Multiple Interventions
Several interventions are needed to reinforce the major goals of sustainable livelihoods for the poor. There is indeed strong reason to suggest that sustainable tourism, with its emphasis on environmental sustainability, is appropriate. Additionally, pro-poor tourism (PPT) interventions are required to increase the net benefits for the poor from tourism, and ensure that tourism growth contributes to poverty reduction (See Box 2). It should involve a combination of eco-tourism with its emphasis on conservation with that of community-based tourism and its concentration on local people's involvement.

BOX 9.2
PRO-POOR POTENTIAL OF TOURISM

There is much discourse in the literature that tourism in the Caribbean is foreign, private sector-dominated, and incapable of reducing poverty. Countless research endeavours refer to displacement of the poor, loss of access to resources, land alienation, inflation, social and cultural disruption.

Advocates of the potential of tourism to be pro-poor argue that:

- It is a diverse industry that has scope for broad-based participation;
- There is tremendous opportunity for backward and forward linkages;
- Tourism is highly dependent on natural capital and culture, which are assets the poor have, even if they do not have financial resources;
- It is labour-intensive though less so than traditional agriculture; and
- Compared to other modern sectors, a high proportion of tourism benefits are gained by women.

Reduce Entry Barriers
Interventions are needed to allow the poor to overcome entry barriers. Training and improved access to credit are obvious interventions. Competition within the tourism industry, and the fact that tourists tend to have high-quality requirements, make it important to draw from early on private sector expertise for training and product development.

Capacity Building, Training and Empowerment
Expanding employment opportunities for the poor is not without its challenges. Field visits to all the coastal villages revealed that jobs in tourism are captured by particular families and the better off. One way of creating opportunities for the less well off in these communities is to provide capacity building, training and empowerment. The development of a hospitality department is in the pipeline in St Lucia, and training is conducted at the Sir Arthur Lewis Hospitality Institute for Training. Considerable strategic work has to be done in all the coastal villages with specific focus on:

- Increasing poor people's basic understanding of tourists and the industry as a whole;
- Training in business skills; and
- Institutional capacity building.

The SLHTP has done significant work in this area as shown in **Table 9.3**.

TABLE 9.3
ACTIONS TAKEN BY ST LUCIA HERITAGE TOURISM PROGRAMME TO INVOLVE POOR PEOPLE IN TOURISM

Issues and Barriers	Actions taken by SLHTP
Seasonality of Employment	Reduction in seasonality through market diversification
Low level of activity	Creation and promotion of tours Training tour guides Policy on tour guiding
Uneven geographic distribution of benefits	Promotion of tours and other activities in remote areas Development of Strategic Development Plans at the Community Level
Displacement and Loss of access to markets	Marketing Initiatives
Inadequate quality standards	Capacity building in the arts and crafts sector Development of standards and training of operators in the application of these standards
No financial or physical assets	Design and promotion of activities using publicly owned assets e.g. turtle watching. Design and promotion of village based activities, e.g. seafood night.

Source: Renard, 2001

Ashley *et al* (2001) found that tourism initiatives in St Lucia generated increased income for the poor, strengthened community institutional capacity, protected the environment, and created new commercial and political partnerships involving poor people. The initiatives depended on state policy, regulation and co-ordination, for example, providing infrastructure, legislating for secure tenure, using planning controls to encourage private operators to make and implement pro-poor commitments, and encouraging pro-poor tourism partnerships.

Use Existing Skills

Ashley *et al* (2001), while cautioning it was still too early to access the merits of the St Lucia HTP reported that "one of the distinctive features of the Heritage Tourism sub-sector is that it is able to use traditional skills in cooking, farming, artistic expression, craft production or communication, skills that poor people typically possess. Not only does the sub-sector use these skills, but it also often nurtures and enhances them, as it consciously utilises them as an element of the product."

Protecting Local Culture and Minimising Social Impacts

While there is much emphasis on promoting the local culture, not much is done to protect it. Further, the social impacts have not been always positive. Field visits to Anse La Raye in 2003 revealed that crime, violence and drug use had crept into the fish fry event; the disco had to be closed and a higher police presence maintained. It is estimated that one bar made EC$3,000 on fish fry night before the disturbances at the discotheque. Since the police closed the discotheque, earnings had fallen to EC$1,000. The local culture was being destroyed by outsiders, though not necessarily tourists. Fish fry vendors are now paying for security. Also, Renard (2001) noted, in an assessment of the Anse La Raye initiative, a large crowd can destroy the authenticity of the area. A tourism awareness and appreciation programme is needed to stress the importance of tourism and the negative effects of harassing visitors, which, from all accounts, is occurring on fish fry night in Anse La Raye. Failure to stop harassment of visitors quickly will undermine heritage tourism.

Partnerships and Linkages

Partnerships unlock synergies. It is important to create opportunities for the private sector to link with pro-poor tourism ventures. One route would be to allow private tour operators and agents to channel their own clients to enterprises of the poor by including visits on their itinerary, rather than competing in every respect. It is difficult for the poor to develop linkages with the international tourism industry and marketing associations, although these have considerable influence over tourists' itineraries and activities. Tourism companies may develop complementary products with the villagers to make destinations more attractive, extend the length of stay and provide employment and other income benefits. Tourism companies can also source supplies locally as another means of integrating with the poor of the LWI, especially if their resorts are remote and the only source of agricultural supply is these small villages. The villagers can also be suppliers of craft and entertainment, like the Hopkins villagers.

Impacts on the Poor

It is difficult to assess the financial impacts and cash earnings from tourism since data are not readily available. However, tourism initiatives by poor people in the LWI have had some financial and non-financial benefits. While the poor remain poor, they are better off than before and are less vulnerable in that can meet their basic needs in most cases. Incomes from tourism enterprises may be small, but can and often provide a critical buffer where other opportunities are scarce. Some persons gain regular employment in resorts to be able to move from being poor to being secure. The initiatives provide opportunities for small income to fill gaps, business opportunities beyond agriculture, and have better access to markets and infrastructure. However, the seasonality and volatility of the industry as a whole make the poor still vulnerable.

In terms of non-financial benefits, the Anse La Raye and Hopkins case studies are good examples of giving value to popular culture. The Anse La Raye example points to the positive impact of tourism in giving hope to a community that faced a devastating decline in the banana industry. The Anse La Raye venture benefits women in particular, which results in greater overall household security. Ashley (2001) notes that

> *"The experience in Anse la Raye involved participatory planning at both community and governmental level. It has developed a greater sense of pride and ownership among community members and has allowed for an increase in social services for villagers. The feeling of desolation and neglect is gradually being replaced by one of hope and enthusiasm."*

Marketing

The potential for pro-poor, village-based tourism is high if well marketed. One key finding of UK CEED (1997) was that the St Lucia all-inclusives were perceived by locals as enclave resorts, and the long- term viability and sustainability of the tourism sector depended on the quality of the environment and the amiability of the local people. As opposed to enclave development, small-scale, community-based tourism is integrated into the villages and should not draw hostility from the local people.

The SLHTP that incubated the Anse La Raye Fish Fry has been a donor-funded government programme responsible for developing a niche product—heritage—at the micro and macro levels. The programme has made inroads into breaking the monopoly of cruise ship tourism by competing for visitors who have an interest in cultural tourism. This was achieved by recruiting local operators, developing a new product, and attracting tourists to inland initiatives. Progress has been slow in implementing policy recommendations made by the SLHTP, including building political support and developing a supportive policy framework for marketing and incentives. The SLHTP highlights the challenge of attracting beach and package tourists away to cultural products, and the slow pace of a multi-level approach to deliver actual change at the ground level.

Supportive Policy Framework

A supportive policy framework is needed to have positive impacts, as the Anse La Raye Fish Fry demonstrates. The SLHTP promoted participatory planning, lobbied government

for supportive policies and tourism legislation and in other sectors for infrastructure, and promoted inter-departmental initiatives and co-ordination. It worked via the Village Council that in turn organised and helped establish the Fish Fry. The voice of the poor people of Anse La Raye is being heard; the government is receptive to the ideas of the poor in these coastal villages.

Supporting Actors and Levels of Interventions

For pro-poor tourism to have any impact, a range of actors and varying levels of intervention are important. The international community has been instrumental in their capacity as donors, funding programmes with an aim toward helping the poor. The SLHTP in St Lucia had donor funds to develop a heritage tourism product. Government plays a key role: government departments involved in St Lucia and Belize include Finance, Public Works, Transport, Trade and Industry, Arts, Culture, Science and Technology. The Ministry of Tourism in St Lucia has set up a strategic assistance programme for vendors, which seeks to:

1. Train volunteers;
2. Assist vendors to market their products;
3. Develop marketing tools;
4. Diversify vendors' products; and
5. Develop management tools.

The St Lucia Ministry of Tourism was also reviewing standards for small, medium and large guesthouses. The deadline for the review was August 2002. Government is to spend EC$4 million in small property and business development.

The private sector is also important in promoting the product through tour operators. The community in pro-poor tourism plays a vital role as was seen in their participation in decision-making at the local level.

Legislative Reform

In respect of incentives for the tourism sector, the Tourism Incentive Act (1996) of St Lucia waives consumption taxes on materials, furniture and equipment, and tax holidays are granted. However, the legislation is skewed in favour of big business, and less so for community-based enterprises or small operators. Terms of reference are now being prepared to redraft the Act, to meet the needs of all actors in tourism. The consultant is to be hired using a Canadian International Development Agency grant under the Caribbean Project for Economic Competitiveness. The accommodation tax is to be redirected to small operators to plough back into marketing their enterprises. The Prime Minister announced the proposal, but it has not been implemented.

NEW KNOWLEDGE AND LAND USE PLANNING

The ad hoc planning and development of land in coastal villages of Belize and St Lucia arises from the lack of clearly articulated strategic land use policies or development plans for small coastal settlements. In the coastal zone, spontaneously occurring land uses, in the absence of adequate supporting infrastructure, are compromising public health and safety.

BELIZE

The administrative apparatus for land use planning in Belize consists of the Lands and Survey Department (LSD) within which is located the Land Utilisation Authority (LUA); the Department of Housing and Planning that includes the Central Planning and Housing Authority (CHPA); the Coastal Zone Management Authority (CZMA); and the Department of the Environment, Environmental Protection Agency (EPA). The constraints in fulfilling the mandate of each agency and the role of land use planning in achieving sustainable livelihoods are elaborated below.

The Lands and Survey Department (LSD) is responsible for the allocation, leasing, management and surveying of national land. One of the earlier difficulties encountered in land management was the failure of the LSD to allocate lands in accordance with the land use zoning plans of other agencies such as the CHPA and CZMA. A decision was taken in the 1990s to give the LSD authority to review all lease applications in excess of 10 hectares so as to determine which other agencies needed to be consulted.

The Land Utilization Authority (LUA) of Belize is the agency responsible for the approval of sub-divisions, land access and general standards for lotting. In recent years, the LUA has been very effective in enforcing minimum standards; it even produced a guideline document. There has been some attempt at decentralised decision-making. In village or municipal expansion, land is obtained by application to the local authority based on the councils' recommendations for purchase or lease.

The Central Housing and Planning Authority (CHPA) carries out housing schemes and prepares schemes to regulate development for any land area. Areas subject to schemes become "planning areas", and local authorities are empowered to enforce such schemes. To date, planning schemes have been done for Belize City, Corozal Town and Ambergris Caye. However, planning schemes are sometimes overturned by political expediency, reflecting the fact that autonomy of the technical agency is not guaranteed by the legislation and decentralised decision-making and local governance are a far way off.

The Coastal Zone Management Authority was established under the Coastal Zone Management Act of 1999 to address cross-sectoral sustainable development of coastal resources, and to function in a consultative and advisory capacity to the public, private sector agencies, and the Minister. The CZMA is charged with the responsibility to prepare a Coastal Zone Management Plan, which will take several years. Two sets of "development guidelines" have been drafted, the Turneffe Islands and the Belize City Cayes, and work has commenced on Caye Caulker. The cayes have been given priority

for developing guidelines, but the coastal settlements in the LWI occupied by the poor have been neglected. Further, the CZMA has no decision-making or implementation powers, including development control.

The Environmental Protection Agency is responsible for evaluating environmental impact assessments that are required for development. A constraint to land management in the coastal zone is that while EIAs are mandated for development of more than 202 hectares, there are smaller projects requiring less land that have potentially significant environmental impacts, that will escape from the EPA's scrutiny.

An assessment of the effectiveness of land use planning in Belize reveals several constraints that are summarised as follows:

- No national physical development plan has been prepared for Belize;
- The Special Development Areas Programme established in 1992 is an attempt to prepare a set of sub-regional strategic plans for Belize, engaging both the public and non-governmental agencies. In particular, it is designed to assist the Land Utilisation Authority in steering development opportunities to the right locations. The Corozal District East SDA was prepared under the programme and covers Sarteneja. The objectives of the SDA were:
    - —The identification of viable agricultural land;
    - —The identification of land viable for tourism development;
    - —The protection of the environment with particular consideration of the coast and the Shipstern Lagoon.

One of the principal guidelines in all physical planning in Belize is to identify and protect land, assessed between good and medium agricultural potential. However, there has been much pressure to convert agricultural lands for residential and resort use since the SDA was prepared.

- According to a Cabinet directive, a development plan was to be prepared for Sarteneja with an emphasis on tourism, but this has not be achieved;
- Most development applications for Sarteneja are not in conformity with the Special Development Area plan and so receive treatment on a case by case basis, while the plan is being revised;
- Development control of land use applies only to urban areas and excludes rural areas in both case studies. This makes regulation of land development in the LWI difficult and there is much haphazard development that does not conform to public health and safety standards. Development control is weak, given a staff of only three professionals. An attempt is being made to educate the villagers by meeting with the Village Councils on planning issues to avert illegal or haphazard development;
- Land development policies change frequently, and there is an absence of a strategic land development policy;
- Some developments that required Environmental Impact Assessments have avoided this requirement because of political intervention, (World Bank 1996).

Several new reforms are in place, including a National Building Bill, which will apply to construction of buildings. A new Land Management Programme is to start up and some 80 villages will be delineated in collaboration with the Village Councils, and plans prepared to guide their physical development.
There have been repeated attempts to regularise the land allocation and land use planning process in implementing the National Lands and Land Utilisation Acts. It seems that the Lands and Survey Department has fallen victim over the years to politics and financial influence. In extreme cases, land allocation decisions by the local Lot Committee may depend on the applicant's party affiliation or political activity. Forest reserve lands have been cleared on the request of politically connected or financially powerful agricultural interests. Under these circumstances the transparent process of decision-making is overpowered by political manoeuvring.

A Geographic Information System (GIS) provides the tool for a less arbitrary approach to land allocations and land use decisions. However, the full utility of the GIS has not been exploited for it is used mainly for tax valuation purposes.

ST LUCIA

A new Physical Planning Act has been. The GOSL has also mandated that a National Land Policy be formulated to guide the sustainable use and management of all lands. Despite these new legislative provisions and policy proposals, there remains a gap in the administration of physical planning in St Lucia. A National Physical Development Plan was prepared by United Nations Volunteers in 1990. At the regional and local levels, few plans guide physical development, except for Dennery and Environs and the North West Urban Corridor including Castries, Gros Islet and Rodney Bay prepared in 1990 by the United Nations Volunteers. Some local-area plans are in progress for Anse La Raye and Cul de Sac. However, coastal settlements have developed in an ad hoc manner, evident from the haphazard layout of many villages both in terms of land use and infrastructure. In the absence of strategic land use plans, development control and enforcement become even harder to achieve. There is optimism that once the Physical Planning Act is proclaimed and the National Land Policy crafted, sustainable use and management of land will improve. To have such results, manpower constraints must be overcome.

GENERIC LESSONS

Perhaps the major generic lesson is in the lack of political will to introduce change, despite new knowledge. Another key lesson is that the institutional reform process is slow to accommodate change. Further, some degree of autonomous funding is necessary to implement sustainable livelihood programmes, otherwise political interference is likely to undermine reforms. Several equally important generic lessons are summarised below.

Multiple Livelihoods and Risk Reduction

Sustainable livelihoods for the poor in the LWI are unattainable by specialising in one livelihood. Engagement in multiple livelihoods has allowed the Caribbean poor to survive all along. Diverse occupations give strategic flexibility and resilience.

The poor have multiple sources of income derived from livelihoods and remittances from overseas relatives. What is clear is that all poor communities studied are reliant on remittances from overseas to support their needs. This has been and will continue to be a buffer for the Caribbean in the face of adversity.

Most poor households in the LWI have a diverse and geographically dispersed portfolio of income sources: they pursue multi-locational and multi-occupational livelihood strategies, which are good coping strategies for risk management and reduced vulnerability.

Paternalism, Dependence and Poverty
Paternalism deepens dependence and does not help communities to escape the poverty trap. Hopkins is in the top ten communities receiving donor assistance in Belize and remains one of the poorest in the country. Anse La Raye and Praslin have both received donor funds but are still struggling to survive.

Geographical Location and Vulnerability
Coastal villages in the Caribbean are most times poor because they occupy hazard-prone lands. Villagers are always recovering from hurricanes in both St Lucia and Belize.

Land and Sustainable Livelihoods

Landlessness is a major cause of poverty. It is possible to predict that if adjustments in the present system of land tenure are not forthcoming, the majority of the poor living in the LWI of the Caribbean will be functionally landless. The dismantling of the Alien's Landholding Act in the Caribbean will exacerbate landlessness.

Land Degradation and Modification of Human Behaviour

Given the narrow coastal strips with very rugged topography, the LWI in the Caribbean islands consists of hillsides. Agricultural livelihoods in the LWI commonly take place on slopes. McGregor (1995) sounded a caveat that "the present crisis of land degradation on erosion-prone Caribbean farm lands will deepen inexorably unless concerted action is forthcoming". Despite known causal factors, land degradation has not been halted in the two case-study areas, although various strategies aimed at arresting the process have been implemented over time. Agricultural production by the poor continues on unstable slopes and is becoming a progressively less productive pursuit. As McGregor (1995) observes, the decline in hillside farming systems is the result of an interaction of physical and human variables, which is not new; at the height of plantation monoculture, there was a Caribbean-wide abandonment of exhausted land. The persistence of land degradation is the net result of both human and physical factors. High natural soil erosion rates, due to high rates of geomorphological activity linked to the geology and climate of the Caribbean, combined with sloping terrain, thin and highly erodible soils and the intense nature of tropical rainstorms, are exacerbated by human activity such as deforestation,

slash-and-burn cultivation, shifting cultivation and short-term cropping.

The generic lesson is that the natural, physical characteristics of land in the Caribbean cannot be reversed and interventions are needed to modify human activity in reafforestation, soil conservation, agro-forestry. Agriculture in the LWI is unsustainable given the utilisation of steep slopes, fragile soils, the use of high levels of costly fertiliser and toxic pesticides, and the advanced age and dubious literacy of the farming population. Alternative sustainable agricultural systems are needed and must be communicated to farmers. The role of the state has to be re-examined particularly in the context of supporting agricultural production that degrades natural resources. The revival of the agricultural sector will take huge injections of state support to ensure that the poor can access reasonably performing and stable markets for finance, inputs and agricultural output. Additionally, the present and future generations must be willing to engage in farming.

Generic lessons for improving agriculture include:

- Training in organically grown fruits and vegetables for export and locally for hotel resorts;
- Develop niche markets and reduced fertilieer use for organically grown crops;
- Develop new markets for organically grown crops to reduce risks;
- Improve small farmer access to credit for equipment purchase using soft loan facility;
- Land reform/leasing of state land/resettlement to improve land access among poor farmers so that the threats from hillside cultivation and slash and burn practices are minimised;
- New cultivation and land management techniques should be introduced such as terracing, mixed cropping etc;
- Agricultural extension services improvements are needed to disseminate new best practices;
- Continuous interfacing of agricultural extension officers with coastal communities which have been traditionally dependent on fishing;
- Infrastructure upgrading in roads, drainage, irrigation and availability of cold storage facilities;
- Use of new information technologies such as Geographic Information Systems for slope and soil analyses, hazard mapping, and remote sensing technology such as satellite imagery;
- A stronger role in educating poor farmers for public agricultural research and extension systems;
- Promotion of agro-forestry in protected areas and buffer zones designated around these areas.

Pro-poor Tourism

Traditionally, tourism in the Caribbean has not had a specific poverty alleviation focus. Working with community-based organisations and enhancing community participation do

not guarantee that poor people will benefit from such interventions. The institutions that have a poverty alleviation focus must be engaged collaboratively to promote pro-poor tourism. Today, pro-poor tourism efforts are needed to steer the poor into alternative income generating activities, even if the results will be slow. Pro-poor tourism interventions unlock opportunities for the poor, whether for economic gain, other livelihood benefits, or participation in decision-making. However, these interventions should have sustainable tourism objectives that ensure environmental considerations are not overlooked. Failing this, the very asset the poor rely on to attract tourists will be degraded.

Broad Strategic Interventions

A broad range of strategic interventions is needed to transform opportunities for the poor in the LWI of the Caribbean. A diversity of actions is needed at national, regional and local levels in product development, marketing, investment, legislative and policy reform, and building local capacity in all areas of product branding, packaging, marketing and quality assurance. It must also confront external forces such as globalisation. The poor also face competition from established tour guide operators in both the private and public sectors. Partnerships must be forged between the poor communities, public and private sectors and civil society as a whole.

Product Diversity and Complementarity

The key to reducing the vulnerability of the poor in tourism, given its seasonality and volatility, is to provide product diversity. A complementary product based on cultural tourism that could be integrated into more conventional tourism packages, to encourage tourists to spend more in the local communities, can yield income for the poor.

Product Quality, Infrastructure Expansion and Upgrading

Pro-poor village-based tourism has the potential to become an alternative sustainable livelihood for the poor living in the LWI. Small bed-and-breakfast facilities and guesthouses can offer a different type of accommodation from the conventional hotel resort. For this form of tourism to take off, however, the quality of accommodation must attain a standard acceptable to international and local visitors. This is possible if infrastructure serving coastal villages is upgraded. All too often, the infrastructure is retrofitted to meet the demands of hotels, but it should be extended to all the residents so as to improve access to capital that can unlock their potential to do business in the tourism sector. One economic measure that can be adopted to offset the capital cost of infrastructure expansion and upgrading to these small coastal villages is to adopt a system of differential pricing whereby the hotels pay higher prices and the government subsidises the poor.

Land Use Planning

For village-based tourism initiatives to take root, a land use zoning plan is needed to provide spatial order and the basis for infrastructure upgrading. The haphazard nature of the built development in some of the coastal villages (Anse La Raye and Hopkins) does not lend itself to projecting a physical attractiveness to visitors. This does not mean that the quaint look of the villages along the coast will be compromised. Rather, the

appearance will be enhanced with a more orderly layout than the spontaneous, organic, haphazard look that currently prevails**.**

There is need to re-examine and revise land allocation policy, strengthen physical planning capabilities, and use both regulatory and economic incentives to achieve land use optimisation, recognising that the land is finite and fragile. Corrective measures must be taken to ensure the sustainable utilisation of land.

One of the key lessons is that the poor have difficulty conforming to existing land use planning regulations. It appears that meeting building standards and complying with land use zoning regulations is unattainable because they impose costs that the poor cannot afford. A valid question is whether variations in building and engineering standards and land use zoning should be allowed in the first place, and whether they should be specifically designed to be pro-poor. Another question is whether small-scale development by villagers should be the subject of an environmental impact assessment, if the potential for significant environmental impacts exists.

Best practices are needed in the following areas:

- Planning Administration;
- Provision of low-cost housing;
- Peri-Urban/Village Redevelopment and Renewal;
- Provision of Physical and Social Infrastructure;
- Peri-Urban/Village Design;
- Disaster Mitigation;
- Environmental Management; and
- Community Participation and Empowerment.

Training and Utilizing Existing Skills

Poor people are tired of training that leads to no income. Tourism activity engaged in by the poor should utilise the skills they already possess—cooking, farming, fishing, artistic expression, and craft production. Start where people are; and strengthen what already exists in terms of skills, rather than trying to impose new skills in the initial stages.

Social Capital

Pro-poor tourism depends on access to social capital. Donor funding cannot sustain the pro-poor programmes and the social capital of the poor in accessing resources independently is important.

OTHER GENERIC LESSONS

- **A champion is needed within the community, working with the diverse stakeholders;**
- **Tourism must be successful at the national level to have spin-offs at the village level;**
- **Pro-poor tourism must be incorporated into broader tourism development;**

- **Pro-poor tourism often involves departing from conventional tourism products;**
- **Pro-poor tourism must have commercial viability to have a multiplier effect on the village economy;**
- **Enhancing economic impacts requires action by producers who are poor, plus marketing and policy reforms;**
- **The poor benefit from infrastructure improvements;**
- **Non-financial impacts are important such as improving access by the poor to assets, and participation in decision-making to have sustainable benefits;**
- **Results will be slow;**
- **External funding may be required to cover start-up costs; and**
- **Because there is no universal blueprint for pro-poor tourism, diversity is central. The diverse local circumstances and interests of the poor must be understood.**

Many of the lessons learnt from the tourism ventures in poor communities of the LWI are generic to micro-enterprise development: the importance of credit and training; the value of drawing on family networks to run small enterprises; the difficulties of community-run ventures; the need to balance expansion of supply and demand; the importance of securing conducive policy and regulation. Three specific issues are relevant:

- **To minimise the volatility arising from international developments, tourism must be promoted to locals so that support is not seasonal;**
- **Given the volatility of tourism, it is important to develop products that also have a non-tourist domestic market such as culture and crafts for local use or export;**
- **The demand for a high-quality product by international tourists calls for strategic decisions to draw early on private sector expertise for training and product development.**

Tourism Development and Environmental Management

Big business was not asked in the early days of tourism development to create economic benefits while protecting the environment. Asking the poor to do multi-tasking in developing and promoting tourism while addressing environmental sensitivity is demanding, but these onerous requirements are the only way to make their livelihood sustainable.

Elites and Barriers

Elites dominate and understand the complex structure of markets and policies. This applies to both agriculture and tourism. Even if the poor are willing to participate in developing the sectors, they are excluded by elites who erect barriers to entry and information. The status quo is unlikely to change in near future unless policies are specifically designed to be pro-poor.

The experience of tourism in poor villages is that it takes time for benefits to appear. Collaborative management is not always successful; complex arrangements and weak institutions present a challenge. It is difficult to open doors for small operators. Vision is not shared by all even within the communities.

Religious and political differences limit co-operation and synergy at the village level. There are divisions on the basis of generations, families, and politics. Collaboration and co-operation by the vulnerable are needed in the interest of enhancing their sustainable livelihoods.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

Land in the right quantity and location is a major determinant of sustainable livelihoods. In the Caribbean land water interface, land is typically a narrow coastal strip, first, flat or gently sloping, that changes over a short distance into rugged hilly terrain where the soils are thin and vulnerable to erosion. The challenging terrain causes human settlement to be generally confined to the LWI where there is much competition for land, and where poorly managed land use activity pollutes the marine environment.

The sustainable livelihood of the poor in agriculture is constrained by high rates of natural soil erosion arising from the combination of sloping terrain, thin, highly erodible soils and the intense tropical storms that frequently cause flooding, landslides and crop damage. Human activities—slash-and-burn and shifting cultivation—also contribute to land degradation. Research by Pemberton *et al* (2002) concludes that among the main causes of the non-sustainability of agriculture are under-capitalised farms using low-input technologies. The poor engaged in agriculture are also severely constrained by limited access to credit, information on crop cultivation and marketing, as well as inadequate infrastructure especially irrigation, drains and roads. To this can be added the threat of insertion into the global economy, that dictates the need for trade liberalisation and undermines guaranteed markets for traditional crops such as bananas and, in the future, other commercial crops.

The generic lesson is that natural, physical characteristics of land in the Caribbean are irreversible so that interventions are needed to modify human activity that trigger soil erosion, landslides and pollution. Further, relaxation of agricultural constraints is necessary to make agriculture a sustainable livelihood of the poor. Among the steps needed to liberate the sector for the benefit of the poor are training in organic cultivation of fruits and vegetables, which not only have less pollution impacts but also fetch higher prices. There now exists a growing niche market for such produce arising from the demands of hotels in the Caribbean and countries in the North Atlantic. This also helps to diversify markets therefore reducing the risk of over-dependence on single markets such as the European Union as has been the case in the past for bananas. New cultivation techniques should be introduced to small farmers to alleviate environmental impacts and improve productivity. This will require more agricultural research and dissemination of

information by agricultural extension officers who should spend more time in the field with small farmers than in offices attending to bureaucratic matters. Additional areas for state attention include reform that improves access to land of better capability to support agriculture and better access to credit by small farmers.

Incorporation of new technologies will greatly enhance the capacity to make agriculture a more sustainable livelihood for the poor. The use of Geographic Information Technology to assist in determining land capability, slope and soil analysis, land use zoning and hazard mapping is recommended to effect improvements.

The role of the state is paramount in supporting sustainable agriculture with a pro-poor focus. State activity is needed in ensuring that the poor can access reasonably performing, stable markets for finance, and agricultural inputs and output. Moreover, infrastructure such as irrigation, drains and roads requires huge injections of state capital.

Agro-processing provides the poor of the LWI with an alternative livelihood to traditional activities in farming and fishing. Diversification into agro-processing has started on a small scale in the coastal villages of Praslin and Anse La Raye. But constraints in other sectors apply—limited access to credit, information, marketing difficulties, and infrastructure to provide water and sewerage disposal.

Forests provide an alternative income-generating livelihood for the poor, as they are a source of material for construction and the manufacture of souvenirs. Forests also play an increasing role in revenue generation arising from eco-tourism. If skillfully undertaken, agro-forestry presents additional income earning opportunities for the poor. Illegal activities such as squatting and logging have increased deforestation causing watershed degradation, siltation of river courses and coastal bays and coral reef destruction. Other threats to sustainable livelihoods in forestry are hurricanes, bush fires, and the designation of forests as protected areas, which restrict forest resource usage. Appropriate policy incentives can remedy these problems and realise economic benefits for the poor.

Tourism presents a viable alternative income generating activity for the poor in the LWI of the Caribbean, provided constraints to achieving a sustainable livelihood in this sector are addressed. Currently, most job opportunities in tourism require the poor to work in resorts located outside their villages. The mounting evidence on tourism disproves that it has benefited the poor residing in the LWI. It remains a source of income for economic elites, but less so for the poor because policy incentives have not had a pro-poor focus. Initiatives in promoting eco-tourism and community-based tourism still do not capture benefits for the poor, an observation substantiated by Renard (2001) who points out that over the past decade experiments to achieve more equitable and sustainable benefits to people have failed to break the dominant culture and patterns of organisation within the tourism industry, and have had no significant positive impact on people and host communities.

For pro-poor tourism to generate positive benefits several strategies must be adopted. Diversifying the tourism product to minimise risks in a sector that is so volatile and

seasonal is important. Premium quality is essential since the industry is quality- sensitive, and this must apply to the full range of products inclusive of accommodation, food, entertainment, and crafts. A major constraint to community-based, pro-poor tourism is the significant infrastructure deficiencies, which deter visitors from over-nighting in coastal villages. Infrastructure upgrading and architectural interventions are crucial to retrofitting and redesigning coastal villages and state investment is critical. These measures will also mitigate negative environmental impacts of debilitated or non-existent infrastructure.

Physical changes will be insufficient to promote pro-poor tourism. Other measures include reducing entry barriers in tourism through human resource development in the form of training and better utilisation of existing skills, access to credit, and the creation of an enabling environment for forging commercial and political partnerships involving poor people. Like agricultural sector reform with a pro-poor focus, tourism will require state commitment to change. Areas of reform include providing capital and a supportive policy and regulatory framework. For the poor are unable independently to transform the sector and eradicate constraints. Cost recovery techniques will need to be implemented and cross-subsidisation of the poor will be necessary.

In all the proposed income-generating alternative livelihoods for the poor of the LWI, the state should play a pivotal role in unlocking possibilities for these communities. The complexity of the constraints demand state intervention, otherwise the poor cannot by themselves remove the barriers to achieving sustainable livelihoods.

The communications plan matrix below provides a summary of the main findings, the policy actors and change agents that will be needed to implement recommendations for alternative livelihoods in tourism, agriculture and agro-processing. Also proposed are modes of communicating essential messages to poor communities living in the land water interface.

COMMUNICATION AND UPTAKE PROMOTION MATRIX: PRO-POOR TOURISM, AGRICULTURE & AGRO-PROCESSING

Communication Products	Targets of Products: Policy Actors and Change Agents	Proposed Communication Modes
Pro-Poor Tourism Product diversity important to reduce vulnerability of poor. Egs. of product diversification are heritage and eco-tourism.	Ministry of Tourism Tourism Board CBOs and NGOs	Policy Brief, Workshops, Audio and Video Cassettes.
Product quality is needed in all aspects of tourism. Egs. Accommodation, culture or nature-based tourism.	Ministry of Tourism Tourism Board CBOs and NGOs	Policy Brief, Workshops, Audio and Video Cassettes, On the ground extension officers giving one on one training/talks*
Infrastructure and physical design constraints must be relaxed in coastal villages to improve environmental and aesthetic quality.	Ministry of Works Ministry of Planning Physical Planning Department Coastal Zone Management Unit	Policy Brief, Urban Design and Infrastructure Upgrading Plan.
Reduce entry barriers Eg. Improved access to credit.	Ministry of Finance Micro-credit institutions	Policy Brief, Workshop
Training in business skills	Ministry of Finance Small Business Development Corporations Hospitality Institutes University Private sector CBOs and NGOs	Policy Brief, Workshop, Extension officers giving one on one training/talks, courses. Private enterprise talks, talks by successful small business persons.
Use & refining existing skills eg. Cooking, farming, arts and craft.	Ministry of Culture Ministry of Tourism Tourism Board CBOs and NGOs	Training workshops, courses, extension officer talks, audio and video cassettes.
Improved product marketing.	Ministry of Information Ministry of Tourism Tourism Marketing Board CBOs and NGOs	Training Workshops, Courses, Extension Officer talks, audio and video cassettes.
Protecting local culture and minimising social impacts.	Ministry of Information Ministry of Tourism Ministry of Culture CBOs and NGOs	Tourism Awareness & Appreciation Programme using radio, television and posters.
Pro-poor tourism legislative reform & fiscal incentives	Ministry of Tourism	Policy Brief, Workshop

Communication Products	Targets of Products: Policy Actors and Change Agents	Proposed Communication Modes
Pro-Poor Agriculture		
Traditional banana production unsustainable because of WTO ruling and over-use of chemicals. Shift to organic banana production.	Ministry of Agriculture Ministry of Finance Farmers Association	Policy briefs, training modules, workshops, agricultural extension officer talks, radio and television programmes, audio & video cassettes, posters.
Improved access to marketing information & marketing of organically produced bananas.	Ministry of Agriculture Agricultural Marketing Board Ministry of Information Hoteliers Association** CBOs and NGOs	Workshops, radio and television programmes
Diversify food crop production & markets to reduce vulnerability of poor.	Ministry of Agriculture Agricultural Marketing Board Hoteliers Association CBOs and NGOs	Workshops, Training Modules, Extension Officer Programmes, Radio and Television programmes.
Agro-processing provides value-added and livelihood diversification for poor farmers.	Ministry of Agriculture Ministry of Industry and Commerce Ministry of Finance Small Business Development Corporation Marketing Agencies CBOs and NGOs	Workshops, Training Modules, Talks by successful small business persons, radio and television programmes, audio and video cassettes.
Relax infrastructure constraints in water and sewerage, irrigation, drainage, roads and electricity.	Ministry of Works Ministry of Planning Physical Planning Department Coastal Zone Management Unit	Policy brief and infrastructure upgrading plan.

* Extension officers giving one-on-one training as is done with small farmers (although there are reported failures in SLU and Belize) is a useful technique for information dissemination to other types of enterprises such as tourism and agro-processing. Revisits by officers are helpful especially in the incubator phase.

** The hotel sector demands high quality bananas that the local producers are unable to satisfy. This must be communicated to farmers.

TARGET INSTITUTIONS

The target institutions that will be required to uptake the research products and disseminate findings are those engaged in policymaking. The following is a list of these target institutions that apply to both St Lucia and Belize.

Agriculture

- Ministry of Agriculture (including extension officers)
- Agricultural Marketing Boards
- Ministry of Physical Planning (including the Geographic Information Systems/ Land Information Agencies)
- Lands and Survey (State Lands)
- Ministry of Finance
- Ministry of Works

Forest resource usage

- Forestry Department
- Protected Areas Conservation Trust (Belize)
- Land Alliance for National Development (Belize)

Tourism

- Ministry of Tourism
- Ministry of Works
- Ministry of Finance
- Ministry of Planning (Physical Planning Department)
- Tourism Marketing Boards
- Heritage Tourism (St Lucia)
- Heritas (St Lucia)
- National Trust (St Lucia)
- Coastal Management Authorities
- NGOS and CBOS dealing with tourism

Land Use Planning

- Lands and Survey Department
- Physical Planning Department
- Environmental protection Agency
- Coastal Zone Management Authority
- Land Information Sections/Geographic Information Section
- Works (infrastructure) Department
- Land Alliance for National Development

BIBLIOGRAPHY

Ashley, C., and Maxwell, S. 2001. **Rethinking Rural Development.** ***Development Policy Review*** **19 (4). Blackwell Publishing.**

Ashley, C., Roe, D., and Goodwin, H. 2001. ***Pro-Poor Tourism Strategies: Making Tourism Work for the Poor: A Review of Experience.*** **Overseas Development Institute.**

Cater, E. 1992. **Profits from Paradise.** ***Geographical Magazine*** **64: 16-21.**

Clauzel, S. 2001. ***Developing a Complementary Tourism Product to Benefit Local Communities: The Case of Vieux-Fort, St Lucia.*** **M.Sc. Thesis Unpublished, The University of Greenwhich.**

Deare, F., Ahmad N., and Ferguson T. 1992. **Soil Losses from a Flatland Soil. In:** ***Sixth Annual Seminar on Agricultural Research*****. NIHERST, Port of Spain,Trinidad.**

Dujon, V. 2000. Caribbean Peasants in the Global Economy: Popular Resistance to the Privatisation of Communal Land in The Twentieth Century and Beyond. *Global Development Studies*. 2, (1-2), 199-221.

Dujon, V. 2002. Local Actors, Nation-States and Their Global Environment: Conceptualising Successful Resistance to the Anti-Social Impacts of Globalisation. *Critical Sociology*. 28, 372-388.

Finkel, H.J. 1971. **Patterns of Land Tenure in the Leeward and Winward Islands. In:** ***Peoples and Cultures of the Caribbean: An Anthropological Reader.*** **Michael Horowitz (ed.) Garden City, N.Y., Natural History Press.**

France, L and Wheeler, B. 1995. **Sustainable Tourism in the Caribbean. In:** ***Environment and Development in the Caribbean*** **edited by David Barker and Duncan F. M. McGregor , The Press, University of the West Indies.**

Government of Belize 2001. **The National Integrated Coastal Zone Management Strategy for Belize.**

Government of Belize 2002**. National Report to the World Summit on Sustainable Development, Ministry of Natural Resources, the Environment and Industry.**

Government of Belize 1994. **An Account of the Development of Plan for the Corozal District East Special Development Area. Lands and Surveys Department, Ministry of Natural Resources.**

Government of St Lucia 2003**. Draft St Lucia Hazard Mitigation Plan**

Government of St Lucia 2002. **St Lucia's Initial National Communication on Climate Change. Star Press St Lucia.**

Government of St Lucia 2000. **Convention to Combat Desertification**

Government of St Lucia 1999. **St Lucia Heritage Tourism. Anse La Raye Consulation Report on Nature Heritage Tourism.**

Government of St Lucia 1996. **1996 St Lucia Census of Agriculture Final Report, Planning and Statistical Unit, Ministry of Agriculture, Lands, Fisheries and Forestry.**

Gray, C.R. 1993. **Regional Meteorology and Hurricanes. In: *Climatic Change in the Intra Americas Sea*, edited by G.A. Maul,. London, Edward Arnold for UNEP.**

Hunting Technical Services and Mott MacDonald 1998. **Report on Protecting St Lucia's Watersheds.**

Irz, X. , Lin, L., Thirtle, C., and Wiggins, S. 2001. **Agricultural Productivity Growth and Poverty Alleviation in *Development Policy Review*, 19 (4): 449-466.**

Kang, B., Fawunmi, D., and Mareck, J. 1988. **Performance of three maize and cowpea cultivars alley cropped with various combinations of Acioa barterii and leucacena leucocephla. In: Resource and Crop Management Programme Annual Report 1988. International Institute of Tropical Agriculture, Ibadan, Nigeria.**

King, R.B., J.H. Pratt, M.P.Warner and S.A. Zisman 1993**. Agricultural Development Prospects in Belize, Natural Resources Institute, Bulletin No.OB48, Chatam, UK.**

Lal, R., Eckert, J., Fausey, N., and Edwards, W. 1990. **Conservation tillage in sustainable agriculture. In: S*ustainable Agricultural Systems*. C. A. Edwards, R. Lal, P. Madden, R.H. Miller and G.House eds., Soil and Water Conservation Society, Ankeny, Iowa.**

Land Tenure Centre. 1988. Land Registration, Tenure Security, and Agricultural Development in St Lucia: A Research Report, Volume 1-5, Madison, Wisconsin, University of Wisconsin.

Laville, B. 1978. Land Use and Credit Facilities in St Lucia as Applied to the Small Farmer. Appendix VIII in Liverpool and Emmanuel, Vol.2 Country Reports.

Le Franc, E. 1993. Rural Land Tenure Systems in St Lucia. Institute of Social and Economic Research. Working Paper. 40 .

McGregor, Duncan F.M. 1995. **Soil Erosion, Environmental Change and Development in the Caribbean: A Deepening Crisis? In:** ***Environment and Development in the Caribbean*** **edited by David Barker and Duncan F. M. McGregor , The Press, University of the West Indies.**

Organisation of American States. 1986**. St Lucia Natural Resources and Agricultural Development Project-Studies and Proposals for the Implementation of a Land Registration Programme. Washington, D.C.**

Palacio, J.O. 2002. Community Assessment Final Draft Report. Community Management of Protected Areas Conservation Project (COMPACT).

Pemberton, C., L. Wilson, G. Garcia and A. Khan 2002. **Sustainable Development of Caribbean Agriculture. In:** ***Natural Resource Management for Sustainable Development in the Caribbean*** **ed. by Ivan Goodbody and Elizabeth Thomas-Hope.**

Renard, Y. 2001. **Practical strategies for pro-poor tourism: a case study of the St.Lucia Heritage Tourism Programme. In:** ***PPT Working Paper No.7.*** **Centre Responsible Tourism, International Institute for Environment Development and Overseas Development Institute.**

Schapiro, L. J. 1982. **Hurricane Climatic Fluctuations, Part II: Relation to Large Scale Circulation.** ***Monthly Weather Review*** **No.110: 1014-023.**

Sheng, T.C. 1981. **The Need for Soil Conservation Structures for Steep Cultivated Slopes in the Humid Tropics. In:** ***Tropical Agricultural Hydrology*****, edited by R. Lal and E.W. Russel, 357-72. Chichester, John Wiley.**

Sheng, T.C. 1972. **A Treatment Oriented Land Capability Classification Scheme for Hilly Marginal Lands in the Humid Tropics.** ***Journal of the Science Research Council of Jamaica,*** **3: 93-112.**

Sproule, K.W. 1994. ***Community Based Tourism Development in Belize.***

Start, D. 2001. **Rural Diversification: What Hope for the Poor? Paper presented at** ***The Workshop on Emerging Issues in Rural Development.*** **London, Overseas Development Institute.**

Swarbrooke, J. 1995. ***The Development and Management of Visitor Attractions,*** **Butterworth-Heinemann, Oxford, UK.**

The World Bank 1996. ***Belize Environmental Report.*** **The World Bank, Washington D.C., U.S.A**

The World Bank 1995. **Belize Environmental Report.Washington. D.C.USA**

Tripp, R. 2001. **Seed Provision and Agricultural Development.** ***The Institutions of Rural Change.*** **Oxford, James Currey.**

United Kingdom Centre for Economic and Environmental Development 1997. ***An Assessment of the Environmental Impacts of Tourism in St Lucia*****, 1-3**

Wave Communications 1999**. Tourism Development Plan for the Anse La Raye Waterfront. Draft Report on Proposed Infrastructure and Service Developments.**

WINBAN (Windward Islands Bananas Growers Association). 1993. *Report of the Productivity Constraints Phase I*. Unpublished Report, Winward Islands Banana **Growers Association, Research and Development Division, Castries, St Lucia.**

World Resources Institute 1994. ***World Resources 1994-1995, A Guide to the Global Environment*****, Oxford University Press.**

World Resources Institute 1992. ***World Resources 1992-1993, A Guide to the Global Environment*****, Oxford University Press.**

LIST OF PERSONS INTERVIEWED

St Lucia

Michael Andrew, Deputy, Forestry Division

Sylvester Clauzel, Programme Co-ordinator St Lucia Heritage Tourism Programme

Christopher Cox, Ministry of Agriculture

Crispin D'Auvergne

Duane Heollt, Deputy Planner, Physical Planning Department

Margaret Anne St Louis, Planner, Physical Planning Department

Giles Romulus, St Lucia National Trust

Tanya Warner, Ministry of Tourism

Belize

Martin Allegra, Department of the Environment, Ministry of Natural Resources and the Environment

Lindsay Belisle, Land Management Programme Officer

Malikah Cardona, Principal Planner, Physical Planning Department, Ministry of Natural Resources and the Environment

Imani Fairweather-Morrison, Chief Executive Officer, Coastal Zone Management Authority and Institute

Sergio Garcia, Chief Executive Officer, Ministry of Agriculture, Fisheries and Cooperatives

J. Rene Ogaldez, Marine Project Coordinator, Programme for Belize/COMPACT

Dr. Vincent Palacio, Manager, Belize Tourism Board Training Unit

Natalie Rosado, Protected Area Officer, Conservation Division, Forest Department

Dylan Vernon, Assistant Resident Representative, United Nations Development Programme

Diane Wade, Land Alliance for National Development

Valerie Woods, Executive Director, Protected Areas Conservation Trust

APPENDIX 1

FIGURE 9.3
The poor visual quality and deficient basic infrastructure make Anse La Raye unsuitable for stay-over visitors