Resources, Planning, and Environmental Management in a Changing Caribbean

Edited by
David Barker
Duncan McGregor

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Preface

This volume reports on current research by geographers and others into resource management and planning issues in the Caribbean region. The chapters have been selected from the thirty-five papers presented at the Third British-Caribbean Geography Seminar (BCGS) held at the Mona campus of the University of the West Indies in August 1998, and suitably revised and edited for publication. The meeting was organized around the theme of "Resources, Planning, and Environmental Management in a Changing Caribbean", which also serves as the title of this volume. The common theme of the meeting and of this collection is the search for development strategies that focus on social and economic needs of people without further deterioration of the region's fragile environmental resource base, in the context of a rapidly changing political and economic world. Other papers from the meeting appeared in two special issues of *Caribbean Geography*, volumes 9 (2) and 10 (1). The volume is the third in a series of outputs from the BCGS, produced by the present editors and published by the University of the West Indies Press. *Environment and Development in the Caribbean: Geographical Perspectives* appeared in 1995 and *Resource Sustainability and Caribbean Development* in 1998 (the latter edited with Sally Lloyd Evans). In addition, two other special issues of *Caribbean Geography* have been published from the seminar papers: volumes 3 (4) and 7 (1).

All three seminars were intended to bring together geographers and researchers from cognate disciplines in order to exchange ideas and present their research work to a wider audience. Participants have been drawn from all over the Caribbean as well as the United Kingdom and other industrialized countries. For example, participants at the 1998 meeting came from Jamaica, Trinidad, St Lucia, Barbados, Antigua, Guyana, Suriname, the Cayman Islands, Martinique, the United Kingdom, Canada, Germany, and Sweden.

Though applied geography research has been at the core of these meetings and geographers have formed the majority of participants, other disciplines and personnel have been well represented. These have included economics, sociology, geology, zoology, ecology, and anthropology, and Caribbean professionals from agencies concerned with urban and regional planning, natural resources management, and hazard management and disaster preparedness. A feature of all three meetings has

been a range of excellent research contributions by young geographers, either in the final stages of post-graduate research or in their first flush of life-after-the-thesis. We feel that exposure at this level for these young researchers has been an important contribution of the seminar series.

The theme chosen for the research published here was intended to encourage contributors to reflect on resource planning and environmental management issues at the dawn of the new millennium, a symbolic date in a contemporary "changing Caribbean". As in other parts of the developing world, the region is being assailed by turbulent economic, social, cultural, and environmental change. There are significant interactions among the different economic sectors, social development, and the fragile resource base in the Caribbean region. There is interdependence between environmental degradation and poverty. Natural hazards have an impact on economic development. Tourism is a double-edged sword. Increased tourism can increase wealth yet also increase disparities in wealth; it can have negative effects on a country's environmental resource base yet, at the same time promote new interest in the care and stewardship of environmental heritage through the creation of national parks and protected areas. Interactions among policy makers, planning options, and ordinary people are critical to the implementation of sustainable development strategies.

The interrelated nature of issues concerning environment and development in the Caribbean region should be evident from the nature of the outputs from the three BCGS meetings. A daunting research agenda remains for geographers and those in cognate disciplines in the field of environment and development in the Caribbean region. It is the editors' hope that in this volume, and in its predecessors, we have indicated the diversity of ongoing geographical research into the region's resource and environmental management problems. We also aver that the contribution of non-geographers to the outputs from the BCGS meetings underlines the place of geography as a meeting point for a wide range of specialists, and as a framework within which they can contribute effectively towards the sustainable environmental management of a changing Caribbean.

David Barker
Duncan McGregor

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David Barker
Duncan McGregor

1 Environment, Resources, and Development: Some Reflections on the Caribbean Research Agenda

Duncan McGregor and David Barker

In 1998 the third in a series of British-Caribbean Geography Seminars (BCGS) was held at the Mona campus of the University of the West Indies. This volume is a collection of papers presented at that meeting. Two earlier meetings were held in 1995, at Royal Holloway, University of London, and in 1992, also at the Mona campus. A major objective of the first BCGS was to publish and disseminate applied research on environment and development topics in the Caribbean. Despite a number of positive trends in access to information, the task of publishing academic research on regional environmental and developmental problems and issues seems to be equally as important today as it was ten years ago.

One of the encouraging trends in the 1990s has been the improvement in the availability of information relating to the Caribbean region via the Internet. A rapidly increasing number of Caribbean Web sites is serving a growing cadre of environmental professionals, non-governmental organizations (NGOs), and other regional interest groups. What we referred to as a "wave of environmentalism" surging across the region (Barker and McGregor, 1995: 15) has found a voice and a means to articulate ideas and mobilize action through the electronic exchange of information. Several forward-thinking and innovative people and organizations have pioneered the development of regional Web sites and the networking of information resources around the region. For example, a number of important Web sites provide useful information on environmental issues, such as the Island Resources Foundation in the Virgin Islands (www.irf.org) and the Natural Resources Conservation Authority (now National Environmental and Planning Agency [NEPA]) in Jamaica (www.nepa.gov.jm).

Another trend over the last decade has been an unprecedented increase in the number of regional and international meetings, workshops, conferences, and seminars. These meetings have provided opportunities for interpersonal contact, interaction and technical exposure for young professionals in public sector agencies and tertiary educational institutions that were undreamed of a generation ago. Despite this apparent

marked increase in "face-to-face" networking at formally convened sessions, the papers presented at today's meetings are just as likely to remain unpublished as were those in the past. Many of these papers contain good ideas, current information, and carefully compiled research data. Even when a meeting is well publicized on the Internet, all too often the information and ideas in the paper never reach the wider regional or international audience. Increasingly at academic conferences, far too many interesting presentations never appear in print, as peer-reviewed professional publications. There is a tendency for conference presentations to be fleeting and non-permanent. The researcher far too frequently simply incorporates comments and feedback from one meeting into the next iteration of a PowerPoint presentation for a subsequent conference, to be published at some ill-defined future date.

In our dual role as conference organizers and publication editors, we have tried to demonstrate that research worthy of presentation to an international audience in academic conference can, and should, be capable of being developed into a worthwhile, refereed publication. The process of feedback, critical comment, and peer review is an essential component of professional writing and is especially important in the early stages of career development. As editors, we have been possibly overzealous with respect to the review process, but we feel that the quality of the end product has been justification enough, especially as a feature of all the meetings has been the excellent contribution of young geographers. Thus, almost all the papers presented at the BCGS meetings have been published. The two earlier volumes, like this one, were published by the University of the West Indies Press: *Environment and Development in the Caribbean: Geographical Perspectives* was published in 1995; and *Resource Sustainability and Caribbean Development* appeared in 1998. Most of the other papers appeared in two special issues of the regional journal *Caribbean Geography,* published in 1992 and 1996; the former a collection of six papers from the first meeting, and the latter five papers from the second meeting. In order to accommodate the larger number of papers at the third conference, eleven papers were published in two special issues of *Caribbean Geography* in 1998 and 1999 prior to the publication of this volume.

Over the last two decades the region has become increasingly buffeted and enmeshed by the forces of globalization in various economic, social, cultural, and environmental guises. Though impacts are positive as well as negative, it tends to be the latter that are problematic and often form the focus of academic research. Thus, demographic factors such as population growth and population movements are the engine of change affecting rural and urban landscapes, and put pressure on the natural resources base and limited land space. The steady growth of tourist arrivals

has far-reaching implications for the tropical, insular, physical environment as well as affecting levels of regional economic prosperity and disparity. Renewable resources may be depleted quickly and irrevocably by expedient but ill-advised resource management decisions. The tourist resort of Negril in Jamaica, for example, barely escaped an environmental and developmental calamity in the early 1980s when plans for the mining of its surrounding wetland for a peat-fired power station were seriously contemplated.

The forces of globalization and trade liberalization have enormous implications for the Caribbean region in the new millennium, not only for the region's beleaguered bananas, but for wider issues of food security and economic sovereignty. But incessant change is, in many ways, the embodiment of the Caribbean as a geographical region. The ebb and flow of the Caribbean Sea is mirrored, figuratively, in the ebb and flow of people and ideas across the islands. Over the last 500 years, the transformation of natural landscapes, the vicissitudes of economic and political fortunes, and the forging of cultural identity have been the hallmark of the region's dynamic and dramatic history. All these interlocking forces of change were moulded in the past, as they will be in the future, by the geography of the region and its connections with the rest of the world. For those concerned with interpreting the shifting currents of the contemporary Caribbean, the enduring problem is that the complex economic, social, cultural, and environmental changes are spatially and temporally intertwined like the proverbial Gordian knot.

It is not surprising, therefore, that a number of the contributors to this volume have used a historical perspective to inform and conceptualize their notion of a "Changing Caribbean". Understanding the past is of considerable value in the search for development strategies that focus on social and economic needs of people in the present in order to avoid further deterioration of the region's fragile environmental resource base. An example is the value of comprehending traditional patterns of resource use and local systems of knowledge of small hillside farmers, coastal fishermen, or charcoal burners, in shaping policy frameworks that can integrate resource management and community development.

Another example is to be found in anthropologist Jean Besson's work in Chapter 2. Here she takes an expansive look at small-scale marketing in Jamaica from the earliest days, drawing on historical sources and comparative fieldwork in eight rural communities and a long-term study of the Falmouth marketplace. The essay explores continuity and change among male and female marketers in the context of complementary and flexible gender identities. The analysis explores links between the marketing system, small-scale land tenures, and peasant agriculture. ROSCAs (Rotating

Savings and Credit Associations) have evolved from the traditional concept of "partners" in the informal sector, and contributed to gendered culture-building and economic development.

John Brierley uses the more recent past to analyse change in small farming systems in Chapter 3, in this case, the island of Grenada. He compares the findings of two farm surveys, the first undertaken during the Marxist-inspired People's Revolutionary Government and the second ten years later as a democratically elected government faced economic recession. His analysis of separate farm fragments (parcels of land) reveals subtle temporal changes in the composition of kitchen garden crops. Development programmes for small farmers have failed over this period and farmers have scaled back on vegetable production and farm their kitchen gardens less intensively. The strength of tradition is a reflection of inflexibility and imperviousness to turbulent political and economic events that agricultural planners have not addressed effectively.

Barker and Beckford focus on the problems facing small yam farmers in Jamaica in Chapter 4. In contrast to the Grenadian case, these farming systems are dynamic and significant change in yam production has occurred over a similar period. Yellow yam has become a major export crop and a significant earner of foreign exchange. Commercialization of yam production has given rise to an informal-sector commercial trade in yam sticks in order to supply small farmers with a critical component of their production system. A major issue that has emerged is what farmers refer to as the "yam stick problem", characterized by the scarcity, inferior quality, and high price of yam sticks. A major source of yam sticks is Cockpit Country, slated to become a national park. A conceptual model of the impacts of increased yam production for farming systems and agricultural planning, rural development, and environmental resource management is presented.

The use of forest resources is also the focus of Caroline Sullivan's work in Chapter 5. Indigenous Amerindian peoples in the Guyana rainforest are dependent to a large extent on the same ecological cycles as their ancestors. Here, traditional systems have exhibited long-term ecological and livelihood sustainability, but the future is uncertain. She uses an economic income accounting framework to assess the monetary value of the forest to Amerindian households. Participatory research techniques were used to collect both qualitative and quantitative data from households in three forest communities. The results shed some light on the non-monetary value placed upon the forest by such communities. Some of the policy options for forested areas are examined, and a case is made to integrate the views of all stakeholders in the formulation of development policy for forested areas.

The rural communities examined in Chapter 6 by Judy Rocke are located in south-east Trinidad close to important forest reserves, but use of forest resources is much more restricted than in Guyana. The eleven case study villages in Moruga and Cocal are located in a classic rural periphery of a developing nation, and the pace of change and modernization has been slow, to the extent that rural deprivation is firmly entrenched. The questions are how to address the problem of rural poverty and how to accelerate rural development. The chapter proposes a new method for analysing rural poverty in the Caribbean based on highly detailed, local-scale research. A community impact assessment suggests ways in which rural transformation and development might be engaged in these deprived communities and suggests a methodology to assist planners in the geographical targeting of development projects.

Mark Pelling examines the problems facing rural communities in the coastal and estuarine lowlands of Guyana in Chapter 7. Though only accounting for 3 percent of the national land area, these areas are the chosen place of settlement for 90 percent of the national population, and are becoming more urbanized. The political, economic, and environmental processes that led historically to this skewed settlement pattern are today the root causes of the flooding hazard there. The social and spatial distributions of vulnerability to flooding are explored using two contrasting but complementary methodologies. The first method involves a household survey of ten coastal urban and periurban neighbourhoods. Micro-locational factors, dwelling tenure, dwelling form, livelihood and gender of household head are identified as the principal indicators of vulnerability. The second approach involves a review of the institutional framework for environmental management decision-making, and demonstrates the consequences of global and regional development trends for locally vulnerable populations.

While the hazards described in Guyana are largely anthropogenic in origin, Alex Hobson focuses on the hurricane hazard in Chapter 8. Over the last decade or so, Nevis, like many of the other Leeward Islands, has been pounded by a series of hurricanes and tropical storms after a relatively long period without significant exposure. A hurricane can bring violent change to the natural environment and rapidly alter the mindset of those who suffer personal disaster. Hurricane Hugo was the first of this series of storm disasters to strike the Leeward Islands in recent times. The chapter looks at baseline data from 1994 to examine how Nevisians had reflected on their lack of preparedness for Hugo in 1989, and to determine whether their experiences had changed their perception of hurricane hazard. The reasons for the general lack of preparedness of the islanders during Hurricane Hugo and the adoption of mitigation measures

after Hurricane Hugo are documented, and subsequent storm events are commented upon. Such studies can be used to guide natural disaster management policy in the Caribbean and to encourage change in people's understanding of disaster preparedness.

Tourism is one of the most significant contemporary factors influencing change in the Caribbean region. We noted above its radical impact on economic prosperity and social development, and the pressure it exerts on the physical environment and the resource base. The nexus of these concerns has emerged in debates about sustainable tourism, a theme in several papers in this series of BCGS meetings. This volume contains three chapters that illustrate ongoing research by geographers in this field.

In Chapter 9, Sue Bleasdale and Sue Tapsell look at sustainable tourism in Cuba and its place in Cuba's political landscape. Since 1985 Cuba has experienced rapid growth of its international tourism industry. This chapter explores whether a consensus exists concerning the social and environmental impact of this tourism development. A centralized and planned economy provides the context for the careful and controlled development of tourism. Opinions seem to be divided when assessing the impact of recent tourism growth. Evidence exists of both positive and negative impacts in the social and environmental fields. There is no doubt that the growth of tourism has helped Cuba survive the collapse of the USSR and COMECOM and the embargoes imposed by the United States, but whether this contribution is sustainable is still in doubt.

The next two chapters focus on the growth of tourism and the changes that have transformed the Montego Bay area on Jamaica's north coast. In Chapter 10, Rhonda Koster and Adrian Seaborne discuss the utility of Butler's resort cycle model and Weaver's plantation model to describe and explain patterns and processes of resort development in the Caribbean. They suggest that the application of a universal tourist model to a specific location has limited value. The changing patterns of land use in the twentieth century in Montego Bay and its surrounding area are depicted as a series of maps, and interpreted in relation to data on tourist arrivals and accommodation. A modified model of resort development is presented, which the authors argue is better able to describe and explain the patterns and processes of resort evolution in terms of their social, economic, and environmental impacts.

In Chapter 11, Bernard Thraves provides an in-depth discussion of the growth of Montego Bay as an international tourist resort, emphasizing the city's rapid urbanization. A large proportion of Montego Bay's urban growth has been accommodated in squatter settlements on land unsuited to development. Provision of basic housing has been achieved, but consumption of housing amenities remains low. There has been inadequate

investment in local and regional transportation infrastructure, and urban congestion has retarded economic development. Also, a general absence of infrastructure planning is reflected in environmental degradation, which threatens the viability of the city's tourism resource. Most at risk is the marine environment, which is severely impacted by pollution from the Montego Bay watershed. Recent infrastructure projects, including the upgrading of sewage treatment facilities and realignment work on the North Coast Highway, provide some cause for optimism.

In the final chapter, Calbert Douglas focuses on those dependent territories in the Caribbean that, for various reasons, did not become independent during the second half of the twentieth century. Politically still connected with member states of the European Union, he presents data that reveal their different political geographies and their highly differentiated level of economic development. He reviews the paradigm of sustainable development and examines three territories still tied to Britain: the Turks and Caicos Islands; the British Virgin Islands; and Anguilla. The appropriateness of the sustainability debate in these territories is evaluated through reference to their general level of economic development, infrastructure provision, quality of life indicators, social distance in small islands, intergenerational equity, environmental protection and environmental policies, and social factors and issues. In the search for sustainable development, balanced economic and social agendas, sustainability targets, and applications of criteria in resource management are of critical importance in the twenty-first century.

REFLECTIONS ON THE RESEARCH AGENDA

In terms of research effort, it has become clear over the span of the three BCGS meetings, and through the contact network established as a result, that much of the geographical research carried out in the region has been low-budget and predominantly island-specific. Individual researchers working independently or with post-graduates, or small groups of two or three colleagues collaborating on a project, is the established pattern; as opposed to the much larger-scale, often multidisciplinary, projects that are commonly encountered in other geographical areas, such as Africa. The consensus of colleagues from the United Kingdom, and to some extent from those EU colleagues who have participated in the BCGS meetings, is that this reflects a reluctance of national and EU research funding agencies to commit substantial project funding to the Caribbean region. The unwritten justification is that this is properly the province of North American funding. In the UK case, this perhaps reflects a trend among funding agencies, both Research Council and Department for International

Development (DFID), to focus funding on particular geographic or thematic areas. Thus, for example, much of the natural resources management funding of DFID is focused on Africa and South Asia. The reason for this may simply be a pragmatic response to a progressively squeezed research budget, with synergistic, "value-added", criteria being the stimulus for closer geographic and thematic focus.

Yet this focus does not reflect the realities of the physical and human landscapes of the insular Caribbean. In the region, progressive physical degradation of soil resources is all but ubiquitous, rates of urbanization are among the world's highest (McGregor and Potter, 1997), and the deleterious effects of mass tourism are becoming progressively more apparent. The context of environmental problems in the Caribbean is thus both wide-ranging and complexly interlinked, but the recurrent underlying theme is one of inappropriate land resource use. This is seen explicitly in terms of agricultural systems, urban systems, and tourism-related developments, and the increasing competition and compromise among these.

In reflecting on the broader picture of the research covered in the three meetings, it is evident that there are common, yet overlapping themes. For editorial purposes in Barker and McGregor (1995), we grouped the sixteen research papers into sections on coastal zone management, tourism and development planning, natural hazards and disaster management, land resources and development planning, and national parks. In McGregor et al. (1998), the nineteen research papers were organized into the themes of population and urban sustainability, tourism and sustainability, economic sustainability and the household, rural change and agricultural sustainability, and land use and sustainability. In this volume the topics covered include sustainable food production and resource depletion, community forest resources, rural planning and community development, sustainable tourism and tourism planning, coastal resources and coastal management, disaster preparedness and environmental hazard management. There are obvious similarities in the content and groupings (tourism, hazards, small farming, etc.), even though the case studies are based in different Caribbean territories.

However, the editorial problems associated with imposing order on the presentation of research material simply reflect the real, complex, and interrelated nature of the research material itself and the issues raised. The point was emphasized in our introduction to the first volume (Barker and McGregor, 1995: 5–9). The interrelated nature of issues concerning environment and development in the Caribbean region as foci for geographical research should be evident from the BCGS meetings. Indeed, since the seminar series was originally conceived in the early 1990s, the

problems facing small developing countries in insular regions such as the Caribbean have emerged onto the world stage. Agenda 21 forcefully highlighted the problems facing small islands:

> Small island developing states, and islands supporting small communities are a special case both for environment and development. They are ecologically fragile and vulnerable. Their small size, limited resources, geographical dispersion and isolation from markets, place them at a disadvantage economically and prevent economies of scale. (*United Nations Conference on Environment and Development,* 1992, AGENDA 21:17.123)

The 1994 Global Conference on the Sustainable Development of Small Island Developing States in Barbados specifically highlighted the problems of SIDS, and a new acronym entered the lexicon of global governance. As part of the 1994 Barbados Program of Action, SIDSNET, a Web site and network for small islands research located in Fiji, has emerged as another important information resource (www.sidsnet.org).

Thus, many of the contemporary issues facing small island states have been articulated to the wider international community and are conceptualized as quite different from those of the much larger continental developing countries. The environmental and developmental problems facing Jamaica, Antigua, or Tonga are not the same as those facing India, Brazil, or Nigeria. The former have small populations, limited territorial sizes, narrower ranges of natural resources, and are therefore highly dependent on international trade and the vicissitudes of economic globalization. Fragile and interconnected coastal zone and terrestrial ecosystems coupled with coastal populations make these countries highly vulnerable to natural and anthropogenic disasters, including sea-level rise through global warming. The conservation of the indigenous resource base is the aim, indeed the imperative, but within the context of economic prosperity and social equity. Peoples' attitudes to land and their environment are critical both to the understanding of changing resource use and to the formulation of realistic conservation strategies.

The significant issues identified as important to SIDS by the international community have been reflected similarly in the research presented at the three BCGSs. Though geographical research has been at the core of the meetings, disciplines such as economics, sociology, anthropology, and zoology also have been represented, and clearly contribute to an understanding of the interrelated nature of environmental and development issues. The urgent need is for Caribbean research that informs holistic and proactive development strategies, and paves the way for the implementation

of appropriate, balanced management options. But our understanding of the underlying dynamics and interactions is imperfect. While much can be achieved by individual research, a focused and better-funded collaborative research effort could accomplish the task in a more appropriate time frame. We are firmly convinced that, in a region characterized by unacceptable levels of poverty and economic development, the people–environment paradigm of applied geography has proved to be an appropriate focus for Caribbean research and is well equipped to respond to the agenda emerging from the SIDS Program of Action.

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2 Gender and Development in the Jamaican Small-Scale Marketing System: From the 1660s to the Millennium and Beyond

Jean Besson

This chapter examines gendered identities and discourses in Caribbean development through the case of the Jamaican small-scale marketing system, from the 1660s to the turn of the millennium, highlighting the significance of this human resource for the twenty-first century. Drawing on historical sources, combined with comparative fieldwork over the period 1968–1998 in eight rural communities in the parishes of Trelawny and St Elizabeth[1] and in Trelawny's Falmouth marketplace (which is linked to an islandwide and transnational marketing network), the chapter explores continuity, change, and potential among male and female marketers. The analysis also shows how this marketing system articulates with other dimensions of the peasant economy in a wider context of engendered culture-building and development.

In the first section, I outline contrasting perspectives on Caribbean peasantries,[2] including their marketing systems, and suggest that rather than being "an 'obstacle' to development" (see Mintz, 1989: 147), the peasantries are a creative adaptation. In section two, I review the debate regarding the African heritage and gender roles in Caribbean small-scale marketing, and show that complementary and flexible gender identities and discourses have characterized the creation of these creole institutions. The third section provides an historical perspective on the development of this marketing system throughout Jamaica, at the core of the Caribbean region, including the Falmouth marketplace, which is now the island's largest rural market. Section four examines gender complementarity and flexibility in marketing and cultivation in the parishes of Trelawny (which feeds the Falmouth market) and adjoining St Elizabeth, at the heart of the island's agrarian economy. I also show how engendered change in the marketing system is impacting the rotating savings and credit association

(ROSCA) *partners*. In conclusion (section five), I argue that gender identities and discourses in the small-scale marketing–cultivation system and its ROSCA *partners* articulate with gender complementarity and flexibility in other dimensions of the Jamaican peasant economy, such as landholding and migration. In addition, I show how this Jamaican case, which has similarities with other Caribbean peasant adaptations, has wider significance for the cross-cultural study of development and gender.

CARIBBEAN PEASANTRIES, DEVELOPMENT, AND GENDER

Caribbean peasantries have been regarded as inhibiting development. Mintz (1989: 146–147) highlights this view in *Caribbean Transformations* and elsewhere locates this devaluation of the peasantries within the context of the plantation system (Mintz, 1985: 133–134). Criticisms of the peasantries include their "uneconomic" farms, "underproductive" family-land tenures, "chaotic" cultivation, and "wasteful" small-scale marketing systems (see, for example, Mathurin, 1967; Lowenthal, 1972: 104; Besson and Momsen, 1987; Hills, 1988; Mintz, 1989: 223; Espeut, 1992; and Besson 1984a, 1995e, 1995f).

In addition, Wilson (1973: 234, 1995: 234) contends that, while Afro-Caribbean men are the vanguard of creole culture as reflected in their value system of "reputation" (which includes entrepreneurship, such as small-scale trading), even "lower class" women of African descent in Caribbean rural communities have constrained "indigenous" development through their adherence to Eurocentric "respectability" since slavery days. Therefore, Afro-Caribbean peasant women bear the brunt of the critique regarding gender and development.

Mintz has advanced an alternative view of Caribbean peasant adaptations. His definitions of "peasantry" in general focus on access to land, small-scale cultivation for subsistence and sale in internal and export markets, and subordination to wider economic and political control (Mintz, 1989: 132, 141; see also Mintz, 1985). From these perspectives, Caribbean peasantries are "*reconstituted* peasantries, having begun other than as peasants – in slavery, as deserters or runaways, as plantation laborers, or whatever – and becoming peasants in some kind of resistant response to an externally imposed regimen", namely, the "plantation system and its connotations" and "imposed [Euro-American] styles of life" (Mintz, 1989: 132–133).

Mintz identifies five main modes of peasantization in the post-Conquest Caribbean, and variants of small-scale trading feature in all these types:

1. The "squatters", who emerged in the Greater Antilles after the Spanish conquests of the late fifteenth and sixteenth centuries, traded by "smuggling through illegal ports" (Mintz, 1989: 147).
2. The "early yeomen", or post-indentured Europeans in the mid-seventeenth-century Lesser Antilles, "produced tobacco, indigo, and other products for European markets" (Mintz, 1989: 149).
3. The "proto-peasantry", or slaves who cultivated house-yards and plantation provision-grounds from the late seventeenth to the early nineteenth centuries, produced surpluses for sale in public marketplaces, especially in the mountainous non-Hispanic territories such as Saint-Domingue, the Windwards, and Jamaica (Mintz, 1979, 1989: 151–152, 180-213; Besson, 1995c).
4. The "runaway peasantries" or Maroons, who became established throughout the Caribbean region during the entire slavery period, raided plantations and traded illicitly – and in some cases legally, after treaties (Mintz, 1989: 153–154; Price, 1996).
5. The post-slavery peasantries, who especially typify the non-Hispanic Caribbean, have expanded Maroon and proto-peasant marketing systems – both internally and for the world economy (Mintz, 1960, 1985, 1989: 214–250).

My own view of Caribbean peasantries has built on Mintz's work and, in contrast to Wilson's (1973, 1995) androcentric thesis, has shown the significance of peasant women as well as men in creating Caribbean cultures and economies (for example, Besson, 1979, 1984a, 1987a, 1988, 1992, 1993, 1995a, 1995g, 1998). This chapter extends this approach, by focusing on the contribution of both genders in Jamaican small-scale marketing, which has parallels throughout the Caribbean region.

THE AFRICAN HERITAGE AND CARIBBEAN GENDER DIFFERENTIATION

Within the focus on such small-scale marketing systems, controversy exists regarding both the African heritage and Caribbean gender differentiation. The predominance of female marketers and higglers in the contemporary Caribbean has been attributed to African cultural influences (for example, Herskovits, 1937: 260; Herskovits and Herskovits, 1947: 292). However, in assessing the role of the African heritage, Mintz asserts that, while women dominate Haitian and Jamaican post-slavery markets as in West Africa, complementing a primarily male cultivator role, reports of proto-peasant marketers provide no evidence that women outnumbered men and family groups, and men probably outnumbered

women in such marketing activities. Moreover, the first marketplace in Jamaica was not African, but English (Mintz, 1960: 114, 1989: 195–196, 210–212, 216, 223–234; Mintz and Price, 1992: 77-80). Simmonds (1987: 32) concludes that, in a context where gender division of labour by the later part of the eighteenth century in Jamaica was more marked among urban slaves than plantation slaves,[3] "the rural component [of trading] was at best shared between the sexes, with the possibility of the men being the principal cultivators, while urban marketing was dominated by females". She also suggests African influences on the marketing roles of urban female slaves (Simmonds, 1987: 32), consistent with Higman's (1984: 53–54) view that plantations rather than towns were the vanguard of creolization.

Nevertheless, Mintz's (1989: 217) observation for Jamaica that "divorce among the slaves was consummated by tearing in two the *cotta*, or head-cloth" (used in Trelawny until the 1980s), and his "guess that this practice signified the breaking in two of a symmetrical economic relationship between male cultivator and female marketer" does suggest some gender differentiation among plantation slaves paralleling the female emphasis in urban trading. Moreover, urban and rural sectors were not isolated even during slavery and the marketing network linked plantations and towns. However, while Mintz (1989: 216) had "no evidence that land use was ever afforded other than to male slaves", we now know that Afro-Caribbean women have obtained access to land and have cultivated house-yards and provision-grounds since slavery days (Besson, 1992, 1995c; Bush, 1990: 49; Momsen, 1988). A synthesis of the evidence therefore suggests some gender divisions of labour in relation to complementary male cultivation and female marketing among the proto-peasantry, but within a wider context of flexible gender roles and identities in these spheres in contrast to more distinct gender ideologies among urban slaves. As will be shown later in the chapter, there were further variations among the Jamaican Maroon peasantry – where women cultivated and both men and women marketed.

After the emancipation of the proto-peasant slaves there were increasing tendencies towards male cultivation and female marketing in rural areas, as gender divisions of labour in agriculture replaced the age and health distinctions of the slave-plantation fieldwork gangs (Patterson, 1973: 59–61; Momsen, 1988: 84, 92). Marketing and higglering provided women with opportunities for autonomy, mobility, flexible entrepreneurial roles, and an alternative source of cash to domestic service (Mintz, 1989; Durant-Gonzalez, 1983). Mintz and Price (1992: 77) note that in post-slavery Haiti and Jamaica "women emerged as the overwhelming majority of marketers"; while Mintz's (1960, 1989) research revealed the persisting

predominance of female marketers and higglers in contemporary Haiti and Jamaica complementing a male emphasis in cultivation. Mintz and Price (1992: 80) therefore argue for active Caribbean culture building in these gender roles, with African cognitive orientations regarding gender autonomy being "reinforced by the plantation experience", rather than for passive African retention (compare Bush, 1990: 50).

Comparative data from eight peasant communities and a major marketplace in the west-central area of Jamaica advance this thesis of dynamic Caribbean culture building. The data not only reveal continuing tendencies towards male cultivation and female food marketing and higglering, deriving from the proto-peasant and post-emancipation periods and reinforced by contemporary social contexts, but also highlight parallels among the Maroon peasantry resulting from changing gender roles. In addition, there is evidence of current transformations towards undifferentiated gender roles in import–export-related food and dry goods higglering. This gender flexibility is reminiscent of the flexible gender discourses among proto-peasants and Maroons in their creative adaptation to slavery and marronage, and parallels the participation of both women and men in other dimensions of the peasant economy. The next section provides an historical perspective on this small-scale marketing system in Jamaica.

A HISTORICAL PERSPECTIVE ON JAMAICAN SMALL-SCALE MARKETING

Mintz and Hall (1960) have shown that the first legal marketplace in Jamaica was established in the island's then capital of Spanish Town (Santiago de la Vega) (Figure 2.1) in 1662, and was "English, not African, in conception and form" (Mintz, 1989: 195–196). This was a quarterly livestock market, introduced at the request of the colonial settlers seven years after the English capture of Jamaica from the Spanish in 1655 (Mintz, 1989: 195). This market, set up by English law to serve the island's free population (pp. 195–196), paralleled marketplaces at that time in England, for example in Dorset and the Cotswolds.[4] Edward Long provides evidence that an internal food marketing system had likewise developed in Jamaica by the 1660s, centred on Spanish Town and the buccaneer city of Port Royal, by colonial small settlers before the escalation of the large-scale slave plantations (Long, 1774, 1: 282–283, in Mintz, 1989: 196).

By 1685, "less than a quarter of a century after the first legally recognized market was established" in Jamaica (Mintz, 1989: 197), Cundall observed that "the negroes" were participating in a "usual Saturday market at Passage Fort" (Cundall, 1936: 99, in Mintz, 1989: 197). Patterson (1973: 225) notes that "by the 1760s the slave-dominated marketing system

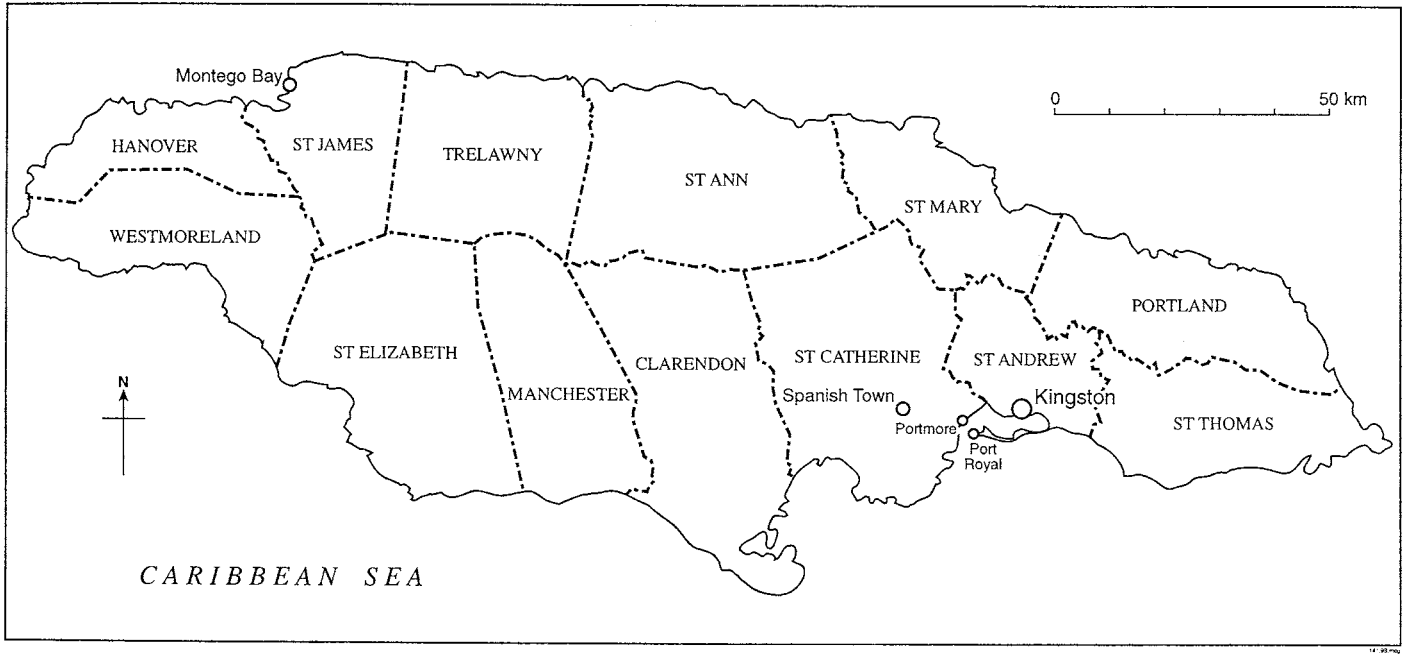

Figure 2.1 Jamaica: parishes and cities

was well developed". Long records that by 1774, at the zenith of Jamaica's so-called Golden Age based on the sugar-and-slave plantation system, food marketing was in the hands of the slaves – who controlled about 20 percent of the island's metallic currency (mostly in small coins) from their marketing activities (Long, 1774, 2: 105, 303–304, 562, 570, in Mintz, 1989: 199–200). Therefore, as Mintz (1989: 201) concludes, "one century after the first legal Jamaican market was created, the slaves had made a place for themselves in the free economic activity of the country which would never thereafter be challenged".

The details of the appropriation of the masters' internal marketing institutions by the slaves are well documented by Mintz and Hall (1960) and Mintz (1989: 180–213; see also Patterson, 1973: 216–230), and are part of the wider process of cultural re-creation and institution building by the Jamaican peasantry (Besson, 2002; compare Mintz and Price 1992). As in other areas of the Caribbean region, both male and female slaves appropriated house-yards and provision-grounds for cultivation, marketing and customary land transmission (Mintz, 1960, 1979; Besson, 1995c). During slavery in Jamaica, alternate Saturdays were allowed for provision-ground cultivation, and market-day was changed from Saturday to Sunday so as not to conflict with either plantation production or the food cultivation of the slaves, though both the merchants and the missionaries objected to these Sunday markets (Mintz, 1989: 197, 202, 204–205). Jamaican slave marketing included not only ground provisions, but also livestock, crafts, and clothes (Mintz, 1989: 194-206; Patterson, 1973: 216-230).

Marketplaces used by the slaves were established throughout the island, "not only in the towns but any part of the rural areas where there was a potential demand, such as ports, villages, cross-roads and the residences of large and wealthy families" (Patterson, 1973: 226). These included the marketplace in Falmouth (Trelawny's second capital) (Figure 2.2), established towards the end of the eighteenth century, which almost certainly developed from earlier proto-peasant marketing in Martha Brae[5] – the first town in the eastern part of "Old" St James and the first capital of Trelawny (Besson 1987b, 2002).

The British colonial town of Martha Brae had been founded in 1762, at a site on the (now) Martha Brae River, one and a half miles inland from the coast, where the sugar plantations of Holland and Irving Tower adjoined, to serve as a supply point for the surrounding sugar estates of eastern Old St James, which was the heart of the Jamaican slave-and-sugar plantation system (Besson, 1984b, 1987b, 1988). In 1771, when the new parish of Trelawny was created from east St James, Martha Brae became Trelawny's first parochial capital, in the plantation heartlands of a parish that would have more slaves than any other parish in the island (Ogilvie,

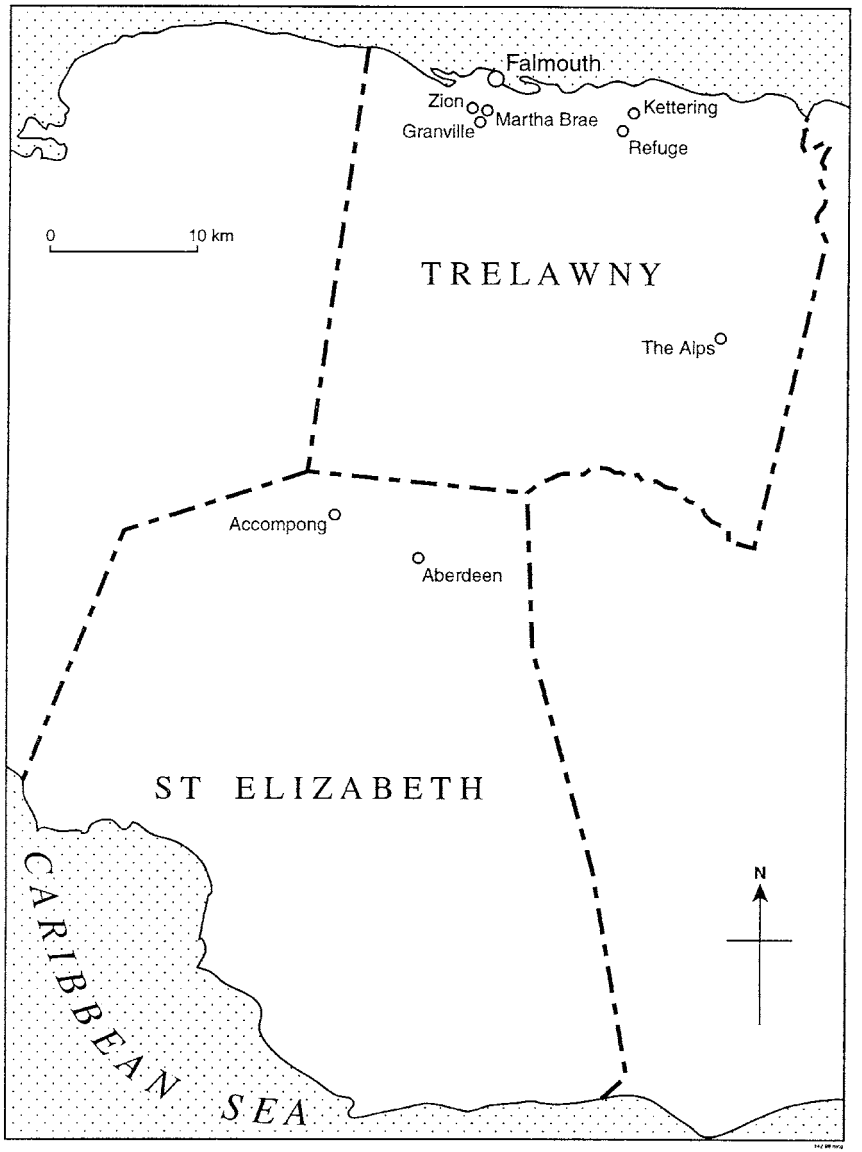

Figure 2.2 Parishes of Trelawny and St Elizabeth, showing communities studied

1954: 150). From the late eighteenth century, when the new town and seaport of Falmouth in Trelawny began to eclipse Martha Brae (which it would replace as parish capital around 1797), Trelawny's proto-peasant marketing system shifted to Falmouth; this being especially so for the

slaves in the plantation hinterland surrounding Martha Brae (Besson, 1987b: 120; compare Simmonds, 1987: 34–35). On Sundays, these slaves sold their surplus produce on the streets of Falmouth and especially in the central square. So significant were these proto-peasant marketing activities that Falmouth's main street and square came to be known as Market Street and Market Square (Ogilvie, 1954: 43; Concannon, 1970: 5). Around 1798 or 1799 the Falmouth Water Company was formed and the proto-peasant market was consolidated around the large stone water-storage tank in Market Square. In 1800, a shed for the Sunday market was built beside the tank, and in 1821 beef stalls were constructed and fish was also sold (Ogilvie, 1954: 42–44).

In 1830, four years before the abolition of slavery, the Baptist missionary William Knibb observed the vibrant Falmouth weekly Sunday market, to which:

> the plantation slaves came in from the country carrying loads on their heads and set out their yams and cocos and melons and eggs and poultry and plantains in the open square around the Falmouth Water Company's big stone storage tank. (Wright, 1973: 56)

In addition, a letter written by Knibb from Falmouth in 1831 provides further evidence of the role of female slaves as marketers and indicates that the planters themselves were reliant on the slaves for the small-scale marketing of goods (Hinton, 1847: 113).[6]

In his account of Knibb as "Slaves' Missionary" in Trelawny, Wright (1973: 166) highlights the significance of the provision-ground–marketing complex in this parish at emancipation in 1838, a situation which the planters attempted to curtail in order to create a landless labour force for the plantations, which persisted in Trelawny after the abolition of slavery. Two years after full freedom, the classic lithograph from a daguerreotype by Duperly of a "Jamaican Market around 1840, little changed from slavery days" (Craton, 1978: 284, and cover) immortalized the Falmouth market. From this lithograph can be discerned both male and female marketers, but a clear preponderance of women.

Around twenty years later Underhill (1862: 383), in his tour of the West Indies, which included Jamaica, referred to "a large weekly market" at the settlement of Hastings (near Dromilly estate) in south-west Trelawny. Underhill (1862: 360) also wrote of Sawyer's Market: "a considerable settlement" in south-east Trelawny, five miles nearer to the north coast than The Alps (originally named New Birmingham) – Trelawny's first Baptist-founded free village, established in 1838 (Besson, 1984b). In addition, his observations on peasant production "for the markets in the

lowlands" (Underhill, 1862: 362) in the new settlement of Albert Town, further into the interior, beyond The Alps and Ulster Spring, highlight the plantation-generated land scarcity constraining the ex-slaves. This was especially true on the coastal plains (where the free villages of Refuge, Kettering, Granville, and Martha Brae, established by ex-slaves and their descendants on the site of the former planter town, were and are still located). Underhill's observations also show the network of markets in Trelawny at this time, and the relative independence that access to land, cultivation and small-scale marketing provided in the face of the persisting plantation system.

My fieldwork in The Alps in 1983 (see Figure 2.2) revealed an oral tradition of a family group, descended from emancipated slaves, who went to market in the late nineteenth and early twentieth centuries (reminiscent of Mintz's (1989: 211) account of marketing by proto-peasant family groups), as well as indications of the growing emphasis on men as cultivators and women as marketers after slavery. However, oral evidence for the years 1917 to 1921 and 1954 to 1955 from Christiana, a few miles further into the mountains than The Alps and Albert Town (and over the Trelawny border into the parish of Manchester), indicates the persistence of men in some areas of food higglering – especially yams (see the section below, on Gender Complementarity and Flexibility).[7] Likewise, oral history for the mid- to late 1950s from John's Hall in the interior of the parish of St James, bordering Trelawny, provides further evidence of male as well as female food marketing and higgler roles.[8]

Towards the end of the nineteenth century, in 1896, the Albert George Market was built in Falmouth's Market Square (Ogilvie, 1954: 44). Trelawny's post-slavery peasantry frequented this marketplace until 1982, at which time women still dominated marketing activities. By 1982 the Falmouth market, which by then was held on Wednesdays, Fridays, and Saturdays, had so expanded that larger premises were built by the Trelawny Parish Council on the eastern edge of Falmouth. On this new site the Falmouth marketing system has expanded further, in the later 1980s and 1990s, due especially to informal import higglering; and its bustling activity on market days engrosses several street blocks beyond the marketplace, stretching to south Tharpe Street on the road to Martha Brae. As a result, marketers have been ordered by the Parish Council to vacate the streets (in order to trade in licensed stalls), an instruction that has been only partially successful. This attempt to constrain and control informal marketing parallels earlier efforts by the colonial government, the planter-based Jamaica Assembly, and the Parish Vestries, during the slavery era, to curb and license Maroon and proto-peasant trade (Mintz, 1989: 197–198; Simmonds, 1987: 37–38; Campbell, 1990: 127, 133). By 1990

the Falmouth market was regarded as Jamaica's main rural market, especially on "ben' down market" days (the dry goods market, discussed in the next section).[9] In 1998 the Falmouth marketplace, which continues to be used by the Trelawny peasantry, was still Jamaica's leading rural market; and the "ben' down market" held on the Wednesday before Christmas in 1996 and in July 1998 were the largest dry goods markets that I observed during my long-term fieldwork.

On December 9, 1989, the Albert George Market was reopened by a local private company as a "historical and shopping centre" in the context of the tourism industry. In 1998 this marketplace was still a tourist attraction, with souvenir shops, small grocery and dry goods stores, and (in 1996) historical exhibits such as plantation sugar-processing equipment and coins from the late eighteenth century. The coins included a large copper "cart-wheel", about two inches in diameter, which "the slaves hated" as it was so heavy to carry, a half-penny, and "tokens given to the slaves" for collecting rat-bat manure from plantation mountain caves.[10] During slavery, such coins were part of the island's currency, and (as mentioned earlier in this section), by 1774 around 20 percent of this money was controlled by proto-peasant slaves as a result of their marketing activities.

This network of small-scale distribution and exchange established by the slaves has been both continued and transformed by their descendants in Trelawny and elsewhere in Jamaica, including the adjoining parish of St Elizabeth. This islandwide marketing system, which now has links with the diaspora, includes the five "free villages" that I studied in Trelawny (The Alps, Refuge, Kettering, Granville, and post-slavery Martha Brae); Martha Brae's satellite squatter settlement of Zion, established during the period of my Trelawny fieldwork (1968–1998); the Accompong Town Maroon community in St Elizabeth (the oldest persisting post-treaty corporate Maroon society in the Americas, where I conducted fieldwork during the period 1979–1998); and Accompong's neighbouring post-emancipation village of Aberdeen (in St Elizabeth), which evolved from the slave community on Aberdeen estate and where I undertook fieldwork from 1991 to 1998. All these reconstituted peasant communities originate in proto-peasant, Maroon, and post-slavery peasant adaptations and are still surrounded by plantations, which are now reinforced by other forms of land monopoly deriving from the bauxite and tourism industries. In these contexts access to land, transmission of landholdings, cultivation, and small-scale marketing continue to provide bases of autonomy and identity among both men and women today. In the next section I outline the gender complementarity and flexibility in marketing and cultivation, which reflect the wider dynamic gender discourses of the Jamaican peasantry (see Besson, 1998).

GENDER COMPLEMENTARITY AND FLEXIBILITY

In his classic study of the Jamaican small-scale marketing system in the 1950s, based on the Brown's Town marketplace in the parish of St Ann adjoining Trelawny, Mintz stated that

> Mention has been made of the division of labor between men and women which, historically and functionally, seems to parallel that between cultivation and marketing, although by no means strictly so. This division of labor characterizes thousands of individual rural lower-class peasant families. The higgler wife, or "partner", provides an outlet for some of her cultivator husband's foodstuffs. At the same time, higgling provides the wife with a largely separate economic activity in which the husband does not exert a great deal of control. . . .
>
> . . . The . . . hypothesis that small-scale farming and the present system of Jamaican internal marketing neatly sustain one another . . . requires substantiation, and can be proved or disproved only by careful field studies. Such studies would throw additional light on one of the most fundamental institutions of Jamaican culture. (Mintz, 1989: 223–224)

Mintz's hypothesis of gender complementarity in peasant cultivation and marketing is substantiated to a significant degree by my fieldwork, from the late 1960s to the eve of the millennium, in the eight rural communities in Trelawny and St Elizabeth and in the Falmouth marketplace. However, there have also been changes in gender roles, reflecting the flexibility of gender identities that has typified the Jamaican peasantry since the days of slavery and marronage. I look first at Accompong and Aberdeen in St Elizabeth, and then at the Trelawny communities and the Falmouth marketplace.

Accompong and Aberdeen

Within the Accompong Maroon village in St Elizabeth (see Figure 2.2), complementary tendencies towards male cultivation and female food marketing can be identified, displaying both continuity and change from gender emphases in the slavery and post-slavery past. However, this gender complementarity in Accompong is a transformation of gender roles in marronage. Before the 1739 treaties, Maroon women were the cultivators of provision-grounds, growing "plantains, sweet corn,

bananas, cocoa, pineapples, cassava, and in some cases even sugar cane" (Campbell, 1990: 47); while men especially engaged in warfare, raising livestock, and hunting (Barker and Spence, 1988: 199; Campbell, 1990: 47, 190). Moreover, when the Maroon provision-grounds were destroyed by the colonial troops, it was the Maroon women (covered by the men) who in turn pillaged the slaves' provision-grounds, collecting produce for the Maroon community (Campbell, 1990: 222). In addition, historical evidence indicates that both male and female Maroons mingled clandestinely with the proto-peasant slaves in the marketplaces "to sell their produce and livestock and buy necessities, including gunpowder, under the strictest secrecy" (Campbell, 1990: 191, see also p. 133). Oral history in contemporary Accompong likewise tells of plantation livestock raids on Aberdeen slave estate, bordering the Maroon commons, and clandestine food trading at Maggotty market during marronage, complementing cultivation, hunting wild hogs, and gathering giant bean pods from cocoon vines (Besson, 1995d).

After 1739, in addition to acquiring freedom and legal rights to land, the Maroons were allowed to market freely, so enabled by clauses in the treaties (Campbell, 1990: 127, 133). They were, however, supposed to apply for licences to sell their goods, though there is no evidence that they did. After the Leeward Maroon treaty, "Both [Maroon] men and women could be seen attending the marketplaces laden with ground provision and fruit", with the women also trading in pigs and fowls (p. 191). In addition, Maroon women "continued to grow plantains, coffee, cocoa, cassava, corn, yam, pawpaw, pineapples, citrus . . . and pears" (p. 190).

At the time of Katherine Dunham's journey to Accompong in 1941, while hunting was waning, peasant marketing by mule still complemented cultivation (Dunham, 1946, in Barker and Spence, 1988: 200). With the construction of the first dirt road to Accompong in the 1940s, the Maroons diversified into cash cropping bananas and sugar-cane in the 1950s and marijuana in the 1970s, though banana production declined in 1981 due to vulnerability in the world economy (Barker and Spence, 1988). However, during my fieldwork in 1995, the Accompong Maroons signed a contract for renewed banana export-crop production, and this was still in force in 1996 (though the situation had deteriorated again by 1998); while reports of marijuana cash cropping continued (e.g. Earle, 1996).

It seems likely that, released from warfare by the treaty of 1739 and with the later decline in hunting in 1941, gender roles in Accompong became gradually transformed as men began to turn to cultivation; and that marketing eventually became more closely linked with women as they gradually withdrew from agriculture, especially with the growing

specialism of women as marketers and higglers in the non-Maroon communities after emancipation. In Accompong today, in addition to cash cropping and rearing livestock in the intermediate zone of the Maroon commons, men cultivate food forests on house-yards and provision-grounds (Barker and Spence, 1988; Besson, 1995d, 1997). Marketing of food surpluses is now done primarily by female marketers and higglers – not that males do not have the ability to market, as Maroon men explain, but they are busy farming for their women. In addition to selling ground-provisions cultivated by the men, Maroon women higglers buy surpluses from other households in the village for resale in marketplaces in "the lowlands". These female marketers and higglers, who are transported down the precipitous road by a male van-driver (a Maroon ex-colonel), go to market at Magotty, Santa Cruz, and Southfield on the northern, central, and southern plains of St Elizabeth.

These female Maroon higglers specialize in the purchase and resale of yams ("yellow yam, sweet yam, renta yam"), which hold a central place in the Maroon peasant economy. Other crops, such as dasheen, plantains, pumpkins, and bananas are also marketed in this way.[11] The significance of the contemporary Maroon male-cultivator role, and the gender complementarity between cultivator-men and non-cultivator (market-) women, is highlighted at the annual myal ritual. Myalism was the first creole spirit possession religion forged among the Jamaican slaves from African cosmologies, and the myal dance was performed to protect the plantation-slave communities from internal harm and from the external "sorcery" of slavery (Schuler, 1980; Besson, 1995a). In contemporary Accompong, the myal dance or play is still performed to protect the Maroon community. This is enacted through perceived possession of female Maroons by the spirits of the male ancestral warrior-heroes and is now scheduled once a year, on or near the January 6, which is said to mark both the ending of the First Maroon War (1725–1739) and the birthday of Colonel Cudjoe, who led the war and forged the peace. The possession of female Maroons by male ancestral spirits, under the sacred Kindah Tree, symbolizes the historic role of scarce but precious women in reproducing the Maroon polity, while the pilgrimage to the reputed graves of Cudjoe and his "brothers" or lieutenants underlines the significance of the male ancestral warrior role. In addition, nowadays the myal feast, cooked at the Kindah grove, highlights the significance of men in livestock raising and farming in the Maroon economy. The ritual cooks are men, male pigs and fowls are sacrificed, and even the "pot food" (no "shop food" is allowed), which consists especially of yams, is "male" (Besson, 1995d, 1997, 1998). This ritual therefore reinforces both the continuity and change in gender complementarity, and reflects the flexibility

of male and female identities and roles that has typified gender discourses in the Maroon adaptation through the centuries in Accompong.

In neighbouring Aberdeen (see Figure 2.2), which evolved from the proto-peasant community on Aberdeen slave estate (but where villagers are linked by ties of conjugality, kinship, and descent to Accompong Maroons), ground-provision cultivation for household use and for peasant marketing is likewise a mainly male activity, reinforced by cash cropping in bananas for the world economy and in sugar-cane for nearby Appleton Estates. Some women go to sell in marketplaces, as either marketers or higglers, at Maggotty, Balaclava, and Santa Cruz in northern and central St Elizabeth.

While these complementary male and female cultivator–marketing roles persist in Accompong and Aberdeen, the flexibility of gender roles is further reflected in the entry (or reentry) of male (as well as female) higglers from outside of these communities (for example, from Balaclava, Santa Cruz, and Junction in northern, central, and southern St Elizabeth) into the traditional post-treaty or post-emancipation female marketing domain. These external "middlemen" are mainly male van-driving higglers, who purchase dasheen and yams for sale in Kingston and for licensed export.[12] In Accompong, such trade has developed despite the rocky road, whereas more accessible Aberdeen is a rich source of food supply for such higglers from the plains, including male and female higglers who come by van or taxi to buy cocoa, mangos, breadfruit, plantains, and bananas to sell in marketplaces on the plains. Both these mountainous communities, while hemmed in by plantations and the bauxite industry, have access to more (albeit mountainous) land than do the Trelawny peasant adaptations, especially those communities on or near the North Coast plantation–tourist plains (the free villages of Refuge, Kettering, Granville, and Martha Brae, and the squatter settlement of Zion).

The Trelawny Communities and Falmouth Market

As in St Elizabeth, peasant cultivation in Trelawny is mainly a male domain, though some women do cultivate, and in 1996 women marketers and higglers continued to dominate food marketing on Fridays and Saturdays in the Falmouth marketplace. These continuing tendencies from the post-emancipation past are reinforced by an islandwide network of predominantly female food marketers and higglers who come to Falmouth from throughout Jamaica, facilitated by the staggering of market days, though male food higglers and marketers are not as rare as in the 1970s (when men would sometimes say that it was women's work to market), and male food higglers were more noticeable by 1998. In addition to such periodic markets elsewhere in Trelawny (for example, at Jackson

Town near The Alps, at Duncans adjoining Kettering, and at Clarke's Town near Refuge), weekly markets are held on various days in Kingston, and in other parochial capitals and smaller towns throughout the island. The mainly female food marketers and higglers in the Falmouth marketplace in the 1990s included traders from the parishes of St Ann, St James, Hanover, St Elizabeth, Manchester, and Clarendon, and from the capital city of Kingston, as well as from Albert Town, Ulster Spring, Stewart Town, and Jackson Town in eastern Trelawny, and from Martha Brae and Bounty Hall near Granville.

In contrast to a persisting female predominance in the marketing of ground provisions, which has been the backbone of Jamaica's domestic economy from slavery days (Mintz, 1989: 198–201), Falmouth's Wednesday dry goods "ben' down market"[13] (which has continuities with the marketing of crafts and clothes by proto-peasant slaves) is undergoing more rapid transformation which reflects a discourse of dynamic gender identities and roles. Since the late 1980s[14] Falmouth "ben' down" has become Jamaica's largest rural market, linked through networking to informal commercial importing, which is a new variant of marketing, of circulatory migration, and of sustainable development (compare Besson, 1995g: 279–280; Laguerre, 1990: 152–153; Freeman, 1997). Large numbers of male as well as female higglers from throughout the island commute by air to Curaçao, Panama, Grand Cayman, Miami, and New York, buying dry goods retail and wholesale for resale in Jamaican markets, including the Falmouth marketplace. For example, in 1995, such higglers of both genders in the Falmouth "ben' down market" came from the parishes of Clarendon, St Catherine, and St Thomas, as well as Kingston. The main dry goods were clothes and shoes, bales of cloth, and brightly coloured plastic pails and bowls, but combs, cosmetics, jewelry, and household goods (pots, pans, crockery, and electrical appliances) were also sold. The Christmas market in 1996 included tinsel decorations and exotic paper flowers. Despite airfares and import tax, such informal commercial importers (ICIs)[15] maintained profitable retail market stalls. In 1998, ICIs and higglers of both genders (who may buy wholesale in Kingston) were selling in Falmouth market from Kingston, Portmore, and Spanish Town in St Catherine, Montego Bay in St James, the parish of Westmoreland, as well from Bounty Hall and Deeside near Granville in Trelawny, and from Martha Brae's satellite squatter settlement of Zion. In addition to the dry goods mentioned previously, electric fans and brightly coloured clothes-baskets were especially apparent.

This transformation in dry goods marketing, and the related change towards undifferentiated gender higgler roles (and the possible predominance of men by 1998 in dry goods marketing), coexists with the continuing

sale of homemade clothes by female marketers and higglers from Trelawny peasant communities such as Martha Brae and Zion (which are less than two miles inland from Falmouth). By 1995 young male Rastafari from such communities were also selling Rastafarian clothes and crafts, which they had knitted, in the Falmouth marketplace, a trend that was still in evidence in 1998 when, in addition, a Trelawny Rasta was reselling bangles made in the Kingston "ghetto".

Within these contexts of continuity, change, and current transformation in the small-scale marketing system, the traditional Jamaican rotating savings and credit association (ROSCA) "partners" has been both reinforced and transformed as a further dimension of sustainable development. "Partners" enables capital to be raised for large items of expenditure and has been reported as a mainly female institution, including its use by female higglers to purchase goods for marketing (Katzin, 1959; Austin, 1984: 50; Harrison, 1988: 113). "Partners" is still a thriving institution among women in the free villages of Trelawny and in the squatter settlement of Zion. However, in the 1990s, both the scale and role of "partners" have escalated in the Falmouth "ben' down market", where male as well as female higglers now use this ROSCA to raise much larger sums of capital for informal commercial importing (Besson, 1995g). This is paralleled by the increasing participation of men in ROSCAs in Trelawny's peasant communities. In the Falmouth market in 1998, male and female higglers and ICIs were "throwing hands" of up to J$500 and J$1,000 a week and even J$2,000 per day. "Partners" is also sometimes now transnational. For example, a "banker" in the Falmouth market in 1998 runs a "partners" in Linstead in the parish of St Catherine, with members in Connecticut in the United States, as well as in Linstead, Kingston, and Montego Bay.

CONCLUSION

This chapter suggests that complementarity and flexibility in male and female identities and roles have typified gender discourses in Jamaican small-scale marketing and its articulation with cultivation, since the proto-peasantry and marronage. This complementarity and flexibility in the cultivation–marketing system is likewise reflected in other dimensions of the peasant economy (Besson, 1998). This is especially so in relation to land, which has been appropriated in a range of ways, through both customary and legal tenures, since slavery days. This includes the creation by both genders of "family land", and its customary transmission through women and men (i.e. through cognatic descent), a landholding system rooted in the institution building of both male and female slaves.[16] In the Trelawny free villages and in Aberdeen, where such landholding cognatic

descent lines ("Old Families" traced through males and females) form the core of the communities, both men and women serve as family-land trustees, rent and purchase land, and create and transmit family land to their descendants. In the Accompong Maroon society, while men were predominant in marronage, both genders acquired land through squatting and by treaty; and today both female and male Maroons hold and transmit inalienable rights to the Leeward Maroon commons (Besson, 1995b, 1995d, 1997). In Martha Brae's satellite squatter settlement of Zion, both women and men have "captured" land and created house-yards which they are now preparing to purchase after many years of confrontation and negotiation with the state.

Gender complementarity and flexibility have likewise been reflected in overseas migration. While early migrations from the free villages since the post-emancipation period to World War II were primarily by men, females entered this formerly male sphere after the war, just as men have entered, or reentered, the female sphere of small-scale marketing. In such migration and in the new areas of import and export higglering, both genders contribute to the articulation of the informal sector with the national and world economies, as has long been the case in the internal marketing system. ROSCAs, used by women and men, are contributing to these links, as reflected in the Falmouth marketplace and in migrant contexts (see above, and Besson, 1995g: 281).

In a seminal article on rotating savings and credit associations from a cross-cultural perspective, Ardener (1964) "disputed the assertion by Clifford Geertz (1962) that ROSCAs, though useful in an intermediate stage of development, would necessarily fade away as more developed financial institutions replaced them" (Ardener, 1995: 1–2). Further, as Nelson (1995: 67) notes, "Ardener (1964: 221) has claimed that ROSCAs were causative in a shift from a traditionalist agricultural society to a predominantly trading economy; which was her refinement of Geertz's claim that ROSCAs were a product of a shift from the one social form to another." Nelson's own study of the female Kiambu Group among "informal-sector beer-brewers and self-build house-owners" in a squatter area of Nairobi shows how this ROSCA "assisted a shift from a more informal sector economy to the more complicated, formal sector area of co-operative investment and speculation in real estate" (1995: 67–68). In this process, the Kiambu Group itself also evolved "from an informal association to a formal, registered co-operative plus ROSCA and finally to a very successful land-buying co-operative" (Nelson, 1995: 49).[17]

The case of ROSCAs in the Jamaican small-scale marketing system, especially in relation to import higglering, reflects a similar escalation of "partners" in the articulation of the informal sector with the formal

national and world economies, including the growth of trading and investment among the peasantry. However, in contrast to the Kenyan Kiambu Group (Nelson, 1995), the structure and organization of "partners" has so far remained the same, another difference being the increasing gender flexibility in "partners". These comparisons and contrasts highlight the significance of the study of the informal sector, including its gender discourses, in the cross-cultural study of sustainable development.

In the case of Jamaican small-scale marketing, such development has been embedded in complementary and flexible gender identities and roles since the 1660s to the turn of the millennium, in the wider context of the culture building of the island's peasantry. These conclusions challenge the critique of Caribbean peasantries as inhibiting development. They also question Wilson's view of distinct and unchanging gender spheres, with peasant women adhering to colonially derived, Eurocentric institutions while their menfolk advance "indigenous" development (see also Besson, 1993, 1998).

Instead, both peasant women and men have been at the forefront of Caribbean creolization or "indigenization" (Besson, 1993, 1995a) and have engaged from the informal sector with the formal capitalist national and world economies – in similar, complementary, and changing ways – through the small-scale marketing system from slavery to the present day. Moreover, in this marketing system, men are currently expanding their roles in an economic sphere entrepreneured especially by women. In Jamaica, where patriarchy has not entirely disappeared, some male higglers and ICIs rationalize their strategy with the observation that "times are hard, so we just have to do what women do". However, the attraction of higher profits may be bringing men into this formerly female domain. This may likewise account for the involvement of men (as well as women) in clothes imports, while the homemaking of clothes tends to remain in the hands of women.[18]

This still-evolving creole marketing system, with its dynamic gender discourse, is a valuable human resource for the as yet unknown and changing circumstances of the twenty-first century. In 1998, on the eve of the millennium, one nascent development is emerging in the Falmouth marketplace, where two male higglers from Portmore in St Catherine were reselling bales of cloth for a female-relative "boss" who had bought the cloth from Germany, Africa, and China by Internet.[19] Trading in cyberspace may therefore be the next stage of development in the Jamaican small-scale marketing system.

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NOTES

1. The eight rural communities that I studied were The Alps, Refuge, Kettering, Granville, Martha Brae, and Zion in Trelawny, and Accompong and Aberdeen in St Elizabeth (see Figures 2.1 and 2.2).
2. By continuing to refer to Caribbean "peasantries", I do not mean to ignore Barker's (1989: 273–274) critique of the usage of this concept. However, the alternative term, "small farmers" (Barker, 1989: 273), would seem to address only the occupational dimension of (some) peasantries. In addition to the other aspects highlighted by Mintz's (1989: 132, 141) definitions of peasantry, see Dalton, 1967, 1971 and Besson, 1984a: 75–76 n3.
3. Simmonds (1987: 31–32) notes that on the plantations, while male slaves dominated the higher status roles of drivers and artisans with females filling domestic occupations, the majority of field slaves were given the same work regardless of gender – the gang system being differentiated only by health and age. In contrast, in the towns, where there was a preponderance of women, slave-holding females and African female slaves (than males and Creoles), slave women were mainly engaged in domestic work and marketing, while male slaves were generally assigned skilled occupations (cf. Higman, 1984: 50).
4. The marketplaces in Chipping Norton in the Cotswolds and in Wareham, Dorset, are illustrations of this theme.
5. The origin of Martha Brae's name is controversial. Fremmer (1968) argues for Spanish derivation from *multiberon* (Bay of Many Sharks), the name of the bay at the mouth of the river (now Rock Bay), but Ogilvie (1954: 6) contends that "the name is traditionally associated with 'Mart', a centre for the sale of goods and 'Brae', the Scottish name for 'Hillside bank'" or, more accurately, for "the [hill-] slope bounding a riverside plain" (Kirkpatrick, 1983: 149). The predominance of Scottish planter settlement in this area of Jamaica, the town's main role as a supply-point for the surrounding plantations – including the trading of slaves (Hart, 1994: 57–58) – and the highly developed proto-peasant marketing system in this area of the island, lend weight to Ogilvie's argument; especially as the town's name was changed from Lyttleton (after the governor at the time) to Martha Brae. It therefore seems likely that the name of this British colonial settlement evolved along with its role as a riverside-hill market town for both masters and slaves. Even today in post-slavery Martha Brae, food produce is traded at the crossroads known as "River Hill".
6. In his *Memoir of William Knibb*, Hinton (1847: 113) includes a letter from Knibb from "Falmouth, July 6, 1831" (discussing the rising tension between planters and slaves, with the impending abolition of slavery), in which Knibb refers to a female slave-marketer threatened with flogging in this Falmouth marketplace:

> Oppression and cruelty still go on. One of the inquirers here was this day threatened with flogging and imprisonment for not standing in the market all Lord's day, to sell her masters' goods. I went to the Custos, and prevented it, telling him plainly that I would send word to the Colonial Office if the woman was punished. I should like your advice how to act. Numbers of our members [Baptist slaves] are debarred the means of grace, by being obliged to buy and sell on the Lord's day for their owners.

7. During the earlier period (1917–1921), male "draymen" drove mule-carts to Christiana to buy bananas, yam, and ginger, which were taken to the railway at Williamsfield and Kendall (in central Manchester). The yams were sent to Kingston for market sale, the ginger was exported, and the bananas were shipped from Montego Bay. In the later period (1954–1955), yams were bought wholesale by male higglers and transported by male truckers to Coronation Market in Kingston, where the yams were resold in smaller quantities to female higglers for retail sale in rural markets. I am indebted to my mother Meg McFarlane and to Professor David Edwards, respectively, for the 1917–1921 and 1954–1955 data from Christiana (personal communications, 1998). Their information suggests that the variable of wholesale/retail trade and related transportation are significant factors interacting with gender in the Jamaican small-scale marketing system.
8. The mode of transportation (see note 7 above) also seems to have been significant in John's Hall where, in the 1950s, male traders accompanied female marketers and higglers riding by donkey to Montego Bay. As roads became paved and transport improved, more women travelled alone to market. I am grateful to Jeanne Robinson-Foster, attorney-at-law, for this information.
9. The "ben' down market" is so called because stalls are often on the ground and buyers and sellers have to bend down. The transformation of such dry goods marketing in Jamaica through informal commercial importing is encapsulated in Ginger Knight's Jamaican play *Higglers!,* also performed at Lewisham Theatre in London, England, in December 1995.
10. Rat-bat manure is reputed to be especially fertile.
11. The pricing system of this produce, especially the yams, when they are purchased in the community and resold in the market, is influenced by the islandwide small-scale marketing system. Maroons explained that it is only when yams are relatively scarce on a national scale that "you might have a little chance of getting ten [Jamaica] dollars a pound" when sold to higglers in the community. It is felt by some Maroons that it is such financial constraints, reinforced by the problems of the road, that perpetuate the marijuana export trade.
12. This parallels, in some respects, the male mule-cart draymen and truckers who purchased yams wholesale from Christiana in the periods 1917–1921 and 1954–1955 mentioned earlier (see note 7 above). The importance of this growing wholesale trade in yams for the world market is reinforced by Barker and Beckford's (2003) study of the intensification of yam production in central Jamaica for export to North America and Britain.
13. See note 9 above.
14. In the 1980s transnational higglers played a significant political–economic role in Jamaica by importing goods (whose purchase was enabled by the overseas sale of market produce) that customers were unable to obtain in the island's precarious dependent economy – such as cornflakes and toiletries, sometimes for specific clients.

15. Informal commercial importers were so named in the highly politicized context of the Jamaican economy in the 1980s (see note 14 above).
16. See Besson (1979, 1984a, 1984b, 1987a, 1987b, 1988, 1992, 1995a, 1995b, 1995c, 1995d) for analyses of Caribbean family land.
17. For a somewhat similar link between the ROSCA ethos and land in the Caribbean region, see my discussion of *susu land* in Trinidad and Tobago in 1992 (Besson, 1995g: 277, 281, 283 n9).
18. I am grateful to my colleague Dr Nici Nelson for drawing to my attention the possible link between increased profits and increasing male participation in marketing and clothes imports.
19. Other cases of female-higgler delegation to male relatives were encountered, in 1998, in the Falmouth marketplace and in the Trelawny squatter settlement of Zion.

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3 The Apparent Inflexibility of Small-Scale Farmers to Changes in Grenada's Political–Economic Environment 1982–1992

John S. Brierley

INTRODUCTION

During the 1980s Grenada experienced a period of political upheaval without parallel in the Commonwealth Caribbean – one that resulted in major shifts in political strategy to develop the historical cornerstone of its economy, agriculture. By comparing the results of two surveys, one conducted in 1982 and the other in 1992, this chapter examines the nature and degrees of the change this upheaval had upon the structure and nature of small-scale agriculture in the nation. The underlying premise for this study is that the contrasts in political ideology and economic development strategies were of sufficient magnitude to have induced changes with respect to the social profile of the farmers, the structure of their holdings, and the nature of their land use.

The first survey was undertaken when the Marxist-inspired and heavily Cuban-supported People's Revolutionary Government (PRG) was at the height of its power and influence. Among its goals the PRG aimed to make the national economy more self-reliant, especially in regard to food production. To this end, the population was exhorted via slogans to "grow more food", to "marry idle lands with idle hands" and for "every square inch to be put into production" (Brierley, 1985a). In short, this government, which assumed power in 1979, was "looking for imaginative solutions to [the] entrenched problems of dependency and under-development" (Singh, 1990). Thus, by 1982 comprehensive programmes had been implemented in order to revitalize the farm sector through the installation of an agrarian infrastructure whereby farmers could acquire land, obtain improved farm supplies, upgrade their farming technology, benefit from better transportation facilities, and obtain guaranteed prices for produce of a given quality. State farms were established on estate holdings whose land had been acquired by government. Not only were these farms expected to become efficient production units, they were to serve as local

centres for dissemination of farm technology, planting materials, and farm chemicals (see EPICA Task Force, 1982; Coard, 1983; Schoenhals and Melanson, 1985; and Thorndike, 1985). While an air of optimism was evident among various sectors of the population, many of Grenada's more elderly small farmers seemed oblivious to this spirit of euphoria.

In contrast, the second survey was conducted when a democratically elected government was still striving to restore credibility to national policies and stabilize the economy following the demise of the PRG in October 1983. At this time the economy was in recession, owing largely to declining production of bananas and the lack of nutmeg sales following the break-up of the Soviet Union in 1991, which had been a principal market for this commodity (Caribbean Development Bank, 1992). Agricultural policies were based principally upon structural adjustment strategies that aimed to bolster production of Grenada's export agriculture. In this regard, there were two key schemes, both initiated in 1986, namely, the Agricultural Rehabilitation and Crop Diversification Project and the Grenada Model Farms Corporation. The former was geared to upgrade neglected or old orchards of nutmeg and cacao with new planting stock, as well as to encourage farmers to cultivate non-traditional tree crops and vegetables specifically for export markets. The latter aimed to rationalize land use on government-owned estates, which had been formerly part of the PRG's state farm system, and to divest parts of these holdings into model farms that were to demonstrate the economic viability of small-scale production of traditional export crops, non-traditional crops, and food crops (Grenada Model Farms Corporation, 1986; Phillips, 1994). Another objective of the model-farm concept was to encourage younger people to become full-time farmers. Hence, those selected to participate in this project were on average 20 years younger than the national mean age of farmers, which was then estimated to be about 55 years.

Consequently, these surveys were conducted against dissimilar political and economic milieux. By analysing the results of these two surveys, the reaction on the part of small farmers to differing sets of stimuli may be gauged and this will lead to a better understanding of their adaptive strategies to changing agrarian circumstances.

SURVEY METHODOLOGY

For the purposes of these surveys a small farmer was defined as an individual who, at the time of the interview, occupied a minimum of 0.4 ha but not more than 6.0 ha of land. Occupancy of land included the accepted types of tenure (that is, ownership, leasehold, sharecropping, and peppercorn rent) and also undivided family land (for which an individual was

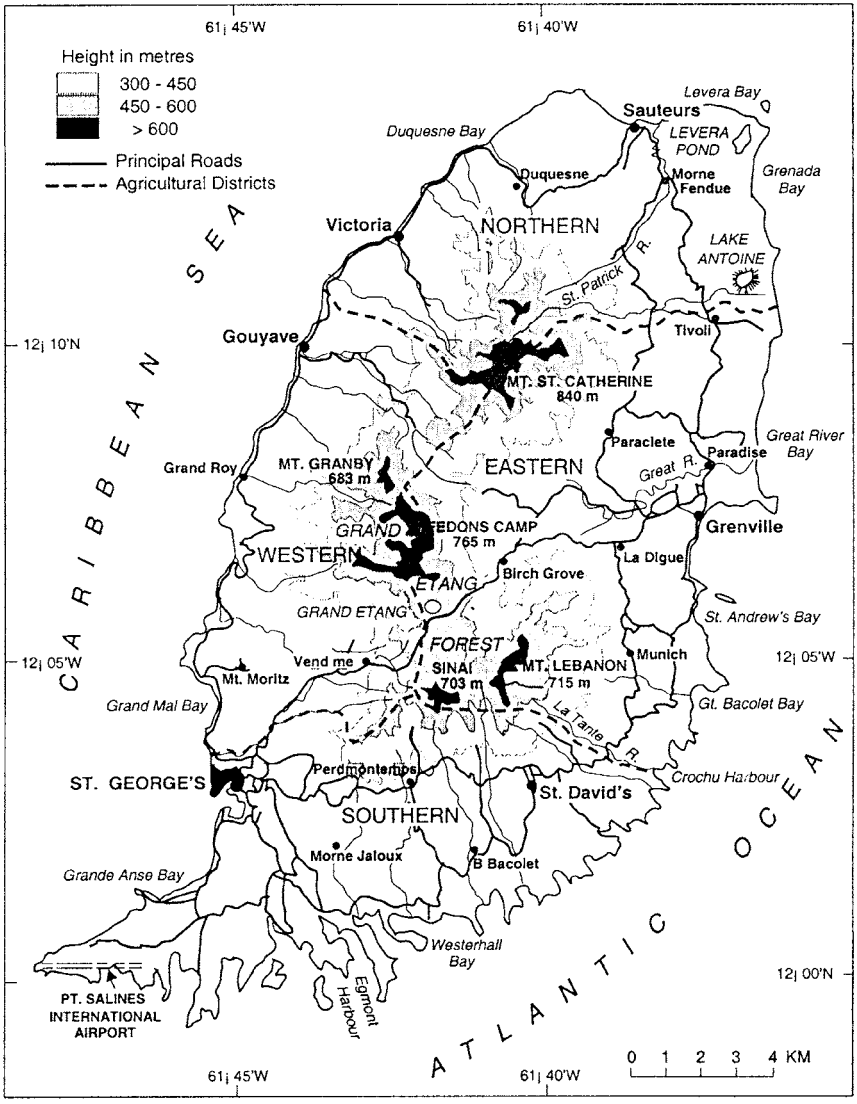

Figure 3.1 Grenada: physical features and agricultural districts

either responsible, or had the use of a portion), and land being taken care of for a relative or friend who might be abroad, ill, or unable to maintain his or her property. Random sampling was based on the four agricultural districts of the island of Grenada (Carriacou was excluded) (Figure 3.1) and resulted in totals of 186 and 218 farmers being interviewed in 1982 and 1992, respectively. These numbers represented slightly more than 5 and

5.5 percent of all smallholdings as recorded by the 1981 Agricultural Census of Grenada.

SOCIAL PROFILE OF SAMPLED SMALL FARMERS

An integral component of agricultural geography is the human dimension, knowledge of which enables a better understanding to be gained of farming systems, the farm structure, and associated land-use patterns. Hence, consideration of age, gender, marital status, household size, and educational attainment are salient variables. In view of the PRG's programmes to reduce the extent of idle land by encouraging the nation's youth (of whom an estimated 75 percent between the ages of 15 and 25 years were then considered to be unemployed) to participate in agricultural activities (Brierley, 1985b), it was anticipated that their involvement in small-scale farming might have been captured by the 1982 survey.

Upon comparing social data for the two surveys there is no evidence to substantiate this conjecture, as the mean ages of farmers were 56.5 and 55.6 years, respectively (Table 3.1). There was no proof to suggest the PRG had succeeded in convincing younger individuals to participate in small-scale farming, since only 3.3 percent of the sample were in the 15–29 years age cohort, as compared with 4.6 percent for 1992 (Table 3.1). It was noteworthy that in 1992 the majority of farmers in this youngest age cohort did acknowledge that the PRG had aroused their interest in agriculture and, hence, for their current involvement in farming.

With respect to other social criteria, Table 3.1 reveals that there was a slight decline in the proportion of women who are small farmers, for which no ready explanation is apparent. As for marital status, household size and composition, and educational attainment, no obvious differences exist between the two samples that would collectively influence either the nature or intensity of agrarian activity.

BASIC CHARACTERISTICS OF SMALL HOLDINGS

Although the social profiles between the two sets of sampled farmers exhibit little variation, differences were, nonetheless, anticipated to emerge in regard to farm size, farm fragmentation, and patterns of land tenure. However, there is an uncanny consistency in the mean farm sizes and the degrees of fragmentation, as in 1982 the average farm occupied 2.02 ha and was comprised of 2.75 fragments, while the corresponding data for 1992 were 2.04 ha and 2.72 fragments. Furthermore, Table 3.2 discloses that more than three quarters of the farms in both surveys consisted of two, three, or four discrete parcels, with only about 15 percent

Table 3.1 Social Profile of Sampled Farmers, 1982 and 1992

	1982		1992	
	Number	**Percentage**	**Number**	**Percentage**
Gender				
Female	36	19.4	35	16.1
Male	150	80.6	183	83.9
Total	186	100.0	218	100.0
By Age Cohorts				
15–29 years	6	3.3	10	4.6
30–39 years	19	10.2	27	12.4
40–49 years	27	14.5	38	17.4
50–59 years	56	30.1	48	22.0
60–69 years	43	23.1	64	29.4
>70 years	35	18.8	31	14.2
Total	186	100.0	218	100.0
Mean age (years)	56.5		55.5	
Marital Status				
Single	19	10.2	29	13.3
Cohabiting	21	11.3	38	17.4
Married	103	55.4	110	50.5
Widowed	29	15.6	29	13.3
Divorced/separated	14	7.5	12	5.5
Total	186	100.0	218	100.0
Household Composition				
Number of children <5 years	0.56		0.53	
Number of children 5–15 years	1.15		1.33	
Others >15 years	1.90		1.75	
Partner	0.67		0.68	
Total	4.28		4.29	
Schooling				
Median Standard Attained	5		5	
Educational Level				
No schooling	9	4.8	13	6.0
Primary	163	87.7	190	87.1
Secondary	3	1.6	5	2.3
Vocational	7	3.8	3	1.4
University	1	0.5	2	0.9
Other	3	1.6	5	2.3
Total	186	100.0	218	100.0

Table 3.2 Farms by Number of Fragments, 1982 and 1992

No. of Fragments per Farm	No. of Fragments		% of Total Number			
	1982	1992	1982		1992	
1	28	34	15.1		15.6	
2	61	65	32.8		29.8	
3	47	66	25.3	76.9	30.3	76.6
4	35	36	18.8		16.5	
5	11	15	5.9		6.9	
6	3	1	1.6		0.45	
7	0	1	0		0.45	
8	1	0	0.5		0	
Total	186	218	100.0		100.0	

being single-unit holdings. Hence, based upon these criteria, the structure of small farms is fundamentally similar.

It is by standardizing the method of analysis of fragmentation that differences between the two surveys become more evident. This standardization is achieved by numbering the set of fragments incorporated in an individual holding according to their respective distance from the farmer's home. Ordinarily this residence occupies a piece of land where fruit trees and vegetable crops are tended – property commonly referred to as the kitchen garden. This plot is designated as fragment 1 (F_1). Where poverty and/or crowding prevail in a settlement, farmers may occupy only a housespot, with no room available for a kitchen garden. In the 1982 survey there were 33 such cases (18 percent of the sample), whereas in 1992 only 22 farmers (10 percent) were restricted to a housespot. For these people, their F_1 was considered to be the closest fragment to their home, which invariably served the purpose of a kitchen garden. By this convention the fragment furthest from the home was assigned the highest number. On an island where rural settlement is confined mainly to coastal areas and valleys penetrating the island's interior (Figure 3.1), the tendency is for higher numbered fragments to be located on steeper slopes, at higher altitudes, and with heavier types of soils, factors that collectively reduce their agricultural potential.

Figure 3.2 and Table 3.3 show differences between the surveys on the basis of fragment number. First, the pattern of tenure varied, although the general tendency was for owned land to decline through F_1 to F_5. In terms of the total sampled areas, the level of ownership dropped from 59.2 to 51.0 percent between 1982 and 1992, a change principally attributable to increased renting of land and, to a lesser extent, the caretaking of property. The reason for this change was that, in the wake of PRG rule,

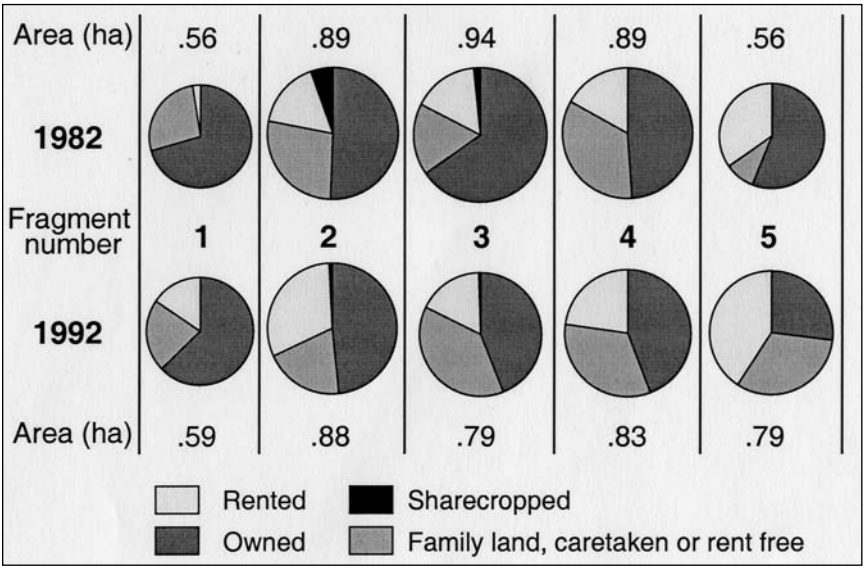

Figure 3.2 Comparison of mean fragment size and tenure by fragment number, 1982 and 1992

it was widely perceived that a period of political stability would prevail and be conducive to investment. Hence, prices of farmland increased due to the growing demand by Grenadian migrants to acquire property, either as a speculative venture or for their retirement home. In particular Grenadians who had migrated to Great Britain prior to the imposition of the United Kingdom Commonwealth Immigration Act of 1962 were retiring by the mid-1980s, and on their return to Grenada constructed new homes on land they had previously purchased through remittances. Other migrants residing in North America were acquiring parcels of land for identical reasons. As a result, fewer small farmers in 1992 could afford to purchase land and instead had resorted to renting it. It seems apparent that small farmers, nevertheless, desired to occupy a similar area of land in 1992 as they did in 1982, with the result that a comparable level of fragmentation was attained.

A second set of differences emanating from the analysis by fragment number pertains to land-use efficiency. A review of the proportion of each fragment that is idle, i.e., neither worked nor part of any system of rotational fallow, revealed land to be more fully utilized in 1992 than in 1982 – a time when the PRG was urging the nation to reduce its extent of idle land. In light of the fact that this revolutionary government had achieved some success in this regard (Brierley, 1985b), this trend seems to have

Table 3.3 Basic Characteristics of Small-Farm Structure, 1982 and 1992

1982	Fragment Number							
Characteristics	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Number of farms with fragment	186	158	97	50	14	4	1	1
Mean distance from farmer's home (km)	0.21	1.38	1.92	2.69	4.99	3.31	3.62	4
Mean size (ha)	0.56	0.89	0.94	0.89	0.56	0.58	0.9	2.02
Total area of all fragments (ha)	103.9	128.1	86.3	44.3	7.9	2.3	0.9	2
% of total area	27.7	34.2	23	11.8	2	0.6	0.2	0.5
Tenure (% of area)								
i) Owned	70.7	50.7	65.5	48.9	56.3	34.8	–	–
ii) Family land, caretaker or rent free	27	27.4	17	34.4	9	26	–	100
iii) Rented	2.3	16.5	16	16.7	34.7	39.2	100	–
iv) Sharecropped	–	5.4	1.5	–	–	–	–	–
% land in idle condition of total fragment	16.7	27	57.7	58.9	36.1	61	0	50
% of fragment on which idle land is found	29.6	47.5	70.1	78	64	100	0	100

1992	Fragment Number						
Characteristics	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Number of farms with fragments	218	184	119	53	17	2	1
Mean distance from farmer's home (km)	0.12	1.4	2.67	3.3	3.67	4.02	2.74
Mean size of fragment (ha)	0.59	0.88	0.79	0.83	0.79	1.1	0.2
Total area of all fragments (ha)	129.2	161.3	94.5	44	13.5	2.2	0.2
% of total area	29	36.3	21.2	9.9	3	0.5	0.1
Tenure (% of area)							
i) Owned	62.9	48.4	44.1	44.4	27.1	100	100
ii) Family land, caretaker or rent free	21.8	19.7	38.3	32.9	32.3	–	–
iii) Rented	15.3	31.2	17.1	22.8	40.6	–	–
iv) Sharecropped	–	0.7	0.4	–	–	–	–
% land in idle condition of total fragment	12.2	26.7	35.3	36.1	45.1	65.5	50
% of fragments on which idle land is found	17.9	47.3	51.3	56.6	58.8	100	100

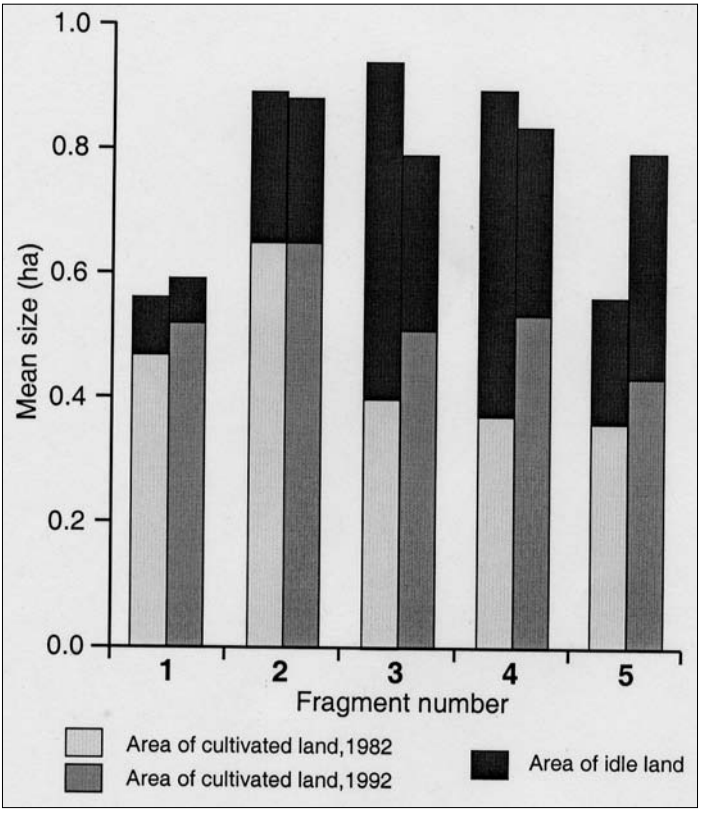

Figure 3.3 Fragment size and proportion of idle land by fragment number, 1982 and 1992

continued between 1982 and 1992, at least by small farmers. The proportion of total farmland acknowledged to be idle dropped from 35.5 to 26.0 percent, with the tendency being for the proportion and incidence of idle land to increase with fragment numbers (Figure 3.3 and Table 3.3). Whether or not this decline reflects a heightened commitment to agriculture remains to be examined. Nevertheless, these data do seem to justify the increase in rented land by small farmers.

EXAMINATION OF LAND-USE CHANGES BY FRAGMENT NUMBER

While the foregoing analysis denoted both spatial and temporal variations in tenure and degree of idle land, a more detailed appreciation of land use can be obtained by noting the occurrence of tree and vegetable crops

for each fragment number. In the following analysis, no account is taken of the total number of, nor the area occupied by, a specific crop, merely whether or not it was present in a given fragment. In the case of an annual crop, the information pertained to whether it had been grown in the twelve months prior to the date the questionnaire survey was taken. By segregating data for tree and vegetable crops, indices of occurrence were calculated for each fragment number by relating the declared number of different trees or vegetables against the maximum number possible for a specific fragment. The formula used to determine a specific index of occurrence I is:

$$I = \frac{\Sigma a}{P}$$

where a equals the individual occurrence of a crop and P is the maximum potential occurrence, i.e., the total number of crops multiplied by the total number of parcels associated with a fragment number.

The results provide a quantitative means for comparing land use on the two constituent sets of fragments associated with the two surveys.

Tree Crops

Usually the dominant impression of a Grenadian small farm is one of an arboretum, where tree crops customarily overshadow plots of vegetable cultivation. Apart from being an integral source of the farmer's household food, these trees also comprise the principal cash crops, namely bananas, cocoa, and nutmeg. Kitchen gardens on F_1 represent the nucleus of these smallholdings and, notwithstanding their small area (Table 3.3) or plethora of trees, are tended and harvested. Tables 3.4a and 3.4b denote indices of tree-crop occurrence by fragment number and highlight the significance of F_1 in this regard. Subsequent discussion is restricted to fragments 1 through 5, because higher numbered fragments have too small a sample size to allow generalizations to be made.

In addition to the indices of tree-crop occurrence being highest for F_1, they exhibit the largest numerical difference of any fragment number between the 1982 and 1992 surveys, i.e., 0.40 versus 0.46. For both surveys the most frequently found trees were bananas for domestic use and coconuts, which together with breadfruit/breadnut, cacao, citrus, mango, and nutmeg were present on half or more of the F_1s. In 1992, this index was boosted by the increased incidence of annonaceous fruit, avocado pear, bananas of the export variety, and golden apple (also known as Jew Plum, June Plum, botanical name *Spondias dulcis Forst*) (Weir et al., 1982), which

Table 3.4a Distribution of Tree Crops by Fragment Number and Index of Occurrence, 1982

1982	**Fragment Number**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Number of Fragments	**186**	**158**	**97**	**50**	**14**	**4**	**1**	**1**
Tree crops								
Annonaceous fruits (mainly soursop, but includes sugar apple and custard apple)	64	18	9	2	–	–	–	–
Avocado pear	91	48	28	14	5	–	–	–
Banana, export varieties[a]	54	52	22	13	4	–	–	–
Banana domestic use	**170**	**85**	33	18	5	2	–	1
Breadfruit/breadnut	**121**	74	33	10	3	1	1	–
Cacao	**126**	**101**	**49**	23	7	–	–	–
Cashew	12	13	8	2	1	–	–	–
Coconut	**129**	**97**	**49**	23	3	1	–	–
Golden apple	38	17	4	1	–	–	–	–
Lime	39	9	3	1	–	–	–	–
Mango	**119**	**81**	29	11	2	–	–	–
Nutmeg	**114**	**107**	46	**32**	**9**	1	1	1
Other citrus (includes citron, grapefruit, orange, and tangerine)	**123**	59	20	11	6	–	–	–
Papaya	13	2	–	–	–	–	–	–
Sapodilla	30	17	5	3	–	–	–	–
Spices (includes cinnamon, cloves, pimento and tonka beans)	21	39	10	7	–	–	–	
Other fruits (include guava, starapple, and tamerind	4	1	–	–	–		1	–
Index of occurrence	**.40**	**.31**	**.21**	**.20**	**.19**	**.07**	**.12**	**.12**

[a] Although not botanically a tree, bananas are regarded in this study as such because they are cultivated more in the manner of a tree than a vegetable. Domestic varieties include plantain and bluggoes.

Note: Values in bold denote tree crops found on half or more fragments whose total number exeeds 10 (i.e. fragments 1 through 5).

were, at that date, also found in at least half the kitchen gardens. With the exception of bananas, the other trees were some of the varieties being promoted by the Agricultural Rehabilitation and Crop Diversification Project, which enabled farmers to obtain improved varieties of seedlings from government nurseries at subsidized prices. In view of the value of these trees and their fruit, many small farmers selected their kitchen garden as the site for planting them. Here an observant eye can be kept

Table 3.4b Distribution of Tree Crops by Fragment Number and Index of Occurrence, 1992

1992	Fragment Number						
	1	2	3	4	5	6	7
Number of Fragments	**218**	**184**	**119**	**53**	**17**	**2**	**1**
Tree Crops							
Annonaceous fruits	**145**	38	9	2	4	1	–
Avocado pear	**114**	78	39	12	2	–	–
Banana, export varieties[a]	**114**	87	44	8	7	1	–
Banana, domestic use	**196**	**125**	58	18	**10**	–	–
Breadfruit/breadnut	**119**	63	38	14	5	1	1
Cacao	**139**	**104**	57	23	7	–	–
Cashew	18	13	7	3	1	1	–
Coconut	**164**	**94**	48	15	5	–	–
Golden apple	**125**	23	20	8	–	–	–
Lime	49	21	6	6	1	–	–
Mango	115	74	31	5	3	–	–
Coconut	109	**101**	**74**	**31**	**13**	–	1
Other citrus	147	68	37	17	6	–	–
Papya	32	12	–	2	1	–	–
Sapodilla	56	25	7	3	1	–	–
Spices	41	35	20	10	6	–	1
Other fruits	26	11	4	1	1	–	–
Index of occurrence	**.46**	**.31**	**.22**	**.20**	**.21**	**.21**	**.18**

[a] Although not botanically a tree, bananas are regarded in this study as such because they are cultivated more in the manner of a tree than a vegetable. Domestic varieties include plantain and bluggoes.

Note: Values in bold denote tree crops found on half or more fragments whose total number exeeds 10 (i.e. fragments 1 through 5).

over their growth and hopefully prevent theft, because praedial larceny is a problem that was cited as serious by 56 percent of the sampled farmers in 1992.

In contrast, land use on F_2 is characterized by export cash crops as opposed to food trees (Tables 3.4a and 3.4b). For the most part, farmers occupying two or more fragments devote the greater portion of their cultivated land to export crops. Bananas, of both the domestic and export varieties, are frequently intercropped with young cacao and nutmeg trees when orchards of these trees are either being established or rehabilitated. Cultivated in this way bananas serve a dual role: (1) to provide needed shade for immature cacao and nutmeg and (2) because of their short

growth cycle, to be a source of income. Ultimately, bananas are phased out to leave pure stands of the other trees. Nutmegs are the most ubiquitous of trees, being cultivated in the interior of the island where there is adequate rainfall for successful development. Tables 3.4a and 3.4b indicate these trees are found on almost half of all the fragment numbers for both surveys. Older farmers regard their mature nutmeg orchards as "black gold", because they can be a source of income as their physical strength starts to wane, but when they still possess sufficient energy to undertake the less strenuous activities of maintaining their trees and harvesting its crop of nutmeg and mace.

With regard to other varieties of tree crops found on F_2, and likewise on higher fragment numbers, these are generally dispersed on an intermittent basis over the parcel and are few in number. A high degree of similarity exists between the two sets of indices for tree-crop occurrence for F_2 to F_5, suggesting that small farmers have a deep-rooted pattern in their use of land. The decline in idle land between the two surveys is attributed to the rehabilitation of nutmeg and cacao orchards that has reduced the extent of wasteland.

A unique difference between the surveys is the marked decline in annonaceous fruits and golden apple from F_1 to F_2 for 1992 (Tables 3.4a and 3.4b). It is conjectured that the lack of carryover of these tree varieties from F_1 had more to do with the incidence of praedial larceny than with any limitations associated with the crop diversification project.

Vegetable Crops

It is the variety of vegetables that represents the hallmark of a typical kitchen garden. When discussing the planting arrangements of vegetables in particular, the distinctions made by Ruthenberg (1971) are valuable. He defines mixed cropping to be the simultaneous and intermingled cultivation of two or more crops, whereas intercropping is the simultaneous cultivation of two or more crops in alternate rows. Interplanting, he considers to be the growing of short-term annuals between longer-term annuals or biennials, while interculture refers specifically to planting arable crops under perennials such as tree crops. On F_1 numerous permutations and combinations of these four types of planting arrangements are to be found, although the pure-stand cultivation of cabbage, carrots, lettuce, and tomatoes is a common practice.

Tables 3.5a and 3.5b compare the range of vegetables grown on F_1 for the two surveys. Crops occurring on more than one third of all fragment numbers are highlighted and underscore the importance of ground provisions (dasheen, tannia, and yam), corn, and pigeon pea – crops that are staples in the diet of rural Grenadians. Yet, adaptive strategies are taken

by farmers and these account for variations in the frequency with which these staples are planted. For example, in 1982 yams were most prevalent, being found in 60 percent of all kitchen gardens (Table 3.5a); a frequency of occurrence due to moisture conditions in the previous year's growing cycle generally favouring ground provisions, as well as the availability of adequate planting material for yams. In 1992 pigeon pea was most common, with a 55 percent presence on F_1 (Table 3.5a), a variation that was caused by the previous growing season having been drier than usual. As a rule, staple crops will occupy at least two thirds of the area devoted to vegetable cultivation in kitchen gardens.

Regarding other vegetables grown in F_1, differences in their frequency of occurrence reflect a range of factors, such as the availability of seeds and other planting material, regional and household preferences, types of soil, and rainfall amounts. One important distinction between the two surveys relates to pumpkin/melon cultivation. Whereas in 1982 only about 5 percent grew these fruits (with the emphasis being on pumpkins), this proportion had increased to more than 28 percent by 1992 (with cantaloupe and watermelons being more common). In the southern agricultural district almost half the kitchen gardens contained melons, which were being promoted by the crop diversification project and had the locational advantage in that they could be readily sold to tourist hotels and upscale restaurants concentrated in the south-west corner of the island. Hence, as previously noted for non-traditional tree fruits, kitchen gardens are the site of choice for testing the viability of cultivating new crops and where they can receive the vigilance necessary to ensure optimum development. Similarly, other crops requiring regular attention, such as tomatoes and lettuce, are principally found on F_1.

On reviewing the indices for F_2 to F_5 a marked decline in variety is shown to occur with increased distance from the home (Tables 3.5a and 3.5b). A comparison between 1982 and 1992 data reveals a similar pattern in that staple crops are most frequently found. Of these, ground provisions are most pervasive, since most thrive in the moist interior of the island. Of these fragment numbers, only F_2 is likely to contain areas where any substantial cultivation of vegetables might occur. On higher numbered fragments cultivation of vegetables becomes sporadic and seemingly incidental in contrast to that of tree crops. Yet again, it is the uniformity of the indices of occurrence that is the striking feature of vegetable-crop cultivation, with the principal difference being the change from yam to pigeon pea as the most prevalent crop. Thus, the general pattern of vegetable cultivation mirrors that for tree crops in that little change is obvious once consideration extends beyond the kitchen garden. For farmers of their average age, they possess a wealth of collective experience so that

Table 3.5a Distribution of Vegetable Crops by Fragment Number and Index of Occurrence, 1982

1982	**Fragment Number**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Number of Fragments	**186**	**158**	**99**	**50**	**14**	**4**	**1**	**1**
Classes of vegetables								
i) Tropical roots and tubers								
Cassava	27	15	10	3	–	–	–	–
Dasheen	**93**	46	26	8	2	1	1	1
Eddo	12	1	–	–	–	–	–	–
Sweet potato	**71**	27	13	4	1	1	–	–
Tannia	**110**	**61**	26	18	4	–	–	–
Yam	**112**	**64**	**33**	7	4	–	1	1
ii) Temperate roots								
Beetroot	7	1	–	–	–	–	–	–
Carrot	27	6	6	–	–	–	–	–
Onion	2	–	1	–	–	–	–	–
iii) Green leaf								
Cabbage	44	17	9	2	1	–	–	–
Celery	3	5	1	–	–	–	–	–
Lettuce	41	4	1	–	–	–	–	–
iv) Fruit and pods								
Corn	**72**	43	21	6	–	–	–	–
Cow pea	7	2	2	–	–	–	–	–
Cucumber	30	12	3	1	–	–	–	–
French bean	55	24	5	3	–	–	–	–
Melongene	19	5	2	–	–	–	–	–
Okra	39	15	5	–	–	–	–	–
Pepper	**68**	14	8	2	–	–	–	–
Pigeon pea	**85**	49	23	8	2	–	–	–
Pumpkin/melon	10	1	1	–	–	–	–	–
Tomato	**76**	22	9	3	2	–	–	–
v) Others								
Chive and thyme	25	2	2	–	–	–	–	–
Sugar cane	12	12	2	1	–	–	–	–
Index of occurrence	**.23**	**.12**	**.09**	**.06**	**.04**	**.02**	**.08**	**.08**

Note: Values in bold denote vegetables found on one-third or more fragment total number exceeds 10.

Table 3.5b Distribution of Vegetable Crops by Fragment Number and Index of Occurrence, 1992

1992	**Fragment Number**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Number of Fragments	**218**	**184**	**119**	**53**	**17**	**2**	**1**
Classes of vegetables							
i) Tropical roots and tubers							
Cassava	23	21	14	5	–	–	–
Dasheen	**107**	38	23	9	3	–	–
Eddo	6	8	3	–	–	–	–
Sweet potato	46	46	14	15	–	–	–
Tannia	**90**	**62**	30	7	5	–	–
Yam	**97**	**64**	35	16	–	–	–
ii) Temperate roots							
Beetroot	12	6	3	2	–	–	–
Carrot	30	15	3	1	–	–	–
Onion	8	1	–	1	–	–	–
iii) Green leaf							
Cabbage	52	32	9	2	–	1	–
Celery	–	1	1	–	–	–	–
Lettuce	37	9	2	1	–	–	–
iv) Fruits and pods							
Corn	**79**	60	13	9	–	–	–
Cow pea	1	1	–	–	–	–	–
Cucumber	44	7	5	2	–	1	–
French bean	52	21	7	2	–	–	–
Melongene	11	2	1	–	–	1	–
Okra	62	13	2	6	–	–	–
Pepper	69	18	3	4	–	1	–
Pigeon pea	**121**	**79**	22	**19**	–	–	–
Pumpkin/melon	62	20	2	3	–	1	–
Tomato	67	20	12	8	–	1	–
v) Others							
Chive and thyme	23	7	–	1	–	–	–
Sugar cane	13	10	6	3	–	–	–
Index of Occurrence	**.21**	**.13**	**.07**	**.09**	**.02**	**.15**	**.00**

Note: Values in bold denote vegetables found on one-third or more of fragments whose total number exceeds 10

such a pattern is both rational and time-tested; perennial tree-crop cultivation having proven to be the most sensible as well as sustainable activity in the rugged interior of Grenada where the majority have their holdings.

SUMMARY AND CONCLUSION

From the foregoing data and analyses it may be reasonably assumed that small farmers have been largely impervious to major changes in their political and economic environment that occurred between 1982 and 1992. If they are judged by the decrease in idle land and the higher indices of crop occurrence associated with their kitchen gardens, then farmers might be considered to have become better custodians of the land they occupied in 1992 than in 1982. However, such an interpretation would be misleading, particularly with respect to vegetable production. One shortcoming of calculating indices of crop occurrence is that account is neither taken of the area occupied nor the number of specific plants associated with a given fragment. Thus, the findings from application of this technique need to be assessed with caution, notwithstanding its other merits in providing a ready means of evaluating land use. When the two surveys were conducted visual differences were readily apparent, especially in regard to kitchen gardens – the site where most interviews were conducted. Here the most discernable difference was the reduced size of the beds that were tilled in 1992, with more land being devoted to ornamental shrubs, such as bougainvillea, hibiscus, and poinsettia, speciality fruit trees, such as soursop and sugar apple, and grass. In numerous cases, beds formerly used for ground provisions had been given over to traditional and non-traditional export crops, with the result that in many parts of the island the character of the kitchen garden had undergone a conspicuous transformation. Verification of this change was provided by senior agricultural officers and long-serving extension officers in the Ministry of Agriculture. They stated unequivocally that kitchen gardens were being worked less extensively and intensively than had been the case during the PRG regime, and certainly considerably less so than during their childhood days in the 1940s and 1950s. Their explanations for this change included factors such as the increased dietary preference for imported food, which had become more readily available and affordable as more rural households were increasingly dependent upon the influx of remittance money; the termination of the school garden programme in the primary school curriculum; and the higher incidence of praedial larceny. Farmers, who acknowledged having reduced the extent of arable cultivation, claimed such activity was either not worthwhile or household assistance could not be relied on to

help them with the arduous tasks of preparing and planting the soil. Because Grenadian kitchen gardens have been previously considered to be the nucleus of small-farming operations, serving as a training ground where children acquire gardening skills and knowledge from their parents or grandparents (Brierley, 1991), then their demise is likely to have long-term and adverse repercussions for domestic food-crop production.

A similar trend was evident on F_2, where the area allocated to cultivate ground provisions in particular had been scaled back. Endorsement of this fact is provided by the Caribbean Development Bank (CDB), whose *Annual Reports*, 1990–1997, repeatedly have mentioned Grenada's worsening food production. For example, it was recently noted that, "with respect to root crops, fruit and vegetables, production continued to decline because of scarce financial resources and the abandonment of farms by some of the traditional producers" (i.e., small farmers) (Caribbean Development Bank *Annual Report*, 1997: 33).

Small farmers interviewed in the two surveys exhibit a remarkable similarity with respect to most facets of their social and agrarian character. Consequently, on the one hand, they appear to display an inflexibility to the political and economic stimuli which prevailed in 1982 and 1992 for the purpose of inducing change to their farming system. In other words, they represent a traditional and conservative group. On the other hand, the fact that the key problems associated with developing small farming and domestic food production were fundamentally the same in the early 1990s (cf. Brizan, 1992 and Phillips, 1994) as they were during the years of PRG rule (cf. EPICA Task Force, 1982 and Coard, 1983), denotes the failure of an array of developmental programmes and strategies to effect long-term benefits. Thus, for the decade under review the net result has been a retrenchment of labour-intensive activities of small farmers with regard to vegetable cultivation, but a reduction of idle land through further planting of cacao and nutmeg – a subtle and cautious readjustment by farmers to their perceived economic needs.

If small-scale agriculture is to be revived and contribute towards making the economy significantly more self-reliant in food, then Grenada's government must create a social, economic, and political environment whereby young, well-trained individuals are enticed by guaranteed farm incomes and supported by a comprehensive agrarian infrastructure to work the nation's prime agricultural land in a scientific and technologically advanced way. Formulation of such an environment will need to be more imaginative and innovative in nature than hitherto, in the light of the conclusion here that the small farmer has been deemed to be resolute in character.

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4 Yam Production and the Yam Stick Trade in Jamaica: Integrated Problems for Resource Management

David Barker and Clinton Beckford

INTRODUCTION

Yam production in Jamaica is the domain of small and medium-sized farmers, many of whom cultivate marginal land on steep hillsides. The cultivation of yams is a crucial source of income for many thousands of rural Jamaicans and the linchpin of their economic livelihood. Yam farming is a major employer of labour, especially for thousands of unskilled, poorly educated farmers and labourers who are virtually unemployable outside of agriculture. At the national level, yams have become an important export crop and a significant earner of foreign exchange mainly due to improved export marketing facilities, attractive market prices, and expanding effective demand in both the domestic and main overseas markets (Canada, Britain, and the United States).

The system of yam production used by farmers in Jamaica has remained virtually unchanged since the earliest period of yam cultivation in the country (Rankine, 1972). Most farmers use traditional methods similar to those in West Africa, whereby heads of yams are buried in hills or mounds, which are then staked with local varieties of hardwood or bamboo sticks to provide support for the climbing yam vines. The method of yam cultivation is somewhat different in other parts of the Caribbean region, where yam stakes are not always used to support the crop's biomass, and the yam vines trail on the ground. In Jamaica, an alternative production system (minisett), which does not require staking, was introduced from Nigeria in 1985 (Campbell-Chin-Sue, 1995) but the innovation has not generally been adopted by farmers and remains deeply unpopular (Beckford, 2000).

The dramatic increase in yam production in Jamaica has translated into a rising demand for yam sticks because many more yam hills are being dug and planted than erstwhile. Moreover, in the regions where yam output is high, farmers can no longer obtain an adequate supply of yam sticks by cutting their own sticks from nearby localities, and a commercial trade in yam sticks has emerged. The "yam stick trade" is an

unregulated informal sector activity whereby men source and cut sticks from forests and woodlands, and transport them into major yam-growing communities for sale to farmers. Increasingly, farmers have experienced difficulty obtaining good quality yam sticks in adequate quantities to meet their production needs because years of exploitation have depleted Jamaica's forests and woodlands of the traditional hardwood species used for yam sticks (Barker, 1998; Evans, 1994). At the same time the quality of yam sticks has deteriorated and their price has increased sharply, prompting small farmers to refer to the "yam stick problem". Further price increases in yam sticks may jeopardize the commercial viability of yam production for small farmers.

This chapter has three main sections. First, we analyse the commercialization of yam production from a temporal and spatial perspective. Second, we examine the evolution of the "yam stick problem" and the organization of the yam stick trade. Finally, we propose a model that depicts some of the consequences of the commercialization of yam farming and the yam stick problem, and discuss implications for resource management, especially since yam stick harvesting may contribute significantly to rate of deforestation in Jamaica.

The field data are derived from interviews conducted in 1996 by one of the authors as part of his doctoral research (Beckford, 2000). A detailed field survey of yam farmers was undertaken in Litchfield and Allsides in southern Trelawny, and Craig Head in northern Manchester (Figure 4.1). These communities are located in extension districts that, according to Ministry of Agriculture data, had the highest yam output in 1996. Boundaries for the study areas were delimited by field reconnaissance mapping and every farmer cultivating within these boundaries at the time of the survey was identified and interviewed. In total, detailed questionnaires and lengthy informal discussions were conducted with 216 farmers (96 in Litchfield, 75 in Allsides, and 45 in Craig Head). In addition, a survey of 44 commercial yam stick traders was undertaken, to assess the volume of the trade, its characteristics as an informal sector enterprise, and to glean accurate empirical information about the geographical source areas for yam sticks. The yam stick traders were interviewed as they were encountered in the field, mainly within the three farming communities.

TRENDS AND GEOGRAPHICAL PATTERNS IN YAM PRODUCTION

Yam production is important in the central and western parishes of Jamaica, where rainfall is between 1,250 and 5,000 mm per annum ideally distributed between wet and dry seasons, in contrast to the wetter, more

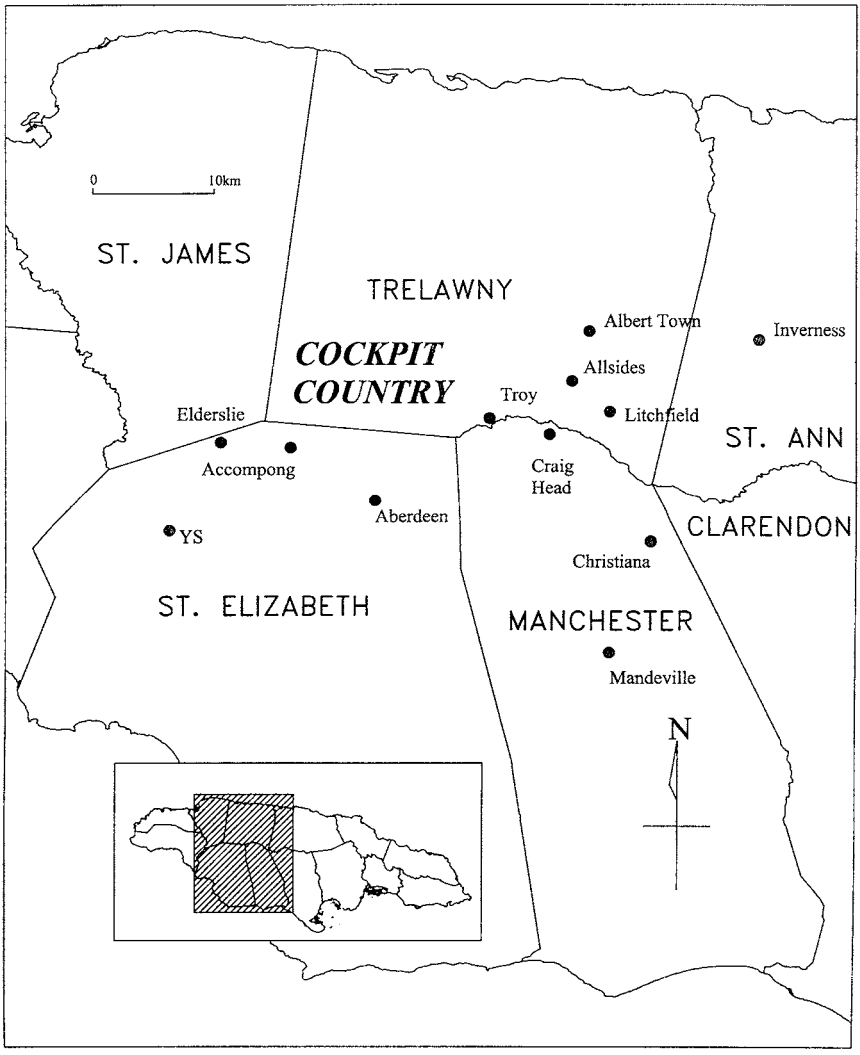

Figure 4.1 Map of the study area

mountainous eastern parishes. In their natural state, soils in these central regions tend to be suited to yam cultivation, being well drained, clayey, sandy or gravelly loams formed on the rocks of the Central Inlier or the bauxitic soils of limestone areas. Historical factors played a role too, because the cultural tradition of yam farming was quickly established in the central uplands of Jamaica, regions settled in large numbers soon after emancipation (Barker, 1989). Cash crop production among small farmers

developed quickly after emancipation, building on the successful marketing of agricultural surplus during slavery (Mintz, 1985; Besson, 2003). By the mid-nineteenth century, small farmers were exporting ground provisions (including yams) to feed West Indians working in railroad and canal construction projects in Panama and Costa Rica (Satchell, 1990; Newton, 1984).

However, as the twentieth century unfolded, rural populations in these central parishes increased in size and pressure on land resources began to take its toll (Barker, 1989). Many farming districts became severely degraded because cultivation on steep slopes encouraged rampant soil erosion. The Christiana area, for example, has been the focus of several soil conservation schemes and land rehabilitation projects since the 1950s (Edwards, 1995). Today, soils in many of the farming districts in central Jamaica are shallow and badly eroded, yet the land still offers considerable opportunities to the industrious yam farmer (Spence, 1996; Meikle, 1994).

Yam production increased dramatically in the years immediately after Jamaican independence in 1962, doubling from 50,803 tonnes in 1965 to 80,740 tonnes in 1970. In 1971 production leapt by fully 50 percent in a single year, to 122,472 tonnes. Rankine and Ferguson (1974) drew attention to the income-earning potential of the root crop sector, but lamented the lack of scientific research to support it. By the mid-1970s production had stabilized at around 127,000 tonnes, then fluctuated for a period. This was partly in response to the positive impact of the food self-sufficiency programme, and partly due to the negative impact of the dismantling of the Agricultural Marketing Corporation (AMC) in 1981, then the principal means by which small farmers marketed their produce (Rankine, 1983).

Yam production increased dramatically over the period 1983 to 1997 (Figure 4.2). This was the result of buoyant domestic and export markets and initiatives to diversify the agricultural sector to seek new sources of foreign exchange, and occurred despite the temporary setback of Hurricane Gilbert in September 1988 (Barker and Miller, 1990; Barker, 1993). The downturn in production in 1997 has been attributed to the islandwide drought from late 1996 causing a reduction in domestic food output by 21 percent in 1997 (Ministry of Agriculture, 1998). Over the same period 1983 to 1997, the growth in the volume of yam exports was 96 percent, compared to the 63 percent growth in total yam production, while the value of yams exported increased by 151 percent, to over US$11 million in 1997. Yam exports as a percentage of total production have increased steadily from 3.7 percent in 1983 to 4.5 percent in 1997, but there is clearly considerable scope for increasing exports even further.

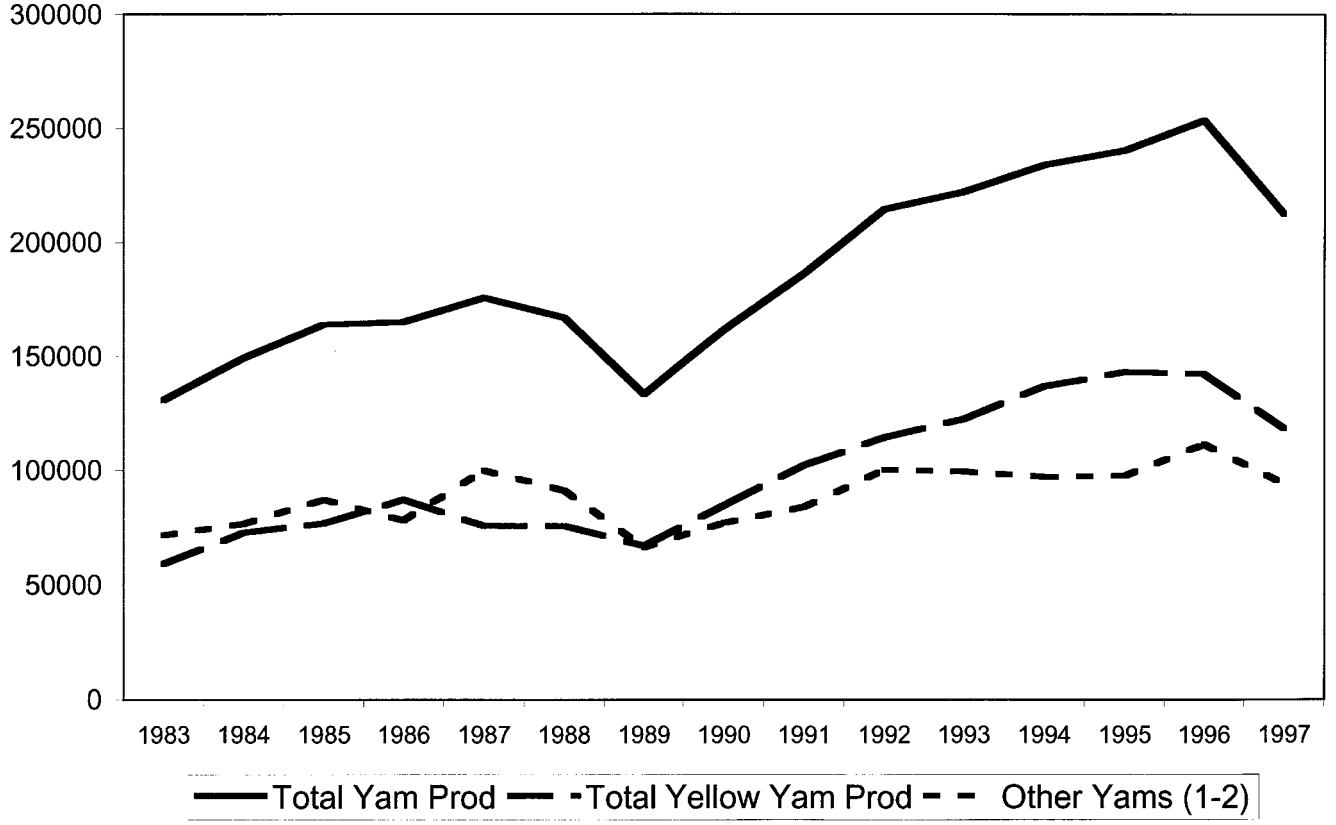

Figure 4.2 Yam production, 1983 to 1997 (tonnes)

Table 4.1 Parish Production of Yams in 1982 and 1990 ('000 tonnes)

Parish	1982	Rank	1990	Rank
Trelawny	17,641	1	42,299	1
St Catherine	14,001	2	8,437	8
Manchester	12,982	3	23,169	2
St Ann	12,695	4	20,168	3
Hanover	12,395	5	8,861	6
Clarendon	10,900	6	16,767	4
St Elizabeth	9,195	7	8,707	7
Portland	6,780	8	5,919	10
Westmoreland	6,069	9	10,532	5
St James	4,646	10	7,301	9
St Mary	4,389	11	4,228	11
Kingston/St Andrew	2,714	12	2,385	13
St Thomas	2,572	13	2,938	12
Total	126,051		161,711	

Source: Ministry of Agriculture, Kingston, Jamaica.

The main variety of yams cultivated has changed over the last thirty years. In the early 1970s, Negro yam was the principal variety grown but, thereafter, yellow yam quickly became the dominant and most popular yam cultivated. By 1975, yellow yam accounted for 32 percent of total production and Negro yam 20 percent. In the export market too, there was a similar change of emphasis through the 1970s. Although the volume of yam exports was fairly small up to the early 1970s, Lucea yam was the principal export variety, accounting for 75 percent of the 1,816 tonnes of yam exports in 1971 (Smikle, n.d.). Within a few years, however, yellow yam dominated the export market too, although the reasons for this are not fully understood. By the end of the 1970s yellow yam was the preferred yam of the ethnic West Indian communities in the cities of Britain, Canada, and the United States, powered by a rising demand for fresh Caribbean food produce in these metropolitan countries. By 1997 yellow yam production was 124 percent higher than in 1983 and accounted for 56 percent of total yam production in the island.

When that data are disaggregated to the parish level and parishes are ranked by output, striking spatial trends and patterns are evident. Trelawny was the top-ranking parish in yam output in 1982 (Table 4.1), but six other parishes could also be similarly classified as important yam-producing parishes, each with an output of over 10 million tonnes. Within eight years geographical patterns significantly altered. Trelawny not only

Table 4.2 Yam Production for Trelawny Parish ('000 tonnes)

Yam Variety	1983	1990
Yellow	9,867	34,038
Lucea	2,649	4,121
Negro	2,586	2,401
Renta	925	670
Sweet	683	777
St Vincent	254	194
Tau	90	54
Other	44	44
Total	17,098	42,299

Source: Ministry of Agriculture, Kingston, Jamaica.

maintained its pre-eminence as the principal yam parish, but pulled ahead of the other parishes, accounting for nearly a quarter of Jamaica's output, nearly twice the output of Manchester, the second-ranked parish. St Ann was third ranked and Clarendon fourth. This central block of four parishes increased yam production much more than other parishes, several of which suffered declining production. By 1995 the principal producer Trelawny accounted for as much as 40 percent of total national yam production, with second- and third-ranked parishes St Ann and Manchester both accounting for around 12 percent each.

These significant increases are due entirely to specialization in yellow yam. In 1983, yellow yams accounted for 58 percent, 49 percent, and 38 percent of total parish yam production, for Trelawny, St Ann, and Manchester, respectively, rising to 80 percent, 69 percent, and 64 percent in 1990. In no other parish did the proportion of yellow yam increase to the same extent. The detailed breakdown of production of different yams in Trelawny over this period (Table 4.2) clearly indicates the shift towards yellow yam output during this period.

THE COMMERCIALIZATION OF YAM FARMING AND THE EVOLUTION OF THE YAM STICK PROBLEM

Commercialization and specialization in yellow yam production in central Jamaica over the last two decades has been essentially a process of agricultural intensification. It has been accompanied by a series of changes in farming systems and farm management techniques (see Gleave and White, 1969 and Adams and Mortimore, 1997 for examples of similar processes in West Africa). Typical aspects of intensification in yam farming

are increased monocropping and shortened fallow periods (Barker, 1998; Meikle, 1994). Land is taken out of the fallow cycle and used to expand the acreage of cash crops, and increasing amounts of fertilizer are used. In the survey reported here, over 80 percent of the yam plots were monocropped and there was very little "planned" fallowing. Land was left uncultivated usually because farmers felt they had insufficient resources to bring it into immediate cultivation, rather than a deliberate strategy to "rest" the land and soil resources.

One reason why small farmers grasped the opportunity to expand production and benefit from higher prices and new market opportunities so readily was that the shift into commercial production required few changes to traditional cultivation methods. Yam heads (setts) are planted in individual mounds (or hills) spaced about 2 m apart. After the yam has sprouted, the hills are staked using sticks approximately 3 to 4 m in height. As the plant grows, the yam vine climbs the stick and produces a significant aerial biomass that enhances tuber development. Large yam tubers are a cultural source of pride among yam farmers and an annual yam festival is now held in Albert Town in Trelawny at which competitions are held for prize yams.

In the past, farmers cut yam sticks for themselves from nearby bush or forest, selecting good quality hardwood saplings. Hardwood yam sticks are sturdy and durable and can be reused many times. Traditionally the best sticks are hardwood species with graphic local names like cantoo (*Peltostigma pteleoides*), burn eye *(Sapium jamaicense*), and rodwood (*Eugenia* sp.) and reportedly can last over twenty years. When asked to list the best types, 92 percent of the farmers surveyed mentioned cantoo and 82 percent cited burn eye. Since sticks were durable and output levels lower, only a small proportion of yam sticks would need to be replaced at the end of any given season.

No mechanization has been involved in commercialization so yam farming has remained labour intensive. Yam heads are planted, weeded, and reaped by hand, and carried to the roadside on the farmer's head or by donkey. However, as farmers have increased yam output so labour inputs have risen significantly. Beckford (2000) clearly demonstrated that, in most cases, increased yam production was attributed to an increase in the number of yam hills per unit of land rather than an increase in the area of land under cultivation. This suggests that commercialization has involved intensification of productive effort. Certainly, farmers have reassessed and reallocated labour inputs. In the past, farmers cut their own yam sticks and as sources on their own land became depleted they would need to travel further to cut sticks. Not surprisingly, once commercial suppliers of yam sticks appeared on the scene, farmers preferred to purchase

Table 4.3 Number of Yam Sticks per Yam Hill in Study Areas, 1995

	1 Stick	2 Sticks	3 Sticks	4 Sticks	5 Sticks	6 Sticks	Total
Number of hills	75,525	61,585	21,953	2,861	443	86	162,453
% total	46.5	37.91	13.54	1.8	0.2	0.05	100

Source: Beckford (2000) fieldwork.

sticks and concentrate their labour effort on cultivating more yams. Given the favourable perception of the relatively high prices for yams at the time, this was seen as a more productive use of a farmer's time than searching for and cutting sticks. However, this reallocation of labour priorities introduced a new production cost (the cost of purchasing yam sticks) into the farming system; hitherto the "cost" of yam sticks was absorbed by the farmer as a non-monetary, time and effort cost to himself.

In the early boom years, the cost of purchasing yam sticks was absorbed comfortably by farmers in a market characterized by rising prices. The prices of yam sticks (as reported by traders) rapidly increased from J$400 per hundred in 1990 to J$600 in 1993, and to J$950 in 1996. Every single farmer interviewed in the survey said that the price of yam sticks was now a serious problem, compounded by their general scarcity (unavailability) and their poor quality (short life span).

Thus, yam farmers perceive there to be a "yam stick problem". It has several different components; the first of which is the high price of yam sticks. The second component is the rapid decline in the quality of yam sticks, so sticks perhaps only last for one season and need to be replaced more frequently. Inferior quality sticks not only last a shorter time but also are not as strong as the more durable hardwood species. Farmers have adapted and improvised staking methods and so frequently more than one stick is needed per yam hill to support the aerial biomass of the plant – weaker sticks are likely to break under the weight of the yam vine during the growing season. Table 4.3 shows that 50 percent of the yam hills were staked with more than one stick and the highest number recorded was six sticks per hill. It was calculated that the farmers were using on average 170 sticks per hundred yam hills; indeed, the number of yam sticks per hundred hills may be a useful indicator statistic or index for agricultural planners in the future. Most farmers reported using more and more sticks every season, even when they planted fewer yams than in the previous year. For the study as a whole, it was estimated that the 216 farmers used (a staggering) 732,115 yam sticks in 1995, an average of 3,389 sticks per farmer. Furthermore, the replacement rate (the proportion

of yam sticks that need to be replaced the following season) was calculated to be as high as 63 percent.

The third component of the yam stick problem is the inadequate supply in response to the apparently insatiable demand for yam sticks. Neither the farmers' own local sources nor the sticks supplied by the commercial yam stick trade are sufficient to prevent the acute scarcity that is evident throughout the study areas.

ORGANIZATION OF THE YAM STICK TRADE

As noted above, an informal commercial trade in yam sticks has emerged in central Jamaica in response to the increased yam production and increasing scarcity of yam sticks. The 44 yam stick dealers interviewed (the first survey of its kind in Jamaica) reported trading 1,160,000 yam sticks, an average of 27,545 per trader in 1995. This is a surprisingly high volume given that 41 of the dealers said they undertook the business on a part-time basis. In total 3,510 trips to cut yam sticks and 1,488 trips to sell yam sticks were made by the 44 traders in 1995. Traders confirmed that effective demand among farmers is increasing, partly in response to increased yam production but also as a direct consequence of the poor quality yam sticks being supplied. Seventy-three percent of the dealers admitted that the sticks they delivered were generally substandard, being usually thin and immature, requiring farmers to replace a high proportion of their sticks each year. Dealers said that the traditional hardwood species favoured by farmers were difficult to obtain because years of exploitation has led to their depletion in the source areas, and so tree species not customarily used were being cut in order to secure supplies.

Despite the large volume of sticks supplied, 95 percent of the dealers reported that they are unable to satisfy the yam stick needs of their customers. Traders emphasized that whatever the quantity of sticks supplied on each trip, there were always dozens of farmers wanting to buy but who had to go without, and often trucks needed to make only one stop before the entire cargo is sold. These statements were confirmed by field observations.

The study attempted to estimate the annual value of the yam stick trade, despite yam stick dealers being sceptical about disclosing their income derived from these activities. However, by using the number of sticks traded and price data, the combined income of the 44 traders was estimated at J$9,280,000 (approximately US$275,000 at 1996 values). Since our survey represents probably only a minor proportion of the trade (the total number of yam stick traders is unknown), then it is obvious that this

is a lucrative business whose commercial value has been underestimated significantly.

The main source areas for yam sticks according to the traders are Cockpit Country and the communities of Inverness in St Ann. Beckford (2000) estimated that 36 percent of the total recorded in the survey of traders came from Cockpit Country, comprising 382,800 from Trelawny, 35,000 from places like Accompong, Elderslie, and YS in St Elizabeth, and 5,000 from northern Manchester. Inverness in St Ann was the second most important source, accounting for about 348,000 sticks (30 percent of the total). The majority of source areas in St Ann are the extensive forests on the holdings of the Kaiser Bauxite Company. Those traders obtaining sticks from the bauxite holdings contend that enormous amounts of good yam sticks are to be found on these lands. During mining operations these sources are cut off from the dealers. In fact, open cast bauxite mining destroys hundreds of thousands of trees and saplings that might otherwise be used as yam sticks.

Yam stick traders said that they rarely delivered sticks to order prior to 1995, they simply procured sticks and took them into yam farming areas where they were sold from the back of a truck or, in a few cases, pick-ups. However, the growing demand for and scarcity of yam sticks has induced some farmers to try to order sticks in advance. Twenty-five of the traders interviewed reported orders being made and twenty said down payments had been offered on occasions by farmers to try to ensure a supply of yam sticks when the traders next return to their area. However, the trade is normally conducted through cash payment on delivery. Only two traders had ever extended credit, while twelve said they had accepted down payments at one time or another though only two did so on a regular basis. Most traders were not keen on advance orders or down payments because of potential problems and uncertainty in obtaining sticks, and also because they operated on a part-time basis. Four yam farmers said they made down payments to yam stick traders in 1995 and complained that they did not obtain the yam sticks they were promised nor get their money back.

Prices for yam sticks are quoted per hundred but farmers are allowed to purchase fractions of a hundred, in which case costs are calculated per stick. All the traders interviewed conceded that the price of sticks has been increasing over the last few years. When asked to identify factors that determined price, the two principal ones stated were transport costs and compensation for personal labour. These answers generally appeared to be vague and unconvincing, and the impression was that prices were set arbitrarily (what the market can bear). Recent entries into the business

seemed to charge the prevailing market price rather than calculate one based on their own costs. The evidence suggests that traders are well aware of the dilemma facing farmers due to the scarcity of sticks and have taken full advantage of the situation.

Yam stick traders were asked also to identify the prices for different species of sticks and different quality of sticks. Only two different prices were mentioned. The traditional hardwood burn eye and cantoo sticks were reported to be sold at prices as high as J$30 to J$40 (approximately US$1) per stick (that is J$3,000 to J$4,000 per hundred). The high price was justified in terms of their much longer life span. All other sticks had the lower price and were not differentiated according to quality. Thus, when sticks are bought from a truck, one price is charged and farmers must pay the same high price for poor quality sticks and acceptable quality sticks alike. Traders claim there is no objective way in which they could grade yam sticks in terms of quality.

RESOURCE DEPLETION AND THE VIABILITY OF YAM FARMING

Figure 4.3 summarizes the main connections between the intensification of yam farming systems and the growth of the yam stick trade, and identifies potential outcomes, including environmental impacts and financial and monetary benefits. One outcome may be that yam farming ceases to be economically viable. In this study 29 percent of farmers said they would reduce production as a result of the yam stick problem. They are beginning to question the viability of yam farming given the high price of yam sticks, and may be shifting into other crops, prompting Beckford (2000) to suggest that the 1997 decline in production might have had deeper underlying causes than simply drought conditions.

Other issues relate to resource management, in particular the extent to which yam stick harvesting poses a threat to Jamaica's forests (Eyre, 1994) or whether harvesting yam sticks in a sustainable manner is possible. Discussion is hampered by lack of quantitative data. For example, there is no accurate information on the number of yam sticks being used nationally. Evans (1994) suggested over 31 million yam sticks were in use, based on Ministry of Agriculture assumptions of 1,000 sticks per acre (2,470 hills per hectare). Campbell-Chin-Sue (1995) estimated there were 43 million yam sticks in use. However, Barker (1998) speculated that both may be underestimates and in the light of the research reported here, these earlier estimates need to be revised upwards because farmers now are planting more than 1,000 hills per acre and using more than one stick per hill. Our estimate is between 41 million and 63 million, and we suggest

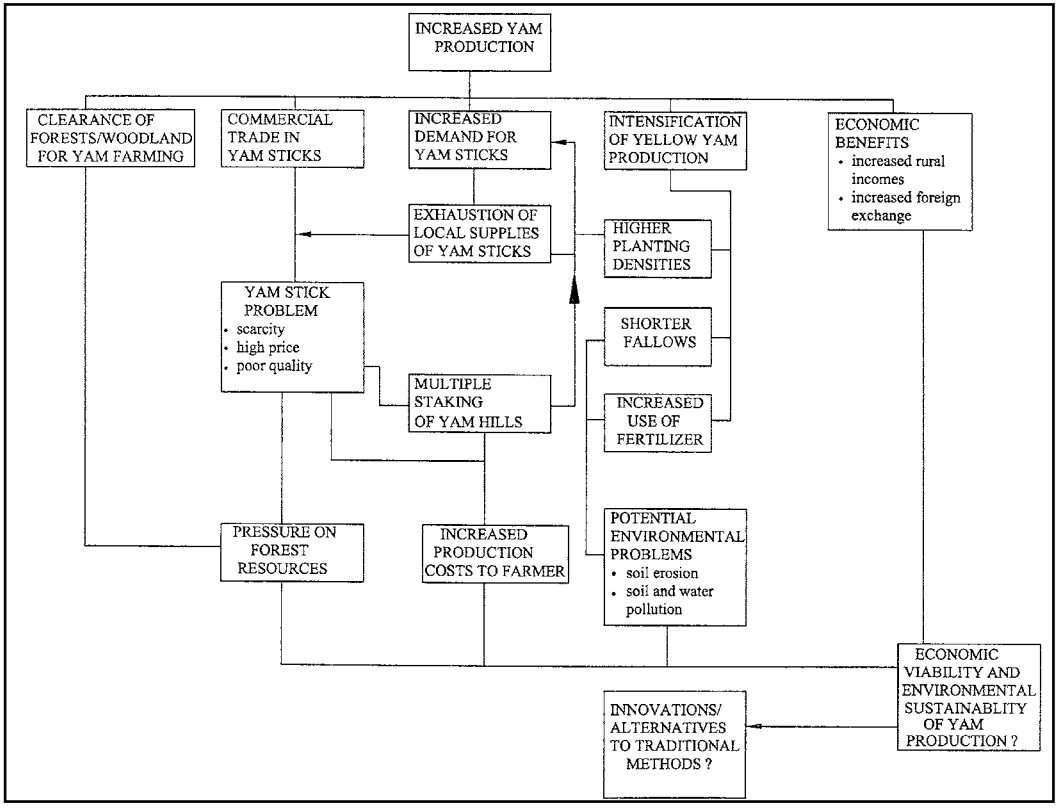

Figure 4.3 Relationships between yam farming systems and the growth of the yam stick trade, and potential outcomes

the latter is more realistic. Furthermore, we calculate a higher annual replacement rate of 63 percent, so perhaps as many as 40 million new sticks were needed in 1997, compared to Evans' estimate of between 15 and 19 million new sticks in 1994.

Pressure on Jamaica's forest resources has continued unabated over the last twenty years but there is debate and controversy regarding the accuracy of some of the higher estimated rates of deforestation that have been published and publicized (Evelyn and Camirand, 2000; Miller, 1998). However, whether deforestation rates are high or low, the spatial pattern of deforestation is often of greater concern because some geographical areas will be more seriously affected than others. Localized severe impacts compel attention, and a good case is Cockpit Country. Earlier work (Barker and Miller, 1995; Barker, 1998; Miller, 1998) commented on encroachment of farmers into Cockpit Country, highlighting the problems around its southern borders. We noted above that 36 percent of the yam sticks sold by traders came from Cockpit Country, especially from the southern fringes. Indeed, one of the present authors counted eleven trucks carrying yam sticks and several loaded pick-ups passing through Troy during a six-day period. Yet Cockpit Country is world renowned for its unique geomorphology, ecology, and biodiversity (Eyre, 1995) and is slated to become a national park (Natural Resources Conservation Authority [NRCA], 1995). Any encroachment into its relatively pristine forests for yam sticks has serious implications for the country's programme for sustainable development. Further, when the proposed Cockpit Country National Park finally becomes a reality, that source of yam sticks will be denied yam stick dealers, at least to the extent that park regulations can be enforced.

CONCLUSION

The yam farmers in central Jamaica are confronted with what they term "the yam stick problem", conceptualized as three interrelated issues: inability to obtain adequate supplies of yam sticks; their high price; and their poor quality (short life span). The commercial yam stick trade seems unable to meet market demand and yam stick supply to farmers is, at best, inadequate and unpredictable. Excess demand and scarcity has led to the exorbitant prices charged for yam sticks, and the problem is exacerbated by the poor quality of sticks supplied. The short life span of the average yam stick means that the cost of the yam stick is an annual recurrent expenditure accounting for a disproportionate part of overall production costs.

It is our view that if the present trends of increased prices and declining yam stick quality continue, the sustainability of commercial yam cultivation cannot be guaranteed. Farmers reported that much of the profit that accrues in one year is used to purchase yam sticks in the following year. Some farmers are reducing the number of yams planted not just because of high yam stick prices but also because of their inability to obtain sticks in the required quantities when they need them. The older farmers, for whom yam production is a way of life, seem committed to yam production, but younger farmers frequently voice disenchantment, and some prefer to grow short-term vegetable crops or rear animals. A report from the Food and Agriculture Organization (FAO, 1994) first suggested that yam stick prices could increase to the point where it was no longer viable to grow yams commercially. This research has confirmed that the problem has become more acute since then.

Another outcome of the model depicted in Figure 4.3 is a reappraisal of the traditional methods of staking yams and a search for alternatives. Minisett technology, an innovation that obviates the need for yam sticks (Campbell-Chin-Sue, 1992), has not proved popular among small farmers and none of the 216 farmers interviewed here were using the technology. However, Beckford (2000) has suggested a number of other alternatives, including plastic yam sticks and "live" yam sticks. The latter involves the use of fast-growing tree species as yam sticks. The yam stick sprouts roots and leaves and thus in effect regenerates and "stays alive", and so theoretically can be used again the following season. The authors are pursuing further research into the feasibility of several alternatives to the traditional methods of staking yams.

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5 Forest Resource Use in Amerindian Villages in Guyana: Implications for Development Policy

Caroline Sullivan

INTRODUCTION

As long ago as 3000 BC, ancient, organized societies existed in the western part of Guyana. Artefacts found at archeological sites suggest that these were agricultural communities that depended on cassava as their staple food, supplemented with fish from the rich rivers, and animals and birds from the forest (Bruhns, 1994). Households in Amerindian settlements in Guyana today are still dependent on the same ecological cycles as their ancestors were, and people live in much the same way as they did then. This implies that the traditional ways of life of the Amerindian people of this region is one that can be said to have been ecologically, economically, and socially sustainable for thousands of years. This embedded knowledge that such groups embody is a valuable part of social and human capital, and in view of the current interest in sustainability and the fact that its social dimension is often forgotten, it is important that the opinions of such groups be assimilated into forest management strategies.

The objective of this chapter is to contribute to the achievement of sustainable forest management, by examining and analysing how such communities use forest resources today. To this end, participatory research techniques were used to collect both qualitative and quantitative data from 143 Amerindian households in three forest villages, and an economic *income accounting framework* is applied to this, in order to assess the monetary value of forest use. Qualitative data from the same households is also examined, and this sheds some light on the non-monetary values placed upon forest use by such communities.

As human populations rise, overuse of resources has come to be seen as one of the main causes of environmental degradation, and population pressure in fragile ecosystems is having a devastating impact in many parts of the world. Following the recommendations of the Brundtland Report (World Commission on Environment and Development, 1987),

environmental policy to deal with such devastation is becoming more integrated with development policy and, as a result, developmental solutions are increasingly underpinning the solution of environmental problems.

The traditional approach to environmental management involves project-by-project curative solutions, aimed at specific needs, but fails to deal with the underlying causes of the problems themselves. Today there is a move towards supplementing this with a broader approach, taking account of both the way society works and the technical aspects of resource depletion. This multidisciplinary approach attempts to integrate natural resource management into economic and social policy, by developing a better understanding of the ways in which changes can be brought about in the behaviour of governments, firms, and households (Schramm and Warford, 1989). It is in this context that the movement towards a more participatory approach to natural resource management has evolved and, in this chapter, the means of incorporating this into development policy in tropical forests is discussed.

THE IMPORTANCE OF TROPICAL FORESTS

Over 200 million people depend directly on tropical forest resources for survival (World Bank, 1992) but, in addition, these resources are important to the global ecosystem for a number of reasons. Not only do they provide a production function in the form of a wealth of resources, but they also fulfil important regulatory functions such as carbon sequestration and hydrological cycling. Because of the high concentration of flora and fauna in tropical moist forests, these areas function as a major *carbon sink*, along with the oceans and the atmosphere itself. Estimates of the size of this total global biomass pool are in the range of 550 to 830 billion tonnes of carbon (Bouwman, 1990), and tropical deforestation is one aspect of human action that is disturbing the functioning of this carbon sink and contributing to the rise in atmospheric CO_2. Since forests contain possibly as much as 85 percent of above-ground biomass carbon (Sedjo, 1992a), changes in the levels of forest cover will have an effect on both emissions and absorptions of CO_2, thus indirectly influencing millions of people all over the world.

Another major reason for placing emphasis on tropical forests is because they provide the natural habitat for between 50 and 80 percent of the Earth's plant and animal species (United Nations Development Programme, 1994). As deforestation continues, biodiversity loss is aggravated at a rate unprecedented in history, reducing the ecosystem's existence

and option values, and having serious implications for sustainability. From an anthropocentric perspective, this loss of biodiversity could have a serious influence on future well-being. At present, only twenty plant species account for the majority of the world's human food consumption, and of these twenty, most are already suffering from a decline in their genetic diversity (US Department of Agriculture, 1985). This means that rapid and worldwide starvation could result if a pest or virus was able to attack these twenty species, and only by adopting the use of new species can we develop pest-resistant strains or new sources of food. Similarly, over 80 percent of the world's human population depends on natural plant sources for medicinal remedies, and even most of the state-of-the-art medicines of the developed world have plant sources as their base (Seager et al., 1995).

NON-TIMBER FOREST PRODUCTS

Non-timber forest products (NTFPs) include any kind of fruit, nuts, honey, bark, fibre, fungi, resin, animal products, or organic chemicals that originate in a forest ecosystem. All forests, in both temperate and tropical areas, have some non-timber products, but because of the huge range of plant species found in the latter, the importance of these "by-products", and the economic potential from them, is much greater in tropical forests. Some indication of the diversity of use of this type of product is shown in Figure 5.1, which illustrates the major forest plants collected by women in the village of Assakata, north-west Guyana, in 1996.

One major advantage of looking at these products as potential income generators is that it is possible to harvest them without any major damage being done to the ecosystem. In addition, the methods of collection of such products are inevitably labour intensive, meaning that they are appropriate to a surplus-labour situation, which may be found in many tropical forested areas. Furthermore, since indigenous forest peoples are usually familiar with these types of product and the methods of collecting them, they are skilled in this type of work (Ros-Tonen et al., 1995).

This type of *embedded knowledge* is illustrated in Table 5.1, which shows the use of commonly collected medicinal plants by women in Assakata. Information such as this illustrates the importance of incorporating the value of NTFPs in any forest valuation, enabling a more accurate and holistic assessment of the use-value of such resources to be made. Due to the nature of these resources, the only realistic and effective way to assess them is through participatory research, and it is on this aspect of forest resource management that this research is focused.

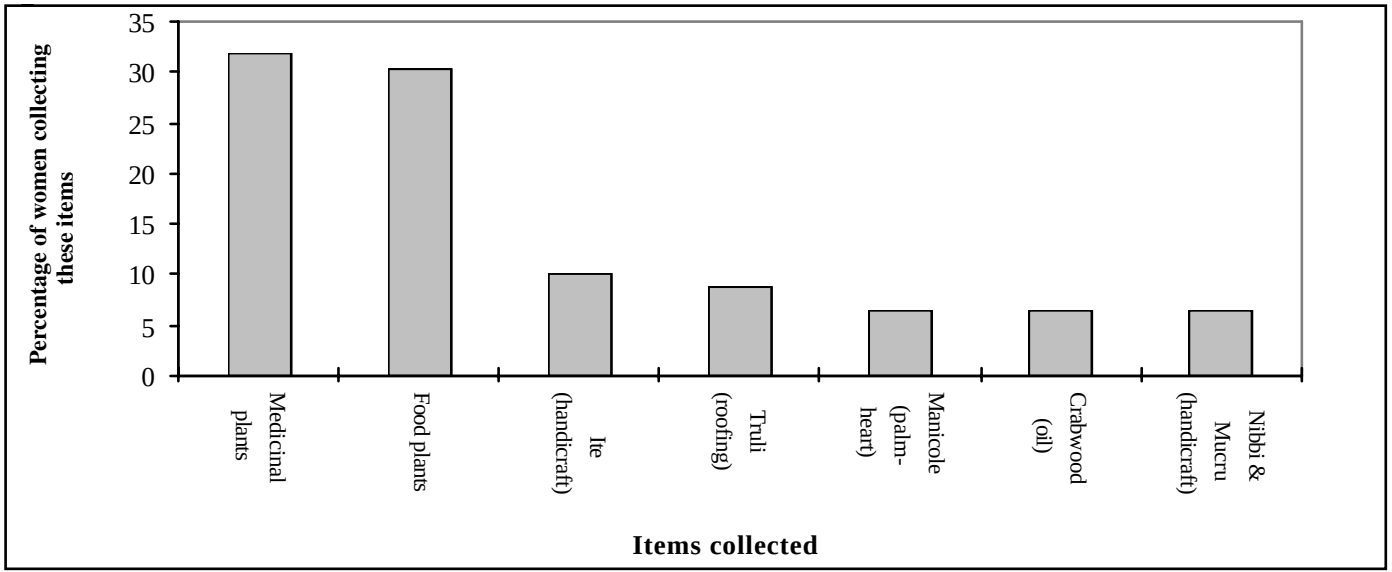

Figure 5.1 Major non-timber forest products collected by women, Assakata, June 1996

Notes: Ite palm is used for making fibres used in handicraft, and fruits can be eaten. *Truli* palm is used as a roofing material. *Crabwood* seeds are used to make a valuable oil used for its medicinal properties. *Nibbi* and *mucru* are used for basketry and other handicrafts.

Table 5.1 Use of Common Medicinal Plants, Assakata, 1996

Name of Plant	Medicinal Use
Boyari *(Aristolochia daemonioxia)*	Birth control, antispasmodic, treatment for tuberculosis
Ubudi (*Anacardium giganteum*)	Cancer, cancerous ulcers, diarrhoea, syphilis
Crabwood (*Carapa guianensis*)	Ulcers, rheumatism, diarrhoea, thrush, swelling
Monkey ladder (*Bauhinia scala-simiae*)	Skin disease, backache, fever, aphrodisiac
Congo pump (*Cecropia* spp.)	Kidney disorders, bush yaws, ulcers
Huria (*Byrsonima crassifolia*)	Snake bites, fever
Bulletwood (*Minilkara* spp.)	Dysentery
Horse eye (*Mucuna urens*)	Worms
Mora (*Mora excelsa*)	Uterine infections, dysentery, antiseptic
Greenheart (*Ocotea rodiaei*)	Malaria, febrifuge

POLICY FAILURES AND TROPICAL FORESTS

According to the Food and Agriculture Organization (1992a), about 8.3 million hectares of forest is cleared annually in tropical America, while in tropical Africa, 5 million hectares of forest are lost each year. These figures highlight the importance and urgency of the forestry problem – to identify the causes of deforestation in tropical forests and to examine ways of replacing the current destructive trends with more sustainable development strategies for forested areas. Many causes of deforestation have been identified in the vast literature on the subject and, in general, they can be classified as natural, individual, or political. The major factors influencing deforestation are shown in Figure 5.2.

Many of these factors have been influenced by a variety of policy failures (Deacon, 1995), and an example of this has occurred in such places as Amazonia (Binswanger, 1989), where cattle stations were set up in areas of cleared tropical forest. At that time, this was seen as a viable development strategy for the region, because the investment appraisal made before the development did not include any evaluation of the environmental effects it would have. This situation was made worse by the Brazilian government's attempts to develop the region of Amazonia by offering tax breaks and subsidies for beef production on this totally unsuitable area of land. The result is that beef is being produced now in the area, but with a productivity rate so low as to make it virtually uneconomical. To make matters worse, the cattle ranching activities have

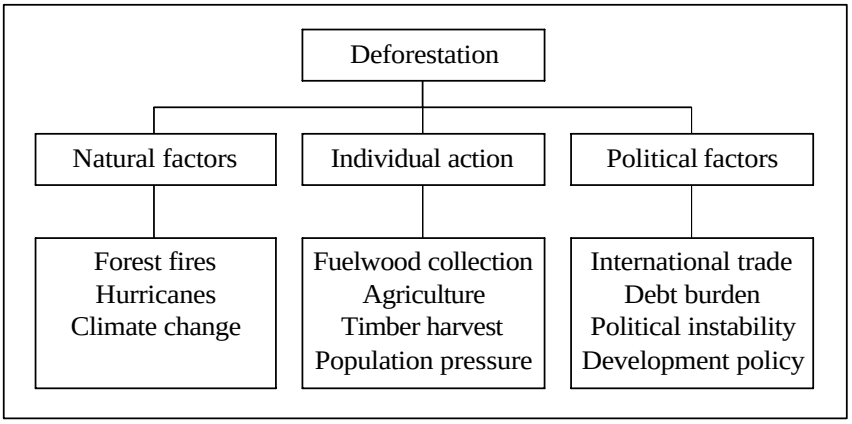

Figure 5.2 Factors influencing deforestation

brought about serious soil erosion and now the area can be used for little else, perpetuating and worsening the vicious circle of poverty.

Development policies in most countries are designed to provide nations with the foreign exchange needed for the purchase of necessary machinery and infrastructure, as well as the consumer goods demanded by their ever-growing populations. As developing nations become more integrated in the global economy, they are often driven to finance such purchases by exploiting their natural capital, which in some cases is the only resource that they have. In the case of forested countries, this is often done by granting timber and land concessions at very low prices (World Resources Institute, 1991). In effect this means that consumers in the developed world are being subsidized by people in poor countries where resources are being sold at prices that do not reflect the full environmental costs associated with their exploitation. This highlights the urgent need for a fuller integration of environmental and developmental policies.

One of the most promising changes in environmental and developmental policy-making practice is the evolution of the participatory approach. This recognizes the knowledge base of a wider range of resource users than previously, and allows the inclusion of the views of a wider range of stakeholders in the decision-making process. By incorporating a participatory approach into economic analyses, it becomes possible to gather a much broader range of qualitative and quantitative data, and consequently to develop a much deeper understanding of the socio-economic processes that influence human behaviour. Since a change in human behaviour is a prerequisite to successful environmental policy (Redclift, 1996), this is an important step forward.

THE ROLE OF ENVIRONMENTAL VALUATION

One of the reasons for a failure to internalize environmental costs in development projects arises out of the problems associated with environmental valuation. Unlike other goods and services, those provided by the environment are ill-defined, often non-marketed, and even, to a large extent, undocumented (Daly, 1989). Statistically, this means that they can be described as "fuzzy" values, which do not fit in well with the linear methods used in conventional neoclassical economic analysis. In order to overcome some of these difficulties, the development of a participatory approach to the question of tropical forest valuation is an attempt to provide more comprehensive information about the economic, social, and ecological values that can be assigned to tropical forests. By examining how forest-dwelling people view the forest resource, and what its relationship is to their lives, it becomes possible to broaden our whole concept of the term *value* as applied to forest resources.

Although clearly a forest has greater value than simply the present use-value of some of its components, a more accurate understanding of this can contribute to the assessment of the total economic value (Barde and Pearce, 1991). By developing a realistic value of the *income flows* from natural capital, it is possible to assess some indicator of the value of the *stock* of that capital. One way of approaching this is through the use of what have been referred to as *biased shadow prices* (Dasgupta and Mäler, 1997), to estimate the option and existence values of the resource, and to achieve this, reliable data on use values must be available. The objective of this research therefore is to shed some light on the value of forest resource use, with a view to enabling policy makers to internalize at least some of the externalities associated with natural resource degradation.

RESEARCH METHODOLOGY

To achieve this objective, an assessment of the economic and social value of NTFPs has been made. For the economic valuation, an accounting framework has been developed, similar to that employed in conventional national accounting, but modified to include the value of nature in the form of forest use. In addition to the use-values of forest products (such as foods and medicinal plants), this valuation attempts to include some measure of forest services, by using the revenues from hunting and fishing as a proxy which reflects the quality of the ecosystem services provided by the forest itself. This more holistic approach to the question of valuation also attempts to examine social factors, such as the gender and intergenerational differences that exist in attitudes to forest functions, development options, and environmental change.

Figure 5.3 Map showing the location of the study villages

For the purpose of this work, data was collected in a participatory manner from three Amerindian villages, with the assistance of seven Amerindian field assistants. The villages themselves are located in moist deciduous tropical forests on the coastal plain of north-west Guyana, as shown in Figure 5.3. The study villages were selected after consultation with a number of Amerindian students from the area, and the director of the Amerindian Research Unit at the University of Guyana. Through the use of a number of participatory methods, a "statistical snapshot" of the economic life of these villages was produced, and this was further

enriched by qualitative data from the same households. During an eight-week period, the field assistants interviewed household members in every occupied house in three villages, getting as near to 100 percent survey results as possible. General attributes of the study villages are shown in Table 5.2.

Participatory Research Methods Used to Investigate the Use of Non-Timber Products

A total of 143 households was included in this study, and interviews were held with men, women, youths, and elders, with specific information being collected from farmers, fishermen, hunters, craft-workers, and palm-heart cutters. A number of different data collection activities were conducted, including:

- Training of local field assistants
- Participatory mapping
- Village meetings
- Structured interviewing with key informants
- Preference ranking
- Group discussions with village subgroups such as women, teenagers, elders, etc.
- Wealth ranking
- Transect walks
- Participatory observation

In order to permit a consistent recording procedure for each household, information from respondents was recorded on pre-prepared data sheets. Interviews between the household members and the field assistants were kept as informal and relaxed as possible, and every attempt was made to ensure that the information recorded was accurate and reliable. During the survey period, householders in each village were asked to complete diaries of all the activities of household members and these, along with interviews with key informants, provided a cross-checking mechanism for the data collected. In addition to the data collected in the villages, other data was collected in local markets, in the capital, Georgetown, and from representatives from the company trading in palm-heart.

Methods of Estimating Proportions and Quantities

Although the Amerindian people of Guyana are relatively well educated, it was important to use a standard method to enable people to accurately

Table 5.2 Attributes of Study Villages

Attribute	Assakata	Sebai	Karaburi
Population	176	201	559
Number of households	23	31	89
Average number of persons in household	7.6	6.5	6.8
Average age (years) of household heads	45	42.5	44.5
Average age (years) of senior women in households	38	36.6	39.4
Average number of years education for adults	4.03	6.1	6.53
Average size of farm (acres)	3.4	3.43	5.64
Location	Assakata Creek, Santa Rosa/Moruka	Sebai Creek, Port Kaituma	Kumaka Road, Santa Rosa/Moruka
Vegetation type	Mixed deciduous forest and swamp, rainfall average of about 120 inches (2,880 mm) per year	Mixed deciduous forest and swamp, rainfall average of about 120 inches (2,880 mm) per year	Mixed deciduous forest and swamp, rainfall average of about 120 inches (2,880 mm) per year
Means of transport and hours of travel from the nearest market	6 hours paddling by canoe	6 hours paddling by canoe	6 hours walking, or by canoe for those households near river

estimate quantities of crops produced or food eaten. In the case of the crop outputs, the standard size of basket (*quake*) used in the village was used as a measuring unit, and the field assistants then converted this to number of pounds weight produced. Pounds were used as a measure of weight because that is what is used in Guyana. This procedure was effective and efficient, as all households had a good knowledge of how many *quakes* they did produce, as they had to actually carry these themselves back from the farms to the households. Using this method, the quantities elicited do represent quite accurate estimates, with any error being that of under- rather than over-estimation.

THE ACCOUNTING FRAMEWORK

As a means of estimating the value of NTFP use, a model of the village economy has been developed, and the value of the net village product (NVP) calculated. (Net village product is used as opposed to gross village product, since the cost of capital depreciation has been included.) This will be based on the usual accounting framework, as outlined in the United Nations *System of National Accounts* (United Nations Environmental Programme, 1993), but modified to represent the simpler economy found in a subsistence village. The basis of the usual equilibrium accounting assumption is that inputs equate to outputs (Begg et al., 1994), and the model of the village economy used here will be calculated on such an assumption, where:

$$\text{value of household input} = \text{value of household output}$$

Here:

$$\text{Household inputs} = wL^h + rK^h + \delta K^h + p_f F^h \qquad \textbf{(1)}$$

where:

w = wage rate
L^h = weighted hours worked by household h (weighted for men, women, and child labour inputs)
r = rate of interest for the use of capital in production
K^h = productive capital used by household h
δ = capital depreciation rate
p_f = implicit price of each unit of nature (forest) used
F^h = implicit quantity of nature (forest) used by household h

$$\text{Household outputs} = \sum_{i=1}^{n} p_i Q_i^h \quad \textbf{(2)}$$

where:
p_i = price of the good
i = counter for NTFPs; hunting, fishing, handicraft and farming outputs, etc.
n = the number of outputs counted by i_1, i_2, etc.
Q_i^h = the quantity of that good produced by household h

All values used here refer to the period of one year, and so for convenience, the time subscript (t) usually applied will be omitted. Without intertemporal household data, it is impossible to identify any specific value for capital accumulation by households. As a result, this value is included in the total of "value added" associated with the use of the forest. By equating the value of household inputs and outputs, we get:

$$wL^h + rK^h + \delta K^h + p_f F^h \equiv \sum_{i=1}^{n} p_1 Q_h^1 \quad \textbf{(3)}$$

To build the complete model of the village, we then need to consolidate all of the data, and the NVP is obtained by summing across all households H ($H = h_1 \ldots h_n$):

$$\sum_{h=i}^{H} p_f F^h = \sum_{h=1}^{H} \left(\sum_{i=1}^{n} p_i Q_i^h - (wL^h + rK^h + \delta K^h) \right) \quad \textbf{(4)}$$

DETERMINING THE VALUE OF FOREST INPUTS FROM THE NET VILLAGE PRODUCT

The value of $p_f F^h$ will be derived as a residual from the completed equation of all other inputs and outputs, as shown below:

$$\sum_{h=i}^{H} p_f F^h = \sum_{h=1}^{H} \left(\sum_{i=1}^{n} p_i Q_i^h - (wL^h + rK^h + \delta K^h) \right) \quad \textbf{(5)}$$

This residual represents the contribution made to NVP by the various NTFPs, and these are in the form of output values from village activities

generated by the use of forest resources. By examining their monetary value, it is possible to assess the proportion of village output that depends on *non-timber* forest utilization (in all calculations, the exchange rate of US$1 = G$138 is used, at the rate for June 1996).

It must be emphasized here that this mathematical model is based *entirely* on figures collected in the field. None of the figures used in this analysis are in any way hypothetical. They are all based on *observed use-values* generated through the collection of both quantitative and qualitative data during some 3,600 hours of interviews and surveys conducted during the fieldwork. (Calculated on the basis of work conducted by the author and seven Amerindian field researchers working intensively for ten hours per day in data collection for forty-five days.) The purpose of the model itself is simply to facilitate the summation of these various values across all households, in order to arrive at the value for forest use by the village as a whole. It is *not* used to predict or assess unobserved values.

ASSESSING THE VALUE OF HOUSEHOLD INPUTS AND OUTPUTS

In order to compute the model described above, detailed statistics on all household inputs and outputs are required, and were collected using the synthesis of participatory methodologies described above, and a systematic recording of the data by the Amerindian field assistants.

Household Labour Inputs

Detailed data was collected from both heads of households and senior women on time allocation by household members. From this data, the supply of labour was calculated, giving an annual total *effective labour supply* for each village. This term is used to indicate that a weighting system has been used to take account of the different productivity levels of men, women, and children, and their relative earning potentials. This weighting has been calculated from information from those involved in palm-heart cutting, which is used as the basis of the calculation of the shadow wage. Table 5.3 shows the supply of labour for the three study villages for 1996.

The distribution of labour by activity in the village of Sebai is shown in Figure 5.4. From this diagram, it can be seen that in the village of Sebai, most labour time is spent in agriculture, with fishing and hunting also being important. Here, palm-heart harvesting is unimportant, but in the other two villages of this study, it accounts for a higher proportion of household labour. This general pattern of labour utilization is also found

Table 5.3 Total and Average Labour Supply

	Assakata	Sebai	Karaburi
Total labour supply (hours/year)	149,430	184,810	389,277
Average labour supply by household (hours/year)	6,497	5,962	4,374

in other Amerindian villages, and in order to calculate the accounting value of this labour, a system of *shadow wages* is used. The shadow wage has been calculated at G$70 per hour, on the basis of the opportunity cost of labour, or *what could have been earned* through harvesting manicole palms *(Euterpe),* the "heart" of which is bought by a canning company and exported as a luxury foodstuff to Europe. This work has been used as the basis of labour valuation, because the palm-heart industry represents an unregulated labour market with free entry and exit for all workers.

The Contribution of Capital to the Household and Village Production Processes

Household items important for production were identified during interviews with women and senior male householders. Using regionally adjusted market prices for these items, the monetary value of this productive capital stock has been estimated. From the total value of productive capital in

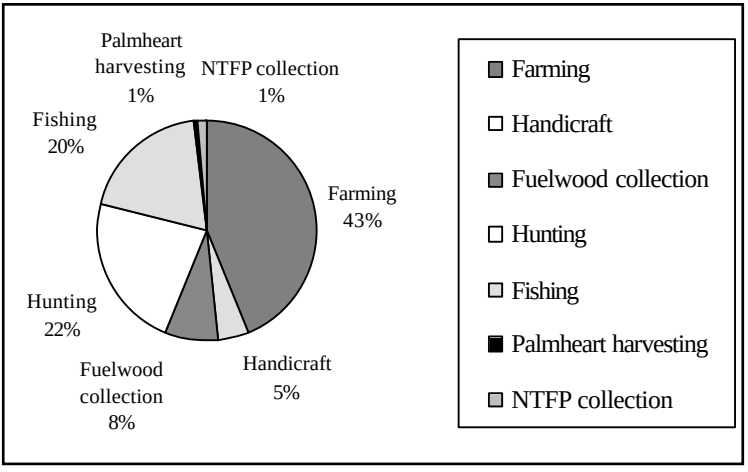

Figure 5.4 Labour distribution in Sebai, 1996

Table 5.4 Productive Capital (G$)

	Assakata	Sebai	Karaburi
Total village productive capital	570,374	1,401,300	2,880,204
Average productive capital, by household	21,937	45,203	32,362
Cost of total village productive capital use per annum	159,705	392,364	806,457

Note: 1996 exchange rates US$1 = G$138.

each village, the amount of capital consumed during the year (δK^h) is calculated, assuming a five-year life span as supported by qualitative data from interviews with farmers. Details of the capital stock holdings in the villages are shown in Table 5.4.

In addition to the value of capital itself, the holding of capital has a cost in terms of foregone interest, and so the village opportunity cost of holding capital is SrK, where r is the real rate of interest for the relevant period. In Guyana, the real rate of interest is in fact a negative rate of –7 percent, since the rate of inflation is 24.5 percent (at December 1995), while the Cooperative Bank of Guyana agricultural lending rate (June 1996) is 17.5 percent. The use of such a negative interest rate is not appropriate as an indicator of the opportunity cost of capital use in most situations. As a result, for the purpose of this study, in the calculation of the NVP, an interest rate of 8 percent is used. Note that if the rate used was 3 percent, the cost of capital use would be less, while if it was 15 percent, the cost of capital use would be significantly more. Due to the very small capital-to-labour ratio (for example, 1:229 in Assakata), the choice of interest rate has little significant effect in this case.

The Distribution of Capital Stock

The spread of wealth within most economies follows a lognormal distribution, which gives a typical shape of a unimodal frequency density function with a rightward skew (Lambert, 1993). This type of distribution indicates that most cases fall into the larger body of the group, which exhibits lower and middle levels of wealth holdings, while a smaller number are found in the long tail to the right, exhibiting high levels of wealth holdings. In spite of the fact that the wealth estimates for these villages have been calculated on the basis of material items, rather than money stocks, it appears that the capital stock in the villages follow the typical shape of a lognormal wealth distribution, as shown in Figure 5.5. This illustration of how "wealth" is distributed within the village of

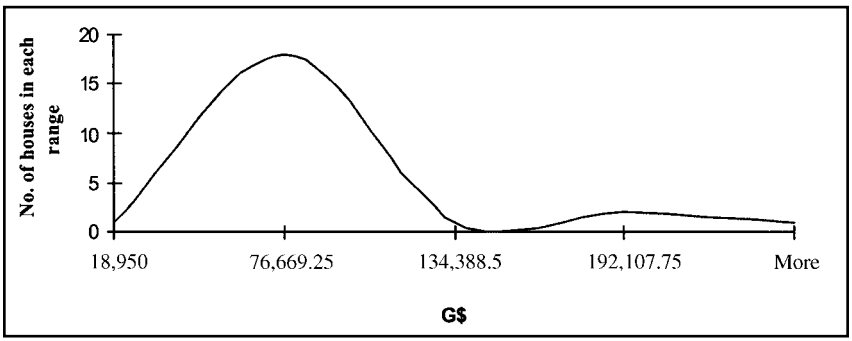

Figure 5.5 Household capital stock in Assakata, June 1996

Assakata reveals that the participatory wealth assessment methodology employed in the fieldwork served as a reliable indicator of how wealth is distributed between the households in these villages.

In Figure 5.5, it can be seen that in the case of the higher range of wealth holdings of around G$140,000, no households feature, while a small number exhibit even higher holdings. The reason for this particularly stretched "tail" is because of the very high monetary prices placed on a few, rarely owned items, such as chain saws or outboard motors. These values of village capital holdings are used as a basis to calculate the amount of capital input used in the process of production, as well as the corresponding figure for interest and depreciation.

Estimating Household Outputs

In these villages, household outputs include the output from farming, fishing, hunting, palm-heart harvesting, handicrafts, fuelwood and the collection of forest plants for food, medicines, and roofing materials. The value of all these are calculated on the basis of the data collected from the villages, and these values are used in the calculation of the NVP.

Although the monetary value of minor food and drink products is relatively low, their importance must not be ignored. This is due to the fact that they provide an important source of vitamins, fibre, and minerals in the household diet. Although little literature exists on the nutritional value of the specific plants used in this location, some evidence suggests that this is one reason why they are collected and used by almost all households in these villages. An examination of the nutritional value of forest foods used by Amerindians in Venezuela (Melnyk and Bell, 1996) suggests that the high nutritional content of such foods makes a significant

contribution to the health of forest-dwelling people. Studies in Africa have demonstrated this nutritional importance by identifying vitamins A, B_2, and C as being supplied by many forest foods (Becker, 1983), and have pointed out that such plants are also used largely to add flavour and variety to staple foods (Ogle and Grivetti, 1985; Sale, 1983). Work in Malaysia (Caldwell and Enoch, 1972) has shown that wild leaves from forest plants contain three to four times the amount of riboflavin that is found in domestic leaf vegetables, and greater amounts than is found in nuts, fish, milk, or eggs. Recognition of the important nutritional role played by forest foods has been further publicized by organizations such as the Food and Agriculture Organization (1992b), and the International Institute for Environment and Development (1994).

Another factor to consider here is the fact that these forest foods also provide a crucial dietary threshold for those households suffering most economic hardship. Given the very marginal difference in productivity between subsistence and starvation in households such as these (Ogle, 1984), this suggests that minor forest food products do have an important role to play in food security within forest villages. In terms of general household well-being and health, forest resources also play an important role as a source of remedies used in traditional medicine. Medicinal plants are important to forest communities throughout the world (Falconer and Koppell, 1990) and, as in these villages, in many countries they are collected mostly by women, with information about their use being passed from mother to daughter. Great potential value lies in the pharmacology of such forest plants (Prance, 1989; Food and Agriculture Organization, 1986), but to date only a tiny proportion has actually been examined (Food and Agriculture Organization, 1989). Although bioprospecting for useful plants continues unabated in many places, the problem of intellectual property rights of such knowledge has frequently brought the issue into the public eye (Sedjo, 1992b).

Medicinal plants in the villages of this study are used for the treatment of a wide variety of illnesses. Malaria (both *Vivax* and *Falciparum*) is endemic to this region, with 82 percent of households claiming to have at least one member affected on a regular basis. Treatment can be taken from the village health posts, where commercial antimalarial drugs can be freely obtained, or by self-treatment based on locally well-known remedies, using various plants from the forest. A number of plants are used as a treatment for malaria, including greenheart seeds (*Ocotea rodiaei*), quashie (*Quassia amara*), huria (*Byrsonima coriacea*), and wild corailla (*Momordica charantia*) (Fanshawe, 1948). According to village health workers surveyed and the staff at the Malaria Eradication Unit at the Moruka

Hospital, approximately half of malaria patients in this area preferred to use forest plants for treatment, mostly for the reason that "it worked better", and that they felt it prevented the return of the disease for longer periods.

Other frequently occurring illnesses are fever, colds, and diarrhoea and dysentery. Although treatment for these is freely available from village health workers, householders again often prefer to treat themselves using medicinal plants from the forest and, on average, women knew of and regularly used 8.23 different medicinal plants. According to 86 percent of women surveyed, children suffered from the most illness, and most of these occurred in the months of May, June, and July. This was thought to be because during the wet season, water in the creeks is easily polluted from latrines, etc., if flooding occurs. As a result, fewer opportunities exist for taking clean drinking water from the creeks. Also, small pools of stagnant water (breeding grounds for mosquitoes) are left standing after the rains. The widespread use of medicinal plants in these villages once again highlights the importance of non-timber products to forest-dwelling people, and it is clear that this importance goes well beyond the monetary sphere.

Wildlife Use in Amerindian Villages

The consumption of both animals and fish is very important for households such as the ones in these villages, as it is from these that most of the dietary protein is obtained (Food and Agriculture Organization, 1989). Other studies in Africa (Ajayi, 1979) have estimated the importance of bushmeat as a source of protein in rural areas, suggesting that 80 percent of village households in southern Nigeria consume bushmeat. In a country-wide dietary survey of households in Sierra Leone (Smith et al., 1979), it was found that 55 percent of households consume bushmeat. In a study in Northern Zaire (Mbaelele et al., 1987), it was shown that together fish and bushmeat provided 95 percent of animal protein for both rural and urban dwellers. In the villages of this study, a wide variety of animals and birds are caught by hunters and trappers, including agouti, labba, deer, tapir, wild hog, macaw, and parrot.

The monetary value of these catches is calculated on the basis of the market prices that they command, and money earned from this provides much-needed cash income for participating households, which is usually used to purchase items such as kerosene, tools, candles, soap, and clothing. By looking more closely at the consumption of both meat and fish within the villages, it is interesting to note that across the total population of the three villages, the average per capita weight of bushmeat consumed is 420 pounds per year, while fish consumption on average is 128 pounds per capita annually. Estimates of the volume of fish and bushmeat sales

Table 5.5 Quantity of Fish and Bushmeat Available for Sale

	Quantity of Fish Available for Sale (kg per annum)	Quantity of Bushmeat Available for Sale (kg per annum)
Assakata	10,142	10,456
Sebai	13,630	20,197
Karaburi	10,760	7,799

Note: The full imputed value of fish and meat catches also includes the volume of these consumed at home.

Table 5.6 Fish and Bushmeat Prices (per kg)

	Assakata	Sebai	Karaburi
Average price of bushmeat (G$)	28.2	46.5	45.2
Average price of fish (G$)	24.3	47.1	34.5

Note: Exchange rates US$1 = G$138 in June 1996.

are shown in Table 5.5, and the prices used for such sales are shown in Table 5.6.

Fishing Methods and Species Variation

It has been estimated that over 1,300 fish species are to be found in Amazonia, of which only about half have been classified (Barthem, 1995). In many areas of the Amazon Basin, as much as 90 percent of animal protein is obtained from freshwater fish (Hall, 1997), and in some areas, this has resulted in species depletion and loss of biodiversity (Goulding et al., 1996). In the villages of this study, a wide variety of fish is caught, and a number of different fishing methods are used. Most of these methods involve the use of materials from the forest, in the form of fibres used for fishing lines (made from *tibisiri*, a fibre from the *ite* palm), or as fishing traps (made from bamboo or *mucru*), or through the use of toxic extracts from forest plants such as huria or kunaparu, the base of important fish poisons.

It is clear from Table 5.7 that a number of different methods are in use today. The most popular method in all villages is the seine net, which is considered the best method by 42 percent of fishermen in Assakata, 39 percent in Sebai, and 25 percent in Karaburi. The reasons given for this being the best method were that it took less time than other methods (as

Table 5.7 Most Widely Used Fishing Methods, 1996

	Assakata	Sebai	Karaburi
Seine net	19.6	31.1	42.1
Hook and line	21.6	36.1	42.1
Hook on branches	13.7	11.5	0.0
Fish trap	13.7	6.6	5.3
Poison	15.7	9.8	5.3
Other	15.7	5.0	5.3

Note: "Other" here includes such methods as fishing poles (rods) and spring hooks.

nets could be left unattended during hunting trips), and that it guaranteed a catch. The hook and line method was also popular in all villages, especially in Karaburi, and this was again considered the best method by 75 percent of fishermen in Karaburi, 56 percent in Sebai, and only 25 percent in Assakata. The reasons for this being considered the best were that it was the easiest, and having many hooks meant a wide variety of fish could be caught.

Fish poison using extracts from forest plants is a traditional fishing method in this area, and predominated before metal hooks and cheap nets became available. In these villages today, however, it seems less important generally, although it is still in use in all villages to some degree. Only in Assakata do a high proportion of fishermen (33 percent) consider that this method of fishing is the best. Fish traps are another important method of fishing in Assakata, and it is interesting to note that these two methods, which depend solely on forest plants, are most important in the villages where households have little cash with which to buy hooks, nylon twine, or nets. This again highlights the important role of NTFPs in the way of life in these forest villages, especially for those households with little surplus income.

In all of these villages a wide variety of fish is caught. Those listed above are just the major ones most commonly found in catches in the wet season in June and July. Details of the types of fish most widely caught are shown in Table 5.8, and from this it can be seen that some variation exists in the types of fish caught in the fishing grounds of the different villages.

Although some species of fish do follow seasonal migrations (Barthem, 1995), it is acknowledged by all the fishermen in this area that fishing in the wet season is more difficult than in the dry season, when fish populations tend to be more concentrated in smaller bodies of water. It is interesting to note that only Karaburi fishermen catch snapper, a

Table 5.8 Major Species of Fish Caught, 1996

	Assakata	Sebai	Karaburi
Haimara	30.6	23.3	52.0
Patois	13.9	11.6	0
Yarrow	13.9	2.9	8.7
Hassa	8.3	0	13.0
Basha	0	10.1	8.7
Morocut	2.8	14.5	4.3
Snapper	0	0	8.7
Cuirass	2.8	2.9	4.3
Other	28.0	34.6	0.2

Note: The haimara listed here includes other fish with the same sounding name, such as imeri and himira, as these were stated by key informants to be the same fish. Although it may well be the case that there is some variation in these species, it is not necessary to differentiate them for the purpose of this study, and furthermore, without detailed biological data, it is not possible to do so.

seawater fish. This reflects the fact that with no direct access to a major river, fishermen from that village tend to go on expeditions to the coast to do their fishing, and they spend several days away from home to do so. In addition to the species listed here, those shown as "other" cover a wide variety of fish, including the blinka, dowalo, sunfish, arapaima, larima, lukanani, and houri.

In order to calculate the monetary value of NVP, all of these values of household outputs need to be taken into account, and village totals for these are shown in Table 5.9. Explanatory notes are given below the table for each one.

CALCULATING THE VALUE OF NET VILLAGE PRODUCT AND THE VALUE OF FOREST USE

By putting together this input and output data for each village, it becomes possible to calculate the NVP, and from that, by rearrangement of the NVP equation, the residual value of forest use can be determined. It is important to note that the values used here represent imputed values in the accounting sense, and do not in any way reflect the monetary income of the households in the study. Details of these values are shown in Table 5.10 for each village, and the calculated value of non-timber product use is also shown, both in terms of Guyana dollars and as a percentage of the NVP. These figures show that the value of these NTFPs to the households does vary between villages, and some trade-off exists between

Table 5.9 Total Value of Household Outputs, 1996

Village	Farming	Fishing	Hunting	Palm-Heart	Handicrafts	Medicinal Plants	Food and Drink from the Forest	Fuelwood Collection	Truli Roofing	Total Value of Outputs
Assakata	4,893,726	2,822,269	4,687,466	1,348,970	552,500	181,467	242,481	1,054,134	23,000	15,806,013
Sebai	12,907,689	6,766,606	10,465,432	92,000	965,000	387,915	356,994	1,209,978	31,000	33,182,613
Karaburi	26,058,800	5,709,020	7,808,030	217,350	4,746,500	373,327	552,935	3,613,502	89,000	49,168,462

Notes:

1. Annual figures for labour supply are based on 11.5 months of estimates. This is to avoid overestimation of the values, and allows for unforeseen events such as weddings and funerals, which inevitably disrupt work from time to time. Hours are weighted to take account of age and gender.
2. Prices for household items used for capital values are based on regionally adjusted average market prices.
3. Farming values are found by applying market prices for crops, to farm outputs, and summing for all households.
4. Fishing values are based on market prices for fish, applied to the volume of fish catches, adjusted by an error term. Data was collected in the wet season when fishing is harder, and so provides a conservative estimate of annual totals. This same point applies to hunting totals.
5. Hunting values use a maximum of 45 weeks of hunting estimates, to take account of seasonal factors.
6. Handicrafts are based on estimated output by craftsmen, valued at market prices for outputs.
7. Roofing materials are calculated using market prices of these materials in Moruka market, with estimates of quantities required on the basis of an average house size, using *truli* and *mukru*, with a life of 5 years.
8. Food and drink from the forest is based on household estimates of quantities of food and drink plants collected (lb) , with value calculated using a price of $30 per lb, the market price of *acquero* and *kokerites*, widely collected forest foods, and *turu*, the main "bush tea" drink. Although these are seasonal, other foods will replace them in other seasons, and so annual totals can be estimated.
9. Medicinal plants are valued on the basis of the market price for crabwood seeds, times the volume (lb) of medicinal plants collected by those households that use them. This provides a very rough indicator of this value, and is one that needs to be developed.
10. Palm-heart harvesting values are based on reported harvests priced at the buying price paid by the company agents. Figures correspond well with company records used as a cross-check.
11. Fuelwood values are based on household hours spent on fuelwood collection, for 360 days, assuming a collected load of 12 lb per hour spent, and a market price of G$7/lb (shadow price from the price of kerosene in the area).

Table 5.10 Value of Inputs, Outputs, and Residuals, 1996

Village	Population	Labour Values	Capital Cost per Annum (8%)	Depreciation (20%)	Total Value of Inputs	Total Outputs	Total Forest Residual	Forest Inputs as a % of NVP
Total values per village								
Assakata	167	10,460,108	45,630	114,075	10,619,813	15,806,013	5,126,544	32.4
Sebai	201	12,936,693	112,104	280,260	13,329,057	33,182,613	19,853,556	59.8
Karaburi	559	27,249,367	230,416	576,041	28,055,824	49,168,462	21,112,638	42.9
Average values by household								
Assakata	7.3	454,787	1,984	4,960	461,731	687,218	222,893	–
Sebai	6.5	417,313	3,616	9,041	429,970	1,070,407	640,437	–
Karaburi	6.3	306,173	2,589	6,472	315,234	552,455	237,221	–

competing activities. For example, in Assakata, where significant effort is put into palm-heart harvesting, the earnings from this are almost double the amount earned from it in the other villages. At the same time, householders in the other villages earn significantly more from handicrafts than do those in Assakata. This illustrates the possible trade-offs that may exist in this type of economy, and the variety of livelihood choices that are available to households. There are certain to be environmental implications resulting from these choices, and it may be through a more detailed analysis of some of these that some progress may be made in the achievement of "sustainability".

As explained previously, the computed value of $p_f F^h$ is shown as the *total forest residual*, and in the last column of Table 5.10 this is shown as a percentage of total NVP. Although some of this value can be attributed to social capital in the form of embedded knowledge, the figures shown here represent primarily the contribution made to the production process by land, that is, the rent. It also can be described as the "value added from nature", or the use-value of the forest resource to the Amerindian people of these villages. In the case of these three particular villages, the total net value added from nature is G$46,092,738, which represents the value generated by the anthropogenic use of non-timber products from the forest. It is important to note that no account has been included for the value of *timber* products, as these are not commercially used by these communities, and the number of trees used for timber on a regular basis is very small, relative to the normal scale of commercial forestry operations.

Since this figure for forest use represents the use of natural capital (and an element of social capital in the indigenous knowledge of plant use held by the people in these villages), it is necessary to depreciate its value in the same way as man-made capital is depreciated in order to take account of the cost of capital consumption. Using the same rate of depreciation of 20 percent as applied to the productive household capital considered above, this means that the net annual value of forest use by the people in these villages amounts to G$36,874,190. Taken across the total population of 927 persons in these three villages, the average value added from forest resources to the labour and capital inputs of the villagers, is G$39,777 *per capita*. This figure is not insignificant, and there would be a negative impact on village well-being should access to it be lost. Furthermore, this estimated level of rent accruing to nature as a result of the use of these non-timber forest resources is, *ceteris paribus*, an infinite income stream. Assuming such an income stream is generated from sustainable, non-depleting, livelihoods, it is essential that the quality of this income stream be preserved for future generations, through sustainable management strategies.

THE IMPORTANCE OF BROADENING VALUES IN DECISION MAKING

In the evaluation of development projects, decision makers require information about the returns to be gained from alternative land-use options. This is done usually by calculating whether the project is financially worthwhile. One of the most frequently used means of doing this is by calculating the *net discounted future cash flow,* known as the *net present value* (NPV). This relatively simple calculation enables decision makers to assess the viability of a project, and allows comparisons to be made between competing projects. It is based on the economic principle of *opportunity cost*, which represents the *benefits given up* from any alternative (competing) uses. In practice, the cost of this alternative is often calculated on the basis of the revenue that could arise from investing the same sum on the capital market, at the current rate of interest.

The NPV Decision Rule

Mathematically, this NPV is calculated using the following formula:

$$NPV = \sum_{i=0}^{n} \frac{A_t}{(1+r)^t} \qquad \textbf{(6)}$$

where A_t is the expected project net benefit in time t (t has the values from year 0 to year n, where n indicates the expected number of years in the life of the project) and r is the annual rate of discount (interest).

When this calculation is made, if the final value is a positive one, the project is considered to be worthwhile, whereas, if the value is negative, the project would not be recommended. The relative size of the NPVs of the various projects can also be compared so that decisions can be made about which development options are likely to be most successful.

In tropical forests, competing land-use options could include cattle ranching, timber extraction, mining, or small-scale farming. In Guyana, the viable options immediately available in many areas may be limited to timber extraction or small-scale subsistence farming. In both cases, failure to account for the non-timber use values of the forest will result in a miscalculation of the NPV of each land-use option, clearly having important policy implications. To date, systematic information on the economic role of non-timber products has been unavailable in Guyana and, as a result, these have not been included in development project appraisal.

This highlights the importance of a participatory approach in socio-economic research. By incorporating participatory techniques, data collected is likely to be both more valid and more reliable, and by taking local knowledge into account, decisions that include the interests of a wider range of stakeholders are more likely to be made. Overall, in terms of the effectiveness of any project, both of these factors will have a positive influence, and may contribute to a reduction in the implementation of policies that in the long run may prove to be mistakes.

THE SOCIAL AND CULTURAL IMPORTANCE OF NON-TIMBER FOREST PRODUCTS

As has been shown by the above analysis, the forest has a significant role to play in the economy of Amerindian villages, but its importance goes beyond the monetary sphere. In addition to the quantitative data collected for this research into monetary values, other qualitative information was collected on peoples' attitudes to a number of different issues, concerning both future development options and the importance of forest functions. The objective of this was to broaden the economic concept of value, and to highlight the other dimensions of value as perceived by these forest-dwelling people. For brevity, some illustrative statistics of these broader values from one village are shown in Table 5.11, and these figures indicate some interesting points on how the villagers of Sebai feel about the forest and their lives within it.

Table 5.11 Attitudes to Life in Sebai, 1996

How People Feel About Aspects of Life	% Men	% Women
Forest is considered as *important* to the family	92.8	93.3
Plants from the forest are considered *essential* to life	100.0	100.0
Life in the future is considered to be *easier* than at present	65.5	65.4
Feel *happy* with life	83.3	86.2
Think children should *stay* in the village	61.3	48.2
Think their lives would improve with a *job or more money*	53.2	32.1

While 100 percent of all villagers think that plants from the forest are essential to their way of life, only 92.8 percent of men think that the forest generally is important for their families, and 93.3 percent of women feel that way. In spite of the subsistence lifestyle that they live, over 80 percent of both men and women consider themselves "happy". However, 53 percent of men would like to have more money or a job with a salary, but for women this seems to be less important; only 32 percent of them feel

this way. As many as 55 percent of men questioned felt that the standard of living in the village was better than before. In addition, of both women and men, 65 percent felt that life in the future would be easier than at present. Nevertheless, only 48 percent of women want their children to stay in the village, while 61 percent of men would like them to stay there.

In Table 5.12, men's and women's views on various development issues are shown. This information was collected by asking respondents to indicate, on a scale ranging from 0 to 5, how important they considered these issues to be. The numbers shown indicate the mean score assigned to each issue by all respondents (representing 100 percent of households), and suggest that both men and women see some variation in how such issues influence their own families and the community. Indications of how they view future developments are given by the scores relating to the importance of these issues in their children's lifetime.

From the data shown in Table 5.12, it can be seen that health is considered a paramount concern for both the family now, and the community at large, but men feel that it will be less important in the future. Perhaps this suggests that they think there will be a general improvement in health over time. Not all households consider education as important to the family now (probably due to their children having already completed their education), but all did suggest that it was a crucial issue for both the community and future generations. This seems to be confirmed by results from other qualitative data collected from these households, which indicates that 63 percent of men consider that the future will be easier for their children due to better education and more opportunities, while only 56 percent of women felt such optimism. Although men seem to consider "nature and environment" as being more important to the community, and to the future than women do, women put more importance on both "business" and "agricultural development" for all groups.

With the rapid rise in global tourism and the increasing demand for various types of nature tourism, this village is relatively well placed to consider this as a possible future development option. For both men and women in the village, tourism is clearly seen currently as being relatively unimportant, but it is considered as being more important for the community than it is for their families now. This suggests that perhaps these households acknowledge the potential from tourist development, but feel that their own families are not likely to be able to benefit from it. This seems to be confirmed by the fact that, for both men and women, tourism is considered likely to be more important in their children's lifetime than it is for their families at present, and again, this suggests that the households are open-minded towards such possible development in the future. This indicates that if tourism is to be used as a development strategy

Table 5.12 Relative Importance of Various Development Issues, as Indicated by Men and Women

Important for:	Education	Health	Nature and Environment	Business Development	Agricultural Development	Tourism
Men's Views						
The family	4.81	5.00	4.52	4.39	4.58	3.10
The community	5.00	5.00	4.81	4.74	4.90	3.81
Children's lifetime	5.00	4.94	4.71	4.74	4.45	3.65
Women's Views						
The family	4.93	5.00	4.63	4.73	4.93	4.20
The community	5.00	5.00	4.77	4.91	5.00	4.61
Children's lifetime	5.00	5.00	4.63	4.90	4.87	4.30

Note: Figures show the mean scores assigned to each of the issues shown, where respondents gave a score from 0 to 5 to indicate the level of importance of each issue.

within this area, it would be important to try to incorporate as many householders as possible in the operation, to ensure that any benefits accruing from it would be spread as widely as possible throughout the community. Such a development strategy could be designed along the lines of ecotourism, where earnings are retained as much as possible within the community and tourism multipliers are maximized. Such a strategy would impact on all sectors of the local and national economy and could bring much needed revenue to villages such as this. If such a tourist trade were organized in a responsible and controlled manner, with society and the environment as the major constraints, any negative impacts arising from it would be minimized.

ATTITUDES TO THE ENVIRONMENT AND FOREST FUNCTIONS

To investigate how the forest itself is perceived by people such as these, respondents were asked to consider a number of forest functions, and to assign a value to indicate the importance of each. Respondents from 100 percent of households represented were asked to assign a score from 0 to 5 on each of the forest functions, according to how important each was. Since bead counters were used to assign scores, the numbers obtained are implicitly on an interval scale, thus amenable to parametric testing. When questioned about these forest functions some gender differences appeared to exist in the village, and this is shown in Table 5.13, which shows the mean and standard deviation of scores given by men and women for each forest function. When analysed using *t* tests, there appeared to be a significant difference between men's and women's responses at the 5 percent level.

It is clear from these figures that, for both men and women, a high value is placed on such obvious forest functions as provision of shade, food, fuelwood, and building materials. While men in particular place a higher value on the forest as a hunting place, women give a higher value for its role as a source of medicine and also as a source of money income. In relation to the more obscure forest functions such as influencing weather and rainfall, no gender differences seem to exist. But in the case of affecting water flows, women gave a higher value, possibly due to the long periods of time spent by women washing clothes in the river, while men give a higher value to the forest being culturally important. This suggests that gender differences do exist in perceptions of forest functions, and in this village, it appears that, on average, women assign a higher "value" than men to the functions tested. Given the dominant role of women in child-rearing, this gender difference in "values" may have some

Table 5.13 Gender Differences in Forest Functions

Forest Function[a]	1	2	3	4	5	6	7	8	9	10	11	12
Men's mean score	5.00	3.67	5.00	5.00	3.43	3.64	3.64	5.00	1.93	2.87	1.74	3.80
SD of men's scores	0.00	1.49	0.00	0.00	1.65	1.35	1.25	0.00	1.63	1.62	1.77	1.85
Women's mean score	5.00	3.90	5.00	4.87	3.43	4.17	4.00	4.93	2.57	3.52	2.50	3.20
SD women's scores	0.00	1.45	0.00	0.73	1.83	1.23	1.23	0.37	2.03	1.66	2.06	1.99

[a] Forest functions:

1. Shade
2. Money income
3. Source of fuelwood
4. Source of building materials
5. Influences rain and weather
6. Source of medicine
7. Source of food
8. Hunting place
9. Burial ground
10. Affects water flows
11. Spiritual place
12. Culturally important

Table 5.14 Men's Perspectives on the Environment

Observation from the Last 10 Years	% Men
Think there are *fewer* animals in the forest now than before	65.5
Think there are *fewer* birds in the forest now than before	51.7
Think there are *more* insects now than before	96.6
Think there is *more* wind than before	41.4

important implications for sustainability and for environmental education in these areas.

In order to investigate what environmental changes had occurred in the area, some simple questions about such changes were put to the men. The responses shown in Table 5.14 indicate some suggestion that the forest ecosystem in which they live is currently undergoing a degree of change which may not be sustainable, but much more detailed scientific analysis would need to be made before such an observation could be confirmed.

During this investigation, other questions were asked about the use of the forest and the items that would be missed most if it were to disappear. Responses of householders to such questions varied between the villages. Householders in all the villages showed a high proportion of responses indicating that food would be missed, with the figure for Assakata being 31 percent, with a total of 24 percent being made up of wild forest fruits. In Sebai the figure indicating that food would be missed totaled 30 percent, with only 2.5 percent mentioned specifically as fruits, and in Karaburi, 37 percent mentioned food, with 15 percent being mentioned as fruits. This appears to confirm the idea that forest foods are of major importance for forest-dwelling people, and that they supply essential vitamins and minerals to their diet.

In addition to food items, building materials are considered of great importance by householders in all villages. In Assakata, 34 percent of responses indicated building materials as important items that would be missed, similar to the 30 percent indicated by Sebai respondents, but rather higher than the 17.5 percent mentioned by those in Karaburi. Handicraft materials were also seen as important, with 26 percent of respondents in Assakata and 38 percent in Karaburi indicating that these items would be missed and, as a result, household incomes would inevitably be affected. In contrast, householders in Sebai did not mention these items as being a major loss if forests disappeared.

In Assakata, 26 percent of householders mentioned that medicinal plants would be missed, while in Sebai the figure was 13 percent, and in Karaburi the number dropped to just 1.3 percent. In contrast to these relatively low

figures, the number of households actually collecting medicinal plants in each village is quite high, being 52 percent of households in Assakata, 34 percent of households in Karaburi, and 67 percent in Sebai. One of the possible reasons for this large difference between actual use of plants and appreciation of their importance is the fact that medicinal plants are usually collected and used by women, so it is likely that men would thus not necessarily think of medicinal plants as readily as women.

This brief analysis does confirm that environmental knowledge about the forest is part of the Amerindian culture, and in any assessment of forest values this must not be forgotten. In addition to the monetary value of forest products and services, non-monetary values such as the ones discussed above must be respected if survival of forest communities and their ecosystems is to be achieved.

IMPLICATIONS FOR DEVELOPMENT

The solution to the problem of environmental valuation is an important hurdle to be overcome if sustainable development policies are to be achieved. If such calculations can be made and added to conventional investment appraisal techniques, it could prevent the type of policy failure so widely seen throughout the world. Participatory research enables the policy focus to switch from the macro to the micro level, and while macroeconomic and social policies are still needed, they should be complemented by micro-level policies that enable people at the village level to contribute to their own development process (Burkey, 1993).

This type of policy option is illustrated by the very successful microlending policies of the Grameen Bank in Bangladesh. In stark contrast to the activities of the international multilateral lending agencies, this scheme has pioneered the process of "village banking", where loans are provided to villages as a whole, with these then being distributed to householders as small loans on an individual basis. Through this system, householders are also encouraged to make small-scale savings, and as a result, a gradual mobilization of credit within the community is developed. Microbanking systems such as this have already been implemented in over twenty-five countries in Latin America, Asia, and Africa, and in most cases the loans range between US$80 and $100 (Small Enterprise Education and Promotion Network, 1995). An estimated total of US$2.5 billion has already been successfully mobilized worldwide for these small-scale loans, and repayment rates consistently exceed 90 percent (World Bank, 1997). This is seen now as an important way of helping poor communities, and in particular as a way of empowering women in rural areas, which, according to the president of the World Bank, James Wolfensohn,

is "absolutely essential to the development of both economic and social justice in our world" (Wolfensohn, 1997). In villages such as these in Guyana, the provision of small-scale credit facilities would enable households to operate more effectively within the monetary economy, and possibly would reduce pressure on the forest resources at their disposal.

To achieve sustainability in any economy today, the needs and concerns of all stakeholders must be addressed. Looking more specifically at what can be done to improve the situation for forest households such as the ones in this study, a number of recommendations can be made. In addition to the possible creation of micro-credit systems for rural development, many other practical development options could be implemented. These would make a real contribution to the eradication of poverty in these areas, and could include:

- Workshops to disseminate the principles of sustainability in rural areas to empower local populations.
- Relevant training for women in tailoring or other activities to enable the development of cottage industries.
- Training in agroforestry techniques to enable farmers to make better use of their resources.
- The introduction of soil-enriching crops such as soya bean may lengthen the time period in which forest fields can be used.
- Research could be conducted in villages such as these to investigate the application of indigenous NTFPs as insecticides.
- The provision of affordable better local and regional transportation for both passengers and freight would improve the quality of life in households in villages such as these.
- The provision of storage facilities for crops would enable producers to better organize their marketing strategies.
- Value added from agriculture could be increased if processing could be organized for such crops as peanuts, pepper, etc.
- An investigation could be made into the potential for marketing and export of such exotic products as orchids and butterflies, which can be "farmed".
- The development of local industries based on the exploitation of non-timber forest products would provide employment opportunities. This could include processing and packaging of "bush teas", herbs, or medicinal plants, or furniture from forest plants such as *nibbi* and *kufa*.
- Domestication of local species for meat production could produce sustainable income flows from both local sales and exports.

- Improved marketing of wildlife may increase the return for those directly involved, leading to a reduction in catch rates since less would have to be caught to meet the monetary demand from the trappers' households.
- Opportunities for the development of ecotourism should be examined. This could include the provision of "adventure travel", bird watching, photography, etc. This would have to be organized on the basis of participatory management, and could be incorporated as part of a national strategy for ecotourism development in Guyana.

CONCLUSION

A number of major investigations to address the question of forest utilization in Guyana have been made (Sizer, 1997; Flaming, 1995; Forte, 1995), and it has long been known that non-timber forest products play a very significant role in the livelihoods of tropical forest dwellers (Forte, 1996). In the above analysis, the use of non-timber forest products in Amerindian households has been examined, revealing this use-value in monetary terms. Conventional forest valuation procedures have to date failed to take account of such values (United Nations Environmental Programme, 1993), and as a result, policy makers have neglected to consider them as an important factor in the decision-making process. There is no doubt that forest disturbance as a result of large-scale logging is likely to reduce potential for the achievement of sustainability (Redclift, 1987). If national decisions are being made on how forest resources are to be used, it is important that the *currently neglected value* of non-timber forest products be included.

Taken across the total population of the villages of this study, the monetary value of forest use per household is G$257,861 per annum (US$1,868 converted at 1996 exchange rates of US$1 = G$138). This represents the monetary return to forestland, generated as a result of the investment of labour and capital. This is an *imputed accounting value* that can be of use to policy makers, and also could have important implications for people who live in such villages. Estimates like this could be used as an indicator of the amount of compensation which, assuming an infinite income stream accruing from sustainable subsistence livelihoods, would need to be paid *in perpetuity* in the event of such villagers losing their access to the forest as a household input. This situation may arise, for example, in a location that was due to be taken over for the purpose of developing a national park, a logging concession, or any other activity

that may result in the loss of access to products and services of a forest resource. When combined with conventional timber values, the figure could also be used as a guide for the purpose of evaluating the cost of a forest fire, flooding, or other such ecological disruption.

Failure to take account of both the economic and social dimensions of these non-timber values will inevitably lead to policies that may bring about severe ecosystem degradation. In addition to the economic loss incurred by such policy failure, it is also possible that a total erosion of the Amerindian way of life may result (Henfry, 1995). The loss of such social and biological diversity could have irreversible consequences, and are contrary to the terms of numerous international agreements to which Guyana is a signatory. To avoid this, development options in communities such as these could be directed to more small-scale programmes involving micro-credit (Wolfenson, 1997), rather than large-scale so-called development projects, which often cause both environmental degradation and social disruption for very marginal economic gains.

Given the stability and possible sustainability of the traditional livelihoods of the Amerindian people, and the expertise about the forests that they embody, it is foolish for this significant social group to be neglected. Poverty alleviation is an important first step to be addressed if further weakening of this way of life is to be avoided, and development strategies to overcome this need to be drawn up. The purpose of this study is to contribute to this objective by providing additional information about life in Amerindian forest villages, and about the economic and social importance of non-timber forest resources for these groups. It is hoped that this will make some contribution to the achievement of sustainable resource management in Guyana, and towards the maintenance, and indeed strengthening, of the Amerindian way of life.

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6 Rural Poverty and Development Planning: A Case Study of Moruga and Cocal in South-East Trinidad

Judy Rocke

INTRODUCTION

Rural areas in developing countries are usually regions that experience acute deprivation in the provision of, and access to, basic services. Many of the programmes designed by international lending agencies to reduce national debt and promote rapid economic growth have exacerbated the problems of inequality within developing countries. Developing nations like those in the Caribbean have been affected adversely by the forces of globalization and market liberalization. Despite this, there have been some serious attempts to address the problems of inequality in developing countries in the 1990s. Studies have examined the extent of deprivation of basic services and poverty in the wake of structural adjustment programmes or new trading relations. International lending agencies now insist on the submission of proposals that contain detailed policies for addressing poverty and the deprivation of basic needs (Salop, 1992). Countries must monitor living standards through periodic surveys, so the result has been a wealth of data that was absent previously (Thomas, 1995).

In the post-independence era in Trinidad, after a period of optimism and economic boom, the country experienced economic decline between 1982 and 1989 with the collapse of oil prices. In the 1980s the government was forced to enter a borrowing relationship with the International Monetary Fund and the World Bank. Oil revenues again declined in 1998 and 1999. Throughout this period the rural areas of Trinidad lagged behind the urban areas in terms of economic development and infrastructure provision and became a typical rural periphery, characterized by poverty and deprivation.

This chapter was originally part of doctoral research (Rocke, 2001) that examined rural development in south-east Trinidad. The purpose was to develop alternative methods for assessing rural poverty and the extent of

rural deprivation that are appropriate to the context of village communities in Caribbean islands. The chapter considers the problem of uneven development in Trinidad, and develops a methodology for the assessment of rural poverty at the micro-scale that is applied to local village communities in the south-east of the country. The methods are based on a compilation of a community development composite index from seven empirically derived indicators of poverty and rural service provision. An exploratory community impact assessment considers the consequences of three different development options for the villages in the study area.

PATTERNS OF UNDERDEVELOPMENT IN RURAL TRINIDAD

The geographical process of urbanization in Trinidad and the growth of the Port of Spain urban corridor have been documented in Conway (1989) and Potter (1998). The national population distribution is geographically uneven. Fully 65 percent of the population is considered urbanized (United Nations Development Programme, 1997) and the remaining 35 percent live primarily in the south-east and west of the island. These rural villages number less than 3,000 persons whose economic activities are mainly subsistence agriculture juxtaposed with larger commercial farms and estates. Migration of younger people to urban areas in search of education and employment is characteristic of Trinidad and Tobago, as elsewhere in the developing world (Shaw, 1975; Central Statistical Office, 1980).

Uneven patterns of settlement and development have characterized Trinidad's colonial history. Lewis (1973) found that after apprenticeship some ex-slaves had settled close to plantations and urban centres for seasonal employment or to work as craftsmen. Ramesar (1976) documented the arrival and settlement of East Indian indentured labourers and noted that economic development was concentrated in the west and along the east–west corridor even at that time. She argued that rural underdevelopment was the deliberate policy of the sugar interests, to keep potential labourers near to the estates and urban areas. However, there were agricultural programmes dating back to the 1890s in which some lands in the south and east of Trinidad were leased out to encourage cocoa and coffee production. Larger government tracts were held in reserve as protected watersheds and for future oil prospecting, rather than being used for settlement and agriculture (Farrel, 1974). This policy helped create an underdeveloped south-east region, without all-weather roads, credit facilities, medical care, or a reliable public water supply.

The economy of Trinidad and Tobago underwent considerable expansion from the 1950s to the beginning of the 1980s. Windfall oil revenues

amounted to in excess of 70 percent of total government income. However, there was little integration of the oil industry with the rest of the economy as it was under the control of the foreign-based international companies. Foto (1977) argued that the reliance on oil revenues caused the concentration of activities and employment opportunities within towns and the decline of the rural sector.

The failure to diversify the structure of the economy was not for lack of effort. Harewood and Henry (1985) have reviewed government attempts to redress inequality of national development during the period 1956 to 1981. The long-awaited National Development Plan (Town and Country Planning Department, 1983) proposed a functional hierarchy of urban settlements and targeted six depressed rural areas for development programmes. Conway (1984) critically reviewed the plan, questioning the effectiveness of its growth pole models, warning that they tended to concentrate economic activities in urban areas. According to Demas (1984), government was the largest single investor in the country due to its reinvestment of the oil revenues. However, the failure of some large-scale government projects was due to mismanagement and, perhaps, too ambitious an attempt to establish a modern capital sector in as short a time as possible. A multiplicity of projects overheated the economy and caused income and price inflation. At the same time, the agricultural base declined inadvertently due to its disadvantaged position *vis-à-vis* the modern capitalist sector, where incomes were higher and there was less investment risk.

The collapse in oil prices after 1981 sharply reduced the government's ability to maintain a high level of spending on redistributive programmes and basic needs. It forced attention towards the diversification of the economy and the reduction of state involvement in macro-level investment projects. Since 1988, the government has had to reassess its dependence on oil and tried to diversify the economy by developing a manufacturing sector with investments in heavy industry and natural gas (Wilson, 1996). The oil price declines of the 1990s did not impact as heavily as in the 1980s, but the rural economy continued to lag behind the modern urban sector.

Since the adoption of cost-cutting measures in the 1990s, there has been a reduction in spending on development programmes, and the number of households falling below the poverty line has increased. The national survey of household expenditure for 1981 to 1988 showed that poverty had increased from 3.5 percent to 14.8 percent of households (World Bank, 1991). Mindful of the negative impact of debt reduction programmes, the World Bank has requested that studies be conducted to monitor poverty levels and to propose poverty reduction and poverty

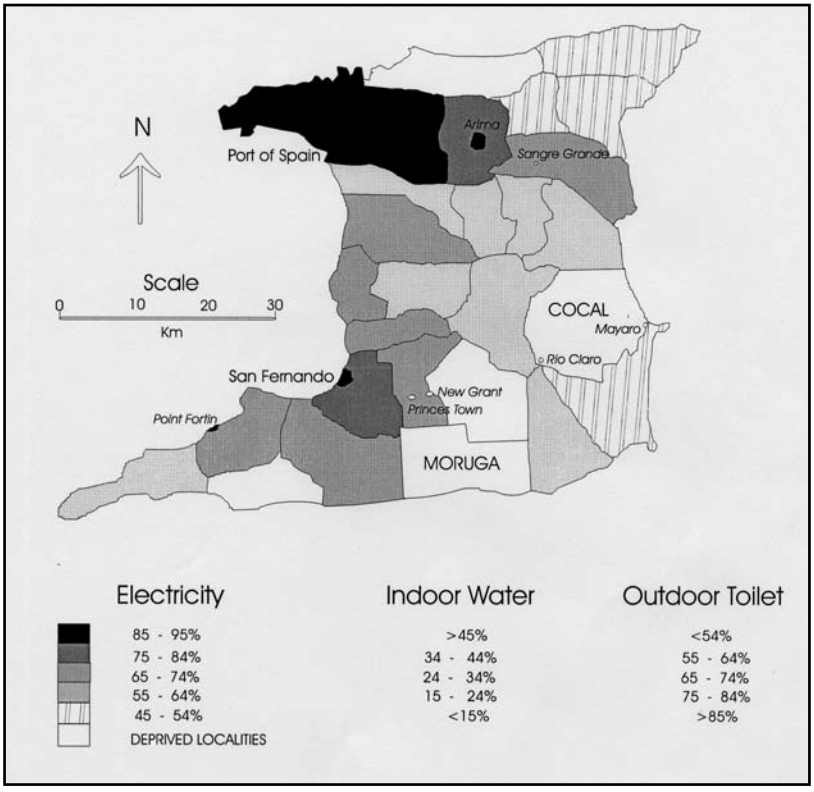

Figure 6.1 Deprived regions in Trinidad, 1980 (Raw data and base map from Central Statistical Office of Trinidad and Tobago, 1985.)

alleviation plans. These studies recognize the presence of relative poverty in rural as well as urban areas (Henry, 1992).

South-east Trinidad is one of the poorest regions of the country, as identified in the National Development Plan (Town and Country Planning Department, 1983). The plan identified five wards (including Moruga and Cocal) which were deprived of basic services and recommended them for special rural development programmes. A national poverty study by Deosaran (1994) still placed Moruga and Cocal among the most deprived wards in the country. As part of the methodology developed for this research, an analysis of the 1980 census data used three variables (piped water supply, electricity supply, and toilet facilities) to map patterns of rural deprivation. Figure 6.1 shows that Moruga and Cocal featured among the five poorest wards in the country.

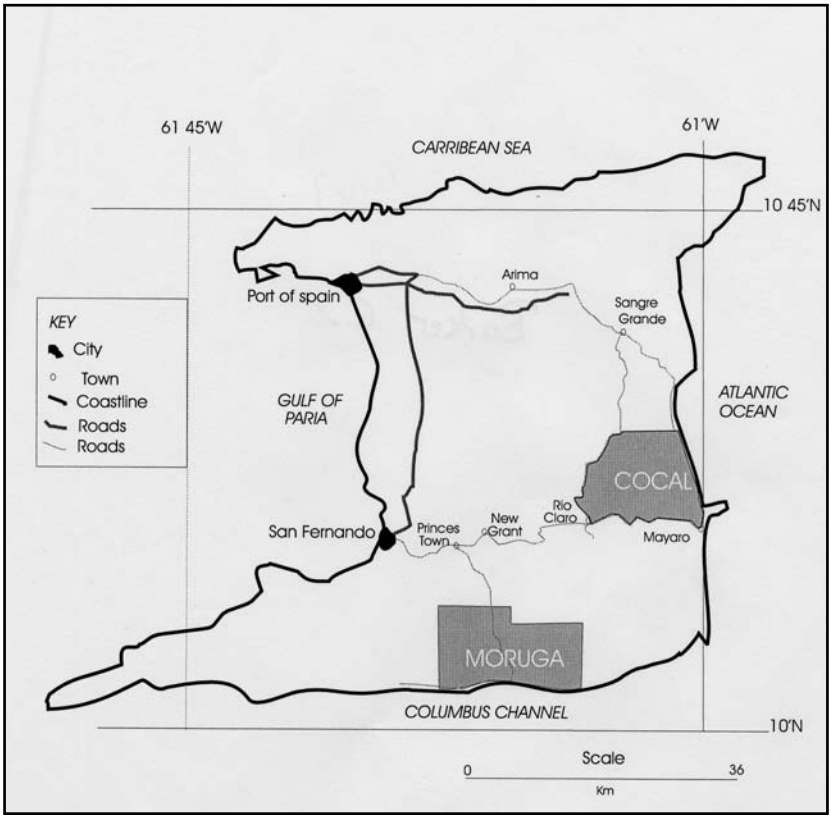

Figure 6.2 Location of study areas in Trinidad (Base map from Town and Country Planning Division, 1984; Central Statistical Office of Trinidad and Tobago, 1995.)

BACKGROUND TO THE STUDY AREA: RURAL SOUTH-EAST TRINIDAD

The study area is located on the undulating plains to the south and east of the Central Range, and the main urban centres are Princes Town, Rio Claro, and Mayaro (Figure 6.2). Administratively, the area is divided into the wards of Moruga and Cocal. Both areas are geographically extensive in relation to their small populations and rural settlement pattern. Moruga ward covers an extensive area approximately 37 km^2 and includes the southern limits of the Naparima Plains and the Moriquite River valley,

with forest reserves extending to the southern coastline. Note that the village of Upper Barrackpore in the north-west of the ward of Moruga was excluded from the study as it is physiographically, economically, and agriculturally part of the Oropuche river valley. Cocal ward is also extensive, and covers about 51 km^2, including the 2,400-ha Nariva Swamp, the eastern foothills of the Central Range and protected forest reserves.

A text edited by Cooper and Bacon (1981) contains descriptions of the soils, forest, and aquatic life of the region. The soils found in the valleys are clay-alluviums and a feature of the high clay content is restricted drainage. Periodic flooding in low-lying terrain during the wet season can impede transport and communications, especially near the low-lying wooden bridges in Cocal. Landslides are a problem in the eastern foothills of the Central Range and in the ward of Moruga, especially along roads located on the crests of ridges. High rainfall (over 2,000 mm) contributes to the problem of surface run-off and landslides on these friable soils. Free-flowing water often damages road surfaces as it exits off the lowest point on the roadway, creating gullies. Major routeways in Moruga and Cocal have been cut off on a number of occasions in the past, the evidence for which are numerous sections of the road with varying sizes of retaining walls, gabion baskets, and planted stands of bamboo trees.

The wards of Moruga and Cocal are also located within the South-East Conservancy – some 105,065 ha of land managed by the Forestry Department. Eighty percent is state owned and the remaining 20 percent privately owned. Two thirds of the state lands is leased to national oil companies (Ramlal, 1991). There has been some encroachment of the forest reserve by farmers in Cocal as less of the land there is reserved for oil prospecting. However, agricultural lands are located adjacent to the major roads that connect the area to the western centres of Princes Town and San Fernando, which are major urban markets for local foodstuff.

There has been little research in the study area to date other than work focused on the preservation and rehabilitation of the Nariva Swamp, the second largest mangrove wetland in Trinidad, which has been under threat from incursive rice and vegetable farmers. Environmental groups have sponsored studies on the impact of encroachment into the swamp and the socio-economic status of the households earning a living from activities such as fishing, crab catching, and agriculture (Ramsar Convention Bureau, 1996). In addition, Sletto (1998) has used a political ecology framework to detail the fragile relationships between the economic and subsistence aspects of villagers' lifestyles in Kernahan village in east Cocal, and the interrelationships between rice cultivation and the local ecology of the wetland and its seasonal rhythms.

ANALYSING SPATIAL PATTERNS OF RURAL DEPRIVATION AT THE VILLAGE LEVEL

Previous studies of rural poverty at the national level in Trinidad have failed to capture in adequate detail the problems facing rural areas. A problem is that the proportionate sample size suitable in a national survey is, at the village level, too small to capture the detailed characteristics of local communities. For example, in a national study on female fertility and family planning (Harewood, 1978), rural communities in the entire region of Moruga and Cocal were represented by only 14 of the 2,000 interviews that formed the national survey. This clearly amounts to very little information about a region with a 1990 population of 6888 in Moruga, and 7,243 in Cocal. The largest villages in Moruga in 1990 were Basse Terre (2,354), La Lune/Marac (1,542), and Penal Rock Road (1,548). The smallest was St Mary's (342). In Cocal, the village populations ranged from Ecclesville (2,089), Union (1,542), and Biche (1,433) to Charuma (387).

In this research, the detailed characteristics of rural life and the perceptions of the quality of life experienced by residents in the study area were investigated by in-depth household surveys. A stratified random sample of 10 percent of all the households in eleven villages located in the two wards was undertaken. The data collection period had to be staggered over two field periods: the survey data in Moruga was collected during the summer of 1996, and a similar survey was conducted in Cocal in 1997. In total, 319 households were interviewed, amounting to information on 1,479 household members, approximately equally divided between the two wards.

The following data is illustrative of the type of information collected. It was estimated that 31 percent of the population in Moruga and 29 percent in Cocal was less than 15 years old, and 10 percent and 8 percent, respectively, over 65 years old. The largest occupational category in Moruga was retired pensioners (many of whom were engaged in subsistence farming), followed by manual workers and farmers. In Cocal, heads of households were mainly manual workers, followed by retired pensioners and farmers. In terms of the building material of housing, 70 percent of households in Moruga and 42 percent in Cocal lived in wooden houses. Assessments were made about housing and living conditions. In Moruga 53 percent of the houses were classified as "fair" and 31 percent as "inadequate". The corresponding percentages for Cocal were 48 percent (fair) and 19 percent (inadequate).

Ownership and access to domestic capital were also documented. In Moruga, vehicle ownership levels were below 20 percent of households.

At the time of the survey, only 76 percent of Moruga's households had electricity (64 percent operated refrigerators), while 53 percent of households had to use public telephones, although the telephone service was being upgraded during the course of the data collection. Vehicle ownership levels were higher in Cocal (34 percent, but still low), while 88 percent of households had electricity.

The residents were encouraged to express their attitudes to life in rural areas and general levels of satisfaction, and their preferences for living in rural or urban areas. Fully 75 percent of respondents in Moruga felt the area was poor, and restricted opportunities for employment were frequently cited by way of explanation for this view. Limited household assets and poor educational facilities were also mentioned as evidence of poverty. In Cocal, 61 percent of household heads considered the area to be poor, and 31 percent felt it was average, but these figures were reversed when asked about their own households (only 35 percent said they were poor; 63 percent felt they were average). Interviewees were also asked to rank the basic needs of their communities. Employment emerged strongly in both areas as the single most important aspect of development that residents felt needed to be addressed. Water supply was ranked second in importance in Moruga, while education was the second-ranked basic need in Cocal.

The next stage of the research methodology involved a search for objective methods to measure and assess the extent of rural poverty in the area, using the detailed data collected in the questionnaire surveys. It was felt to be important to use methods that allowed for the disaggregation of the data to the level of individual village communities within both administrative wards, which as noted above are fairly large and geographically extensive. Many methods have been devised to assess economic and social indicators of rural poverty and service provision in developing countries (Sen, 1976; Ravillion, 1992; Baker and Grosh, 1994). But two major considerations affected the choice of method in this study. Social-cultural data collected for analysis are typically intrinsically skewed (McGranahan et al., 1985) and so require non-parametric statistical techniques. Also, since development is a multifaceted phenomenon, composite indicators combining several variables were deemed necessary. The two approaches that seemed most applicable given these constraints were those used by Smith (1987), working in rural England, and Ijere (1989) in Nigeria. Both techniques are suited to providing a geographical perspective in the analysis of rural development problems.

Smith designed two composite indices that used rank order techniques and standard scores to combine information on different variables relating to the level of rural service provision. On the other hand, Ijere's method

uses location quotients to compare the percentage of a service supplied to the region to the supply that community should have received if there was an equitable share of the service for each of the villages in the region. It allows the relative access to services at certain locations to be compared to the access enjoyed by the entire region and thus overcomes some of the limitations of Smith's method.

A community development composite index was devised based on modifications to the Ijere and Smith methods. It combines location quotient and rank ordering methods. Location quotients are ranked, and their rank order used rather actual numerical values, a procedure felt to be more appropriate given the nature of the data. Other modifications were made to operational definitions. For instance, Ijere used the number of primary, secondary, and tertiary graduates as a social indicator for education; for Trinidad the number of persons over 15 years old still attending an educational institution was thought to be a more valid measure of educational attainment.

Seven indicators of rural development were compiled in the construction of the community development composite index. These indicators are labelled as water supply; household assets and possessions; income and finance; transport and communications; health; employment; and education. For many of these indicators it was necessary to use and combine several variables from the survey data to capture their essence. Both village-based information and data from individual household responses were used in compiling these indicators. An eighth indicator, regional justice, was considered important in the initial stages of the study, but was not included in the final analysis because the residents did not place any significance on it in their survey responses, and also it was difficult to establish a suitable operational definition.

Some of the operational considerations in compiling the indicators of poverty and rural service provision are illustrated below. Water supply was perceived to be the most significant of all rural services. An indicator of water service provision in the communities was compiled from several variables, including the percentage of the population obtaining a supply of water from their roof and the number of individuals who knew the cost of a piped domestic water supply.

The indicator on possessions was included to give both a non-monetary proxy of the quantity of assets available to the residents and a check on income level. The indicator on finance was derived from the percentage of households earning in excess of TT$1,000 per month (the poverty line adopted by the author) and the percentage of households able to access credit. Communication was felt to be an important measure of service provision because residents perceived the rural south-east to be isolated.

The variables included related to rental of the domestic telephone, the use of the public telephone, and the ownership of a private motor vehicle. Health was compiled from three variables, the number receiving medical care, the number reporting a recurring illness, and the number who had treatment at the hospital. The other two indicators were unemployment and the education indicators. The unemployment indicator was based on the number of individuals 15 years old and over who were available for work. The education indicator reflected the number of students over 15 years of age who were still at school. Raw data relating to the percentage distribution of services in the survey villages are shown in Table 6.1.

Next, the scores on the community development composite index were weighted by the following values, to reflect the modal preferences of the entire sample population: water (5.0); communications (2.0); finance (2.4); health (4.9); employment (5.9); and education (4.8). Table 6.2 shows the scores on each indicator for each village. The sum of the weighted ranks produces the final community development composite index for each village. The indicators are ranked from best to worst. For example, in the bottom row of Table 6.2, villages with the lowest index points are those in the most favourable relative positions with respect to the others. Thus, the community development composite index indicates the level of development and, conversely, the level of deprivation and enables the differentiation between a slightly more developed community, such as Mafeking, and a less developed community, such as Marac. Generally, villages in Cocal were in a better social and economic position than villages in Moruga.

A further refinement was to depict the community development composite index scores for each village in schematic diagrams in order to display the spatial relationships with respect to each other and to nearby urban locations. These diagrams were then used to classify villages according to their relative position in the spatial arrangement of the region. The data were clustered and classified into five groups of villages (Table 6.3) and their potential for development was assessed.

As might be expected, villages located off the main roads were in a more disadvantaged position than communities located along them. Generally a strong distance decay effect was evident with increasing distance from the more urbanized, subregional centres. The more remote villages tended to have worse scores than those on the fringes of the study areas, closer to the urban centres. The level of deprivation and underdevelopment in Moruga, particularly, is a function of increasing distance from Prince's Town. On the other hand, the communities in Cocal are influenced by three possible competing urban centres: Biche, which is oriented

Table 6.1 Percentage Distribution of Services in Survey Villages

	Biche	Charuma	Cushe	Ecclesville	Union	Mafeking	St Mary's	Penal Rock	Basse Terre	Grand Chemin	LaLune/ Marac
Water											
Roof	69	58	50	76	100	19	75	63	93	91	95
Willing to pay	41	58	38	27	43	6	13	51	65	67	44
Prefer piped	94	100	88	89	97	97	100	91	89	95	97
Know cost	41	42	63	42	7	91	38	31	18	14	21
Possessions											
Radio	84	92	63	82	93	84	75	74	75	90	85
Television	87	92	75	78	93	75	88	66	72	71	69
Refrigerator	81	92	63	87	87	69	63	51	75	62	59
Communication											
Telephone	50	25	100	47	17	63	50	20	21	38	0
Vehicle	44	33	50	27	37	28	25	17	17	34	15
Public telephone	75	75	75	20	70	53	38	41	41	19	59
Finance											
>TT $1,000	63	33	50	44	57	56	63	29	42	52	41
Bank credit	41	50	38	49	44	44	38	23	18	48	15
Health											
Medical care	75	58	75	76	77	81	25	29	35	34	8
Recurring illness	22	33	3	16	20	22	25	46	51	38	31
Hospital treated	8	3	3	12	8	6	13	17	28	24	5
Unemployment	23	35	24	16	13	24	13	20	20	16	23
Education											
Students >15 years	7	0	12	5	9	10	6	6	9	7	15

Table 6.2 The Community Development Composite Index (Weighted by Modal Preferences)

	Biche	Charuma	Cushe	Ecclesville	Union	Mafeking	St Mary's	Penal Rock	Basse Terre	Grand Chemin	La Lune/ Marac
Water	27.5	5.0	17.5	45.0	55.0	10.0	27.5	17.5	50.0	35.0	40.0
Possessions	3.0	2.0	10.0	6.0	1.0	4.0	5.0	11.0	7.5	7.5	9.0
Communication	4.0	6.0	2.0	14.0	12.0	8.0	16.0	20.0	18.0	10.0	22.0
Finance	2.4	16.8	19.2	13.2	7.2	7.2	13.2	25.2	21.6	7.2	25.2
Health	19.6	29.4	4.9	9.8	14.7	24.5	44.1	51.5	34.3	39.2	51.5
Employment	52.2	63.8	46.4	23.2	11.6	40.6	17.4	29.0	34.8	5.8	58.0
Education	31.2	52.8	9.6	48.0	21.6	14.4	31.2	43.2	21.6	38.4	4.8
Σ Weighted ranks	140	176	110	159	123	109	134	197	188	143	210
Index positions	5	8	2	7	3	1	4	10	9	6	11

Note: Each of the seven indicators are composed of location quotients of related variables. These location quotients are ranked, averaged, and weighted (by modal preferences) to create each of the indicators for each village. The sum of the weighted ranks produces the index points. These index points are ranked from lowest to highest to arrive at the index positions.

Table 6.3 Classification of Villages Based on Relative Location and the Results of Community Development Composite (CDC) Index

Villages	CDC Index Points	Type of Village	Characteristic	Development Potential	Priority for Development
Cushe, Mafeking	100–120	Fringe of suburb	Proximity to major town	Growth or engulfed	Improve transport
Union, St Mary's, Biche	121–140	Break zone	Gravitational attraction of towns ends here	Growth or engulfed	Improve transport
Grand Chemin, Ecclesville	141–160	Established rural centre	Historic with old infrastructure	Growth	Investments outside agriculture
Charuma	161–180	Transitory	Through traffic	Limited	Improve transport
Basse Terre, Penal Rock Road, La Lune/Marac	over 180	Off main road	Deprived, agricultural	Limited growth	Agriculture and basic services

towards Sangre Grande; Cushe, which is attracted by Rio Claro; and Mafeking, which is influenced by Mayaro. In addition, the lack of adequate services in each of these villages limits the level of interaction among them.

These linear distance–decay relationships were distorted at certain locations by other factors, the principal ones being road bifurcations and general inertia associated with declining regional centres. Villages at a road junction or with a network of streets leading from the main road (for example, Basse Terre and Ecclesville) have more favourable scores than those arranged along more remote feeder roads branching off the main road. The people living in the former, more favoured communities tend to have a more outward focus and are more likely to migrate. They also visit the more remote communities less frequently. On the other hand, those who reside in communities off the main road constantly need to access services, transportation facilities, and water offered along main road locations. Inertia may be a factor too. For example, Grand Chemin on Moruga's south coast still hosts a Discovery Day celebration, which was for years the biggest single tourist attraction in that community. The event was discontinued as a national holiday in the 1980s and the decline in the number of persons attending the celebrations has had a negative economic effect. In Ecclesville, the abandonment of the Rio Claro–Mayaro road due to landslides and the poor state of the road surface caused the communities located on the old road to decline. The new Naparima–Mayaro road is sited to the south of the villages and has bypassed communities, promoting some migration by villagers.

COMMUNITY IMPACT ASSESSMENT AND COMMUNITY DEVELOPMENT PLANNING

In order to develop an appropriate methodology to explore development alternatives for the small village communities in Moruga and Cocal, an exploratory community impact assessment was devised and undertaken. Such a procedure could involve either descriptive assessments of the potential impact of development alternatives or, alternatively, a matrix method adapted from conventional approaches to environmental impact assessment. Three different development alternatives were considered: improved agriculture through agroprocessing and marketing of farm produce, the development of light manufacturing, and promoting nature tourism/community tourism. The intent was to identify beneficial and adverse impacts, highlighting the nature of the impacts, the special significance to particular localities, and some mitigating measures that may be needed in order to implement the development strategy.

The matrix was built on a seven-point, subjective rating scale to assess the impact of a particular development alternative on important aspects of the community life, including community health, finance, education, and communications. Positive scores indicate positive impacts and negative scores indicate negative impacts. The sum of these ratings indicates which village communities benefit the most or the least from a particular development option. Table 6.4 provides an example of a community impact assessment for the tourism development option. Constructing matrices for each development option can lead the researcher to make comparisons and suggest the best development alternative for each individual village in the region, and in turn, help serve as a basis for a comprehensive development programme for the region.

The first development alternative considered was improved agriculture. Rural areas have traditionally been considered as places where the potential for agriculture is the chief means of developing the economy through integrated agroprocessing and marketing of farm produce. However, Sletto's (1998) work in the Cocal area suggests that the expansion of agricultural practices changes subsistence structures and leads to unsustainable development. The different land tenure arrangements across the region's villages could possibly cause differences in outcomes of any generalized policy of agricultural expansion and enhancement. For example, in Moruga many households are alienated from land ownership and access to land resources; at best an improved agricultural thrust would provide mainly seasonal employment for casual labour. This would not necessarily solve the unemployment problem in these villages and may fail to stem the exodus of educated youths to the towns. Greater development potential exists in the more agriculture-oriented villages of Cocal. The villages of Grand Chemin, St Mary's, Penal Rock Road, and Basse Terre have greatest potential for agricultural development compared to other villages where agricultural production is already significant.

Generally, existing agricultural practices could be improved with better extension services and a move towards larger 5-acre farms. Farmers might be encouraged to adopt a cooperative approach to processing and marketing produce, or shift into non-traditional herbs and spices that have a more regular annual (rather than seasonal) income. Improving agricultural production would be conditional upon increased financing, the provision of improved communications, and a reliable water supply. A strict land policy with heavy fines for encroaching into the forest reserves might be needed.

The second strategy considered was to invest in light manufacturing through the introduction of small-scale cottage industries, such as sewing and rug making; light manufactures, such as steel fabricating; and food

Table 6.4 Community Impact Assessment Matrix for Tourism Development Option

	Biche	Charuma	Cushe	Eccles-ville	Union	Mafeking	St Mary's	Penal Rock	Basse Terre	Grand Chemin	La Lune/ Marac	Total	Average
Health													
Upgrade health facility	1	2	1	1	0	1	2	3	2	2	3	18	1.63
Improve sanitation	1	1	0	1	0	1	2	0	2	3	1	12	1.09
Education													
Promote wildlife education	2	2	1	2	1	2	1	0	2	2	2	16	1.45
Promote adult literacy	2	2	2	2	1	1	1	2	1	1	2	16	1.45
Promote managerial skills	2	1	1	1	0	1	0	0	1	2	3	12	1.09
Water													
Improve water supply	1	0	0	1	3	1	1	3	2	3	3	18	1.63
Communications													
Increase telephone access	1	1	0	2	2	0	1	2	2	1	2	16	1.45
Increase public transport	3	2	2	3	1	1	2	3	1	1	3	22	2.00
Finance													
Increased demand for loans	2	0	0	1	1	2	1	0	1	1	0	9	0.82
Invite financial institutions	2	1	0	1	0	1	2	2	1	2	2	14	1.27
Employment													
Seasonal labour/crafts	–2	–1	0	–3	–1	0	–2	–3	–1	–1	–2	–16	–1.45
Total	15	10	7	12	8	11	12	12	14	17	19	137	12.43

Note: The level of assets and access to services of each village and effects of increased emphasis on the development of community tourism are considered for each village in the survey. The rating scale is as follows:

+3 important positive
+2 significant positive impact
+1 positive impact
0 no impact
–3 severe negative impact
–2 significant negative impact
–1 some negative impact

processing, such as preserves of fish, vegetables, and fruits. The main impediments here would include the lack of investment capital and general communication problems exacerbated by distance from traditional urban markets and ports. Also the areas have inadequate medical facilities for the treatment for emergencies that may result from industrial accidents. Perhaps novelty items such as homemade liqueurs and bottled spring water could be produced, but the communities generally are severely limited in their potential for agroprocessing, due to the lack of a reliable supply of potable water.

Tourism, the third development alternative considered, returned the highest scores in the community impact assessment exercise, for both Moruga and Cocal. The tourism scenario envisaged the possible development of the region for community tourism, involving nature walks and accommodation of visitors in guesthouses and private homes. The communities in Cocal are located in an area with several documented nature trails through forests, herbaceous swamps, caves, waterfalls, and beaches (Ffrench and Bacon, 1982). As noted above, the Nariva Swamp has become the focus of a national discussion on conservation, environmental protection, and rehabilitation. Employment potential could be improved through the establishment of local tourist-oriented businesses and related services. Accommodating visitors in private homes would tend to improve local housing stock. Villages located along the main road and at end-of-road locations (such as Grand Chemin and La Lune) would benefit from increased passenger traffic. Interior villages off the main road, such as Penal Rock Road, however, might be excluded from tourism development because they have very limited access to a reliable supply of pipe-borne water. Generally speaking, tourism potential would be dependent on the upgrade of services such as the water supply, improved education, and the improvement of health facilities.

CONCLUSION

The research clearly demonstrated that rural villages in south-east Trinidad are all deprived of adequate public and social facilities. However, at the local scale, the provision of rural services varies considerably among the villages due to a number of factors such as underlying distance–decay effects and inertia. Further, the differences among villages themselves are sizeable enough to have an impact upon the success or failure of any generalized development plan for the region.

The findings suggest that though the region is considered agricultural, many of the households, especially in Moruga, have little access to land,

and are in effect landless. The development of agriculture alone will not assist these households; rather, community tourism could be more beneficial. Even so, the successful development of tourism is contingent upon the improved provision of water, social services, and a special education programme for the residents. There is also the need to support investments in cottage crafts, hospitality services, and other small business ventures.

Undertaking a detailed assessment of the needs of individual villages before a development plan for the larger region is formalized would doubtless save time (in the long run) and the wasting of funds. It is with this aim in mind that the methodologies presented here are constructed. The community development composite index can adequately differentiate among villages at the micro-scale and identify their underlying geographical relationships, information that can be used to classify villages for the purposes of development planning. The community impact assessment is a follow-up procedure that explores the development potential of each village community. These two techniques could be employed elsewhere since the researcher is free to select and adjust the rural indicators to reflect the conditions particular to a study area. By generating a detailed data base at the local level, the researcher is not tied to national-level, secondary data sources, which are generally not available nor suitable to micro-scale, community development planning. Replicating the methodology elsewhere in rural areas in Trinidad or in other Caribbean territories would streamline and refine their operational procedures.

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7 Vulnerability, Urbanization, and Environmental Hazard in Coastal Guyana

Mark Pelling

INTRODUCTION

Three out of Guyana's four principal urban centres, including Georgetown, the national capital and primary centre, are located on the Atlantic coastal plain which, together with rural settlement, make up some 90 percent of the national population. The region is low lying and, since European settlement in the seventeenth century, water control and flood hazard have been the principal concerns of environmental management. The coastal mangrove forest was transformed between 1650 and 1750 into a network of polders and used for plantation agriculture and settlement. Maintaining this "second nature" (Smith, 1984) has proven costly and the inability of productive sectors to generate sufficient capital has resulted in flood proneness (Pelling, 1996).

Despite this long history of engagement, in urban Guyana both the physical infrastructure and institutional components of environmental management remain very much "under construction". Drainage, sewerage networks, drinking water provision, and solid waste management systems are under-resourced and function inadequately, to the extent that they may be a cause of environmental risk and degradation themselves. The engineered and bureaucratic boundaries of these systems also do not reflect the demands of contemporary urban settlements, leaving many households with little access to even the most basic environmental resources and services (Sweeney, 1993; Halcrow, 1994; Pelling, 1998a). With some exceptions, such as Georgetown's Turkeyen sewerage facility, urban environmental infrastructure has changed little in the last forty years and is in great need of rehabilitation. This is despite increasing environmental stress due to the expansion and industrialization of the urban economy.

Prior to the negotiation of a structural adjustment package with the International Monetary Fund in the late 1980s, maintenance of the local urban environment was the sole responsibility of local and municipal (Georgetown) government, with additional inputs from central government in strategic sea-defence and land drainage works. Following the

acceptance of a structural adjustment package in the 1990s, policies of participation and privatization have been introduced to broaden the stakeholders in environmental decision-making to include civil society and private sector actors. Such efforts to move from a centralized to a decentralized, and possibly polycentric, management regime have been hampered by the low capacity of civil society and private sector institutions (World Bank, 1993). It is the meaningfulness of this policy shift, without a concurrent investment in social development, that is explored below in the context of urban flood hazard.

URBAN FLOOD HAZARD

Discourse on flooding usually focuses on dramatic, episodic events, such as the Lusignan breach in 1993, where US$56,000 in losses were claimed by petty agriculturalists (Rwana et al., 1994), or the National Emergency flood of June 1996, which directly affected 16,000 people and attracted US$967,000 in flood relief from donor agencies (United Nations Development Programme, 1997; United Nations, 1998). Such large-scale events are, however, only the most visible components of an ongoing environmental stress exerted upon households in Guyana by more frequent "everyday" flood hazard (Bryant and Bailey, 1997). It is important to acknowledge the influence of everyday hazards on the production of vulnerability to episodic events, which can be seen as having a "ratchet effect" (Chambers, 1989), where the health impacts, asset loss, or opportunity costs of low-impact flooding can increase susceptibility to, while reducing preparedness for, future hazard events.

In this context, geographies of vulnerability should be seen as a product of the distribution of socio-economic assets that enable individuals to access services to which they are entitled, and also the political regime and institutional mechanisms through which local environmental and social services are distributed (Pelling, 1998b). In a Guyanese context the historical impact of structural forces on local vulnerability has been discussed elsewhere (Pelling, 1996). Here the focus is on socio-economic assets and institutional mechanisms.

SOCIO-ECONOMIC ASSETS

Using census data and field observation to select neighbourhoods and a random sample frame to identify households, questionnaire surveys were undertaken with 232 households in four neighbourhoods in urban Georgetown and 596 households in six neighbourhoods in an adjacent peri-urban village, here referred to as Plaisance (Figure 7.1). For each household,

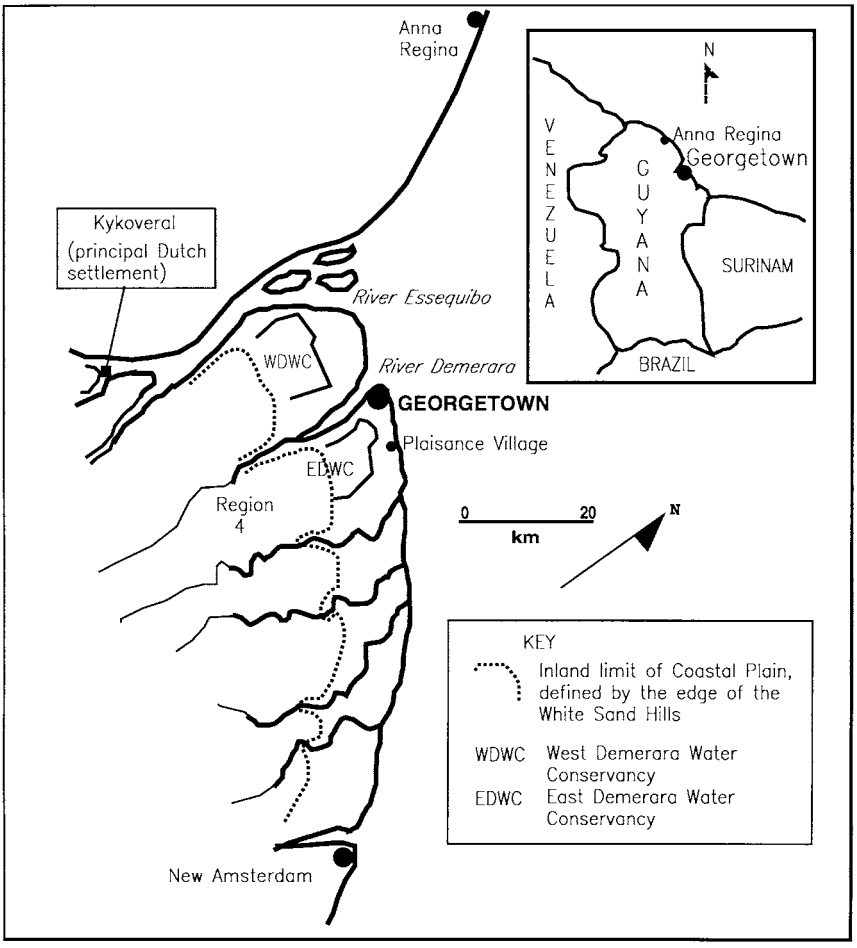

Figure 7.1 Sketch map of land use and study sites in coastal Guyana

socio-economic asset profiles, past experiences of flood hazard, and an impact assessment of a recent flood event were constructed. The impact assessment included water depth and duration of the flood and any direct economic or health impacts.

The urban and periurban surveys were conducted independently, which allowed their designs to reflect local issues. However, because of this some variables are not strictly comparable and they have been omitted from the aggregated data presented below. In the urban survey, "flooding" and the flood impact assessment refers to an event in which 153 mm of rain fell in 24 hours, resulting in widespread flooding across Georgetown (though this did not include a sample taken from an urban squatter

settlement that did not flood). In the periurban sample, "the worst flood" up to five years distant was used to assess impacts.

Access to assets and distributions of vulnerability are described below with reference to dwelling tenure of households, dwelling form, livelihood of head of household, gender of head of household, and household income. Data is presented quantitatively in Tables 7.1 to 7.3, for dwelling tenure (homeowner, renter, or squatter), gender of household head, and income. Each table cross-references the variables and compares them with flood experience and impacts. Qualitative data is presented to indicate the importance of dwelling form and livelihood type. The mix of qualitative and quantitative data has the advantage of retaining the complexity and interactive character of all variables, while also allowing generalization with experiences throughout coastal Guyana.

Dwelling Tenure

In the early 1990s, around 60 percent of dwellings nationally were owner-occupied and one third rented (Bureau of Statistics, 1993). Squatting accounted for 10 percent of housing (Payne, 1993), though this proportion is likely to have grown as a result of the rates at which the proportion of urban households in squatter settlements has risen. Squatter households as a proportion of all dwellings in Georgetown have increased from 1:1,000 households in 1980, to 35:1,000 in 1990, and 70:1,000 in 1995 (Pelling, 1992; Payne, 1993; United Nations Development Programme, 1997).

Across this sample, periurban households indicated greater vulnerability than urban households, with lower household incomes, higher household densities, and less access to adequate sanitation. Renters were more vulnerable than homeowners, showing a lower likelihood of adaptation of dwellings by yard or property raising (periurban, 64 percent against 80 percent for owners; urban, 28 percent against 48 percent for owners). In the periurban sample renters also tended not to take part in community action (9 percent against 15 percent for owners). In the urban sample renters were more likely than owners to have engaged in community works (20 percent against 7 percent for owners).

Risk in squatter households was indicated through low household incomes, overcrowded housing, and the absence of public services indicated by the absence of sewered toilets. However, some relief from vulnerability had been acquired through the higher proportion of dwellings that were raised above ground level (periurban, 87 percent; urban, 66 percent), and through the availability of social resources (relatives living in the same village, 72 percent) and community organization (periurban, 23 percent; urban, 49 percent).

Table 7.1 Cross-Tabulation with Household Tenure

	Tenure and Sample					
	House Owner		House Renter		Squatter	
Variable	**Urban**	**Periurban**	**Urban**	**Periurban**	**Urban**	**Periurban**
Monthly household income >G$30,000	53%	42%	46%	34%	38%	27%
Yard or dwelling raised (>10 cm) to prevent flooding	48%	80%	28%	64%	66%	87%
Household density (mean no. people/room)	1.6	1.9	1.8	2.1	0.6	2.6
Is your toilet connected to a sewerage system?	21%	–	42%	–	–	–
Do you use a septic tank?	60%	11%	51%	4%	–	–
Do you use a pit latrine?	19%	89%	7%	96%	100%	100%
Relative lives in the village	–	67%	–	66%	–	72%
Have you ever taken part in any community work to improve the local environment?	7%	14%	20%	9%	49%	23%
Have you experienced a recent flood?*	87%	92%	94%	75%	–	48%
Does local flooding restrict your work or livelihood options?*	–	62%	–	55%	–	40%
In the most recent flood did you incur any economic loss?*	9%	82%	2%	82%	–	58%
In the last flood did any member of your household suffer any health impact?*	7%	36%	2%	31%	–	21%

Note: All percentages represent the proportion of positive responses in each sample.

* Excludes the urban squatting sample where no flood was experienced.

Table 7.2 Cross-Tabulation with Gender of Household Head

Variable	Gender of Household Head			
	Female		Male/Joint	
	Urban	Periurban	Urban	Periurban
Monthly household income >G$30,000	25%	35%	48%	36%
Dwelling tenure	Own 24% Rent 49% Squat 27%	Own 64% Rent 10% Squat 26%	Own 29% Rent 44% Squat 27%	Own 59% Rent 14% Squat 27%
Yard or dwelling raised (>10 cm) to prevent flooding	33%	80%	43%	79%
Household density (mean no. people/room)	1.7	1.9	1.8	2.2
Is your toilet connected to a sewerage system?	29%	–	24%	–
Do you use a septic tank?	36%	5%	42%	7%
Do you use a pit latrine?	35%	95%	34%	93%
Have you ever taken part in any community work to improve the local environment?	20%	9%	13%	25%
Have you experienced a recent flood?*	96%	58%	89%	63%
Does local flooding restrict your work or livelihood options?*	–	56%	–	56%
In the most recent flood did you incur any economic losses?*	12%	88%	13%	76%
In the most recent flood did any member of your household suffer any health impacts?*	0%	36%	4%	31%

Note: All percentages represent the proportion of positive responses in each sample. Only households with no male resident were classified as female-headed households.

* Excludes the urban squatting sample where no flood was experienced.

Table 7.3 Cross-Tabulation with Income

	Income			
	<G$30,000/Month		>G$30,000/Month	
Variable	**Urban**	**Periurban**	**Urban**	**Periurban**
Dwelling tenure	Own 25% Rent 40% Squat 35%	Own 52% Rent 15% Squat 33%	Own 33% Rent 49% Squat 18%	Own 66% Rent 14% Squat 20%
Yard or dwelling raised (>10 cm) to prevent flooding	40%	82%	42%	44%
Household density (mean no. people/room)	1.9	2.2	1.9	2.0
Is your toilet connected to a sewerage system?	18%	–	34%	–
Do you use a septic tank?	34%	4%	44%	12%
Do you use a pit latrine?	4*%	96%	22%	88%
Have you ever taken part in any community action to improve the local environment?	34%	Labour 19% Money 11%	15%	Labour 11% Money 12%
Have you experienced a recent flood?*	75%	67%	90%	69%
Does local flooding restrict your work or livelihood options?*	–	51%	–	60%
In the most recent flood did you incur any economic losses?*	7%	75%	7%	82%
In the most recent flood did any member of your household suffer any health impacts?*	3%	29%	3%	39%

Note: All percentages represent the proportion of positive responses in each sample.

* Excludes the urban squatting sample where no flood was experienced.

Impact assessments showed that exposure to flooding was greatest in the rental sector in Georgetown and among owners in Plaisance, with squatter households being least impacted. This somewhat surprising finding is partly explained by the importance of micro-locational factors on exposure to urban flood hazard. For example, in Georgetown squatter households remained unaffected by the flood event, despite their identified high vulnerability to potential flood impacts (Pelling, 1997). Similarly in Plaisance three squatter communities were included in the sample and although all lived on land peripheral to the village, flood hazard was greatest among a single community living adjacent to the seawall. The more secure settlements had been settled more recently, reflecting their less desirable status. Although flooding was less of a problem in these newer locations, they had the disadvantages of being at the back of the village and further away from water pipes, shops, the village school, and transport links.

Dwelling Form

Guyanese vernacular architecture incorporates stilts, on which structures are raised between 1 m and 2 m above ground level. The value of this design in providing protection from flooding has been undermined by the process of infilling at the ground level to form bottom houses, a practice that has been linked to the longstanding shortfall in housing stock (Pelling, 1992). Furthermore, post-colonial fashions in the public and private sectors have tended to promote ground-level construction, again increasing vulnerability. As old stock deteriorates, new building has been slow outside of the squatter sector (Peake, 1997), resulting in a greater number of bottom houses and consequent rises in collective vulnerability. The following example shows the vulnerability experienced by a family residing in a rented bottom house in Plaisance.

The Sanmoogan family lives in Plaisance village. Charles and Chropody moved into a bottom house in the village after being married. They pay rent for the dwelling and have lived there for ten years. They live with one daughter in a single room. The family's monthly income is very low, about G$25,000. They have few assets and are consequently vulnerable to flood impacts. Over the past year their home has been flooded four times. Although they look out for the high-tide flood warning in the national press, the family feels there is nothing they can do to reduce their vulnerability and avoid the impact. Their most serious flood was the Lusignan Breach in 1993. During this flood the yard and dwelling were flooded up to 30 cm for about two weeks. The household's major sources of livelihood are petty agriculture (raising chickens in the yard) and agricultural labouring. In the Lusignan flood, Charles was kept away from

work and some of the chickens died; however, the worst impact was the death of Charles and Chropody's infant son soon after the flood. The child was diagnosed as having died from typhoid and Charles believes this was due to the flooding.

Livelihood

Petty agriculturalists are particularly vulnerable to flood hazard. This livelihood form was found to be common as both a principal and secondary source of income in the periurban study and as a secondary input to household maintenance budgets in the urban sample. The following example demonstrates the losses felt by petty agriculturalists suffering from both the direct impacts and opportunity costs of flooding.

The Lall family moved to the village eight years ago when Ram and Bibi were married. The household also includes Ram's elderly mother and two children. All occupants live in one room. The household has a high income of over G$40,000 per month. However, the majority of this income is derived from petty agriculture for which yard space is utilized to rear sheep and cattle. The worst flood the Lall family recalled was the Lusignan Breach in October 1993. The yard and kitchen were flooded by 45 cm of water for about a month. The children were kept away from school for the duration of the flood and the bathroom could not be used but no ill health was reported. The agricultural business suffered heavy losses: two cows and four sheep and some chickens were lost, in addition to damage to property, with a total direct economic loss of about G$115,000.

Gender of Household Head

Between 1980 and 1992 the percentage of female-headed households in Guyana increased from 24.4 percent to 29.5 percent (Bureau of Statistics, 1993), with the proportion being higher in depressed urban areas. Afro-Guyanese women represent 50.8 percent, Indo-Guyanese women 35.2 percent, and Amerindian women 2.6 percent of female-headed households (United Nations Development Programme, 1997).

In the predominantly Indo-Guyanese periurban village, vulnerability in female-headed households was indicated through lower levels of participation in community-based action (9 percent as against 25 percent for male- or jointly headed households). In the urban study the mixed sample of Indo-Guyanese and Afro-Guyanese households was differentiated by lower access to economic resources (25 percent above G$30,000 per month as against 48 percent for male- or jointly headed households). However, in contrast to the periurban sample, female-headed households were

active in community organization (20 percent against 13 percent for male- or jointly headed households). The impacts of flood events were not significantly greater than for male-headed households.

Household Income

In 1992, 83 percent of households in Guyana were reported to have an average monthly income below G$30,000 and classified as low income (Bureau of Statistics, 1993). Furthermore, in 1994, 65.7 percent were described as having their "basic needs unmet" (University of Guyana Consultancy Organisation, 1994).

Income did not associate clearly with vulnerability, risk, or impact variables (Table 7.3). However, low income households did record a higher tendency to be situated in squatter settlements with inadequate environmental infrastructure (35 percent as against 18 percent of high income households), and to be female-headed (35 percent as against 1 percent of high income households; see Table 7.2), and thus indirectly to experience greater vulnerabilities.

MANAGEMENT INSTITUTIONS

The Participatory Paradigm

To be meaningful a democratic polity needs to be competitive and participatory. Neither of these requirements is met in the Guyanese case. Thus, not only Guyana's colonial heritage but also its recent political past and contemporary political economy (mis)shape access to resources for local environmental management and hence the production and distribution of vulnerability.

The economic impacts of structural adjustment in the 1990s have been well documented (Ferguson, 1995) and can be seen to have influenced the distribution of vulnerabilities described above. In particular, economic hardship is experienced through declining wages and increasing retrenchment in the public sector, whose workers tend to be urban-based and Afro-Guyanese. Throughout the country economic hardship is experienced as a result of devaluation, inflation, and cut backs in public spending on social and physical infrastructure. All of these were built upon a legacy of infrastructural decline in the 1980s (World Bank, 1994).

Presented in part as a response to the negative social impacts of structural adjustment, but also responding to weaknesses in the public sector and discourses on sustainable development and good governance, has been the promotion of a "participatory" approach to development project support. Local community-based groups are required to access funds and

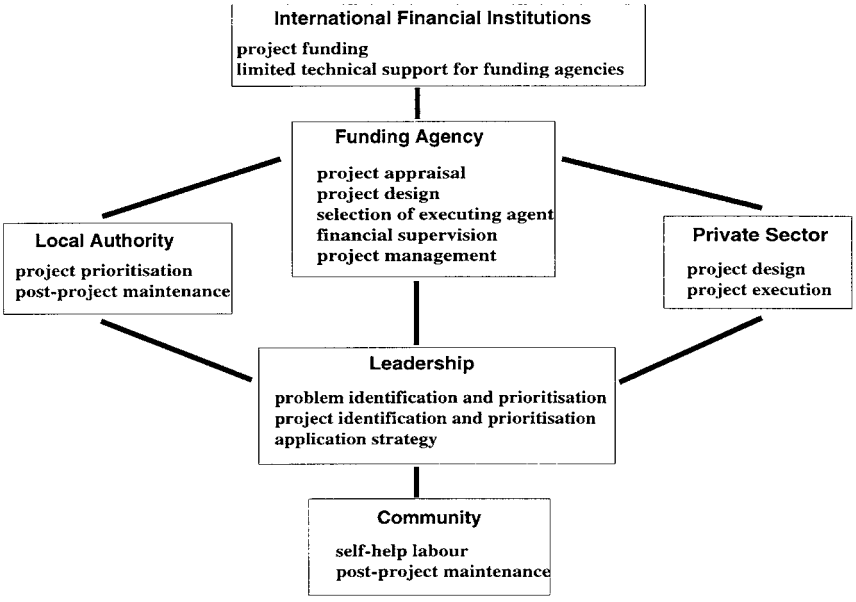

Figure 7.2 The participatory framework

to provide post-project maintenance in return for donor funding of development projects. The participatory framework and actor responsibilities are shown in Figure 7.2.

The donor motivation for this appears, in rhetoric, to be that it is seen to enhance both community empowerment and project sustainability. For grassroots actors this new line of support has offered a potential mechanism for vulnerable groups to access funds to reduce their vulnerability, outside of the governmental framework, and in so doing to circumvent clientelistic relationships with resource providers and positions of marginality in society. The amounts of money being distributed along the participatory route have risen sharply from G$10 million in 1989 to G$900 million in 1995 (G$120 = US$1), so that for some communities it has become the principal source of funding for environmental management (Pelling, 1998a).

Actor Analysis

The principal actors in the new participatory framework are international donors (the World Bank, Inter-American Development Bank [IDB], and Caribbean Development Bank [CDB]), national funding agencies (Social Impact Amelioration Programme, Basic Needs Trust Fund), local governments, and

Table 7.4 Most Likely Future Service Provider: Georgetown Survey

Service Provider (%)	Sample 1: High-Income Suburban	Sample 2: Low-Income Squatter	Sample 3: Low-Income Inner-City	Sample 4: Low-Income Suburban
Individual	28	22	20	24
Community	2	24	3	3
City council	9	13	7	2
None	61	41	68	71
God	–	–	2	–

grassroots leaders and communities. Roles played by these actors and their interactions with more traditional public sector agencies are outlined below. Decision making for environmental management is a form of power that has traditionally been held by government agencies and in Georgetown by municipal governments. Changes in the distribution of decision-making power have been brought about by privatization and participatory management models. However, transitions in power rarely proceed without some degree of resistance and this has clearly been the case in urban Guyana. As Table 7.4 indicates, many individual households remain reticent about community organization but, in the light of public sector inefficiencies and the low capacity of the private sector, see little likelihood of future service provision.

Perhaps in response to this, in the Georgetown sample individual resources were seen by the majority of households to be the most likely source of future infrastructure improvements. The high proportion of respondents who did not think any actor was likely to be able to make improvements further illustrates the great political distance between residents and decision makers who have control over local living environments. Only in Sample 2, a squatter community, was individual action not regarded as the primary source of future environmental management. This reflected the community–self-help culture that, although principally limited to early stages of settlement clearance, was found here. Public sector action was not considered to offer a likely way of improving the local environment in any neighbourhood.

Local Government Services: Inefficiency and Decay

The roots of public sector inefficiencies are financial weakness, inappropriate institutional structure, and political pressure. A symptom of these forces is the dearth of publicly accessible information on public sector management, particularly concerning Georgetown City Council (GCC).

Financial statements were not audited between 1986 and 1996 and the validity of financial accounts over this period has been questioned (*Stabroek News*, 1996c).

Management efficiency has been further reduced by the non-payment of property rates in both the periurban and urban study areas, which can be attributed to residents withdrawing support for public institutions that are perceived to have abdicated their responsibilities. The non-payment rates to the GCC between 1987 and 1992 averaged 38 percent (Inter-American Development Bank, 1993). High non-payment of rates, particularly up to 1991, underlines the observation made earlier of distance building up between grassroots actors and the government in the 1980s. In addition to high non-payment rates, money potentially obtainable from rates was further reduced by the failure of the GCC to conduct a property valuation exercise in 1994.

The depth of financial problems, made worse by poor accounting and non-payment of rates, was reflected in the poor salaries, career prospects, and working conditions in the public sector. These are illustrated by vacancy rates: for example, of 81 posts in the environmental health department, 62 were vacant in 1993 (Inter-American Development Bank, 1994).

The management ambiguities highlighted by the failure to provide transparent accounting were also associated with poor cooperation and coordination between departments from within the GCC. The Inter-American Development Bank (1994) reports that failure to clean city drains has been the result of conflict between the City Engineer's Office and the City Cleansing Department, which share an overlapping responsibility for drain maintenance in Central Georgetown. Similar controversy surrounded responsibility for the cost of maintaining Georgetown's ageing water supply system. From 1993, water rates have been paid directly to the Georgetown Water and Sewerage Commissioners (GW&SC). However, in December 1995, the GCC decided to withhold water rates over a disputed G$44 million debt held by the GW&SC with the GCC. The GW&SC then argued that it was this lost revenue that led to "mains bursting all over and we don't have the means to carry out repairs" (Chief Engineer, GW&SC, in *Chronicle Newspaper*, 1996a).

Local and National Government: Partisan Management

The GCC frequently cited the unwillingness of central government to disburse funds for major projects as a cause of inadequate services. For example, reports of GCC meeting minutes of June 5, 1996 state the view of an opposition party councillor that "the government had no intention of contributing to the well-being of the city" (*Stabroek News*, 1996d). In

reply, the government cited the lack of human resources and poor transparency as a reason for withholding funds. Lack of capacity was one reason for a major government subvention of G$300 million being given directly to the GS&WC in 1995 (*Stabroek News*, 1996a), compared to direct subventions to the GCC of only G$15 million. Tension between national government and GCC was highlighted in 1994 when an interim committee was set up in place of the GCC, leading to the resignation of thirteen councillors (*Stabroek News*, 1994a; Inter-American Development Bank, 1994). Although competition for administrative power appears to have become central to relations between the GCC and the national government, the popular view was often that politicians were able to hide behind a screen of politicking and avoid confronting the deepening problems of life in Georgetown. A letter written to the *Stabroek News* demonstrates this point:

> What I can't tolerate any more is the "striking" City Council. I cannot accept that its elected Council members should continue spending time scoring cheap political points off each other while Georgetown dies. (Anadaiye, in *Stabroek News*, 1996e)

International Donors: Perceived Change

Funding donors appeared to view the participatory approach as a success, with financial inputs having increased over the last ten years. For example, in preparations for its Fourth Basic Needs Trust Fund, the CDB seeks to extend grassroots participation wherever possible (Caribbean Development Bank, 1993). Indeed, viewed from the top down and at the national scale the participatory approach has been successful in bypassing the inefficiencies of line ministries and local governments, and in stimulating a resurgence of civil society "community-based organizations" with enhanced stakes in prolonging the longevity and sustainability of rehabilitated infrastructure.

National Funding Agencies: Enablers or Gatekeepers?

The national funding agencies have responsibility for conducting project appraisal and project management to enable community development priorities to be put in place. This enabling role was weakened in two ways. First, a conflict emerged between the presumption that agencies would act only in response to community applications and the increasingly large sums of money that the agencies were required to expend, resulting in a proactive strategy of problem identification and project selection by the agencies. Second, there was a lack of outreach work (Keddie, 1995) so

that, while the funding agencies argued neutrality, information asymmetries at the grassroots level, excluding the most vulnerable and marginalized from the application procedure, were not addressed.

Furthermore, because of overlapping responsibilities with an IDB-funded urban rehabilitation project, and because funding was earmarked for infrastructure rehabilitation, urban-based groups and groups from squatter communities also encountered many difficulties in obtaining support from the national funding agencies.

Local Political Elites: Resilience through Flexibility

Through the cooption of community groups, Guyana's local political and economic elites adapted to and gained control over the participatory mechanism, which threatened their control of local decision-making power. Cooption was built in to many community groups with local elites forming the core leadership group; the structure of local governance also encourages cooption, with community group applications requiring local government consent (Pelling, 1998c).

Grassroots Actors: Resistance and Withdrawal

Overt resistance (Scott, 1985, 1990) to established structures of environmental management decision-making was observed, for example, in the action of a group of residents setting up their "local community group" in opposition to a coopted community group, and also in letters of protest sent to the national press. More hidden forms of resistance were also observed. For example, during informal conversations respondents expressed distrust of leaders and their alienation from the decision-making process. High rates of property tax non-payment (30 to 40 percent) also suggest a rejection of local government authority.

Withdrawal from the public arena and activities requiring community organization reflects risk aversion and a wariness of recent socio-political changes in Guyana. This is in part a legacy of Guyana's authoritarian political past with social capital largely being reduced to household and familial circuits. Withdrawal was demonstrated in the preference for household adaptation to flood hazard (yard raising or dwelling modification) over communal adaptation, such as coordinated drain cleaning or garbage collection, and in the importance of familial assets during flood events – moving in with a relative during floods (Pelling, 1998c).

Private Sector: Slow Recovery

Wholesale privatization of urban management utilities had not occurred at the time of the study (with the exception of telecommunications). This

has limited private sector involvement to tendering for service contracts (for example, in garbage collection, road maintenance, and drainage clearance) and other alternatives (often petty capitalist), such as the provision of drinking water.

Perhaps not surprisingly, relations between the GCC and the private sector revolve around financial scarcity and mismanagement. For example, in December 1995, private sector consternation culminated in a strike by garbage collection and haulage contractors, which lasted until they were paid for work completed (*Chronicle*, 1996b).

Multisectorial Cooperation: The Way Forward?

Notwithstanding institutional tensions, two multisectorial projects were identified in Georgetown. Both projects involved international NGOs in funding and technical support roles, national government agencies as principal implementing institutions in collaboration with the GCC, and "beneficiary" group participation. The first such project was the Albouystown Upgrading Pilot Project (1989–1993), which was targeted at Georgetown's most deprived ward and included components that aimed to rehabilitate infrastructure (housing) and services (garbage collection) as well as women's employment and youth training and social development. Funding for the project was from the United Nations Development Programme, US$150,000; United Nations Centre for Human Settlements (Habitat), US$50,000; and Government of Guyana, US$20,000 (United Nations Development Programme, 1994).

The garbage collection component used two horse-drawn carriages to collect and remove waste. Funding for these was provided by the Canadian International Development Administration (CIDA), and management was by the Albouystown Neighbourhood Development Committee (ANDC) which was initiated by the umbrella Albouystown Upgrading Project. The initial success prompted CIDA to extend funding from six months to one year, and at the end of this period the ANDC was awarded a contract by the GCC to continue collection. Unfortunately the dire financial status of the GCC resulted in delays in payment of contract fees which the ANDC could not sustain and, consequently, the scheme was abandoned and responsibility for garbage collection returned to the GCC. It has since been suggested by ANDC members that alternative sources of funding, particularly direct cost recovery, could have proved a more reliable source of revenue. Since the collapse of the garbage collection project, Albouystown has again become one of the city's most poorly served wards.

In addition to specific financial problems, the Albouystown Upgrading Project experienced a number of political, institutional, and economic setbacks. From the very inception of the project, local involvement was heavily

tainted by the close political affiliation of members with the People's National Congress party. This is acknowledged in the project terminal report:

> The National Steering Committee had identified a contact person in Albouystown and a temporary venue for meeting in the neighbourhood – the Young Achievers Boxing Gymnasium. The said contact person, who turned out to be an avid supporter of the ruling party (PNC) at the time "assisted" in the dissemination of information and in founding membership of the ANDC. Thus, the seed of political partisanship was sown right at the inception of the project. (Kanneh, 1993, p. 9)

Institutional problems with inexperienced management personnel, lack of access to political authority, and macro-economic problems resulting in the late disbursement of government counterpart funding also caused delays and reduced the effectiveness of project implementation.

The second multisectorial project was the Squatter Settlements and Depressed Areas Upgrading Project, funded by the United Nations Development Programme and signed with the Government of Guyana in 1995. The project is yet to be implemented, but its structure acknowledges the more general incidence of those problems identified in the case study wards. In particular, it finds regrettable the failure to implement the Urban Rehabilitation Programme with which its remit overlaps. It cites "tensions prevalent in certain sections of the squatter communities" and "the apparent lack of congruency among sub-groups in certain squatter communities" as principal reasons for targeting self-help housing areas for development assistance (United Nations Development Programme, 1994: 8). This acknowledgement of social tension within the squatter sites as competition over existing land claims becomes more intense is particularly important as it is likely to affect disproportionately the ability of households with few social, political, or economic resources to retain, let alone acquire access to, these assets.

Some additional cooperation between the private/civil sector and city authorities was also observed during "Gift Day for Georgetown" and "community garbage collection days". These events were promoted and coordinated by the GCC and encouraged private sector enterprises to loan or donate goods for use in garbage collection exercises. One case was also identified where vehicles for assisting in drain clearance had been loaned from central government to the GCC (*Stabroek News*, 1996b). The schemes met with some success as companies donated cleaning equipment and loaned vehicles for garbage removal (*Stabroek News*, 1994b; *Chronicle*, 1995). Although any physical works conducted were small in scale and

their effects only temporary, they do show recognition of the need for multisectorial linkages within the private/civil and public sectors, and a basic willingness by popular and private organizations to participate.

CONCLUSION

Using household interviews, vulnerability to flood hazard in urban communities has been associated with place of residence, tenure, gender of household head, and, less straightforwardly, with income. Furthermore, through an actor analysis the political nature of environmental management institutions has been shown to have distorted policy measures aimed at improving security among vulnerable groups to environmental hazard in urban and periurban coastal Guyana.

Somewhat ironically, at the national level the participatory approach has been linked to positive distributional change, with vulnerability being reduced as communities access development funds directly without loss to rent seeking or distortion by patronage in the public sector. However, from a grassroots perspective, and for both individuals and communities, there is an entrenchment of power relations between the elite and those with elite representation, and the excluded majority. This serves only to deepen vulnerability among the politically marginalized, such as the Afro-Guyanese urban community, or socially isolated, such as female-headed Indo-Guyanese periurban households, which have also suffered disproportionately through the economic impacts of structural adjustment policies in the 1990s.

Thus, while coastal Guyana's social and political institutions are coming to terms with the good governance agenda, the physical environment in urban areas remains a source of hazard to health, wealth, and livelihood for the majority. At this time it is especially important not to overlook the political ecology of the coast when popular international interest and academic attention are focused primarily on the construction of policy for the interior of Guyana. It must not be forgotten that the coastal, and especially the urban, environments and management regimes remain under construction too, and that both coastal and interior systems need to be integrated and seen holistically if a more sustainable development for all is to be pursued.

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8 The Responses of Residents of Nevis to Hurricane Threat: The Case of Hurricane Hugo

Alexis Hobson

INTRODUCTION

Arguably the greatest challenge that faces mankind is finding effective solutions to reduce the increasing losses from natural disasters. Despite remarkable progress in science and technology in different spheres of life and in controlling domains of the natural world today, only limited progress has been attained in preventing natural events from adversely affecting people and their habitats (Haque, 1989). In the past twenty years alone, disasters have killed about 3.5 million people and have caused more than $400 million in losses worldwide (Duguay, 1994). While most of the material losses have occurred in the developed world, the overwhelming majority of fatalities have been confined to the developing world. Work by Susman et al. (1983) and Baird et al. (1975) has explained the increased vulnerability of the developing world using dependency and marginalization theories.

The Caribbean region has a multihazard history and floods, hurricanes, storm surges, landslides, earthquakes, droughts, and volcanic eruptions have all had a significant impact on the islands in the past. Earthquakes, hurricanes, and volcanic eruptions have been the most destructive hazards, each causing many thousands to lose their lives and property losses equivalent to hundreds of millions of dollars at present-day values (Tomblin, 1981). However, while earthquakes and volcanic eruptions are relatively rare events, hurricanes ravage the Caribbean islands much more frequently.

The earliest historical reference to a hurricane dates back to the second voyage of Christopher Columbus (Lobdell, 1989). While the precise number of storms that have traversed the region in historical times is not known, Lobdell (1989) suggests there are references to as many as 500 hurricanes between 1494 and 1938, and has estimated as many as 3,500 storms over the same period. The *Caribbean Cyclone-Resistant Housing Project Information Bulletin* (1991) suggested over 2,000 events ranging from tropical depressions to major hurricanes in the region and over 500 hurricanes between 1886 and 1990 (Table 8.1).

Table 8.1 Summary of Tropical Storms and Hurricanes in the Caribbean, 1886–1990

Type[a]	Total Number 1886–1990	Example	Date	Island Affected
TS	368	Alma	Aug. 1974	Trinidad
HC1	151	Katrina	Nov. 1981	Cuba
HC2	174	Edith	Sep. 1963	St Lucia
HC3	108	Eloise	Sep. 1975	Hispaniola
HC4	64	Flora	Sep. 1963	Tobago
HC5	24	Gilbert	Sep. 1988	Jamaica

[a] TS = tropical storm; HC = hurricane category (Saffir-Simpson scale 1 to 5, based on wind speed and damage potential).

Source: *Caribbean Cyclone-Resistant Housing Information Bulletin,* Issue No. 1.

Based on data provided by Tomblin (1992), major storms have accounted for 42,626 fatalities between 1722 and 1990, with another 594 fatalities resulting from minor events over the same period. As many as 22,000 fatalities resulted from a single storm, the "Great Hurricane" of 1780 (Hubbard, 1992). While the number of fatalities from hurricanes has decreased significantly over the last generation, the cost of damage has increased astronomically. Tomblin (1992) indicates that six major events between 1960 and 1990 resulted in property losses of US$3.090 billion in the Caribbean, losses the islands can ill afford.

RATIONALE FOR STUDY

The starting point for this research was that, despite improved hurricane warning systems throughout the region and despite increased losses from hurricanes, Caribbean residents appear to have adopted low levels of preparedness. The reasons are not fully understood. Factors known to affect the adoption of mitigation measures include awareness of the hazard, frequency of the event, age, and education, though several studies have shown that demographic factors do not consistently affect either perception or response to hazards (Palm and Hodgson, 1992). In a study of human adjustment to earthquake hazard in San Francisco, Jackson and Mukerjee (1974) found that the number of adjustments adopted was related to the number of earthquakes experienced in the past. However, for hurricanes, Burton et al. (1969) have shown that, even when residents in hazardous areas know of the threat or even have had past experience, there is considerable variation in the adjustment measures adopted.

Although human response to hurricane hazard has been well researched, earlier studies were largely confined to the United States (see Baker and Patton, 1974; Baumann and Sims, 1974) and Bangladesh (Islam, 1974; Haque and Blair, 1992). Few similar studies focus on the Caribbean region, despite its long record of immense suffering caused by hurricanes. Severe Caribbean hurricanes in the last two decades have resulted in a few studies, but they mainly assess storm impact (Williams, 1988; Barker and Miller, 1990; Oliver and Trollope, 1981) and the long-term recovery of households (Berke et al., 1993). Less common are studies that examine the extent to which households prepare and implement mitigation or precautionary adjustment measures to reduce hurricane damage.

This chapter documents the extent to which the people of Nevis prepared for Hurricane Hugo in 1989, and their subsequent attitudes to hurricane threat and adoption of mitigation and preparedness measures for the hurricane season of 1994. It was felt that the lack of hurricane experience and inadequate official hurricane warnings contributed to the vulnerability of the populace of Nevis during Hurricane Hugo. Two hypotheses were tested.

Hypothesis 1 was that the relatively low level of hurricane preparedness reported during Hurricane Hugo may be explained by (1) a general lack of disaster experience; (2) inadequate warning; and (3) the socio-economic characteristics of respondents.

There is some evidence that past experience of a disaster affects preparedness level. According to Fritz (1961: 659), communities and societies with the most highly organized preparation are those that repeatedly and recently experienced the same kind of disaster. The repeated impact of a disaster may lead to the emergence of a *disaster subculture* within a society. This term refers to a complex interconnecting set of meanings, norms, values, organizational arrangements, and technological appurtenances that have emerged in response to repeated disaster threat and impact (Mileti et al., 1975: 18). While there is reason to believe that a hurricane subculture once existed on Nevis, the prolonged period without any hurricane impact prior to Hugo may have caused its demise. In fact, no organizational structure was in place to disseminate timely warnings efficiently nor to respond effectively to the threat posed by Hurricane Hugo in 1989.

Research also suggests that the adoption of a protective response after a warning has been received varies according to the quality of warning. Before protective measures are taken people must be convinced that they are at risk. Mileti and Sorensen (1987) show that warnings from official or credible sources are more likely to be accurate and consistent and thus to be believed. Sims and Baumann (1972) and Turner et al. (1979) suggest

that persons with higher socio-economic status tend to better prepared for disaster. Therefore, one might expect the adoption of precautionary measures to be significantly related to factors such as age, occupation, and education level of respondents.

Hypothesis 2 was that the level of preparedness among residents is expected to be higher after Hurricane Hugo than before it. Although the literature on hurricane preparedness levels is limited, studies for other hazards report varying levels of preparedness. Holder (1982) found that during the Kalamazoo, Michigan tornado, 81 percent of respondents reported having a disaster plan and responding accordingly. Conversely, Neal et al. (1982) found relatively low blizzard preparation plans among residents of Wood County, Ohio. According to Mileti et al. (1975), impact of any type may heighten the level of awareness and concern at least for some time after the event. So, given the magnitude of Hugo's impact, it is reasonable to expect that residents exhibited a high level of preparedness during the 1994 hurricane season, when the data was collected.

NEVIS: HURRICANE THREAT AND VULNERABILITY

Nevis forms part of the volcanic chain of islands that make up the outer arc of the Lesser Antilles. The island is 90 km^2 (36 sq. mi) in size and roughly oval in shape, with a central volcanic cone. The tropical marine climate is divided into two seasons: the dry season lasts from January to June and the normally wetter season is from July to December. Rainfall is relatively low, with an average of about 1150 mm (46 in.) annually, with much variation from the coastal lowlands to Nevis Peak in the middle of the island.

Historically, droughts have been a serious threat to the island's development, though hurricanes are by far the single most frequent and destructive disaster. Hubbard (1992) suggests hurricanes were more frequent during the seventeenth and eighteenth centuries, with fifteen and twenty-six strikes, respectively, and only six during the nineteenth century. Five hurricanes struck the island in the twentieth century, in 1924, 1928, 1989 (Hugo), 1995 (Luis), and 1998 (Georges).

Although the whole island is vulnerable to tropical storms, there is some evidence that storm impact intensity may vary depending on topography and orientation. Simulation exercises conducted by the Boundary Layer Wind Tunnel Laboratory of a topographic model of Nevis suggest that wind speeds are accelerated by the upward slope of the terrain (see Davenport et al., 1985). Therefore, houses located on hilly exposed sites are likely to be more vulnerable than the less exposed sites, since the wind speeds tend to be greater.

HURRICANE HUGO

Hurricane Hugo was one of the most destructive storms to affect the Caribbean region in the last two decades, with winds gusting up to 125 miles per hour. Conceived over the Atlantic Ocean as a tropical disturbance on September 10, 1989, the system intensified within three days into a hurricane, affecting several islands (Figure 8.1) and leaving millions of dollars worth of damage in its path. It struck Nevis in the early morning of September 17, the first direct hit in sixty-one years. It impacted on a highly unprepared and shaken populace.

Although no loss of life was sustained, the hurricane caused substantial damage to houses, infrastructure, agriculture, and tourism. The island's housing stock suffered immensely. A total of 1945 (65 percent) houses were damaged, at an estimated cost of EC$27,525,000 (Economic Development Unit, 1989). An important finding of this research was that many small traditional houses withstood the storm, while some modern buildings were severely damaged, perhaps reflecting that in former times Nevis had a hurricane subculture manifested in traditional wooden homes built to withstand hurricane impacts.

METHODOLOGY

The main source of the primary data was a detailed questionnaire survey administered to 206 respondents during the summer of 1994 (Table 8.2), as part of a master's degree programme. Households were selected using a stratified simple random sample and a point sampling technique. The sample was stratified based on parish population sizes, and point sampling was used to ensure a good spatial coverage of all parts of the island.

HURRICANE HUGO: WARNING, PREPAREDNESS, AND RESPONSE

The literature on adjustments to natural hazard is often grounded in the concept of a theoretical range of adjustments (see Burton et al., 1978). Following the work of Jackson (1981), adjustments can be conveniently divided into two categories: response during and after an event (preparedness or emergency), compared with precautions that can be adopted long before the event. The fact that hurricanes have an advance warning phase allows threatened residents sufficient time to adopt emergency actions, such as evacuating their homes, barring window and doors, reinforcing the roof, and clearing debris from their yards prior to the onset of the storm. Similarly, longer-term mitigation measures, such as building stronger structures, repairing homes, purchasing insurance, and strengthening

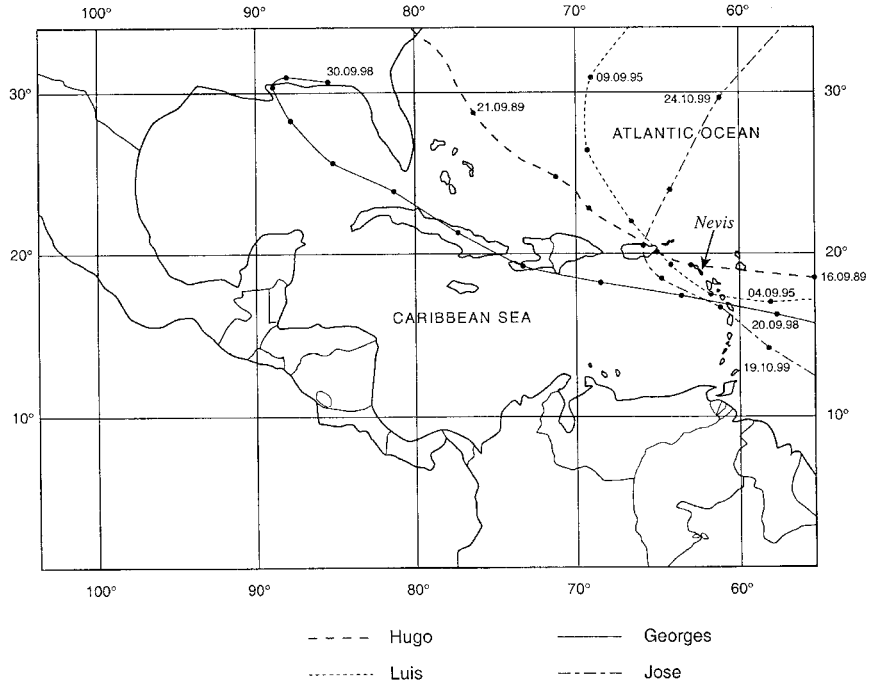

Figure 8.1 Storm tracks of Hurricanes Hugo (1989), Luis (1995), Georges (1998), and Jose (1999) (Modified from Hanley, 1993.)

foundations, form part of the long-term adjustment process for future risks.

It was postulated that the adoption of preparedness measures at the time of Hurricane Hugo was related the general lack of previous hurricane

Table 8.2 Sample Size and Number of Respondents per Parish

Parish	Percent of Households per Parish	Sample of Households per Parish	Successful Interviews
St Paul	17.1	38	36
St John	24.4	54	53
St George	22.3	49	49
St Thomas	18.0	40	31
St James	17.7	39	37
Totals	100	220	206

Source: Author's fieldwork.

experience, inadequate warning, and socio-economic vulnerabilities. Only a small minority of the respondents had any previous hurricane experience. Twenty-six and thirty-four older respondents had experienced the last hurricane strikes of 1924 and 1928, respectively. Therefore, this lack of experience may explain the generally low preparedness level at both the institutional and individual levels prior to the onset of the storm.

Hurricane Hugo occurred one year after Hurricane Gilbert, a highly publicized storm in the region (Barker and Miller, 1990), and so perhaps it was not surprising that 92 percent of those interviewed said they had received warnings about Hugo or at least heard about the approaching hurricane. Further, the majority (65 percent) indicated they actually believed the hurricane would strike Nevis, compared to 31 percent who said they did not believe the warnings.

Mileti and Sorensen (1987) argue that before people act, they must hear the warning, understand the message, believe it, personalize the information, make a decision, and then take action. They further outlined ten variables that largely determine public response. The source of the warning must be credible and should be endorsed by scientists and official organizations. However, given the dormant nature of disaster management in Nevis in 1989, neither the disaster coordinator nor the premier of Nevis made any declaration of an emergency as Hugo approached. The absence of any official pronouncement may help explain why many residents did not take the hurricane warnings very seriously.

In order to gauge the quality of warning received, respondents were asked to describe it on a five-point scale, ranging from 1 (very inadequate) to 5 (very adequate). The majority felt that the warning was either inadequate (40 percent) or very inadequate (30 percent). Only a very small minority felt the warning was very adequate (1 percent) or adequate (5 percent), while the remaining 16 percent were undecided. The absence of official pronouncements, together with the lack of sirens, ringing of bells, or other local-level warning systems to convey the feeling of an imminent emergency situation, may have contributed to the sense of apathy that pervaded on the island at the time of Hurricane Hugo.

Although the majority of the respondents had received some kind of warning, over one third (39 percent) did not take any preparedness measures to reduce damage. Yet all respondents indicated they were aware of possible preparedness measures prior to the onset of the storm. Of those who took action, conventional measures such as barring windows and doors, reinforcing sheeting, and stocking emergency food supplies were the main ones adopted (Table 8.3). The only unusual measure reported was by two individuals who indicated that they "tied down" their house.

Table 8.3 Types of Preparedness Measures Adopted by Respondents

Precautionary Measures	Frequency	Percentage
Moved to shelter	13	4.9
Reinforced sheeting	72	26.7
Barred windows and doors	108	40.3
Cleared debris/cut overhanging trees	10	3.7
Stocked supplies	63	23.5
Tied down roof	2	0.7
Total	268	100

Note: Multiple response possible.

Source: Author's fieldwork.

Given the long period without a hurricane impact on the island, it was postulated that the adoption of preparedness measures during Hurricane Hugo would be significantly related to the age, occupation, and educational level of the respondents. However, Chi-square tests revealed that there was no significant difference among residents with regard to the adoption of preparedness measures based on age, occupation, and education of the respondents (Table 8.4).

The results suggest that although the respondents received warnings, their lack of hurricane experience and the inadequate nature of the official responses resulted in a relatively low level of preparedness regardless of age, occupation, and educational level. Since only the elderly had experienced the 1924 and 1928 hurricanes, it is understandable that most people could not fathom the magnitude of the damage that might be

Table 8.4 Significance Testing of Adoption of Preparedness Measures for Three Socio-Economic Variables

Variables	Calculated Value of Chi Square	Df[a]	Critical Value of Chi Square	Significance Level[b]
Age	2.28	3	7.82	0.31 ns
Education	1.00	3	7.82	0.79 ns
Occupation	0.55	3	7.82	0.90 ns

[a] Df = degrees of freedom.
[b] ns = not significant.

Source: Author's fieldwork.

caused by Hurricane Hugo. Indeed, 53 percent of the sample felt that the impact was "greater" than expected and almost one third (30 percent) felt that the impact was "much greater" than expected. Only 5 percent thought that the impact was less than expected.

The concept of a disaster subculture is being used increasingly to describe the behavioural outcomes and coping mechanisms portrayed by those subjected to repetitive natural disaster impacts (Britton, 1981: 57). Wenger (1978) has pointed out that the development of a subculture within a community is facilitated by three factors. These are the repetitive disaster impacts, a disaster agent that regularly allows a period of forewarning, and the existence of consequential damage salient to various segments of the community (Hannigan and Kueneman, 1978: 132). Based on these features, it was postulated that the absence of repetitive disaster impact and consequential damage that is salient to various segments of the community also influenced the limited response to Hurricane Hugo.

The findings of a Disaster Investigative Report by Oliver and Trollope (1981) on the impact of Hurricane Allen on St Lucia in 1981 give credence to the attitude that pervades in areas that have had a prolonged absence of major storm impact. They stated that

> The survey concluded that whilst awareness of the storm was high, public response was low and poor. The explanation was suggested to be i) lack of hurricane experience, ii) lack of public education about natural hazards, iii) the carefree attitude of the public and iv) insufficient detailed advice at the time of the hurricane approach. (p. 57)

In the absence of disaster experience, the "it can't happen here" syndrome tends to pervade, culminating in low preparedness levels for pending disasters. This contrasts sharply with the well-organized and high-level response in Darwin (Australia) to Cyclone Max, as reported by Britton (1981). However, the operational factor here was that the people of Darwin had learnt their lessons from their experience with the passage of Cyclone Tracy that devastated the city in 1974. Therefore, not only were the emergency operations more organized but the people were a lot more cooperative than they had been in 1974.

In an attempt to understand why some respondents did not take preparedness measures during the passage of Hurricane Hugo, they were asked what were the main reasons for not taking precautions. Some did not believe the hurricane warning (most likely attributable to the lack of hurricane experience), others felt their house was strong enough (Table 8.5). Perhaps these responses reflect the "sit-back-and-wait (SBAW)

Table 8.5 Reasons Cited for Not Taking Preparedness Measures during Hurricane Hugo

Reasons	Frequency	Percentage
Did not receive warning	2	3.1
Thought house was strong enough	13	20.6
Did not believe warning	28	44.4
Underestimated hurricane strength	8	12.7
It was God's work	12	19.1
Total	63	100

Source: Author's fieldwork

approach" as reported by Britton (1989: 109) or the "it can't happen here" syndrome.

It is doubtful whether any type of warning could have adequately prepared residents for the onslaught of Hurricane Hugo. However, the experience of one major hurricane ought to have been adequate to encourage residents to take precautionary measures in the future. Thus, to gauge the impact of the Hugo experience, people were asked if they had done anything to make their homes more resistant to future hurricanes. Some 59 percent indicated that they had taken some form of mitigation measures to reduce future impact or to strengthen or rebuild homes (Table 8.6). They were asked then to indicate whether they had certain "hurricane proof" building features before and after Hugo. There was a general

Table 8.6 Precautionary Measures Adopted after Hurricane Hugo

Mitigation measures	Frequency	Percentage
Changed or repaired roof	51	33.8
Built hurricane shutters	2	1.3
Reinforced roof during hurricane season	13	8.6
Planted shelter trees	2	1.3
Repaired or renovated home	50	33.1
Made new house hurricane resistant	3	2.0
Built new home	21	13.9
Insured house	5	3.3
Strengthened house foundation	4	2.6
Totals	151	100

Source: Author's fieldwork.

Table 8.7 Building Safety Features Reported by Respondents

Safety Features	Before Hugo	After Hugo	Change (%)
Clinching	109	107	–2
Hurricane shutters	39	35	–5
Hurricane straps	5	19	+28
Diagonal braces	86	71	–17
Bolts (roof)	17	19	+11
Anchor bolts	15	26	+73
Rafter anchorage	81	108	+33
Purlin	43	61	+42

Note: Multiple response possible.

Source: Author's fieldwork.

increase in the number of respondents having certain features such as hurricane straps and anchor belts (Table 8.7), though some of these may be classified as incidental adjustments (Burton et al., 1978). Several respondents also indicated that simply anchoring the rafters in concrete was inadequate against hurricane force winds, so lengths of steel bars often had been pushed through the rafters in order to secure them to the walls, to reduce the vulnerability of the roofs to hurricane winds.

In addition, discussions with local builders revealed that the poor performance of the roofs of some concrete structures during Hurricane Hugo has popularized the use of purlins and steel rods to help secure the roofs (Table 8.7). Purlins are horizontal beams that are flatter than the main beams and their purpose is to provide support for the main beam and a greater surface area to affix the galvanized sheeting to the roof. Purlins are common on concrete structures because the other forms of cladding (such as panelboard) are usually structurally weak and prevent the nail from penetrating the ceiling.

EVACUATION TO SHELTER

Although evacuation is a common, pre-impact planning measure for hurricanes (Drabek, 1986; Beatley et al., 1984), few respondents evacuated or expressed any interest in evacuating their homes. Only 4.9 percent of those who took emergency measures during Hurricane Hugo evacuated their homes (Table 8.3). Further, the poor performance of some designated shelters during Hurricane Hugo appeared to have been a significant factor influencing opinions regarding future evacuation. Some people even recounted a story told by their parents about a hurricane in 1889, during

Table 8.8 Reasons Respondents Will Evacuate to Shelters in the Event of a Future Hurricane

Reasons	Frequency	Percentage
House is not safe	22	40.8
Shelter is close to my home	2	3.7
It depends on the strength of the hurricane	26	48.1
Don't want to be by myself	4	7.4
Totals	54	100

Source: Author's fieldwork.

which the roof of the Methodist Church School in Gingerland caved in and killed the shelter manager, who had been reluctant to allow people to leave. Thus, when asked whether they were willing to evacuate if warned of a threatening hurricane, 127 respondents (62 percent) answered in the negative, 54 respondents (26 percent) in the affirmative, while 23 respondents (12 percent) were undecided.

To understand the reluctance to use public shelters in the event of future storms, respondents were asked to state their reasons. The main reasons given by those who expressed willingness to evacuate were: "my house is not strong enough"; "it depends on the strength of the hurricane"; and "I don't want to be by myself" (Table 8.8). It was common for respondents who indicated that they would evacuate depending on the strength of the hurricane to qualify their answer: they would evacuate if the next hurricane were stronger than Hurricane Hugo. This is consistent with evacuation studies that suggest once residents are able to ride out a storm in their homes, the storm becomes the standard of severity for future storms (Saarinen, 1982).

On the other hand, the main reasons why other respondents were unwilling to evacuate were because they felt that their house was either strong enough or stronger than the hurricane shelter in their district and that they preferred to stay at home (Table 8.9). The survey established that over one third of the respondents felt that their homes were strong enough or stronger than the designated shelter in their districts. However the low level of planned evacuation is consistent with other studies that have reported similar findings during hurricanes (Haque and Blair, 1992). A conclusion, therefore, is that the disaster management policy in Nevis should be overhauled to accommodate residents' reluctance to evacuate to shelters and so greater efforts should be made to encourage individuals to adopt mitigation and preparedness measures with respect to their own homes.

Table 8.9 Reasons Respondents Will Not Evacuate to Shelters in the Event of a Future Hurricane

Reasons	Frequency	Percentage
Have to protect my home	12	8.5
Lack of transportation	1	0.7
The shelter is too far	3	2.1
House is strong enough or stronger than shelter	87	61.2
Prefer to stay by a friend	2	1.4
Prefer to stay at home	37	26.05
Totals	142	100

Source: Author's fieldwork.

HURRICANE PREPAREDNESS LEVEL

Studies of disaster preparedness have reported varying levels of preparedness among threatened residents. Holder (1982) found that most people who experienced the Kalamazoo tornado acted according to some prearranged plan. Similarly Perry and Lindell reported substantial levels of household planning for the Mount St Helens volcano, with 69.9 and 48.8 percent of the individuals in the two communities sampled indicating high levels of personal planning activity (Perry and Lindell, 1986, cited in Faupel et al., 1992). Nevertheless, reports of earthquake preparedness levels in California are generally low (Palm and Hodgson, 1992).

Given the relatively catastrophic destruction caused by Hurricane Hugo in 1989, an effort was made to evaluate the current preparedness level of Nevisians. It might be expected that, given the relatively recent occurrence of Hurricane Hugo, a high level of preparedness would have existed on the island during the hurricane season of 1994, when the data were collected. The hypothesis of a high level of hurricane preparedness was tested by the use of descriptive statistics.

Information about the current state of preparedness was collected using a twelve-point checklist, and each item was given a score of one. Respondents were reminded that they were still in the hurricane season and were asked whether or not they had taken specific actions or possessed certain items (Table 8.10). There was a wide variation in the responses to items on the checklist. Such results must be assessed with caution since, as Weinstein (1989) noted, some preparedness activities, such as ownership of a portable radio or flashlight, may not necessarily be specifically for disaster preparedness. Nevertheless, many of the other measures are not connected to a daily routine, and concerted efforts are required

Table 8.10 Hurricane Preparedness Checklist

	Frequency		Percentage	
Preparedness Measures	**Yes**	**No**	**Yes**	**No**
Cut overhanging trees*	14	192	7	93
Checked shutters, hooks, etc.	77	128	38	62
Firmly fastened down roof	105	101	51	49
Secured items in the yard	72	134	35	65
Have a battery powered radio	177	28	86	14
Have a working flashlight	165	41	80	20
A hurricane lamp	132	73	64	36
A first aid kit	154	51	75	25
Containers to store water	197	9	96	4
Have a family evacuation plan	40	166	19	81
Insurance coverage up to date*	49	2	98	2

* Not applicable to all respondents.

Source: Author's fieldwork

to implement them. Holder (1982) shows that people with prior disaster plans were able to implement them during the time of disaster. In the research reported here, the average respondent had a score of six out of a possible twelve. The standard deviation is 2.1, indicating the values cluster tightly about the mean. Generally, the hurricane preparedness checklist data confirm a high level of preparedness among the respondents.

Although evidence about disaster preparedness varies among individuals from very low to very high, the data presented here must be considered in the context of the seasonal nature of hurricanes compared to other disasters. Furthermore, the fact that only five years had elapsed since the passage of Hugo means that the recent experience is a major factor in explaining the generally high preparedness level even outside an actual disaster situation. Nonetheless, there is some evidence that protective behaviour is high after a disaster, because risk perceptions are high, but is discarded or ignored only a few years later (Mileti and Sorensen, 1987). Hurricane awareness and education programmes are methods that can reinforce continued high levels of hurricane preparedness among the populace.

Thus, the data presented show Nevisians were generally well prepared in 1994 for the possibility of a hurricane striking the island and the results compare favourably to most preparedness studies. Therefore, the hypothesis that a high level of disaster preparedness existed on Nevis during the 1994 hurricane season can be accepted. One can surmise that

the experience of Hurricane Hugo was still fresh in the minds of Nevisians, and it will take many years before the "it can't happen here" syndrome revisits the island.

THE POST-HURRICANE HUGO ERA

Three hurricanes have impacted Nevis since this research was completed, Hurricane Luis in 1995, Hurricane Georges in 1998, and Hurricane Jose in 1999. Although these storms were less powerful, it appears they impacted on a well-prepared populace. Consequently, the amount of damage caused by these hurricanes to residential homes was significantly less than in Hurricane Hugo. Only minor damage was reported during the passages of Hurricanes Luis and Jose. Although Hurricane Georges caused significant damage on St Kitts just a few miles away, limited damage was reported in Nevis. Approximately 85 percent of the housing stock was severely damaged in St Kitts, while an estimated 35 percent of the housing stock on Nevis sustained minor damage, mainly roofing (Economic Commission for Latin America and the Caribbean, 1998).

Although it is difficult to determine the reasons for the reduction in the damage caused by these later hurricanes, better organizational and individual preparedness may have been contributing factors. In fact, radio reports out of Nevis during the passage of Hurricane Jose suggested that the island was well prepared. Similar levels of preparedness were reported by the disaster coordinator in Nevis following the passage of Hurricanes Luis and Georges. However, further investigations are needed to determine the extent to which preparedness levels actually contributed to the reduced damages caused by these hurricanes.

Two factors could have contributed to the reported increased preparedness during these hurricanes. First, a disaster coordinator was appointed in 1993 to be responsible for, *inter alia*, the dissemination of hurricane warnings. The literature suggests that the warning source does have an impact on the belief and response to disasters. As noted above (Mileti et al., 1975), warnings from official sources (police, state patrol, fire departments) are more likely to be believed. Similarly, Perry and Greene (1983) reported that the higher the credibility of the sender, the more likely the individual is to believe he is at risk simply on the word of the authority. Therefore, unlike the case of Hurricane Hugo where no official warnings were issued, the disaster coordinator now ensures that adequate warnings are issued prior to the onset of a hurricane. Adequate warnings can significantly increase the preparedness level of a threatened populace.

Second, in the tradition of natural hazards, experience is the greatest teacher. Prior to Hurricane Hugo in 1989, 61 years had elapsed since the 1928 hurricane affected the island of Nevis. Thus, individuals and institutions lacked the organizational experience to adequately prepare for the onset of a storm of that magnitude. For infrequently occurring hazards the general public tends to perceive the risk as very low, and the cultural adaptation process operates to encourage discounting the risk as defined by scientists (Burton et al., 1978). Consequently, very little emphasis is placed on maintaining a state of preparedness by the authorities. As Fritz (1968) explained, it is difficult, however, to establish and maintain an adequate state of preparation under normal conditions, especially if there have been no recent disaster experiences. The contrasting responses of Darwin to Cyclone Tracy and Cyclone Max (Britton, 1981) also suggest that in the absence of disaster experience people generally do not take warnings seriously. However, once people have been severely affected by a disaster they are more likely to adopt precautionary measures (Jackson, 1981; Baumann and Sims, 1978). Therefore, the recent hurricanes provided adequate evaluation for the preparedness mechanisms that have been established following the impact of Hurricane Hugo in 1989.

CONCLUSIONS

The data presented here gives some insight into residents' response to the hurricane threat on the island of Nevis. The general absence of hurricane experience among the populace and the inadequate dissemination of warnings contributed to the relatively low levels of preparedness on the island at the time of Hurricane Hugo. Over two thirds of the people interviewed felt that the warning they received was either inadequate or very inadequate. Nevertheless, the decision to adopt preparedness measures during Hurricane Hugo was not significantly related to the age, occupation, and educational level of the respondents. It appears that the long absence of a hurricane disaster on the island may have eroded the vestiges of any hurricane subculture, traditional cultural experiences for coping with natural disasters.

The passage of Hurricane Hugo has resulted in the adoption of various precautionary measures by residents to reduce damage from future hurricanes. However, the data also suggest that the overemphasis on evacuation as a preparedness measure needs to be revisited, since the majority of residents were unwilling to evacuate their homes in the event of another hurricane. Therefore, residents should be encouraged to retrofit existing properties and to build hurricane-resistant homes. The survey confirmed

a relatively high level of hurricane preparedness on the island afterwards, at least during the 1994 hurricane season. The apparent reduction in the damage caused by more recent storms, especially to housing stock, suggests a higher level of preparedness though further investigations are needed to assess the actual preparedness levels during these hurricanes.

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9 Matching Sustainable Tourism with Socialist Goals: Can Cuba Have It All?

Sue Bleasdale and Sue Tapsell

INTRODUCTION

The rapid growth of the tourism industry in Cuba over the last decade has been questioned by some as being unsustainable. The country has excellent resource potential, both natural and human, and can benefit from the experiences of neighbouring islands and other mass tourism destinations, as well as from the lessons of past tourism in Cuba in the 1940s and 1950s. Yet, according to Avella and Mills (1996), "for the Cuban people tourism is synonymous with economic, social and environmental decline". To some extent this quotation summarizes the main issues being evaluated in this discussion. The aims of this chapter therefore are to evaluate opinion on the Cuban tourism industry while focusing on a number of questions. Is it possible to come to a consensus view about the future of Cuban tourism? Is Cuban tourism, as currently planned, a viable proposition? Is Cuban tourism a sustainable proposition, in terms of helping to maintain political stability, environmental quality, and contributing to social welfare?

The research draws upon a wide range of sources, including journal articles, newspaper cuttings, Cuban magazines, *Granma*, the Cuban Ministry of Tourism, the World Tourism Organization, the Economist Intelligence Unit, Cuba News, the Internet, and personal communications and observations. Some of the statistics are undoubtedly less accurate than others and there were discrepancies in some figures. However, the differences are relatively small and do not distort the general trends and tendencies discussed here.

THE POLITICAL, ECONOMIC, AND SOCIAL CONTEXT OF TOURISM DEVELOPMENT

Tourism in Cuba, since 1989, has developed within the context of a politically stable, highly centralized, and strongly regulated form of socialist government. Cuba has known political stability since the 1959 revolution

and great improvements have been made in a number of sectors. By the early 1980s Cuba was renowned for having achieved standards in literacy and education and in health indicators far in excess of those normally associated with a per capita gross national product of US$2,000 (United Nations Development Programme, 1994; Pearson, 1997). In addition, the island has established an international reputation in developing innovative health treatments and new pharmaceuticals. A major issue for the Cuban government is to protect these social gains in a situation where major changes are taking place in all other sectors of the economy, and where the ability to continue to deliver in these areas is often reduced and constantly threatened (Haines, 1997).

The collapse of the former Soviet Union in 1989 dramatically disrupted the Cuban economy. Fully 85 percent of foreign trade was lost and the economy virtually collapsed (Ellwood, 1998a, 1998b). Eight billion dollars in trade vanished almost overnight. The Cuban state was forced to dramatically restructure its economy – a sort of self-imposed structural adjustment programme, without IMF or World Bank assistance (Ellwood, 1998a).

The situation was exacerbated by the ongoing (since 1961) US trade embargo with Cuba. This was intensified in 1992 with the passing of the Cuban Democracy Act (Toricelli Bill), which extended jurisdiction of economic sanctions to subsidiaries of US corporations worldwide. In 1996 the Helms-Burton Bill was ratified, which extends the Toricelli Bill and aims to further isolate Cuba by exposing foreign investors to US lawsuits.

The breakup of the USSR and the context of the US embargo meant that few options were available to the Cuban government for economic recovery. Tourism was seen as the only available means of generating hard currency quickly and in large amounts, and since the mid-1980s, the Cuban government has been vigorously pursuing the development of this sector.

To date, the government approach to its enforced economic restructuring has been to stick to the principle of social ownership, centralized state planning, and state ownership of resources, while introducing changes in employment law, enterprise conditions, and the investment environment that are conducive to the further development of the tourism sector. Such a compromise is essential if there is to be political stability (whether or not this encompasses a transition to democracy). Political unrest is still at quite a low level. A bombing campaign on tourist hotels in Havana in 1997 (which caused the death of an Italian tourist), and the mass exodus of about 40,000 Cuban rafters in 1994, had little impact on tourist numbers (Noakes, 1995).

Table 9.1 Growth in Tourist Arrivals, 1989–1996*

	1989	1991	1993	1994	1995	1996	1997	1998
Arrivals ('000)	326	418	544	619	741	1,004	1,002	1,004
% change on previous year	–	27.83	19.56	13.5	19.6	26.19	–0.2	0.2

* Figures are from different sources and may not be equally reliable.

Sources: World Tourism Organization, 1995; Haines, 1997; *Destino Cuba*, 1997a; *National Geographic*, 1999.

Most commentators are now agreed that the Cuban economy hit bottom in 1992 and that by 1996 there were clear signs of a recovery, although the economy had still not recovered to its Soviet-era scale. Cuba is still seen to be the riskiest Caribbean location for investment, but it is seen as having future potential as a good jumping off point (in business terms) for Central and South America (Haines, 1997).

THE GROWTH OF TOURISM SINCE 1989

According to Haines (1996), tourism has overtaken sugar as the biggest hard currency earner. Growth in tourism is said to be around 18 to 20 percent per year, although figures vary (Table 9.1), and Cuba has experienced the highest growth rate in the number of international visitors in all of Latin America (World Trade Organization, 1995; *Euromonitor*, 1996).

Numbers of Tourists

The last two decades have seen a steady growth in the numbers of international tourists to the country. The number of visitors increased from 130,000 in 1980 to 326,000 in 1989 and 1,004,000 in 1998 (Table 9.1). The aim of the Cuban government was to reach 2.5 million visitors a year by 2000 (Casals, 1996), although Haines (1996) gave a target of 2 million (this means Cuba will need to have almost doubled the number of rooms available to 50,000 by the year 2000 to satisfy this demand). In order to achieve the government's objectives of attracting 10 million visitors in 2010, the annual growth rate between 2001 and 2010 must be 17 percent. Growth in arrivals is mostly taken as a measure of success in building a successful industry. However, the return rate of visitors to Cuba is low, at <10 percent compared with >40 percent in Barbados (Martin de Holan and Phillips, 1997).

Table 9.2 Origins of Tourists in Cuba, by Percentage

	1990	1991	1992	1993	1994	1995	1996
North America	24	22	26	28	27	27	25
Latin America	24	27	23	25	23	16	12
Western Europe	42	40	44	43	47	47	53
Eastern Europe	7	6	4	2	2	1	1
Other	2	5	3	2	2	8	9
'000	340	424	461	546	619	742	1,004

Source: Haines, 1997.

Tourist Origins

During the Cold War the wealthy American tourists of the 1940s and 1950s were replaced with less demanding, more frugal, visitors from the former Eastern bloc countries. However, today no single country has a monopoly over the island in terms of foreign tourists. Europeans (mostly Italians, Spanish, Germans, French, and British), Canadians, and the newly emerging middle classes of South American (Mexico and Colombia) are the main visitors (*New Internationalist*, 1998) (Table 9.2). Around 30,000 tourists each year are also said to come from the United States (illegally via Canada and Mexico). Dependence on Canadian and German markets in the late 1980s has broadened considerably. Over 50 percent of tourists come from Europe (*National Geographic*, 1999: 5), and the mix of Canadians, Europeans, and Latin Americans is beneficial from the point of view of seasonality, risk spreading, and length of stay. Each of these groups has slightly different seasonal preferences. Seasonal variation is far less than in many other destinations. A broad market base also protects against market fluctuations, thereby spreading risks. Most tourists are relatively long haul and therefore long stay (compared to 1950 when large numbers were short stay and day trip visitors). Length of stay per tourist has varied from about seven nights to ten nights over the last eight years. Again this is due to the market; a US market would bring big changes. Dubesset (1995) notes that in the 1950s the average stay was three days and 29.8 percent were day visitors. The current market base is economically advantageous in comparison.

Hotel Capacity

The hotel sector in Cuba is characterized by rapid growth. Numerous new hotels are being built and older ones are being refurbished, with a shift in emphasis to hotels with a higher star rating (Table 9.3). The number of

Table 9.3 Breakdown of Hotel Rooms by Hotel Category

	1988		1996		1996	
Category	**Hotels**	**%**	**Hotels**	**%**	**Rooms**	**%**
Two star	33	37	46[a]	26	3,509	13
Three star	43	48	64[a]	37	8,153	30
Four star	10	11	56[a]	32	11,332	43
Five star	3	3	8[b]	5	3,884	14
Total	89*	99	174	100	26,878[c]	100

* Plus 168 one star hotels.
[a] 25% in Havana.
[b] 50% in Havana.
[c] 33% in Havana and 33% in Varadero (approximately).
Sources: World Tourism Organization, 1995; Haines, 1997.

hotel rooms available to foreign visitors rose from 5,000 in 1991 to almost 25,000 in 1995, mostly in beach resorts (Martin de Holan and Phillips, 1997: 785). The government hopes to have 50,000 hotel rooms by 2000. However, overbooking room space is already becoming an acute problem. The government must increase capacity very quickly to keep up with the pace of growth. According to the Cuban Ministry of Tourism (in 1996), the government target for hotel occupancy is 60 percent. The 1995 average figure was 52.6 percent, but in some hotels in Varadero and Havana the figure between January and March was over 95 percent (Haines, 1996).

THE ECONOMIC SIGNIFICANCE OF TOURISM DEVELOPMENT

Growth of Tourism Income

Between 1980 and 1989 tourism earnings increased from $40 million to $200 million (Wilkinson, 1997: 2) and earnings reached $1 billion in 1995. Table 9.4 shows the Cuban performance in relation to other Caribbean destinations. Although the other destinations also show large increases in tourism income, Cuban figures indicate less of a downturn in income in 1994–1995 than the other destinations. In 1996 Cuban tourism earnings were $1.35 billion, of which 30 percent was net profit (Ministry of Tourism Havana, cf *New Internationalist*, 1998: 25). In the year 2000 tourism revenue was expected to rise to $3.1 billion. Moreover, since 1989 tourism earnings have increasingly grown as a percentage of gross domestic product (Table 9.5).

Table 9.4 Tourism Receipts for Selected Caribbean Countries

	1989	1991	1993	1994	1995	1996
Receipts (US$ million)						
Cuba	204	387	720	850	1,100	1,350
Jamaica	593	764	942	919	950	–
Dominican Republic	818	877	1,234	1,148	1,250	–
Costa Rica	207	331	577	626	718	–
% Change over previous year						
Cuba	7.94	59.26	26.98	18.1	29.4	18.18
Jamaica	–	28.8	23.29	–2.4	3.37	–
Dominican Republic	–	7.2	40.70	–6.96	8.8	–
Costa Rica	–	59.90	74.32	8.49	14.69	–

Note: Euromonitor (1996) notes increase in Cuban receipts from 1985 to 1993 of 650%.

Sources: World Tourism Organization, 1995; Haines, 1997; *Euromonitor*, 1997.

In 1996 Cuba had the fastest growing economy in the Caribbean at 7.8 percent (Wilkinson, 1997). Although the sugar industry still employs the largest number of people on the island, tourism has now taken over as the largest earner of foreign currency. The bulk of earnings from tourism is said to be reinvested in the industry (A. Gravette, personal communication, 1995).

Visitor expenditure figures also show an increase. Haines (1996) reports a figure of income per tourist of US$934 in 1991 and US$1,490 in 1995, but the significance of this rise is reduced by the high leakage figures, currently said to be 70 to 75 percent (Martin de Holan and Phillips, 1997: 789). One government target is to increase the per capita spending of tourists but several authors point out the difficulty of achieving this due to poor quality facilities, and lack of activities outside the hotels (Haines, 1996; Berman, 1994).

Table 9.5 Tourism Income as a Percentage of Gross Domestic Product

	1989	1991	1993	1994	1995	1996
GDP*	n/a	–25%	–14.9%	+0.7%	+2.5%	+7.8%
Tourism in GDP**	1.2%	n/a	5.6%	6%	8.3%	n/a

n/a = not available.

Sources: *Haines, 1997; Pearson, 1997; **Haines, 1996.

TYPES OF TOURISM DEVELOPMENT

Cuba has an abundance of sea, sun, sand, and palm trees and more beaches than all the other Caribbean islands, making it a prime location for the development of beach tourism. Cuba also has a unique selling point: the island's history. Political, historical, and cultural tours of the island are on offer by large and small tour operators. In the past these tours have included meetings with representatives from the Young Communist League or Committees for the Defence of the Revolution, visits to health centres or hospitals, schools, universities, industrial installations, state-run farms, museums, and other attractions. Two cities have been declared historic sites by UNESCO: old Havana and Trinidad. The authorities also hope to link tourism with the strong artistic and intellectual activity present in most of the country's provinces.

Cuban tourist policy recognizes seven tourism specialties: sunbathing (beach tourism), cultural (including historical and political), science, sports, health, business, and ecological. Ecotourism (that is, responsible tourism, alternative and appropriate tourism) is being encouraged by the government, as are specialist ecoholidays, such as bird watching. Cycling is popular, particularly with the pleasant lack of traffic on the roads. Health tourism is growing and Cuba can be said to have a comparative advantage in this market due to the excellent health-care service and innovative medical research (Goodrich, 1993).

REGIONAL DISTRIBUTION OF TOURISM DEVELOPMENT

Sixty-seven locations are currently involved in tourism and the government plans to target eight regions. The current main centres for beach tourism are Varadero beach; Cayo Largo island; Cayos Guillermo and Coco; Guardalavaca and Santa Lucia beaches; and the Santiago de Cuba beaches. For historical, cultural, and architectural attractions Havana, Trinidad, and Santiago de Cuba are the main locations, while for scenic attractions the Vinales valley is popular with tourists (Figure 9.1).

The majority of Cuban hotel rooms are still concentrated in Havana and Varadero, but plans are in place to reduce this dominance. Growth is expected particularly to take place along the south coast (Costa Sur) and the north coast of Camaguey, both of which are seen to have great future potential (Table 9.6). Currently, 58 percent of hotel rooms are in beach locations, 31.8 percent in cities, 2.5 percent at water sport locations, and 1.8 percent at health resorts (Haines, 1996).

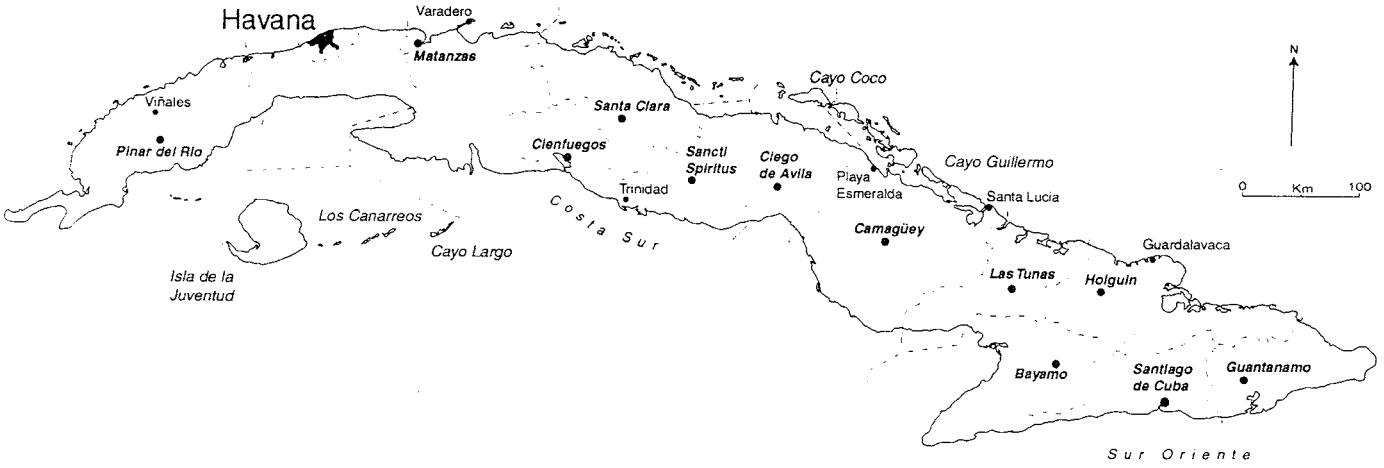

Figure 9.1 Location of tourism development in Cuba

Table 9.6 Regional Distribution of Hotel Rooms

	1996	%	Projected by 2000	Potential
Havana	8,346	31	10,664	34,800
Varadero	8,675	32	14,773	23,200
Costa Sur	1,049	4	1,874	15,500
Norte Camaguey	1,296	5	2,343	27,600
Norte Holguin	1,632	6	2,594	6,000
Sur Oriente	1,725	6	2,489	6,900
Canarreos	682	3	1,310	6,200
Norte Ciego de Avila	1,521	6	5,621	Not available
Others	1,952	7	7,888	Not available
Total	26,878	100	49,556	

Sources: Haines, 1997; *Destino Cuba*, 1997b.

CONSTRAINTS ON TOURISM DEVELOPMENT

Leakage

A less happy economic picture is observable when looking at leakage figures. Leakages result from the repatriated profits of foreign investors and tour operators and from increased import bills. Figures for Cuba are given as 70 percent (Haines, 1997) and 75 percent (Avella and Mills, 1996). These are higher than those for Jamaica (at around 37 percent) but lower than the possible figure of 90 percent for the Bahamas, and closely reflect the average figure for the region (Pattullo, 1996: 39). These leakages reflect the inability of the Cuban economy to produce goods of an acceptable quality for the international tourist, for example, furnishings for hotels, and foodstuffs. In addition, the development of joint ventures encourages this import dependence.

More investment in agriculture is needed, as in the Canadian company Sherritt's project to produce large quantities of salad and vegetables for hotels (Betancourt, 1996). The main problem in the agricultural sector is still seen as the failure of sugar production (Haines, 1997). This perception deflects attention from alternative agricultural issues. Recent government policy is attempting to increase worker incentives and boost food production levels, as well as produce food for the tourism industry. Farmers are now allowed to sell their surplus in the growing number of markets.

Poor Infrastructure and Quality of Accommodation

Berman (1994) states that Cuban "infrastructure is such a mess that big name hotel operators would stay away even after a political turnaround". Therefore, this remains a big problem area. The infrastructure is poor, inefficient, and in need of modernization, yet it is difficult to get financing for investment in this area. There has been some success in financing and improving air travel facilities. Cuba now has fifteen airports and six are capable of handling over one million passengers per year. This is essential if regional initiatives are to be realized.

Inefficient and poor quality services include transportation, energy, water, sewerage and rubbish disposal, and telecommunications. Roads and railways need upgrading to increase tourist choice. Vehicle and fuel shortages are common. Development of the south coast is being held back because the nearest airport is three hours away on poor roads. Tourism is a very heavily computer-based industry and poor telecommunications cause numerous bottlenecks, although some slow improvement is taking place.

Hotel rooms are also a problem. Plumbing, air conditioning, lighting, furnishings, and services are often poor and as Berman (1994) claims, many rooms are not up to the standard required in an upscale international tourism market. Haines (1996) also cites a survey of six countries in the Caribbean and concludes that while Cuba is good for history and the physical environment, the hotels and rooms were lower in quality than anywhere else.

GOVERNMENT POLICY AND PLANNING: LEGAL CHANGES AND TOURISM PRIORITIES

The Cuban government has introduced a number of measures to improve the performance of the tourism industry. Dubesset (1995) lists key features of government policy affecting recent tourism development as: privatization, decentralization, employment, small industry development, and the liberalization of overseas trade.

Restructuring (Semiprivatization) of the Ministry of Tourism

A major change to tourism organization came in 1994 with the restructuring of the Ministry of Tourism. A bill was passed which limited the amount of money available from the government to the ministry; every sector of the tourism industry that had the ability to be self-supporting would have to do so, without government subsidies, although the industry would remain state-owned (and responsible to the ministry).

Several new holding companies were created to manage well-defined sectors of activity (Figure 9.2). The hotel industry was divided into market

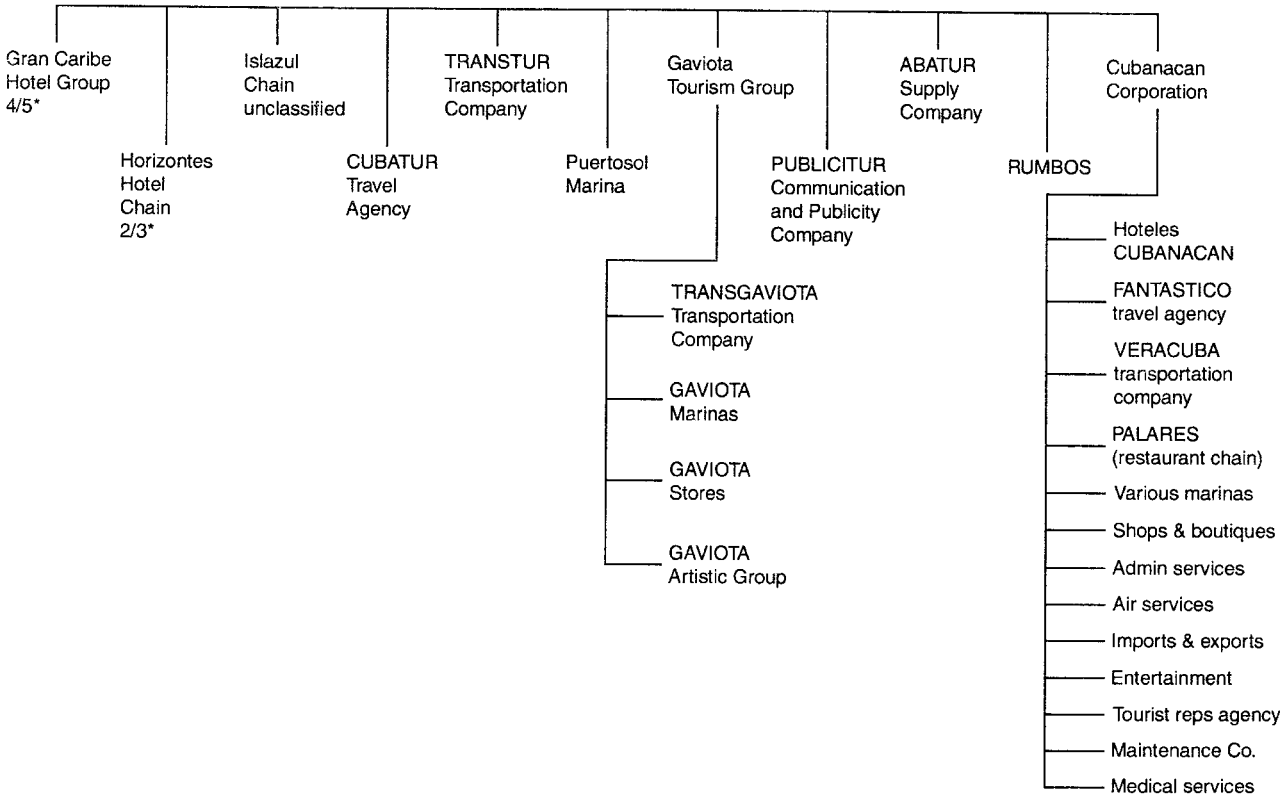

Figure 9.2 Structure of the Cuban Ministry of Tourism (Adapted from Gravette, personal communication, 1995.)

segments, each of which is served by one "chain" that controls and manages a variety of hotels, restaurants, and discotheques. There is no competition between segments and therefore little rivalry. State-owned and partly state-owned businesses/activities must return part of their profits to the state to be invested in health and education.

Changes in Legislation to Encourage Tourism

Joint Venture Agreements

A major innovation has been in setting up joint ventures with overseas companies in all sectors of the economy except defence, health, and education. These have been crucial for the successful development and profitability of the tourism sector and draw attention to the importance of international relations for Cuba. The Cuban government has little experience, skills, or managerial competence in developing an internationally competitive tourism sector. Therefore, joint-venture arrangements are aimed at bringing skills (mostly marketing, administration, management, and training), as well as capital and technology, while Cuba provides the necessary human and physical resources. Leading foreign investors in such joint-venture deals include Spain, Canada, Germany, Italy, France, Sweden, and Argentina.

Investment is generally 49 percent foreign and 51 percent Cuban (although this is at times relaxed), with the profits being likewise divided and with incentives to reinvest them. According to Haines (1997), there were thirty-six joint ventures in tourism by 1996, twenty involving investment in physical development and sixteen covering management. Gran Caribe and Cubanacan, which run the largest hotel chains, have succeeded in attracting substantial backing; however other sectors, such as Cubatur, have suffered. Joint ventures in marinas, golf, offshore cays, and new beach resorts are now being considered. However, foreign investment in services to the tourism industry and infrastructure is still desperately lacking.

Legalized Dollar Ownership

In 1994 the Cuban government announced the legalization of US dollars. This was a move to undermine the growing black market trade in goods, including foodstuffs, which was expanding rapidly in the early 1990s, and with it threatening the economic stability of the country. Cubans are now allowed to receive money from US-based relatives, which has led to the peso regaining its value against the dollar (Ellwood, 1998b). More importantly for tourism, this has permitted more people to provide services for tourists legally.

Expanded Opportunities for Self-Employment and Small Business Licensing

In 1994 the government also announced that it was allowing self-employment in 100 trades, from hairdressing to shoe repairs. As recently as 1989, 95 percent of Cubans worked for the state. By 1996 this figure was down to 75 percent (Wroe, 1996). In 1995, 208,000 people were said to be "self-employed" in this way, probably an underestimation, according to Wroe (1996). The number was expected to rise to 300,000 in 1996 but the government keeps a tight rein on the situation and a number of restrictions still apply. Private enterprise has flourished and there are now thriving markets for food and crafts. However, professionals such as doctors and university graduates are excluded from practising their professions privately. The best place to find a doctor in Havana today is said to be the artisans market in La Plaza de la Catedral, where they can earn ten times their former salaries selling wooden sculptures to tourists.

Improvements to Infrastructure, Training, and Regional Cooperation

Several other government initiatives towards developing the tourism industry can also be identified. One initiative is to increase skills by expanding training for tourism workers. Haines (1996) notes that there are currently twenty hotel schools with 4,700 places, plus the Institute of Tourism Education. Macaulay (1994) reports that Cubanacan now has training schools in all regions. An increased regional tourism cooperation policy is also being promoted. Multidestination tourism and two-centre holidays are being developed with Jamaica, the Bahamas, Mexico, and Costa Rica.

FUTURE TARGETS AND GOALS

Future tourism targets and goals can be said to hinge on three policies: expansion, improving quality, and market diversification.

Expansion

The target was 2.5 million tourists in the year 2000, based on realistic demand forecasts but some question whether the industry can meet this demand (Haines, 1996). There is already evidence of overbooking (Haines, 1996) and shortages in the peak season. It can also be argued that expansion is only feasible if issues of quality, range of services, and basic infrastructure are successfully addressed. Repeat tourism depends on a good experience. Cuba's image as a destination must be positive if the target is to be met.

Expansion will also be assisted by the development of a regional policy to reduce dependence on beach and city tourism, and reduce dependence on Havana and Varadero. This requires the implementation of strict planning control. At the moment the government is only giving permission for further development in Havana and Varadero to companies willing to invest also in other resort areas.

Improving Quality

Upgrading the tourist experience is essential if Cuba is to reposition itself in the marketplace. Increasing the amount per capita that tourists spend is a main objective, by developing more activities, upgrading hotels and facilities, and therefore focusing on higher quality and customer satisfaction. This will mean less emphasis on some markets, such as Canada and the United Kingdom, as these are dominated by "low-spend" tourists. To date the strategy has been high volume, low cost, low price, but now competition is greater, especially from the Dominican Republic, and Cuba has higher costs.

Berman (1994) summarizes Cuban tourism as "cheap, cheap, cheap" with "shabby infrastructure, deplorable hotels, filthy streets and rampant prostitution". Tourism in Cuba, according to Berman, is one-dimensional, there is nothing to do, and he firmly states that Cuba cannot compare with other Caribbean destinations. Berman's views are reflected elsewhere, but not all agree (Chancellor, 1998; Guha, 1998; Foulkes, 1998; Osmond, 1997). A recent survey of tourist satisfaction suggests several areas of the tourism industry that need urgent attention (Tribe and Snaith, 1998).

Adding an eighteen-hole golf course to Varadero in 1998 and massive hotel refurbishment activity are the tactics being employed, alongside massive investment in new five-star hotels. Table 9.3 shows how the hotel sector has shifted up-market over the last seven years. However, continued investment in infrastructure is needed.

Market Diversification

More specialized markets are needed, especially those that exploit Cuba's comparative advantage. Evidence of market segmentation is becoming increasingly apparent in holiday packages to Cuba. More hotels are now offering all-inclusive packages, which on an island where eating out can prove to be difficult due to food shortages, is bound to be attractive to tourists. Two-centre holidays within Cuba are also being offered. Increased market segmentation is focusing on ecotourism (including nature tourism, bird and wildlife tourism), business and conference tourism, event tourism such as sporting events, water-based tourism, health

tourism, and cultural tourism (film, music, historico-cultural, archaeological). Future attention might be paid to the development of the visiting friends and relatives (VFR) market (two million Cubans live overseas) and the cruise and transit tourist market. There is already substantial investment in cruise ship docking facilities and marina development is accelerating.

In addition Cuba should seek to expand its tourist hinterland. Latin America is seen as a "natural market". Tourist numbers from Venezuela, Colombia, and Mexico are growing (Nicardo, 1997). However, the question of new markets is an area of debate: some, for example, Berman (1994), Martin de Holan and Philips (1997), Avella and Mills (1996), seem to imply Cuban tourism cannot survive without the US market. The Cuban government obviously needs to disagree.

SOCIAL SUSTAINABILITY OF TOURISM DEVELOPMENT

Employment and Access to Basic Goods and Services

Tourism creates jobs, which is one of the main reasons countries choose to focus on it. Cuba has strengths and weaknesses in this area. Most of the workforce is highly educated with good academic qualifications, a valuable human resource. The weaknesses are in the lack of appropriate skills for tourism and hospitality, especially marketing, management, and customer service. However, Haines (1996) notes that tourism has facilitated the transfer of management and marketing skills to other sectors as well as the broader demonstration effect. This must be a positive gain for Cuba as the economy moves towards a mixed economic model.

Until the recent crisis with the collapse of the Soviet block and the tightening of the US trade embargo, Cubans were guaranteed "jobs for life". This situation has changed considerably in the 1990s as state enterprises have shed labour and/or become semiprivatized. For the first time Cuba has an unemployment problem and Haines (1997) predicts that this will get worse. The state is now clearly unable to guarantee to deliver all basic essentials to every household.

Tourism represents perhaps the only sector experiencing growth in employment, but analysis remains tentative because of the lack of precise and attributable data. New job opportunities have arisen due to the changes in employment and other legislation since 1994. Relaxation of legislation on self-employment and small enterprises is very significant in encouraging people to switch from poorly paid state work to tourism-related work. Macaulay (1994) notes that waitresses and room attendants make more than doctors, engineers, and psychologists. Much of the attraction of tourist-sector jobs lies in the access they give to US dollars. A

negative aspect of this is the loss of highly educated and trained professionals from the formal sector. Workers in these state sectors are disadvantaged in that their jobs do not allow them to have access to US dollars. The farmer markets, craft markets, small businesses, and tourism all offer new opportunities, in addition to the black market and the growing informal sector. Pearson (1997) and Avella and Mills (1996) note that these new roles are often at lower skill levels, which reinforces the view that tourism, among other changes, is undermining and discouraging education.

Estimates for those employed in tourism are around 60,000 directly employed, with a gross revenue of $530 million (*Trade Environment Database* [*TED*a], n.d.). In addition 15,000 are employed in aviation and 60,000 in tourism related construction (Haines, 1996) out of a total workforce of 3.5 million. Numbers indirectly employed are unknown but are likely to be substantial and increasing rapidly. Avella and Mills (1996) note that the government had granted 151,130 licences for private businesses within the new legislation.

Recent changes in the hotel sector are also affecting employment. Tourism is traditionally a labour-intensive sector and therefore should be capable of absorbing most of the surplus labour resulting from the government's abandonment of the "jobs for life policy", if appropriately trained. Expansion of the hotel sector is creating large numbers of new jobs and although some posts are staffed from overseas this is being kept to a minimum (one of the advantages of a strictly controlled economy). Avella and Mills (1996) note that there is some evidence that joint ventures lead to loss of jobs within hotel chains as reorganization takes place. Martin de Holan and Phillips (1997) also think that overemployment in the sector is one of the factors reducing Cuba's competitiveness.

Increase in Inequalities and Relative Deprivation

Observers have noted the development of income and other inequalities, many of which have been associated with tourism development (Pearson, 1997; Seaton, 1996). Even though most agree that the situation has improved since 1994, the dollarization of the Cuban economy has been said to have encouraged increased inequality between those who have access to dollars and those who do not. With dollars they can earn from trading and other activities Cubans can purchase food and other consumer goods in the dollar shops and on the black market.

Social change is also coming from the demonstration effect of tourists, as well as the spread of the dollar culture, feedback from Cubans overseas, and the availability of TV programmes from the United States. The presence of tourists in large numbers increases awareness of inequalities. Hotels can be seen to have again become the bastions of the socially

privileged, as in the days of Batista. "Tourist apartheid" is observable where Cubans are often excluded from many of the services offered to tourists, for example, hotels are reserved for foreign visitors. However, one group of locals who are allowed to enter the hotels are the *jineteras* (prostitutes or those others trying to latch onto the tourist dollar).

Gender Issues and the Increase in Prostitution

Cuban women have had more economic independence since the revolution than ever before. Castro made a unique and impressive attempt to liberate women from their customary roles of wives and mothers in the home (Marshall, 1987), although in practice machismo is still strong and exists in women as well as men. However, women's gains of increased equality from the revolution are now being undermined. A consequence of the economic crisis and reliance on wages in order to meet essential needs has been a shift in gender work patterns. Women are being pushed back into the home and taking on higher levels of domestic work (for example, spending large amounts of time shopping and queuing for essentials, and growing food – even in the urban areas). In the rural areas more women are taking jobs in agriculture simply to gain access to food supplies. Men, on the other hand, have been forced to concentrate on income earning and have less time for "reproductive" tasks such as child minding. Transport difficulties have also made many re-evaluate their work commitments. Tourism development could provide the economic growth necessary to reverse this situation, as well as supplying additional employment opportunities for men and women.

However, one social consequence widely attributed to the growth of the tourism industry is the increase in prostitution. Young women (often teenagers) with older foreign partners are a common sight around nightclubs in Havana and on tourist beaches. The women are attracted by the lure of making in one night more than they can earn in a month (about US$24).

Before the revolution the sex industry in Cuba was big business. Castro closed down the brothels, jailed the pimps, and provided training and jobs for the women (although the sex tourism industry survived in a reduced format to service Soviet expatriates). The Cuban government has now been accused of allowing sex tourism to resurface, something it vehemently denies (Hatchwell and Calder, 1995). Police patrols along the Malecon esplanade in Havana are said to have increased (MacSwan, 1997) and during the pope's visit to the island in January 1998 police were reported to have rounded up and detained prostitutes in the city.

However, there are those who dispute the reported increase in prostitution. According to Wilkinson (1997), the amount of prostitution in

Cuba has been greatly exaggerated by the western media. Moreover, prostitution in Cuba is not the same phenomenon as that in Thailand or Hamburg, for example, as there are no brothels, sex cinemas, or sex shops. There is also no advertising of sex and, as yet, no organized sex industry.

In fact prostitution in Cuba does not always involve sexual contact at all, but more a friendship that Wilkinson likens to those between many English women and American servicemen during World War II. Although sex is often involved, Cubans seek out tourists and foreign businessmen and women, often in the hope of the exchange of luxury goods, friendship or even marriage, and an escape from a life of ration books. The Cuban government has passed a number to laws outlawing pimping and sex with minors and has a rolling education programme to educate young people to avoid this kind of life.

Prostitution is, therefore, an attractive way for young women (and men) to earn dollars and enhance their income. There is also said to be a greater degree of choice as to whether someone decides to become a prostitute in Cuba (many of whom are part timers), as there is not the degree of poverty found in other Third World countries. Nor is there a hard drug culture, which can be the motive for many in the West entering the profession. So far Cuba has been able to boast the lowest rate of HIV infection in the Caribbean, but today there is a fear of increased cases of HIV due to the increased levels of prostitution.

Increases in Crime

It has been suggested that tourism, as well as the economic crisis, is undermining Cuba's relatively crime-free society. Begging is becoming a more common sight in Havana, where it was rare in 1990. Bag snatchings are on the increase and the numbers of police in tourist centres have increased. However, drug addiction is a small problem, there are no street children or shanty towns, and violent crime like rape is rare. In fact more Cubans commit crime against the government (through black market trading) than against tourists or each other (Hatchwell and Calder, 1995). The main criminal activities that may be linked in the future with the growing tourism industry might be illegal gambling (for example, cruise casinos), drugs and narcotics, the black market (although less so since dollars were legalized), migrant traffic, and prostitution.

ENVIRONMENTAL SUSTAINABILITY OF TOURISM

The environment is a key factor in determining the potential of Cuba for tourism development. Haines (1996) notes 300 beaches, four biosphere reserves, three national parks, several important wetlands, numerous

(1,600) cays and offshore islands, and a rich human and cultural diversity, including two World Heritage Sites. However, the associated development and increased number of visitors to Cuba in certain regions is threatening the environment.

Environmental Problems

Avella and Mills (1996) list the main environmental problems in Cuba as soil erosion (along beaches especially, due to building works), beach erosion (Varadero), water pollution (for example, hotel discharges, Varadero marina, Havana waterfront), salinization (from large-scale agricultural projects using irrigation), deforestation, and species loss. Of particular concern are coastal areas, as new beachfront hotels on the north coast are being constructed in prime habitats for a variety of rare species of dozens of unique birds, rodents, and iguanas. The destruction of mangroves and reefs is also a problem. Ponson (1995) lists Cuba as one of several countries worldwide with severely damaged coral reefs.

Readily observed examples of environmental problems with implications for tourism include pollution from oil wells near to hotels in Varadero, and atmospheric pollution from traffic in Havana (accentuated by the prevalence of old vehicles, and which will increase as traffic builds up). Decaying buildings in Old Havana and on the sea front are also observable and building works associated with refurbishment is adding to the generally poor quality of the urban environment. Finally, resources are being depleted as trees are cut for fuel (even in the urban areas) and to provide wood for carvings, which are sold as tourist souvenirs.

Controls and Regulations

Reference is sometimes made to the fact that Cuba has a good framework for environmental control. Tourism development is being controlled; there is no "free for all", such as characterizes development elsewhere. Reputedly, this is one of the advantages of central planning. Haines (1996) notes that there are clear guidelines and that each case is considered separately on its own merits. Avella and Mills (1996), however, express scepticism, and note that some proposals and projects have been environmentally harmful (for example, road building to connect cays to the mainland have blocked currents and produced saline lagoons, dramatically changing the biological environment). They conclude that the pace of environmental damage to flora and fauna will accelerate and that more care will be needed especially in the development of the cays to keep development within the area's carrying capacity.

The regional policy with its stated aim of reducing the dominance of Havana and Varadero may, at least in part, be a response to recognition

of the need to protect fragile areas from overdevelopment. Macaulay (1994) notes that "with that approach (that is, with focus on ecotourism as stated in government plans) Cuba may be a living sustainable development model". He describes the Environmental Review System as cooperative not confrontational, but notes that CAMARNA, the Cuban agency for environmental protection, must agree to hotel projects, and that the agency has limited funds for full ecological impact assessments. However, he feels that as it is the intention that Cubans will still own everything this will keep the options open for the future. Noakes (1995) notes the value of the spectacular natural setting of the Sierramar development near Santiago, and that further development of the Sierra Maestre is limited by strict conservation laws.

Mok (1997), prior to the tourism convention in 1997, highlighted several new developments (for example, an underwater park, spa resorts, improvements to national parks, woodland tourism, the Playa Esmeralda resort) with a focus on the natural environment and incorporating controls to ensure environmental maintenance.

The government decision not to sell land may be crucial in guaranteeing continued protection for Cuba's rich natural resources. Castro is very keen to be seen as environmentally sound (for example, his speech at the Rio Earth Summit in 1992) and is often quoted in interviews as saying that Cuban development will not be "development at any cost". Haines (1996) notes that the government has recognized in its policy formulation that there is a commercial rationale for "sound ecological and archaeological policies", and also concludes that "vigilance is quite high". Biologists from the natural history museum in Havana can sometimes persuade the regime to delay or halt construction for the benefit of wildlife, but the island's need for hard currency often comes first (*Trade Environment Database* [*TED*b], n.d.).

Tourism is being used to alleviate ecological problems. A small hotel in Pinar del Rio which specializes in ecotourism, helps fund a local biosphere project. A similar project at a hotel on the Isle of Youth enables income from skin-diving holidays to support a conservation project aimed at preserving black coral in that area (Wilkinson, 1997). There are examples of tourism development being pursued that take the environment into account. Since 1995 new pontoon road links have been designed as bridges connecting the cays to preserve the tidal flows and existing pontoons are to be restructured to allow the tides to flow again. The Biodiversity and Sustainable Development Project (using UN development aid) has calculated a plan for developing the region which is said to take into account the fragile balance of nature in the area "to foster sustainable, long-term tourism, that preserves everything" (Wilkinson, 1997: 3).

Table 9.7 A Summary of Tourism Strengths and Weaknesses in Cuba

Strengths
Excellent potential for tourism through exploitation of good natural resources which provide good basis for development of numerous types of tourism.
Good human resource base – large numbers of well-educated graduates and widespread language capabilities. Lack of a sizeable gender gap, high basic literacy levels. People are friendly and hospitable.
Strong planning framework – little possibility of uncontrolled development.
Able to learn from mistakes of those Caribbean islands who entered tourism earlier.
Tourist mix is good – spreads risks and reduces seasonality.
Positively motivated government that, although not democratic, still has considerable trust and support among the general public. Political stability since 1959.
Weaknesses and Constraints
Shortages of capital, lack of credit internationally, over-reliance on overseas finance.
Situation with United States (trade embargo, Torricelli, Helms–Burton Bills) is an all-embracing constraint.
Infrastructure poor and deteriorating.
Inappropriate skills base.
Difficult external image (affects tourist choice *and* risk investment).
Tourism has fickle market tendencies.
Costs are higher in Cuba.
Insufficient competition in Cuba.
Limited multiplier effect – weak development of backward and forward linkages.
High leakage.
Low quality of product.
Regional situation – Cuba is still quite isolated, not fully integrated into any grouping.

The preceding illustrations would seem to indicate that Cuba is trying to avoid negative environmental impacts from tourism development, but against this must be set the strong possibility that the pressure to maintain the growth of the industry may lead to compromises that damage the environment.

CONCLUSIONS

The analysis of the strengths and weaknesses of Cuba's tourism industry (summarized in Table 9.7) shows that it is difficult to arrive at a consensus on the future of Cuban tourism. One view is that the Cuban government's

current strategy of expansion and low price, combined with monopoly industry organization, could present high risks for declining returns. Although more tourists bring in more hard currency each year, the government has to spend more on infrastructure development and foreign-produced goods and services to accommodate the ever-increasing numbers of tourists.

However, government tourism policy has well-articulated objectives and the plans to achieve them. The Cuban economy is growing and more consumer goods and foods are now available. Tourism in many ways might even be said to be the saviour of the Communist system. The heavily state-controlled and centrally planned tourism industry may help to alleviate the sort of problems that free-market systems have encountered when embracing tourism. Much media coverage outside Cuba has reported the success in tourism as problematic and even disastrous for the island's socialist system, infecting Cubans with capitalist ways and values, encouraging consumerism, individualism, and prostitution. Cuba has therefore embraced the market and admitted defeat. However, partly thanks to tourism, the Cuban economy and the revolution have been able to withstand the collapse of the Soviet Union and the increased US trade embargo. Whether Cuba's approach to tourism development produces significant returns to Cuba, its people and environment, and whether it will be sustainable in the longer term is still in question.

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10 Resort Evolution in a Narrowly Based Economy of the Pleasure Periphery: A Case Study of Montego Bay, Jamaica

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INTRODUCTION

The concept that a tourist destination will have a life cycle of its own has been in the literature for forty years. Beginning with the early work of Likorish and Kershaw (1958) and later investigations by Christaller (1963), Stansfield (1978), and Crompton and Hensarling (1978), researchers have concluded that most tourist resorts experience a similar course of development. It was not until the work of Butler (1980), however, that a specific theory detailing the life cycle of a resort was formulated. Although most observers have found Butler's work useful, the model he proposed has been criticized by some (for example, Hovinen, 1984; Cooper, 1994) for its lack of universality and operability. When modified, however, a number of researchers (for example, Oglethorpe, 1984; de Albuquerque and McElroy, 1992; Johnson and Snepenger, 1993) have used the model successfully to describe and explain the patterns of resort evolution in their respective study areas.

In the context of the Caribbean, Butler's resort cycle formed the basis for Weaver's (1988) examination of tourism development on the island of Antigua. By employing many of Butler's ideas and adapting them into the locational and historic context of the island in question, Weaver developed a plantation model of resort development for Antigua. Following this lead, the current research proposes to develop a similar model that will achieve the same goals for Montego Bay, Jamaica. As one of the island's largest and oldest tourist resorts, Montego Bay is deemed an appropriate choice for investigation. Some of the lessons learned from the experience of the resort with tourism may prove valuable to other centres on the island, and elsewhere in the Caribbean, currently experiencing a rapid growth in the industry.

To achieve the general purpose of the research, the remainder of the chapter is organized into five sections. The first of these describes the

characteristics of the Butler model and Weaver's plantation model. Following this, the actual stages of tourism development in Montego Bay are presented and discussed. In the third section, the Butler and Weaver models are critically assessed in terms of their ability to adequately describe and explain the patterns of resort evolution presented. Given that this assessment highlights the need for an alternative explanation of resort evolution to those suggested by Butler and Weaver, a modified model adapted to Montego Bay is presented in the fourth section. The chapter concludes with a brief overview of the research findings and a discussion of their implications for further investigation.

THE RESORT CYCLE AND PLANTATION MODELS

The resort cycle proposed by Butler (1980) is based on the economic product life cycle model, where "sales of a product proceed slowly at first, experience a rapid period of growth, subsequently stabilize and then decline" (Butler, 1980: 6). Based on this premise a tourist destination would initially have restricted accessibility and facilities and receive only small numbers of visitors. As better accommodation and services are provided and access is improved, the number of visitors begins to increase. As marketing strategies are employed, the centre's popularity expands to a wider audience and tourist numbers begin to increase rapidly. Eventually the rate of visitation will decline as the destination's carrying capacities in terms of environmental factors (land scarcity, water, and air quality), physical facilities (transportation, accommodation, and related services), and social factors (crowding and resentment of the local population) are exceeded. Further, Butler (1980) suggests that a resort will move through this cycle, with specific visitor typologies comprising each stage, and that reaction to these visitors by the local population will vary accordingly.

Given these premises, Butler identifies five stages (Figure 10.1) within his model, each with its own set of characteristics in terms of numbers of visitors, facilities, and impacts upon the local community and its inhabitants (Table 10.1). The stages are not placed in any spatial framework and no attempt is made to give them a temporal component.

In his modification of the Butler model, Weaver (1988) also suggested that there are identifiable stages through which a centre will pass in its development as a tourist resort (Figure 10.2). In his study of Antigua, however, he identified only three stages corresponding to the first three proposed by Butler (Table 10.2). He argued in the case of Antigua that the island's tourism industry was still relatively young and that both the

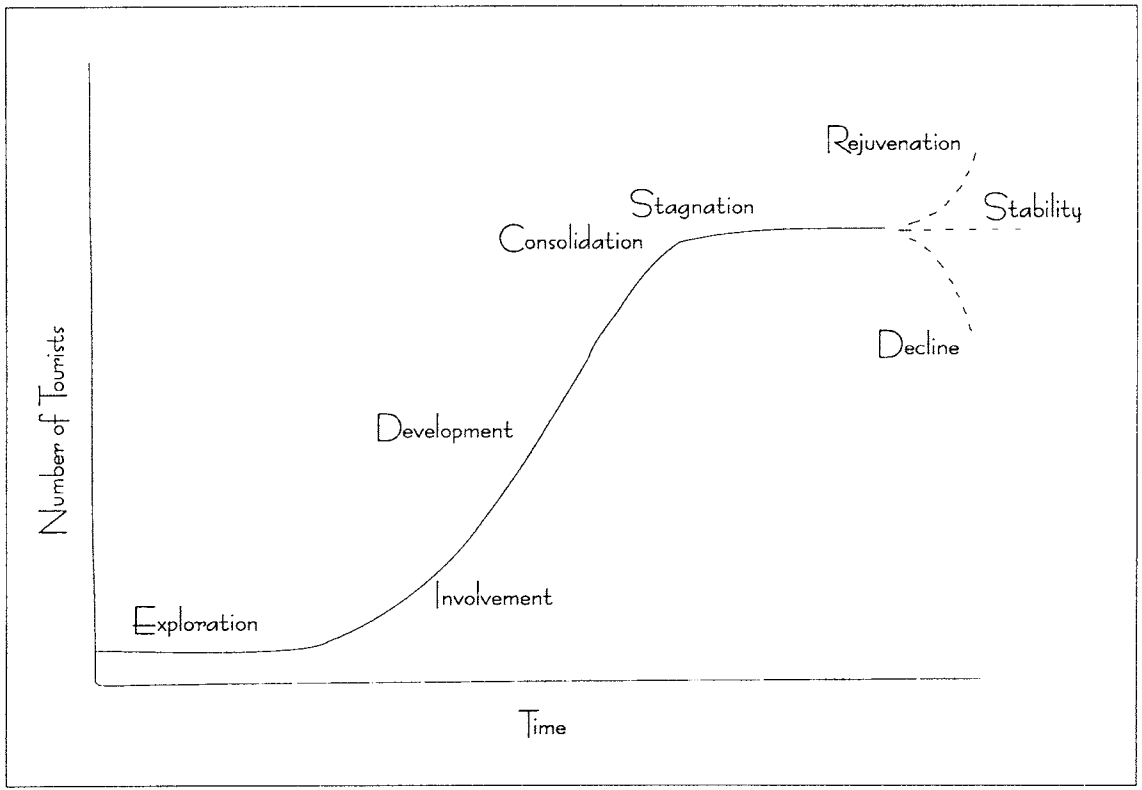

Figure 10.1 The resort model (Butler 1980)

Table 10.1 The Resort Cycle

Stage	Characteristics
Exploration	Low irregular visitation
	No specific facilities
	High contact between hosts and guests
	Little change to the socio-economic and physical environments
Involvement	Increase in visitation and regularity
	Facilities are provided for tourism by locals
	Contact remains high between the two groups
	Some advertising takes place, with the market becoming defined
	Tourism season emerges
	Public pressure on government to improve infrastructure
	Local population happy
Development	Definition of market area and heavy advertising within that region
	Local control declines
	Old small facilities are replaced by large-scale, foreign-owned developments
	Attractions develop, including manmade ones
	Physical appearance of the area has been altered
	Regional and national planning becomes involved
	Number of tourists at peak exceeds the local population
	Imported labour is utilized
	Less direct contact between hosts and guests
	Local population is not happy
Consolidation	Rate of increase declines but numbers remain high
	Major portion of the economy is tied to tourism
	Market franchises are represented with no or few new additions made
	Well-defined recreation business district (RBD)
	Discontentment of the local population is evident
	Old facilities are considered second rate
Stagnation	Peak number of visitation has been reached
	Capacity levels have been attained and exceeded with associated socio-economic and environmental problems
	Resort maintains its image but is no longer *en vogue*
	Reliance on repeat visitation
	Artificial attractions are created
	New development is peripheralized from the original

Source: Butler 1980.

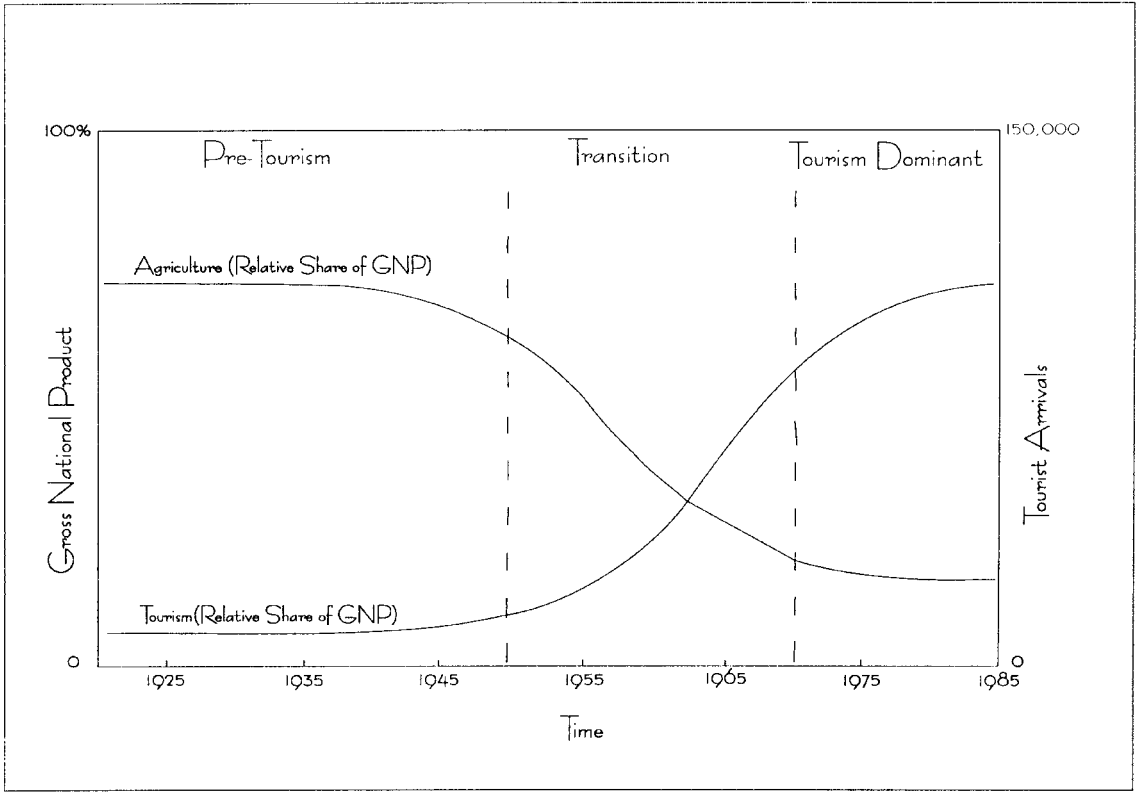

Figure 10.2 The plantation model (Weaver 1988)

Table 10.2 The Plantation Model

Stage	Characteristics
Pre-tourism	Agriculture predominates economy and tourism is negligible
	Transportation is by boat
	Accommodated within the plantation system
	Minimal agent of landscape change
Transition	Agriculture and tourism coexist as important foreign exchange earners
	Tourism growth is aided by infrastructural improvement
	Limited agent of landscape change; tourism located primarily along the coast
	External market influence from Europe and the United States
Tourism dominant	Tourism stands alone as the primary foreign exchange earner
	Agriculture has little significance
	High growth of visitor arrivals and resort construction
	Tourism landscape emerges that impacts on the region
	Tourism dominant core develops that is a aesthetically most pleasing and is surrounded by an impoverished periphery that caters to the core

Source: Weaver, 1988.

consolidation and stagnation stages of Butler's model had not yet been experienced. He also suggested that, in the context of smaller Caribbean islands, tourism was likely to remain the dominant industry in local economies even in these latter two stages because of the absence of significant alternative development options.

Weaver gives the model a temporal component by suggesting that the development of tourism is intricately related to the historical evolution and decline of the plantation economy. The first of his three stages commences with the initial colonization of the island and the development of plantations. In this stage, agriculture dominates the economy and tourism is negligible, being accommodated within the plantation system itself. This first stage existed in Antigua well into the 1940s. Weaver's second stage corresponds with a decline in the importance of the plantation economy and an improvement in transportation and infrastructure. During this stage agriculture and tourism coexist but separate tourist facilities are created and the industry becomes a limited agent of landscape change. In the context of Antigua, this stage corresponds generally with the period from 1945 to 1970. The third stage proposed by Weaver is characterized by a dominance of the local economy by tourism and the relegation of agriculture to only a minor role. Within this, tourism is a major agent of

landscape change and impacts all sectors of the economy in much the same way as the earlier plantation economy.

Weaver places the model in a spatial context by identifying four land use classifications (primary, secondary, tertiary, and non-tourist space) and by mapping their distribution over time. In this context, he defined primary land uses as those that directly serve the tourism industry, such as a resort hotel or beach complex. Secondary land uses comprise land used by both tourists and local residents, such as an airport or restaurants. Tertiary land uses are those areas influenced by tourism but where tourists are rarely found. The purchase of agricultural land on a speculative basis for tourism development and its subsequent abandonment by farmers would be an example of this tertiary land use. The final land use classification encompasses all forms of land cover exhibiting no evidence, directly or otherwise, of tourism's influence.

By his use and modification of Butler's ideas and his incorporation of spatial and temporal components, Weaver was able to describe effectively and explain the patterns of resort evolution on the island of Antigua. The effectiveness of these ideas and models can now be examined in the context of tourism development in Montego Bay.

RESORT DEVELOPMENT IN MONTEGO BAY

As a resort, the spatial extent of Montego Bay has expanded considerably beyond the limits of the original port and its associated built-up area. Originally confined to the port area itself and adjacent suburbs, the current tourism landscape encompasses an area that extends a distance of approximately 23 km from Reading in the south-west, to Rose Hall in the north-east. Within these limits can be found the City of Montego Bay and its recreational business district, together with a linear settlement that has developed along the coastal periphery (Figure 10.3).

The expansion of tourism within this area was slow and it was not until the latter decades of the nineteenth century that tourists began to arrive in Montego Bay. Their numbers were very small and the majority arrived on banana boats and were accommodated within the plantation houses associated with the banana trade or in the few hotels located in the port, such as the Sanitorium Caribbee and the Montego Bay Hotel (Black, 1984). Their impact on the local economy and contact with the local population was minimal and land uses reflected the importance of the agricultural economy, not that of tourism (Figure 10.4).

The growth of tourism became evident in the first few decades of the twentieth century following the construction of a number of guest houses and small hotels around Doctor's Cave Beach, immediately to the north

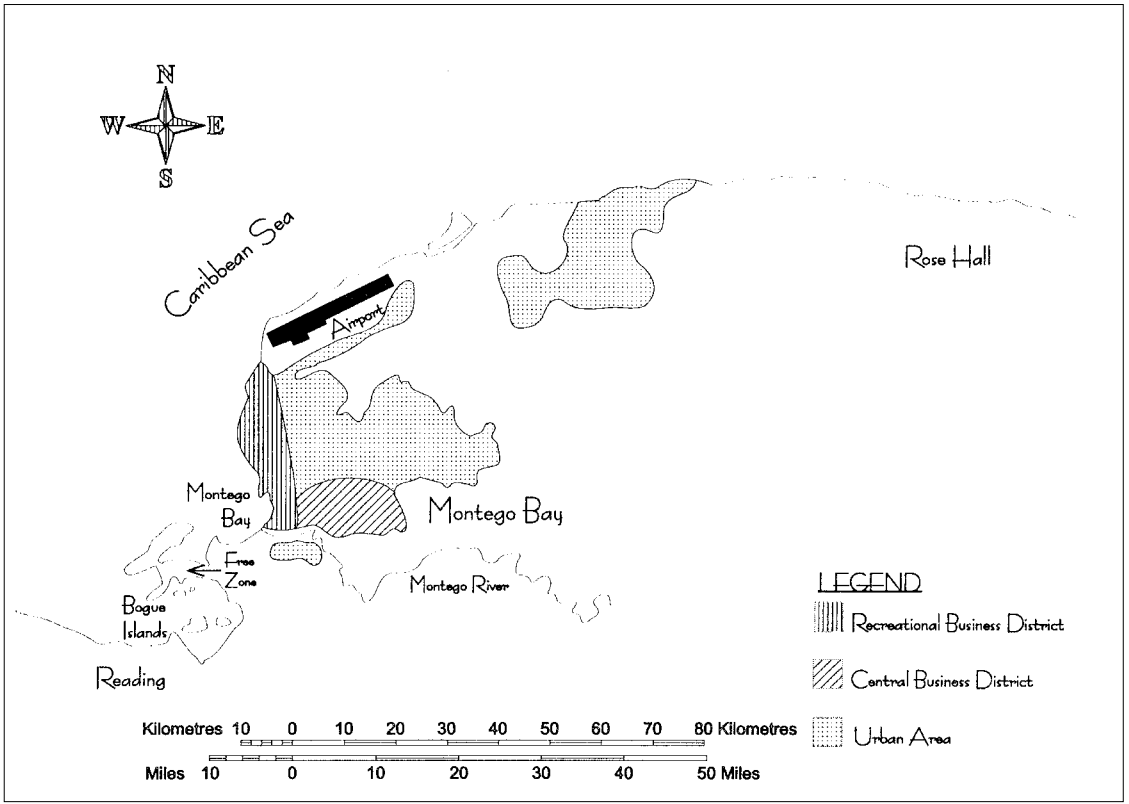

Figure 10.3 The Greater Montego Bay area (Government of Jamaica, 1991)

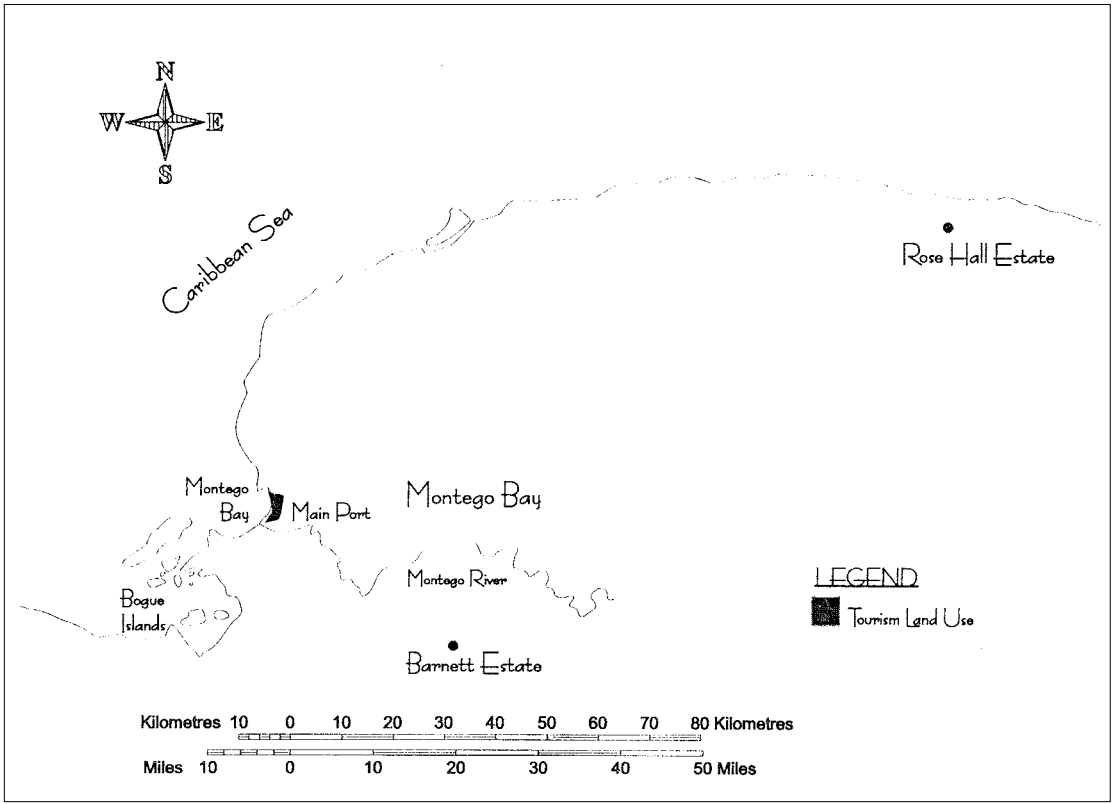

Figure 10.4 Tourism land use in Montego Bay, circa 1900 (Government of Jamaica, 1985)

of the port, and the establishment of a tourism board in 1910 (Black, 1984; Taylor, 1993). By the 1920s Americans, among others, were constructing homes in the area and local entrepreneurs were entering the hotel business on a small scale (Senior, 1988). The growth of the industry in the interwar years was encouraged further by favourable government legislation that included the amending (in 1936) of the Jamaica Hotels Act of 1904 to allow the goods and services required by the hotel industry to be imported duty free, and the provision of government grants for hotel expansion (Taylor, 1973). An airfield was completed in 1944. By 1945, an Anglo-American Caribbean Commission report described Montego Bay as the most intensively developed tourist centre in Jamaica, with fourteen hotels and boarding houses capable of accommodating approximately 400 people, and a variety of other tourist facilities, such as a nine-hole golf course, an esplanade, beach clubs, and an assortment of tourist shops and restaurants (Anglo-American Caribbean Commission, 1945).

Spatially, the industry was a visible consumer of land by 1945 (Figure 10.5). A clearly defined belt of tourism land stretched northward along the coast from the port to the airport and extended inland to the hills overlooking the sea. As the number of tourist arrivals continued to increase during the first fifty years of the century so did the industry's importance in the local economy. Although agriculture was still the area's staple industry, tourism was now competing for land, sharing the transportation facilities of the port, and providing an increasing share of local employment. The industry was geared to meet the needs of foreign markets and the local plantocracy and most of its facilities were segregated spatially and economically from the bulk of the local populace.

Perhaps the most significant factor to encourage the growth of Montego Bay's tourism industry was the establishment of the airport. It not only provided an alternative means of entry for tourists wishing to visit the island, but it also opened up Montego Bay to mass tourism (Senior, 1988; Taylor, 1993). The number of tourist arrivals increased exponentially from the 1950s onward (Figure 10.6) and this growth was matched by an expansion in the accommodation, restaurant, and other recreation-related sectors. By 1965, tourism had surpassed agriculture as a foreign exchange earner for Jamaica (Gayle, 1993) and as the island's primary tourist destination, Montego Bay was the major centre to exhibit evidence of the industry's growth.

By the beginning of the 1970s, the government was playing a more active role in the industry. It provided funds to the Jamaica Tourist Board to help attract more tourists and assisted in the training of Jamaicans for managerial positions within the industry. The employment potential of the industry was recognized, but perhaps more significantly, the government publicly

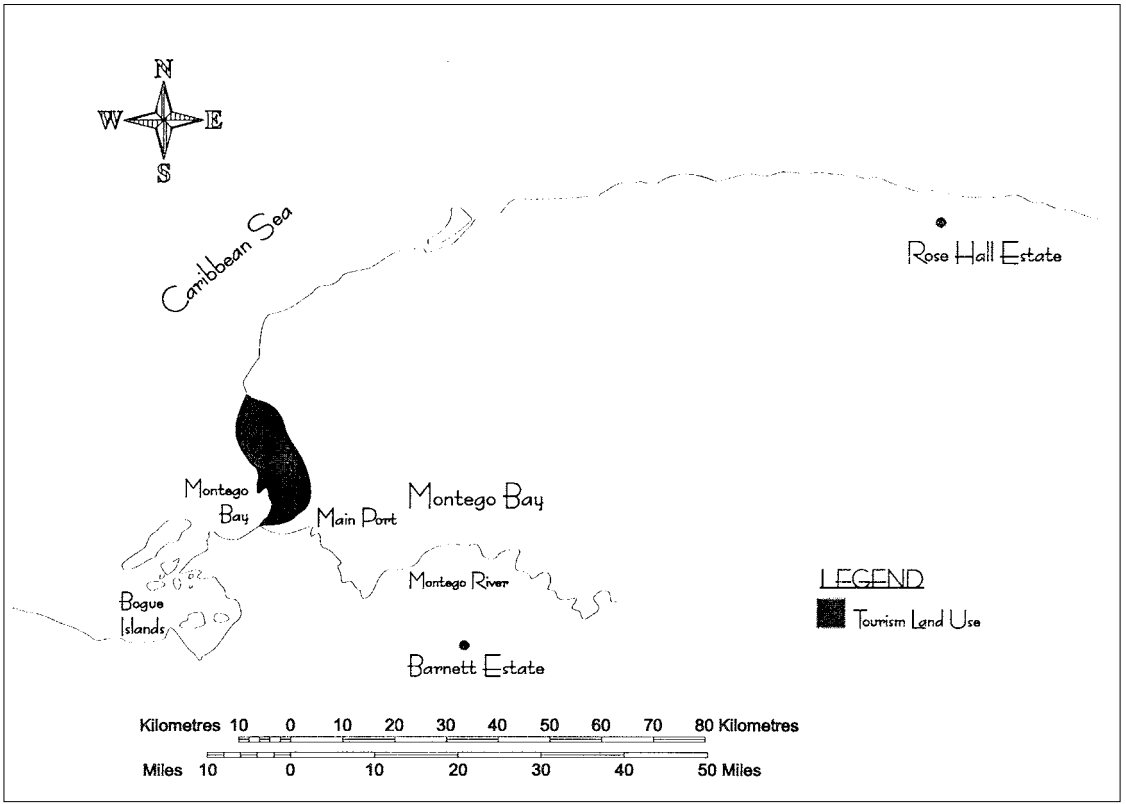

Figure 10.5 Tourism land use in Montego Bay, circa 1945 (Government of Jamaica, 1985)

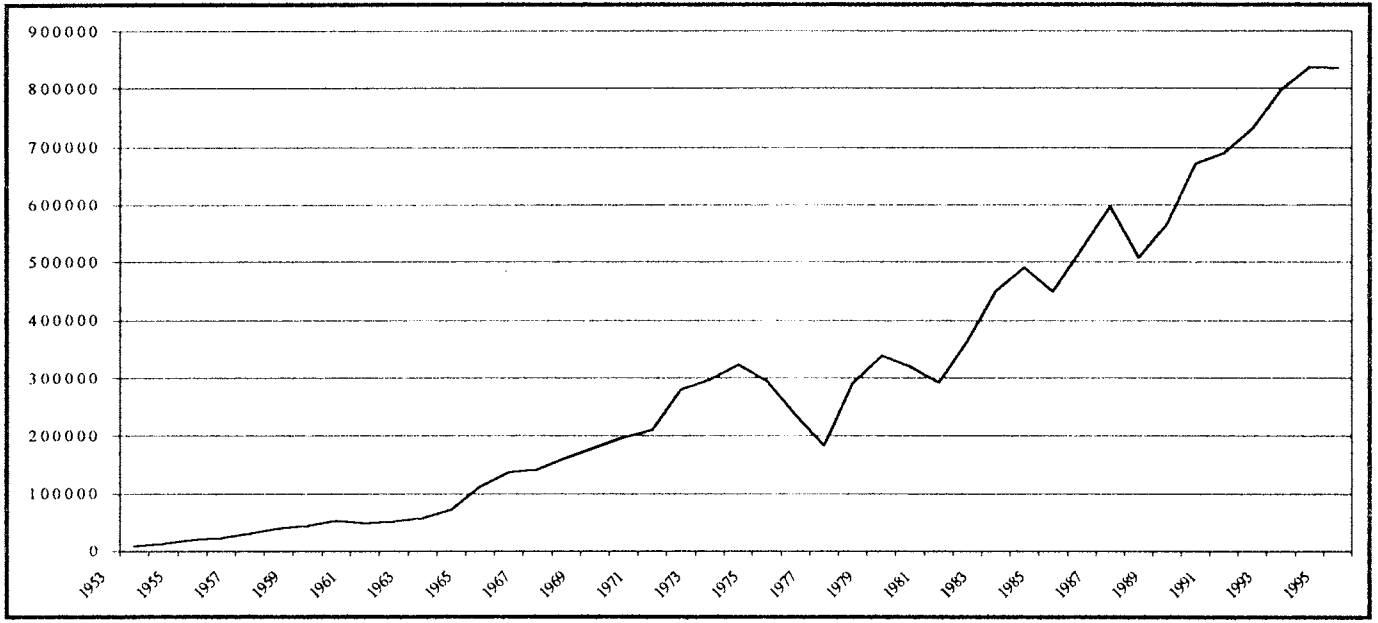

Figure 10.6 Air arrivals in Montego Bay, 1953–1995 (Jamaica Tourist Board, 1997)

accepted the fact that "if tourism is to be acceptable to the people and compatible with national aspirations, its image of segregation from the rest of the society and economy must be changed" (Robotham, 1985: 8).

The growth of tourism in the 1970s was not limited to Montego Bay as other centres in Jamaica, particularly those along the north coast, began to experience significant expansion. Indeed, it was apparent to local authorities in Montego Bay as early as the late 1960s that if the city were to maintain its primate position within the tourism industry, port facilities would have to be improved and more waterfront space created to accommodate future growth. To meet these needs two major projects were begun in the early 1970s by the Urban Development Corporation of Montego Bay (Greater Montego Bay Re-Development Company, 1992). The first of these involved the creation of 940 ha of land and the establishment of a free port on the former mangrove islands at Bogue. This development not only created a new deep-water harbour for cruise ships, but it also provided land for hotel and recreational developments and the establishment of an industrial zone. The second project involved the removal of the old waterfront wharves and warehouses and their replacement with 20 ha of developable land and 1,000 linear metres of sandy beach. Both projects were completed by the middle of the 1980s.

Spatially, the growth of mass tourism extended leisure-related land use in Montego Bay further along the coast to the north-east beyond the airport and as far as Reading in the south-west (Figure 10.7). This expansion did not penetrate very far inland other than on the hills immediately overlooking the sea to the north of the downtown core.

During the 1980s, tourism continued to be Montego Bay's primary source of foreign earnings but various attempts at diversifying the city's economy were meeting with success. Other centres such as Ocho Rios, Discovery Bay, and Negril were emerging as significant competitors for the tourist dollar and investment in new tourist facilities (O'Neil Cuffe, 1992). By the early 1990s, most new large-scale tourism development was occurring elsewhere and while Montego Bay continued to be the main port of arrival for tourists, the majority was accommodated in other destinations. By the late 1990s, widespread renovation and modernization of the recreational business district within Montego Bay was evidence of the importance of the industry to the local economy. At the same time, the lack of significant expansion of leisure-related land use also suggests that the city's growth no longer depended upon it. The only noticeable expansion of tourism land use was limited to development of villa and guesthouse construction at Ironshore on the north-eastern periphery of the city (Figure 10.8). Indeed, the continued growth of Montego Bay in the 1990s was a result of the combination of its diversified economy, its role as the

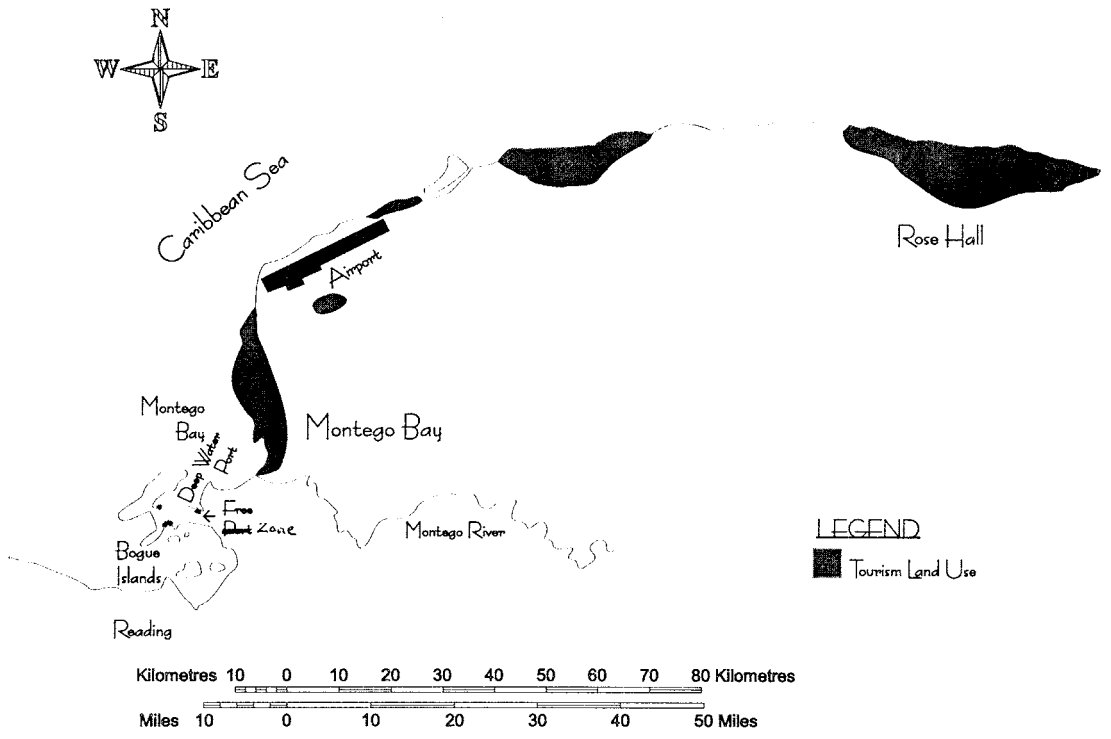

Figure 10.7 Tourism land use in Montego Bay, circa 1980 (Government of Jamaica, 1991)

commercial and industrial capital of the western part of the island, and the tourism industry.

THE RESORT CYCLE AND PLANTATION MODELS APPLIED TO MONTEGO BAY

The models proposed by Butler (1980) and Weaver (1988) are useful in explaining the patterns and processes of resort evolution exhibited by Montego Bay. In many ways Butler's model provides an accurate description of the city's experience with tourism but in a number of areas its predictions are not matched by reality. He stated, for example, that the attitude of the local population towards tourists and tourism would steadily diminish from one of acceptance to one of disappointment and eventual antagonism. Contrary to this, the evidence suggests that in Montego Bay the attitude of the majority of the population was always apathetic to tourism (Taylor, 1993) as the benefits of its development and certainly its control were in the hands of a small minority of the local populace (Gayle, 1993).

Perhaps it is in the "consolidation" stage suggested by Butler, however, where the model most clearly diverges from the actual experience of the resort. Here, the sole dominance of tourism in the local economy predicted by the resort cycle model is absent. Certainly, the clearly defined recreational business district, with an increasing number of major franchises, was present by the late 1970s and 1980s and the marketing of the industry was reaching a wider audience. But the volatile nature of tourism led to a decision to diversify the economic base of the region. As a result, tourism did not come to dominate exclusively the economy of Montego Bay. Its role as a major service centre for the western part of the island had steadily increased through the 1980s and its industrial base had been diversified through such developments as the Montego Bay Free Zone (O'Neil Cuffe, 1992; Greater Montego Bay Redevelopment Company, 1992).

It is not clear from the available evidence whether Montego Bay has in fact entered the "stagnation" stage of resort development. Some of the characteristics of this stage, such as the peripheralization of new development away from the original core and the emergence of socio-economic and environmental problems were in evidence in the resort by the 1990s (Chuck, 1997). The actual number of tourist arrivals, however, was continuing to rise (although the percent increase in visitation was declining) and many of the resort developments in the 1990s were located in the older recreational business district (Jamaica Tourist Board, 1997). Indeed, this evidence would seem to suggest that if Butler's stages do exist, they are not temporally discrete but overlap.

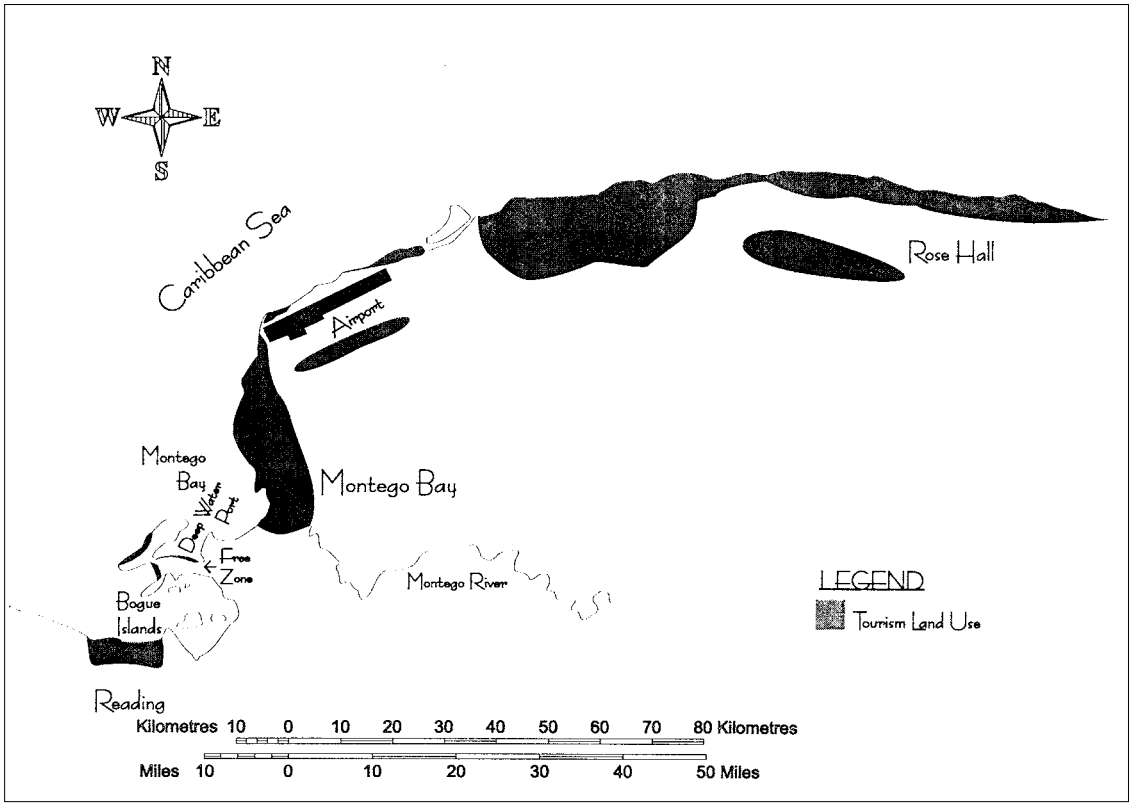

Figure 10.8 Tourism land use in Montego Bay, circa 1993 (Government of Jamaica, 1991)

In an attempt to develop a model with a temporal and a spatial component, Weaver's plantation model (1988) is a useful refinement of Butler's earlier work. In a temporal context, he proposes that a Caribbean resort community's life cycle will parallel that of the development, growth, and eventual decline of the local plantation economy, with tourism gradually replacing agriculture as the community's basic industry. While this may hold true for many of the smaller islands of the Caribbean and perhaps for Jamaica in general, it clearly did not apply in the case of Montego Bay. The "pre-tourism" and "transition" stages of tourism proposed by Weaver may well describe the patterns of tourism development in Montego Bay up to the 1960s. But the characteristics of his "tourism dominant" stage fail to take into account the industrial and commercial diversification that occurred in Montego Bay thereafter and the fact that the centre's earlier dependence on agriculture was not replaced exclusively by one on tourism.

Similarly, his attempts at placing a pattern of resort evolution into a spatial context only partially explain the reality experienced by Montego Bay. His predictions of land use in the earlier stages of tourism development represent a fairly accurate description of the resort's experience but, again, it is in the "tourism dominant" stage where the expected patterns of land use differ from those actually observed. The development of a tourism-dominated urban core with an impoverished periphery specifically serving that core is not clearly evident in the case of Montego Bay. Instead tourism land use is spatially discrete, with a concentration in the recreational business district and in an interrupted band of development along the coast. The spatial distinctness between the central business district and the recreational business district highlights the existence of two cities in Montego Bay. One is the regional city that provides services for the local population and the city's hinterland, while the other is a tourism city that primarily services foreign visitors (O'Neil Cuffe, 1992).

Thus, while both Butler's resort cycle model and Weaver's later adaptation of it have some utility in describing and explaining the evolution of Montego Bay as a resort, neither by itself provides a full account of the patterns and processes involved. In an attempt to do this, a third model is proposed – the resort evolution model – which adapts some of the ideas of Butler and Weaver to the actual experience of Montego Bay.

THE RESORT EVOLUTION MODEL

The resort evolution model (REM) proposed here has four stages, none of which are mutually exclusive but overlap and represent a continuum from the first evidence of tourism through to the present (Figure 10.9). The identification of each stage is based on information in six categories: numbers of tourists; visitor accommodation and facility developments;

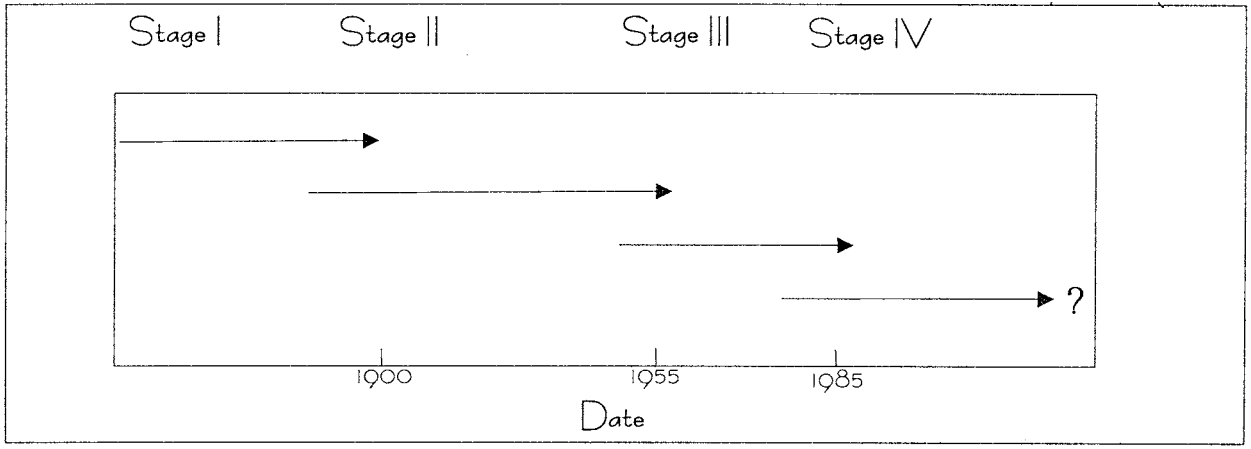

Figure 10.9 The resort evolution model

modes of transportation; economic impacts; social impacts; and land use changes. By examining data related to these six categories it is possible not only to identify the dominant characteristics of each stage (Table 10.3) but also to suggest the key factors that signal movement from one stage to another. Many researchers (Cooper, 1994; Johnson and Snepenger, 1993; Haywood, 1986) criticize both Butler and Weaver for the inoperability of their models. In light of this fact, our discussion of the REM is interspersed with examples from our study of Montego Bay. The intent is to demonstrate the types of characteristics required to understand the patterns and processes inherent in each stage of the resort's evolution. The intention is not to create a general model applicable in any context.

Number of Tourists

The increase in the amount of visitation is one indicating factor of movement from one stage to the next. The rate of visitation increases slightly from "foundation" to "commencement" stages. In the case of Montego Bay, and indeed the island as a whole, there were limited records of visitation prior to the 1920s. In 1926 (commencement) there were 11,619 arrivals to the island and by 1940 that number had increased to 15,147 (Taylor, 1993). The most significant rate of increase occurs late in the commencement stage, which signals passage into mass tourism. By 1956 (the beginning of mass tourism) there were 161,386 arrivals (both sea and air) to the island and 23,302 arrivals to Montego Bay in particular (Jamaica Tourist Board, 1996). By 1985 that number had increased to 584,758 arrivals for Montego Bay alone. After this tremendous period of growth, the rate of increase slows, indicating movement into the diversification stage. During diversification, the total number of arrivals continues to increase in absolute terms, but the percentage increase from year to year declines. For example between 1986 and 1987 there was a 16 percent increase in arrivals in Montego Bay; the interval between 1990 and 1991 saw a 2.7 percent increase and by the mid-1990s, the percent increase had dropped to a mere 0.3 percent (1994–1995) (Jamaica Tourist Board, 1996).

Accommodation

Accommodation and facility development and provision follow a similar pattern of growth to that of visitor arrivals. In the initial stage (foundation) visitors are accommodated within the plantation system. It is the development of facilities specifically for the use of visitors to the region that indicates movement into the commencement stage. These facilities are small scale and locally owned. It is during this second stage that hotels such as Doctor's Cave Beach, Ethelhart, Casa Blanca, Chatham, Beach

Table 10.3 The Stages and Characteristics of the Resort Evolution Model

Stage I: Foundation	Stage II: Commencement	Stage III: Mass Tourism	Stage IV: Diversification
Limited visitation and facility provision	Increase in tourist arrivals	Dramatic increase in tourist arrivals	Rate of increase of visitation declines while actual numbers remain high
Visitors are accommodated within the plantation system	Facility provision begins, small scale and locally owned	Increase in number of facilities, very often international chains; high degree of local ownership, though investment may be foreign; major infrastructural developments take place	Major franchises are well represented and new additions are still made; the range of accommodation available continues to expand
Mode of transportation is primarily by boat	Mode of transportation is primarily by boat	Mode of transport now includes and is primarily by air	Mode of transport remains primarily by air
Minimal impact on the local economy	Area begins to rely on tourism's contribution to the economy; see development of tourist organizations, limited government involvement; beginnings of market area development and seasonality	Tourism one of the primary foreign exchange earners; economy rapidly becoming dependent on this sector; high degree of employment; formalization of organizations and government involvement; heavy marketing to primary generating regions and distinct seasonality; little integration within related industries	Major portion of the economy is tied to tourism, but government begins to seek diversification options; marketing remains high due to little repeat visitation; training and education programmes begin to increase public awareness of the value of tourism and to improve attitudes
Social impact evident in racial servility	Negative perception of tourism by those not directly involved in the industry; tourism developments often in spite of public agreement	Dissatisfaction increases to include both those directly and those not involved with the industry; purported benefits not visible while costs to environment and culture become apparent	Harassment of tourists becomes an issue, as public discontentment increases; urban problems exacerbate negative sentiments
Limited agent of landscape change	Becomes an agent of landscape change as development begins to take place in a linear fashion along the coast	Tourism landscape is visible, and has expanded from original strip along the coast; this area becomes the core and is surrounded by an impoverished periphery supplying labour to the core	Tourism landscape is well defined, with continued expansion away from the original strip; manmade, historic, cultural, and agricultural attractions are now utilized

View Arcade, and Coral Cliff were established in Montego Bay. These hotels were purposely small scale and predominately locally owned (Taylor, 1993).

Once facility provision increases dramatically, and are large in scale and predominantly foreign owned, the resort has entered the mass tourism stage. For example, in 1956 there were 1,350 beds in Montego Bay and by 1985 this number had jumped to 10,401 beds (Taylor, 1993; Jamaica Tourist Board, 1997). It is during this period that foreign ownership begins, so international chains such as the Holiday Inn begin to appear, which are generally larger in scale. Indeed, government incentives are provided to foreign companies to build on the island, through various Hotel Acts that continue to offer duty-free imports and tax exemptions. During this phase, major infrastructure improvements take place to assist in accommodating the increased visitor flow, such as upgrades to the airport and improvement and expansion of highway systems.

By the stage of diversification, major international chains are well represented, with continued expansion of various types of accommodation. In the case of Montego Bay, there was an increase of 96 accommodation units between 1985 and 1994. The increase was largely accounted for by small-scale accommodation developments such as villas (299 to 345 units), guesthouses (1 to 60 units), and apartments (1 to 33 units), with only 16 new hotel units constructed over this period (Jamaica Tourist Board, 1997). The striking feature of this stage is the number of accommodation units that are locally owned versus those that are either partially or completely foreign owned. Although Montego Bay continues to have a large number of locally owned establishments, they only account for 25 percent of the total room capacity, while those hotels that are foreign owned account for 75 percent (Jamaica Tourist Board, 1997). For example, the four largest locally owned hotels in Montego Bay are the Toby Inn (65 rooms), Seagarden (65 rooms), Fantasy Resort (119 rooms), and the Montego Club Resort (120 rooms). In comparison, the four largest foreign owned hotels are Sandals Montego Bay (244 rooms), Half Moon Golf and Tennis Club (340 rooms), Wyndam Rose Hall Resort (489 rooms), and the Holiday Inn (516 rooms).

Transportation

Transportation provision is primarily by boat for both the foundation and commencement stages of resort development for island destinations. It is the advent of air transport during the mid-1950s that encouraged tremendous growth in the tourism industry. As a result, air travel is the distinguishing factor moving a resort into mass tourism. In the case of Montego Bay, there was an exponential growth in tourist arrivals after

the construction of the international airport was completed in the late 1940s. In 1953 there was a total of 8,407 arrivals by air and by 1956 that number had increased to 23,278 (Jamaica Tourist Board, 1996). By 1985, there were 450,194 arrivals by air in comparison to 72,251 by cruise ship. This form of transport has remained the dominant mode into the diversification stage for Montego Bay.

Economic Impact

Economic impact is a far more detailed characteristic to evaluate, for it not only encompasses the actual dollar value gained or lost by the resort, but also includes the level of government involvement in the industry, marketing strategies, and the levels of employment and income created in other industries. In the foundation period, the impact "tourism" has on the economy is very minimal as there are no services or facilities designed specifically for the use of visitors. Instead they are accommodated within the plantation structure, including transportation, lodging, food, and entertainment.

In the commencement stage, once facility provision begins, the economic impact is much greater. The area becomes somewhat dependent on the contributions tourism makes, and as a result the development of tourist organizations to assist in the promotion of the destination's desirability takes place. The development of a Tourist Board in Jamaica began in 1910 by a group of business people who recognized that tourism was beginning to have significance in the economy and felt that a board would aid its development. By 1922, the government had become involved in its organization and, by 1955, the Jamaica Tourist Board was formulated as a permanent entity (Robotham, 1985; Taylor, 1973). A tourist season and market begin to emerge during commencement, and in the case of Montego Bay, that season coincided with the winter months in North America.

The principal factor signaling movement into mass tourism is the economic reliance the region has on tourism indicated by its role as the area's primary foreign exchange earner. In 1965 tourism exceeded agriculture and by 1985 became the primary foreign exchange earner over bauxite (Gayle, 1993). At this point there is a high degree of public employment within the tourism sector. In the context of Montego Bay, the number of people employed in the accommodation sector increased from 4,485 in 1971 to 5,823 by 1985 (Jamaica Tourist Board, 1996). Although the tourism industry is vital to the local economy in terms of employment opportunities, there is little integration with other industries.

Greater government involvement, and by extension recognition of tourism's importance to the economy, occurs in this third stage, as indicated by its commitment to the Jamaica Tourist Board's formalization in 1955, and the establishment of a separate Ministry of Tourism in 1980 (Robotham, 1985).

This period is also characterized by the expansion of tourism organizations. By 1980, the Jamaica Tourist Board had expanded its operations to include a head office in Kingston, with branch offices in Montego Bay, London, New York, Miami, and Chicago. Other organizations to support the industry also emerged during this stage. These included the Jamaican Hotel and Tourist Association and the Jamaican Association of Villas and Apartments in 1961, the Association of Travel and Tour Agents, the In-Bond Merchants Association and U-Drivers Operators Association in 1967, and the Tourism Product Development Corporation, the National Tourism Council and the Jamaican Reservation Service in 1977 (Robotham, 1985).

During mass tourism, one market comes to dominate the industry and visitation fluctuates, reflecting that market's seasons. Jamaica's tourist market is dominated by three countries, the United States, Britain, and Canada, and these comprise 97 percent of visitation (Jamaica Tourist Board, 1996).

In diversification, a major portion of the economy is still tied to the tourism industry. In the Jamaican context, tourism remains the number one foreign exchange earner, accounting for 74.4 percent of the island's gross domestic product (JAMPRO, 1997). Considerable effort is expended on marketing as few tourists are repeat visitors. In fact the majority of the Jamaica Tourist Board's budget (85 percent) is spent on marketing to new visitors. For example, in the 1990s an office of the board was opened in Japan, which increased visitation by 650 percent from that country (Gayle, 1993; Jamaica Tourist Board, 1996).

While efforts are made to educate the local population to the benefits of tourism and in training local people for employment in the industry, it is the search for and development of other industrial options that distinguishes the fourth stage. A good example of this is the development in 1985 of the Montego Bay Free Zone (MBFZ), located west of the city on a manmade peninsula. As of 1996 there were 25 companies operating on 22 of 92 developable hectares (Montego Bay Free Zone, 1996). The project is a joint venture between the Port Authority and the Government of Jamaica. Because of the incentives offered to offshore companies to locate in the MBFZ (such as tax exemption, duty free imports, guaranteed low wages, and unquestioned repatriation of profits) the primary benefits that Montego Bay receives are increased employment opportunities.

Social Impacts

The social impacts of tourism development increase in negativity in proportion to the increase in tourist arrivals. In the foundation stage, the presence of slave labour that is required to serve the visiting elite exacerbates racial tensions. By the commencement stage a negative perception of tourism development is in existence together with a sense that tourism is proceeding without the general consent of the public. This is exemplified by the development of the White Sands beach club, which prior to the 1920s had been a public bathing area in Montego Bay (Taylor, 1993). During the 1920s Doctor's Cave Bathing Club attempted to obtain prohibitive rights over the beach area under the guise of protecting it for the emerging tourism industry. By the late 1920s, after having obtained the right to administer the beach, and despite much public protest, the club was given exclusive management rights provided they did not restrict public access. The club, however, enforced dress codes and entrance fees that effectively eliminated much of the public as users. In this way, tourism development continued in spite of public protest.

Mass tourism is marked by increasing dissatisfaction from both those areas of the population that are involved in the tourism industry and those that are not. This is largely due to the perceived lack of visible benefits to the bulk of the population while the costs are becoming physically apparent. In the case of Montego Bay, the effects of tourism on the social and environmental fabric of the city were painfully present, and recognized by the Manley government during the early 1970s (Robotham, 1985; Taylor, 1993). Programmes were developed to promote domestic tourism through offering Jamaican vacations as rewards to employees. It was also during this time that parks and recreation facilities were provided for the use of both local and visiting populations, the aim being to provide a neutral area for positive interaction between the two groups. Unfortunately, the programmes were short lived.

By the diversification stage, harassment of tourists has become a significant issue and, in the case of Montego Bay, is cited as the number one deterrent to repeat visitation, as public discontentment continues (Chuck, 1997). Although not always directly responsible, tourism becomes the social scapegoat. As a result, continued effort is made to improve local attitudes towards tourism. In the case of Jamaica, two separate programmes were under consideration by the minister of tourism in 1997 to address the problems associated with local attitudes towards tourism and to convince Jamaicans that the tourist dollar is vital not only for the economy but also for the ordinary person (*Gleaner*, 1997). The first programme is Development Trust, which provides an opportunity for local

residents to partake in programmes to improve their community for their own benefit and for the benefit of the tourism industry. The second programme, Team Jamaica, provides an opportunity through educational programmes to improve attitudes towards the tourism industry and to tourists in particular.

Landscape Change

The impact of tourism on the physical environment is limited until the number of visitors becomes significant enough to warrant facility development. The result is that tourism is a limited agent of landscape change during the foundation stage, but begins to have an impact in the commencement stage in a linear fashion along the coast. By the stage of mass tourism, tourism has expanded visibly along the coast and is competing with other potential land users. By the diversification stage, a recreational business district is clearly in evidence and distinct from the urban core. Further tourism development is concentrated away from the original tourist strip in a linear fashion along the coast.

CONCLUSION

The experience of Montego Bay with tourism has indicated that attempts to generate universal models of resort evolution are fraught with difficulties. While the work of Butler (1980) has provided some insight into the patterns of resort evolution at a generic level, and Weaver's (1988) later attempt to place that work in a Caribbean context is a useful contribution to our understanding of the phenomenon, both have failed to account for the uniqueness inherent in any geographic location. In the case of Montego Bay, for example, history may have placed the resort in a similar temporal context to that of Antigua but such geographical factors as shape and scale have worked to create differences in both pattern and process. Hopefully, the current research has demonstrated the need to temper the use of geographic models with a sensitivity to differences in locational context while also expanding our knowledge of the phenomenon of tourism in a Caribbean context.

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11 Urbanization and Planning Issues in Montego Bay, Jamaica

Bernard D. Thraves

Montego Bay is located on the north coast of Jamaica at a place where the predominant east–west orientation of the coastline is interrupted by a major north–south projection (Figure 11.1). The city is the major commercial centre of western Jamaica and serves as the parish capital of St James, one of Jamaica's fourteen parishes. Despite its modest size (82,002 in 1991), the city is known internationally by virtue of its role as a major tourist resort. Tourism has brought considerable economic benefits in the form of service sector employment and construction activity. At the same time tourism has created a narrowly based local economy that is subject to rapid and unpredictable fluctuations in demand. More critically, it has encouraged urbanization at a rate beyond the physical planning capacities of the city's housing, transportation, and general services infrastructure. Rapid growth in the absence of adequate physical planning has contributed to environmental degradation, which now threatens the viability of the city's tourism resource. This chapter provides a review of these issues and outlines the local planning community's strategy for resolving them.

HISTORICAL BACKGROUND

Montego Bay's sheltered location prompted Columbus to name it *El Golfo de Buen Tiempo*. Thereafter the Spaniards chose this part of the coast as a provisioning area for ships en route to their colonies in Latin America (Black, 1983; Senior, 1987). Hence the community's current name is thought to be a corruption of the Spanish *manteca* meaning "lards" or, more explicitly, the bay where ships larded up. Despite its advantageous location, permanent settlement did not take place until after the British seized the island in 1655. The initial settlement was small and was constantly plagued by attacks from pirates and the Maroon communities of freed and runaway slaves. By the late eighteenth century, however, Montego Bay had emerged as a major centre in the plantation economy. Prosperity was based on the export of sugar, rum, and molasses, and later on the basis of bananas. Today the shipment of such traditional cargoes has been replaced by cruise ship traffic at the Montego Bay Freeport (Figure 11.1), and by the export of clothing, electrical products, and other light manufactured goods produced in the

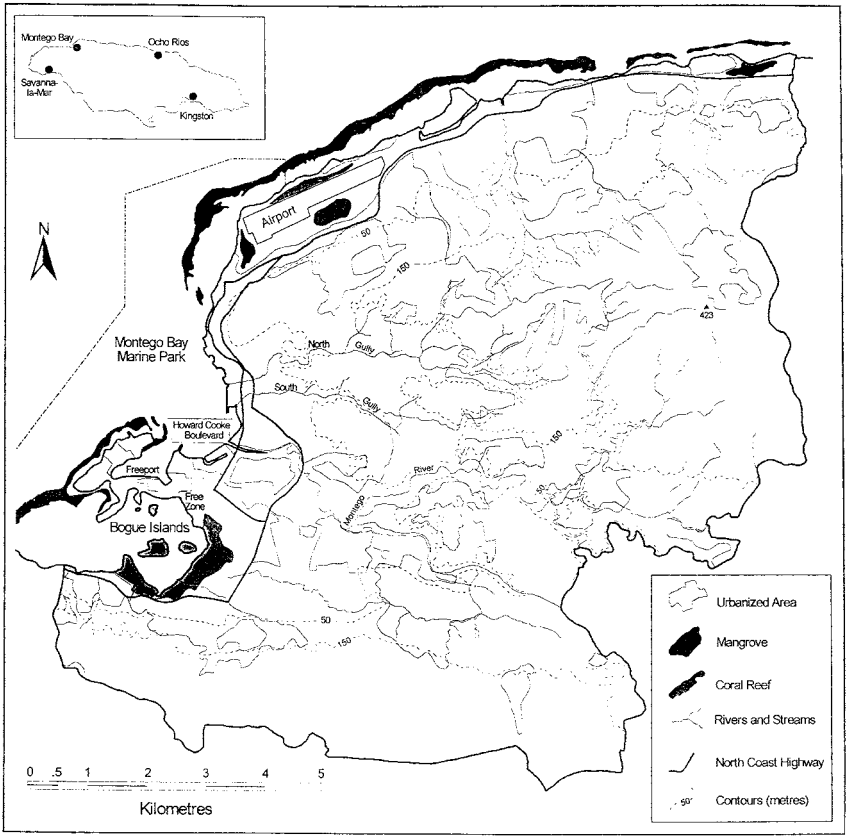

Figure 11.1 Location and general site characteristics of Montego Bay

Montego Bay Free Zone (MBFZ) (Montego Bay Free Zone Co., 1996). Recently a satellite communications station has enabled the MBFZ to become an employment node in the global data processing and telemarketing networks. In 1996 plans were completed to expand the developed area of the MBFZ from 9 to 17 ha (22 to 42 acres).

INTERNATIONAL TOURISM

Montego Bay's role as an international tourist resort dates from the 1920s (see Chapter 10). Before World War II tourism was generally exclusive, small scale and focused on the restorative properties of sea-bathing. During the war the strategic importance of Montego Bay to the Panama Canal resulted in the construction of a landing strip as part of the Churchill–Roosevelt Lend-Lease Agreement. This facility was expanded

into Jamaica's second international airport following the onset of mass tourism in the 1960s. Today the city serves as the principal gateway to Jamaica's considerable tourism industry, most of which is concentrated along the north or "sunshine" coast. By 1998 tourism attracted over 1.8 million visitors and contributed US$1.2 billion in foreign exchange to Jamaica's economy (Jamaica Tourist Board, 1999). Direct employment in the island's accommodation sector alone exceeded 30,000 persons, of which 30 percent were employed in Montego Bay.

Tourism at this scale has generated great expectations of employment and prosperity. However, observation suggests that the tourism economic multiplier is tightly managed. Most tourism is now based on all-inclusive holiday packages wherein the vacation experience of visitors is largely confined within the limits of the hotel compound. The isolation of tourists in these hotels severely limits the opportunity of local entrepreneurs to benefit from business that might otherwise be created in the wider community (Grizzle, 1992).

Despite the limitations of the tourism sector, Montego Bay still provides relatively attractive prospects for employment. Thus, in 1991, 74 percent of working-age men in the city and 52 percent of women were identified as economically active (STATIN, 1995). Corresponding values for the predominantly rural areas of St James beyond Montego Bay were 67 percent for men, and only 34 percent for women. The comparatively high participation rate for women in Montego Bay points to their favourable employment prospects in the city's tourism sector and in the industries of the MBFZ, where 82 percent of employees are women (Montego Bay Free Zone Co., 1996). Employment in these sectors is a major cause of extensive regional commuting (O'Neil Cuffe, 1992), it being estimated that as many as 100,000 persons commute to the city on a daily basis (Chambers, 1996).

POPULATION GROWTH

During the slave and post-emancipation phases of the plantation economy Montego Bay's population grew quite modestly, such that by 1943 it still numbered only 11,500. Thereafter, an annual growth rate exceeding 3 percent raised it to 23,600 by 1960 at the onset of mass tourism. This growth rate was sustained or even exceeded over the next twenty years as tourism brought relative prosperity to the region and stimulated significant rural–urban migration. Similar or even higher growth rates have been typical of urban areas in developing economies during the post–World War II era (Drakakis-Smith, 1987: 5–8; Potter and Lloyd Evans, 1998: 9–15), and they have certainly been matched elsewhere in the Caribbean (Potter, 1989: 1–20; Portes et al., 1997: 5–8). Fortunately, in the case

of Montego Bay the city's growth slowed to 2 percent per annum during the 1980s. Nevertheless, this rate still exceeded the national growth rate of 0.9 percent and identified Montego Bay as the fastest growing community outside metropolitan Kingston, the nation's capital. By 1991 Montego Bay's population had reached 82,002 (STATIN, 1995), with some estimates placing the population of the Greater Montego Bay area at over 96,000 (O'Neil Cuffe, 1992; PADCO, 1993).

Rapid population growth since 1960 has caused the city to overspill its restricted site on the narrow coastal plain (Figure 11.1). At the same time, growth has been experienced unevenly by the city's thirty-two communities (Figure 11.2). Thus, during the 1980s population losses, rather than gains, were generally experienced in the older communities of the urban core (Figure 11.3). Population loss in Montego Bay Central alone exceeded 30 percent, and major losses were also experienced in parts of Albion, Fairfield, Glendevon, and Rosemount. This deconcentration is consistent with a long-established pattern of outmigration from the urban core (Eyre, 1972). In contrast, population gains were generally experienced in existing or newly established suburban communities. Of these, the gains at Catherine Hall, Farm Heights, Freeport, and West Green reflected new housing developments built largely within the formal housing sector. Conversely, much of the gains in Catherine Mount, Flankers, Green Pond, and Norwood reflected construction activity in the informal housing sector. Consequently, in spatial terms at least, Montego Bay's growth in the post-World War II era has resembled the suburbanization experience of North American and European cities. Significantly, however, its growth has contrasted with these cities in that much of it has been unplanned and has proceeded without adequate provision of basic urban services.

THE HOUSING SECTOR

In 1991 Montego Bay's housing stock of 15,303 housing units accommodated 21,316 households at an average density of 3.8 persons per household (STATIN, 1995). Rapid population growth over preceding decades had caused massive demand for housing at rates in excess of supply. The only exception to this was in the 1980s when the rate of new housing construction actually exceeded that of household formation, as a consequence of which the backlog in housing demand was somewhat reduced (O'Neil Cuffe, 1992). Despite this, the overall consumption of housing amenities remained low. Consequently by 1991, 47 percent of households had no direct access to piped water, 33 percent needed to share toilet facilities with other households, 34 percent were housed in one-room dwellings, and 20 percent were dependent on kerosene lamps for lighting

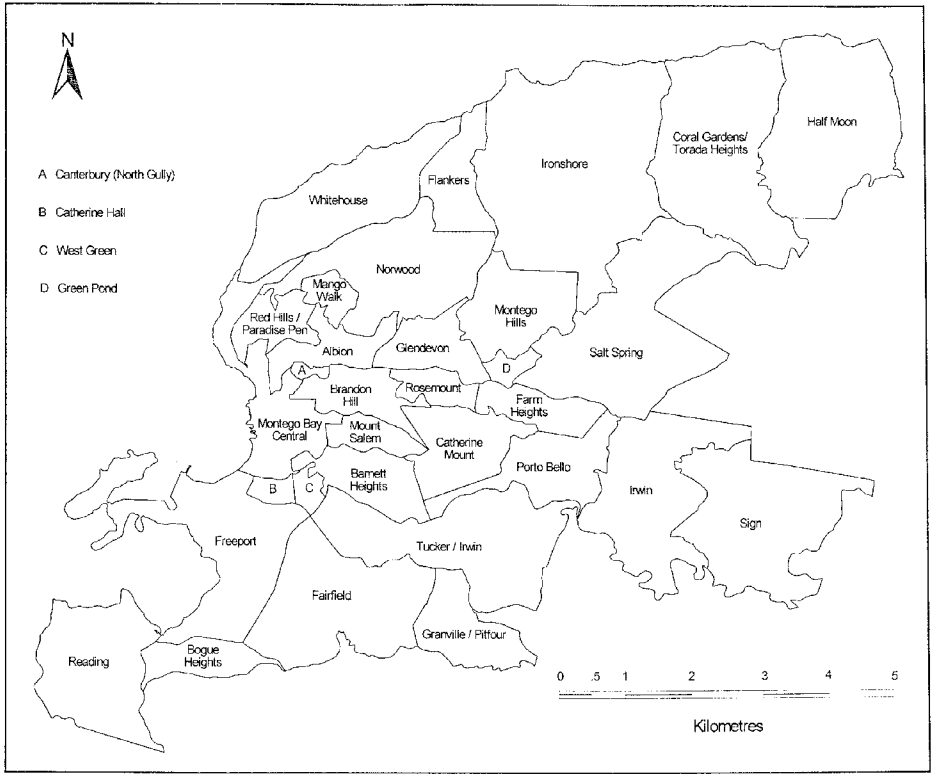

Figure 11.2 Location of Montego Bay's constituent communities

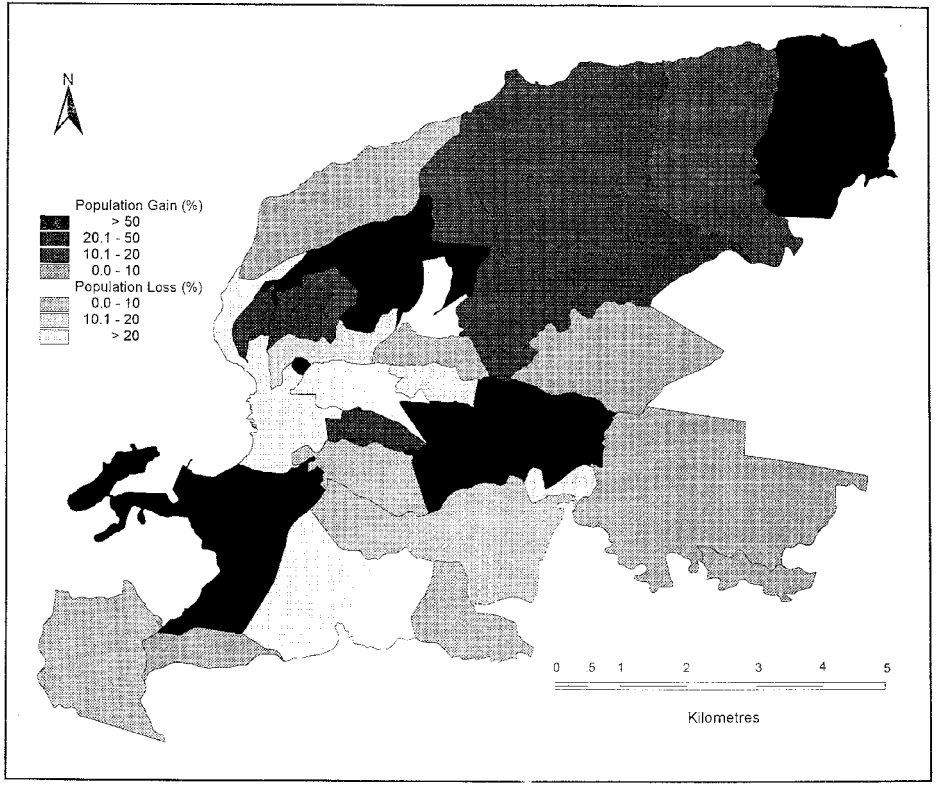

Figure 11.3 Population change in Montego Bay, 1982–1991

(STATIN, 1995). These rates were typically much higher in the city's most disadvantaged communities, such as Canterbury and Norwood (Table 11.1). Moreover, an index of housing amenity (Table 11.1, column 9) based on a composite of the aforementioned characteristics revealed a pattern of stark contrasts across the city (Figure 11.4). Computation of the index was determined by transforming the raw data for each characteristic (Table 11.1, columns 1, 3, 5, and 7) to produce a set of standardized scores (columns 2, 4, 6, and 8). Individual values of the index for each community were then computed by averaging the scores across the four characteristics.

By 1991, 62 percent of Montego Bay's housing stock was identified as formal sector housing, but during the 1980s only 43 percent of the new housing was produced by this sector (O'Neil Cuffe, 1992). A prominent example of such development was the Urban Development Corporation's (UDC) comprehensively planned, low-income housing project at Catherine Hall. This development was built on part of a former sugar estate on one of the few level sites close to the urban core. In this instance, the loss of a valuable agricultural resource was offset by the provision of housing that ranks among the best in Montego Bay in terms of basic amenities (Table 11.1 and Figure 11.4). Most interestingly, many of the original housing units show evidence now of additional construction activity in the form of added floors and extensions. Such incremental construction is commonplace in the self-help environments of Montego Bay's informal settlements. Its presence in Catherine Hall and in other UDC developments, such as those built in Ocho Rios to house low-income workers in the tourism industry (Coit, 1995) and in Portmore near Kingston, suggests the practice is not limited by economic status, but represents a more universal feature of Jamaican enterprise. Elsewhere, Montego Bay's experience with incremental housing construction can be viewed as part of a long-established and widely observed phenomenon in third world cities (Turner, 1967, 1968; Griffin and Ford, 1980; Potter and Lloyd Evans, 1998: 137–158), and one that has parallels in other Caribbean countries (Potter, 1994: 8–19).

Other notable formal sector developments include the low-density subdivisions of custom-built villas in Ironshore and Coral Gardens/Torada Heights. These villas range from relatively modest family homes to palatial residences. Many provide accommodation in the tourism sector and are owned by Jamaicans or foreign nationals resident in North America. Consequently, with the exception of those that provide basic accommodation for their staff, the villas do little to help meet the housing needs of Montegonians.

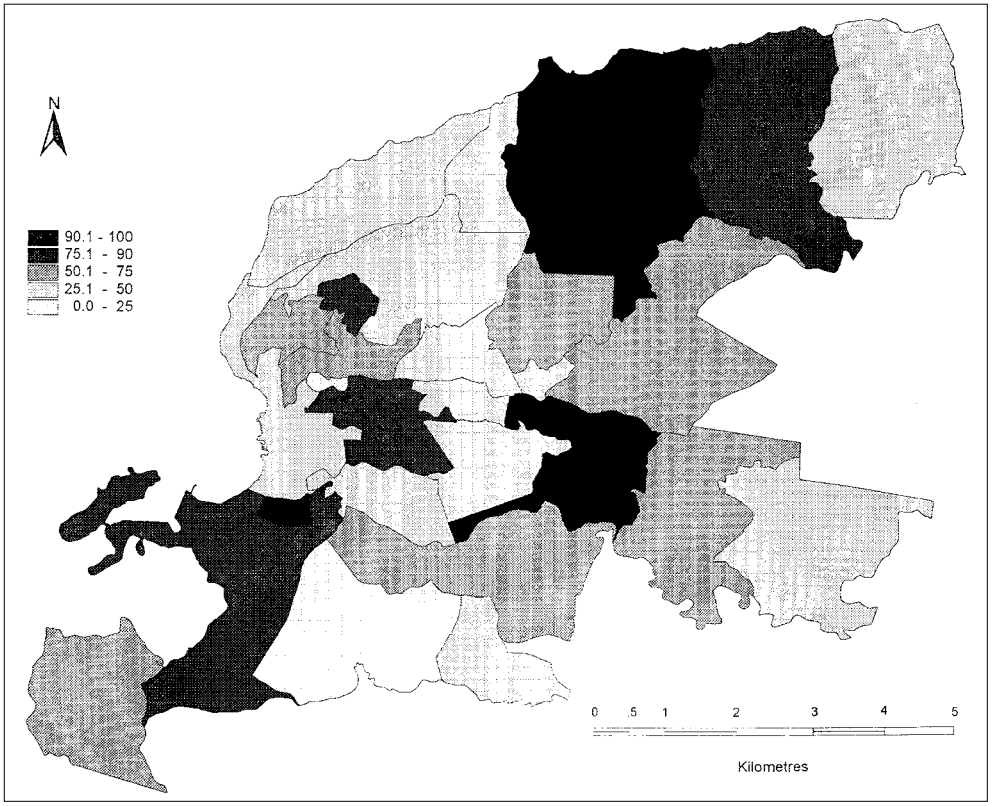

Figure 11.4 Housing Amenity Index for Montego Bay

In contrast to these examples, most housing in Montego Bay is produced by the informal sector and is identified as "self-help" housing. During the 1980s, 57 percent of housing construction took place in this sector, its growth and importance being attributable to several interrelated factors (O'Neil Cuffe, 1992). First, the stock of low-cost housing in the city core (Montego Bay Central) was reduced by demolitions and illegal conversions to commercial uses. This reduction took place at the same time as high rates of rural–urban migration created sustained demand for low-cost housing. Second, the public sector has been unable or unwilling to service land and sell building lots at a rate commensurate with the rate of household formation. Last, but not least, the prevalence of low-income jobs and uncertainty overemployment in tourism and other sectors of the economy has meant that many Montegonians have been denied access to conventional mortgages or housing loans from the National Housing Trust. To overcome these factors many individuals have solved their housing needs by "capturing" land and building self-help housing in one of the informal settlements. Much of the recent development in Rosemount, Norwood, Glendevon, Granville/Pitfour, and Catherine Mount (Figure 11.2) has been of this type. Not surprisingly, these communities figure prominently among those identified as having the lowest levels of housing amenity (Table 11.1 and Figure 11.4).

Montego Bay's first informal settlement appeared in the 1930s in the community of Canterbury (North Gully) (Eyre, 1972, 1979), an area that still has the lowest level of housing amenity in the city (Table 11.1 and Figure 11.4). By the early 1990s seventeen such settlements provided accommodation for 70 percent of Montego Bay's population (PADCO, 1993). The construction of individual housing units within the settlements usually takes place on an incremental basis as and when needs dictate and funds become available. Some construction is undoubtedly related to the receipt of remittance monies from abroad (Eyre, 1997). Preference is for single-detached units and in 1991, 89 percent of all housing units in Montego Bay were classified as detached (STATIN, 1995). Preferred building materials include concrete, concrete block and steel rebar. The use of these materials reflects at least three factors. First, in most instances those seeking housing are not destitute, as is the case of many residents in third world cities (Basu, 1988; Aldrich and Sandhu, 1995). Second, the view is taken that landowners or public authorities are less likely to bulldoze "permanent" structures than those constructed from less substantial materials. Naturally, this practice is not a guarantee against attempts to remove informal developments, as was evident in the attempt to bulldoze properties in Flankers in 1994 (Eyre, 1997). Third, the preferred

Table 11.1 Housing Amenity Characteristics for Montego Bay and Its Constituent Communities

Community	Households Without Piped Water into Dwelling		Households Sharing or Without Toilet Facilities		Households In One-Roomed Dwellings		Households Using Kerosene Lighting		Index of Housing Amenity (theoretical range 0–100)
	% (1)	score (2)	% (3)	score (4)	% (5)	score (6)	% (7)	score (8)	(9)
Porto Bello	4.1	95.3	3.0	96.2	2.9	100.0	1.2	97.9	97.4
Catherine Hall	0.5	99.7	2.5	96.9	10.0	87.3	0.3	100.0	96.0
Farm Heights	0.2	100.0	6.6	91.8	13.9	80.4	0.7	99.0	92.8
Ironshore	3.5	96.2	0.0	100.0	28.3	71.7	1.4	97.5	91.4
West Green	6.6	92.6	19.8	75.3	8.2	90.5	1.7	96.7	88.8
Freeport	8.6	90.3	6.3	92.2	9.9	87.6	7.7	83.4	88.4
Mango Walk	5.9	93.5	13.7	83.0	14.5	79.3	1.4	97.5	88.3
Bogue Heights	13.1	85.3	6.7	91.6	13.9	80.5	9.0	80.5	84.5
Bradon Hill	7.2	92.0	22.9	71.5	20.1	69.4	2.9	94.1	81.7
Coral Gardens/Torado Heights	27.0	69.3	15.1	81.1	14.1	80.0	5.7	87.8	79.6
Mount Salem*	10.0	88.8	29.9	62.7	27.9	55.3	2.2	95.6	75.6
Reading	36.2	58.6	10.8	86.5	24.5	61.4	15.8	65.4	68.0
Montego Hills	54.3	37.9	14.1	82.4	20.8	68.1	19.8	56.4	61.2
Irwin	47.9	45.2	21.4	73.4	21.1	67.5	20.6	54.7	60.2
Red Hills/Paradise	42.0	52.0	19.9	75.2	26.9	57.2	21.9	51.5	59.0
Tucker/Irwin	39.9	54.4	28.6	64.3	27.7	55.8	18.3	59.7	58.6
Albion	47.6	45.7	38.3	52.2	28.2	54.8	16.0	64.8	54.4

Montego Bay	46.8	59.1	32.9	56.8	33.6	46.5	19.6	45.2	51.9
Green Pond*	60.2	31.2	33.6	58.1	28.9	50.9	15.6	65.9	51.5
Sign	53.6	38.8	26.3	67.3	24.4	61.6	32.2	28.6	49.1
Rosemount*	55.0	37.1	36.8	54.1	34.0	44.5	18.9	58.4	48.5
Whitehouse	37.8	56.8	50.5	37.1	34.2	44.0	22.0	51.4	47.3
Barnett Heights	44.0	49.7	48.7	39.3	40.8	32.3	14.8	67.4	47.2
Salt Spring*	69.6	20.3	30.8	61.7	30.7	47.9	23.5	48.4	44.6
Glendevon*	57.7	34.0	47.4	40.9	37.9	37.4	18.5	59.3	42.9
Flankers*	74.8	14.3	25.3	68.4	33.1	46.0	28.5	37.0	41.5
Granville/Pitfour*	59.9	31.4	40.0	50.1	36.7	39.7	29.1	35.6	39.2
Half Moon	21.3	75.8	45.7	43.0	56.8	3.6	29.8	34.0	39.1
Montego Bay Central	42.6	51.3	62.9	21.7	53.1	10.2	21.8	51.8	33.8
Catherine Mount*	64.9	25.7	22.3	72.1	45.6	23.6	41.4	8.1	32.4
Norwood*	66.4	24.0	25.9	67.7	43.5	27.4	45.0	0.0	27.8
Fairfield*	78.0	10.7	62.4	22.2	58.9	0.0	28.4	37.2	17.5
Canterbury* (North Gully)	87.3	0.0	80.3	0.0	54.3	8.2	21.6	52.3	15.1

* Informal settlements are identified in all or major parts of these communities.

building materials offer greater protection from the region's tropical storms and hurricanes.

In this manner the informal sector has evolved to meet the basic housing needs of Montegonians. Unless and until higher incomes and greater security of employment become the norm, self-help housing of this type is likely to remain the most viable housing option for most Montegonians. Balanced against this success, however, are the severe environmental costs that have accompanied much informal sector housing development. These costs stem from the absence of any meaningful site selection process and the general lack of physical infrastructure services in informal settlements. In many instances development has taken place on lands unsuited to development or on lands designated for conservation. Development on steep slopes and in gullies has resulted in increased soil erosion and run-off, and in a consequent degrading of water quality in the creeks and rivers that drain to the sea. The principal watercourses affected are the Montego River, North Gully, and South Gully (Figure 11.1). Water quality is further impaired by the rudimentary nature of the water supply system, the general absence of sanitary and storm sewers, and inadequate provisions for the storage and removal of garbage (USAID, 1993). The use of creeks for the washing of motor vehicles is commonplace, and for some this practice provides a source of income. For a few, the use of the same creeks to wash clothes and conduct personal hygiene is a matter of ready convenience, or perhaps necessity.

In a typical informal settlement water is supplied via standpipes. For example, in parts of Norwood, Rosemount, and Salt Spring over 80 percent of households are dependent on standpipes for their primary water supply (STATIN, 1995). Similarly, in the absence of a sewer system or properly installed and maintained septic tanks, over 90 percent of households in these neighbourhoods rely on pit latrines. These frequently overflow after heavy rainstorms and discharge untreated human sewage into surface or subsurface drainage systems. Even where sewer connections have been developed the capacity of the main sewage treatment plant at Catherine Hall (Figure 11.1) is insufficient to meet needs. Discharge of raw sewage also takes place into the Montego River during storm events. Three major consequences may be noted. First, the sewage load in rivers and creeks poses an immediate risk to human health (USAID, 1993). Second, inadequate or improper sewage disposal contaminates the region's karstic bedrock formations and threatens long-term impairment of groundwater quality. Third, the increased silt and nutrient load discharged to the bay threatens the survival of the marine communities directly offshore (Lee and Walling, 1992; Sullivan and Chiappone, 1994).

TRANSPORTATION

Montego Bay's role as the major commercial centre in western Jamaica is reflected in the demands placed on its transportation infrastructure. Despite the rapid urban growth of the last 40 years, the local and regional road system has remained largely unchanged. Consequently traffic design capacities are clearly exceeded and much of the road system is in need of major repairs. The construction of a bypass road (Howard Cooke Boulevard) on reclaimed land seawards of the city centre (Figure 11.1) has served simply to draw more vehicles into its narrow and crowded streets. The consequent traffic flow is marked by vehicular congestion, lack of parking space, and conflict with high levels of pedestrian activity. Effective transportation is further handicapped by the absence of a municipally operated public transportation system. Instead, local transportation is based on an assortment of privately operated taxis, which provide an indispensable low-cost service on relatively fixed routes throughout the city. Transportation to communities outside Montego Bay is provided by a small fleet of ageing buses. These ply regular routes but at infrequent intervals as they usually depart only when they have a "full load". High average waiting times add considerably to the length of the working day of those commuting to and from the city. This general inability of the transportation system to properly serve the needs of the population is illustrated by inadequate access to the MBFZ. Currently the economic development potential of manufacturing and information processing industries in the MBFZ is limited more by the unreliable transportation access of employees than by direct employment opportunities (O'Neil Cuffe, 1992; Frey, 1996).

In the regional context, all traffic passing east and west of the city must be routed through or close to the city centre and along a narrow coastal highway (Figure 11.1). Routes into the hinterland area south of the city are negotiated on steeply graded, twisting roads. Since 1992 congestion on these roads has been exacerbated by the closure of rail services on the line linking Montego Bay with Kingston. Congestion also reflects increases in heavy vehicular movements resulting from the concentration of international trade through port facilities at Montego Bay and Ocho Rios. A prime example of this is the shipment of sugar from the large Frome Estate located southwest of Montego Bay. Until 1985 this sugar was exported using a lightering system at the south coast port of Savanna-la-Mar (Figure 11.1). With the demise of lightering the sugar is now transported 160 km by road to the bulk handling facilities at Ocho Rios to the east of Montego Bay.

Taken collectively the transportation problems of Montego Bay are viewed as an impediment to the city's economic development. Resolution of these problems has been advanced though numerous proposals. These include measures that would bring about better integration and effectiveness of the existing taxi and bus services, the development of a multimodal transportation facility in the city centre, designating parts of the city centre for pedestrian use only, and the construction of a major bypass to the east of the city (O'Neil Cuffe, 1992). Aside from serving the needs of Montegonians, these proposals are also viewed to enhance the potential of the tourism sector. Currently the general unattractiveness of the city centre is thought to repel tourists and thereby limit the extent of tourist expenditure and the effectiveness of the tourism multiplier (Greater Montego Bay Redevelopment Corporation, 1983a).

ENVIRONMENTAL DEGRADATION

By global standards the scale of pollution in the Montego Bay watershed is not significant. Locally, however, the impact has become a matter of serious concern and is well illustrated by the fate of the region's coral reefs (Figure 11.1). On Jamaica's north coast these reefs form a major tourist attraction and an important resource for local fishermen. Degradation of the reefs is in part attributable to overfishing and to natural phenomena. The latter include the mechanical breakage and damage to benthic species caused by hurricanes Allen and Gilbert in 1980 and 1988, and the Caribbean-wide die-off of the algal-grazing long-spined sea urchin (*Diadema antillarum*) in 1983 (Hughes, 1994; Sullivan and Chiappone, 1994). Degradation is also attributed to groundwater seepage of nutrients and to the increased nutrient and silt load of the principal rivers entering the bay. Degradation of this type is caused by uncontrolled urban development and by land clearing and poor farming practices in the upland areas around Montego Bay. The silting problem has been further aggravated by the practice of cutting and clearing the mangrove woodland, which once lined much of the coast and served as a natural filter for waters entering the bay. Most dramatically, in the mid-1960s several small mangrove cays (the Bogue Islands) were dumped with limestone rubble to create the spit of land now forming the Montego Bay Free Zone and Freeport. Today the mangrove is largely restricted to Bogue Island Lagoon situated to the south of the Freeport (Figure 11.1).

The negative impacts of urban development and farming practices on the reef environments are compounded by the activities of tourists and the tourism sector (Grizzle, 1992). Examples of these activities include the collecting of coral, damage caused by snorkellers and boat operators, and

the release of grey water and sewage from hotels, restaurants, and cruise ships. The collective impact of all of the above factors over several decades has rendered the reefs "algae dominated". Live corals are rare, and the size and variety of fish populations have been greatly reduced (Lee and Walling, 1992). In response to deteriorating conditions a 59-ha marine park was established as early as 1974. However, as this was essentially a park in name only, conservation efforts appear to have been largely ineffective. In 1992 the protected area was expanded to form the 1530-ha Montego Bay Marine Park (Figure 11.1), Jamaica's first national park. At this juncture it is too early to judge its effectiveness in reversing decades of environmental neglect.

THE PLANNING PROCESS

Urbanization is inextricably linked to processes of development. In the case of Montego Bay urbanization has been accelerated by the emergence of tourism as the leading sector of the local economy. Unfortunately the pace of urbanization has exceeded the physical planning capacities of the city and has resulted in a number of negative externalities. These now threaten to impair the environmental resource on which tourism is based. In the wider context, the city's growth and attendant planning issues parallel those observed in other emergent metropolitan centres in the Caribbean (Potter, 1997).

Cognisant of the complex planning issues with which it is faced, Montego Bay recently completed a comprehensive long-term development plan, which was drafted by Planning Design Quorum on behalf of the Greater Montego Bay Redevelopment Corporation. GMRC is a private non-profit company that was launched in 1991 at the recommendation of the Montego Bay City Caucus, a pan-organizational, apolitical community action group. It is supported by the local planning authority of St James Parish Council, receives technical support from the United States Agency for International Development (USAID), and is funded by international grants, donations, and locally generated membership fees. These fees constitute the largest source of funding. Their importance is reflected in GMRC's claim that the plan must be funded by the people of Montego Bay in order to reflect the hopes and aspirations of the community. Hoteliers, property developers, banks, and others with vested interests in tourism and the wider economy are listed among the private sector sponsors of the plan. This is neither surprising nor unwarranted. Indeed, judging by the limited statutory powers and impoverished financial status of the Parish Council (Greater Montego Bay Redevelopment Corporation, 1995), it is difficult

to imagine how even a limited amount of planning would be feasible without the financial support of the private sector.

Rather than attempt to impose planning solutions from above, GMRC has sought community involvement in the resolution of local planning issues. Towards this end it has published a series of background papers, which highlight planning issues and the possible proactive and remedial actions required to address them. For example, a series of forest reserves have been proposed to protect forestlands in the uplands around Montego Bay. These would be established in conjunction with an agroforestry demonstration farm and the adoption of land development guidelines for new upland subdivisions (Greater Montego Bay Redevelopment Corporation, 1993a). Similar protective measures are identified for other ecological zones, including coral reefs, beaches, mangrove woodlands, and river corridors. Additional measures have also been proposed to increase the sustainability of the city's energy consumption, fresh water supply, and wastewater and solid waste collection systems (Greater Montego Bay Redevelopment Corporation, 1993b). These measures are strongly imbued with the philosophy of the three Rs (reduction, reuse, and recycling), and have been made with the realization that additional pressure on resources will stem from continued rapid population growth until at least 2015 (Greater Montego Bay Redevelopment Corporation, 1993c).

It is through such background papers and their discussion at community workshops that GMRC has attempted to establish a consensus on planning objectives and courses of action. This process culminated in late 1997 with the publication of a draft development plan (Greater Montego Bay Redevelopment Corporation, 1997). In short, the dimensions and immediacy of Montego Bay's planning problems are well understood. What remains uncertain is the ability of the local planning community to implement solutions. Two major obstacles may impede success. The first is the real challenge of educating the general public as to the benefits of, and their role in, sound environmental stewardship. For many the immediacy of providing adequate shelter, food, and employment may conflict with environmental goals that place restrictions on individual enterprise and personal freedom. The second is financial. To date there is little indication of how the upgrading of public utilities and the construction of major capital projects are to be funded.

This said, in the spring of 1998 Montego Bay exhibited several hopeful signs. Notwithstanding the loss of more prime agricultural land, site preparation work was in progress on the construction of sewage stabilization ponds and a new treatment works in Freeport. In addition, the National Water Commission was committed to building six new sewer lines, including a main trunk sewer from North Gully to the new treatment

works. In Montego Bay Central work was well advanced on the canalization and "roofing" of South Gully. This project is unlikely to significantly reduce the problems of stream pollution, but it will provide needed parking space and lead to improved traffic circulation in the city centre. Better integration of taxi and bus services and reduction in conflict between pedestrians and motor vehicles has been achieved by the opening of a multimodel transportation facility on previously derelict lands adjacent to the central business district. Immediately to the west of the city work had commenced on the first phase of upgrading the North Coast Highway between Montego Bay and Negril. This project is being undertaken by a Korean contractor on the basis of funds provided by the Japanese. The second phase, involving upgrading of the coastal highway east of Montego Bay, is funded by the European Community and begun in 1999. Optimism was being expressed that this project would act as the necessary catalyst for construction of a new bypass to relieve traffic congestion in the city centre. Whereas upgrading of the regional road system will primarily serve the interests of large stakeholders in the regional economy, including those in the tourism sector, it is equally apparent that the economic wellbeing of the larger community will remain dependent on the success of these stakeholders. Success in the regional economy, however, is likely to sustain rapid population growth in the city. As yet there is no clear indication of how such growth is to be accommodated, and there is little sense of Montego Bay's role in a broader regional planning strategy. Herein lies the crux of the planning issues that will face Montego Bay over the next few decades.

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12 Sustainable Socio-Economic Development for European Union Member States' External Regions and Territories in the Caribbean for the Twenty-first Century

Calbert H. Douglas

INTRODUCTION

There was tremendous growth in research activities on sustainable development in small island states and territories during the last decade of the twentieth century. Research output increased following the implementation of Agenda 21 of the United Nations Conference on Environment and Development (1992) and the Global Conference on the Sustainable Development of Small Island States, Barbados (United Nations Industrial Development Organization, 1994). Geographers and development analysts have contributed to this debate by drawing attention to a wide range of issues specific to the Caribbean region (McElroy et al., 1990; Beller et al., 1990; Pantin, 1994; Barker and McGregor, 1995; Conway and Lorah, 1995; France and Wheeler, 1995; Ratter, 1997; Douglas, 1997; McGregor et al., 1998). However, few researchers have considered sustainable development with regard to the nature of relationships between islands in the Caribbean region and the European Union and its developing external policies. Sutton (1991) recognized the importance of the European dimension and pointed to the paradoxical relations that existed between the nation states of the Caribbean and Europe.

This chapter adds the European dimension to the sustainable development debate and so widens the perspectives of Caribbean economic and political geography by discussing policy differences in sustainable development terms. This important area requires exploration, since the European Union (EU), through several of its member states, has strong connections in the area. France, the Netherlands, and the United Kingdom have external regions and overseas territories in the Caribbean area with different geographical and political relationships that may influence sustainable development outcomes.

The chapter forms part of wider research into processes, perceptions, and attitudes to environmental management problems, responses, and relationships between the EU and the external regions and overseas territories of its member states. Here, the chapter introduces a political focus and discusses the comparative political geography of islands with connections with the EU. Then, the status of external regions of EU member states is identified, to help understand how they relate to the sustainable development policy frameworks of the EU. Thus, the separate strands of Caribbean-European geography are interrelated, with some interesting and sometimes unclear relationships and processes. The next section discusses the sustainable development paradigm and introduces a multidimensional conceptualization of the processes that are inherent within the sustainability concept, but which hitherto have not been considered. This allows consideration of the diverse nature of the socio-economic and environmental problems present in EU-linked Caribbean areas. A comparative study of three UK overseas territories, Anguilla, the British Virgin Islands, and the Turks and Caicos Islands is presented in relation to these ideas. The chapter concludes by arguing that a balanced economic and social agenda, sustainable targets, and applications of criteria in resource management are of critical importance to the development of the overseas territories in the twenty-first century.

POLITICAL GEOGRAPHY OF ISLANDS CONNECTED TO EU MEMBER STATES

In terms of the geography of islands connected with the EU, it is useful to note that, apart from Belgium and Luxembourg, each member state comprises a mainland and a large number of adjacent islands, together some 440 inhabited islands. The majority of these islands are small, ranging from populations of a few people to those with nearly a million people (Douglas, 1997, 1998). There are a few larger islands with more than one million, such as Sicily (4.8 million) and Sardinia (1.8 million). All these numerous islands form integral parts of their respective states, so as with all nation states, national policies address the immediate problems of a given island. Moreover, as part of their respective EU member states, such islands come directly under EU environmental policy directives and regional policy initiatives (Douglas, 1997; Pienkowski, 1998; Coffey and Pienkowski, 1998). Thus, for example, environmental concerns and issues within a given island region come under the framework of an individual member state and EU sustainable development programmes and environmental directives.

Since the 1960s the greater proportion of overseas territories, many of which are small islands, have become independent states, but a number of territories remain as dependencies or overseas territories. There is no direct link between the EU and these territories as regards the application of its economic development and environmental policies and its directives, as they do not form part of their parent states. In this regard, the report of the Commission of the European Communities (1992) has pointed to the confusion that surrounds the legal status of Europe's independent countries, overseas territories, and autonomous regions. The report gives details of territories that, by virtue of their geography and/or history, have a special relationship with the EU (Cole and Cole, 1993). It is interesting to note that six EU member states have connections with non-continental territories located away from the immediate European mainland area. Such territories comprise external state-regions that are linked directly to particular member states as part of their homelands and so are within the EU, and other external territories that do not form part of a member state. Those external territories that do not form a part of their member state include a number of autonomous and semi-autonomous regions, and those of dependent territory status, or overseas territories in the case of the UK-linked islands after February 1998.

Paradoxically, geographic proximity to the European continent does not determine state-region status and thus nation and EU status. Connectivity to the EU is not dependent upon geographical distance from Europe. It relates more to historical, political, and evolutionary developments between individual member states and their respective overseas territories. Spain, for example, has a number of non-continental units that have similar status to her mainland provinces. The Balearic Islands, Las Palmas, and Santa Cruz are within the European continental shelf area. Ceuta and Melilla are, however, on the north coast of Africa but are autonomous regions of Spain. Further examples are the Azores and Madeira in the Atlantic, which are autonomous regions of Portugal by virtue of the 1985 Portuguese Act of Accession. The overseas departments of France, Départments d'outre-mer (DOMs), provide examples of non-continental territories that are at some distance from the European mainland. As integral regions of France, they have the same status as Départments in mainland France and thereby come under the EU policy and initiative frameworks. The Court of Justice held that all provisions of EEC Treaty and secondary law apply to the French overseas departments from 1960 (Commission of the European Communities, 1992).

Overseas regions and territories are classified according to whether they form an integral part of a respective member state (and thus the EU),

or external territories, such as the territories d'outre-mer (TOMs) and collectivists territorials (CTS) and dependencies that are not a part of the EU. Table 12.1 shows the external regions and overseas territories that are integral parts of EU member states and those that do not form part of the member state and hence the EU. French Guyana, Guadeloupe, Martinique, and Reunion are external regions that are an integral part of France. However, the external territories of French Polynesia, French Southern and Antarctic Territories and Wallis and Futuna Islands are not part of France. Thus, the first three DOMs represent France in the Caribbean and through its EU membership, Europe in the Caribbean.

Four other EU member states have connections with external territories or dependencies that do not form part of the EU. These include Denmark, which has connections with the Faeroe Islands, and Greenland, which withdrew from the EU in 1985, and Finland, which has the Åland Islands. The Netherlands has two autonomous territories in the Caribbean, the Netherlands Antilles and Aruba. The Netherlands Antilles comprise the Netherlands Leeward, which includes Curaçao, Bonaire, and Aruba, and the Netherlands Windward, which includes the southern half of St Maarten, St Eustatius, and Saba. Aruba is independent or "status-apart" from the other islands of the Netherlands Antilles. It became an autonomous region (self-governing) in 1986 and is an integral part of the Netherlands. In 1994, the Netherlands agreed that Aruba should retain its autonomous status. The queen of the Netherlands is head of state of Bonaire, Curaçao, St Maarten, and St Eustatius and Saba but they do not form part of the State of the Netherlands, and therefore are outside the EU direct framework.

The United Kingdom has a number of overseas territories and two Crown dependencies. The Crown dependencies are not part of the United Kingdom, but have a special relationship with the EU, which is governed by Article 25–27 and Protocol 3 of the UK's Act of Accession. Before the 1998 review, the UK group of territories was referred to as the UK dependent territories. These include Anguilla, Bermuda, the Cayman Islands, Montserrat, the British Virgin Islands, and the Turks and Caicos Islands in the Caribbean. Unlike France, these territories are not a part of the UK, so fall outside the EU directives and its direct policy and funding frameworks. Paradoxically, Pienkowski (1998) has pointed to the UK Overseas Territories Conservation Forum action in June 1997 when they drew the attention of the Secretary of State for International Development to "a crack" into which biodiversity conservation in the UK territories were in danger of falling. The point made was that the United Kingdom was a contributor to the Global Environmental Facility (GEF) that was available to developing countries. The anomaly relates to the different perspectives

Table 12.1 EU Member States' External Regions and Overseas Territories

EU Member State	External Areas That Are Integral Parts of the Member State and EU	External Areas That Do Not Form Part of Member State or EU		
	Overseas Possessions or Departments	External Autonomous Regions	External Territories	Overseas Collectives and Overseas Territories (Dependencies)
Denmark		Faeroe Islands, Greenland (withdrew Feb. 1985) Home rule		
Finland		Åland Islands. Autonomous province		
France	French Guiana, Guadeloupe, Martinique, Reunion, St Martin – departments d'outre mer		French Polynesia, New Caledonia and dependencies, Wallis and Futuna, French Antarctic Territories, terriotoire d'outre mer	Overseas collectives/territories: Mayotte, St Pierre et Miquelon, collectivé territoriale
Netherlands		Aruba	Netherlands Antilles, including Bonaire, Curaçao, St Eustatius, St Maarten	
Portugal		Azores, Madeira	Portuguese overseas territories Macao. Reverted to China 1999	
Spain		Ceuta and Melilla, semi-autonomous		
United Kingdom				Caribbean overseas territories: Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Montserrat, Turks and Caicos Islands. Other areas: British Antarctic territory, British Indian Ocean territory, Falklands, Gibraltar, Pitcairn Islands, St Helena and Dependencies, South Georgia and the Sandwich Islands.

each group had with regard to the status of the territories. From the EU perspective they were not a part of the member state and so were not part of the EU. From the UK's viewpoint, with regard to the GEF, they were not considered separately (as developing countries were), but were treated as part of the United Kingdom and so were not, as Pienkowski (1998) puts it, "generally eligible for such funding".

The territories of France, the Netherlands, and the United Kingdom form the association known as the Overseas Countries and Territories (OCT). The OCT covers arrangements for providing finance for various projects and programmes and for promoting technical cooperation for these countries. Constitutional status in the external territories, in terms of administration, representation, and citizenship, differs between member states. This means that mechanisms to promote convergence in socioeconomic conditions and environmental policies, the primary objective within mainland EU, do not automatically reach to these external areas. As mentioned earlier, the OCTs are not required to apply EU environmental legislation directly in the way that the EU member states comply. Nevertheless, they are influenced by safeguards incorporated in the Association Decision (Decision 91/482), which determines the framework for providing development aid within the territories.

SUSTAINABLE DEVELOPMENT PARADIGM AND MULTIDIMENSIONAL GEOGRAPHY

Deterioration of the environment is a significant problem within countries, big and small, and between countries in the global interactive context. Environmental problems and issues arising are of extreme importance to small islands, whether they be small island independent developing states (SIDS) or small island overseas territories (SIOTs). International fora such as the United Nations Conference on Environment and Development (1992), UN Barbados Global Conference on the Sustainable Development of Small Island States (1994) and the Commonwealth Secretariat (1995) have raised concerns regarding these issues. These problems are of concern whether generated externally and transported via air or sea, resulting for example in localized climatic change, rising sea levels, and ecologically damaging pollution; or generated internally by misuse and depletion of renewable resources. It is understandable that sustainability programmes in many such island spaces have environmental damage limitation and repair considerations as the central focus of policy agendas. Thus, the objectives of working programmes, projects, and educational initiatives in Caribbean states and territories reflect the concerns for the environment. Small islands are faced with marine-based ecological problems and

vulnerability from potentially destructive natural hazards that take a comparatively high proportion of their GDP and annual budgets (Pearce, 1987; Lockhart et al., 1993; Collymore, 1995; Reading and Walsh, 1995; Briguglio, 1998). Development strategies and application of sustainability criteria therefore tend to relate to ecological dimensions both in marine and terrestrial biophysical spheres, so that attention centres around coastal, marine, and land-based environmental protection and damage limitation strategies.

There is another dimension outside the environmental/ecological debate that is problematic and demands an equal focus: the human dimension. In the Caribbean, it reflects an uneven and discontinuous economic geography, whereby economic, social, cultural, and gender-based factors are characteristically compartmentalized, with little access and transitions between societal levels. In a study of gender, ethnicity, and small business development in Trinidad, Lloyd Evans (1998) pointed to problematic constraining factors such as external dependency, international debts, unemployment, rising urbanization, and urban primacy. In a study of basic needs in the Eastern Caribbean, Potter (1993) highlighted the relatively poor conditions, unequal distributions, and exclusion that existed in infrastructural provision, access to water and to proper sanitation and housing.

Factors such as these exist to a greater or lesser extent across the entire EU Caribbean regions and territories. In terms of a typological representation, the situation reflects a multidimensional and noncontiguous human geography at and between what McGregor and Barker (1995) referred to as micro, meso and macro levels. Such a typology also reflects differential economic, cultural, political, and gender-based perspectives. The situation is reinforced, in turn, by the fragmented physical geography of island states, a factor that is intensified in archipelago states. Economic activities and development tend to be unevenly distributed between islands so that some are less developed than others (Douglas, 1999). Fragmentation also exists at the regional level within the Caribbean area where independent island states, French regions, and EU member states' linked territories each have a different relationship with the EU. The uneven development and differential relations together reflect fragmented dimensions that complicate the sustainability paradigm. Furthermore, they present problems for decision makers at every level of island society and also should be of concern to EU member states.

There are two important assumptions on which the sustainability concept depends, which influence governance, policy strategies, and response outcomes during the twenty-first century. The first is an implied assumption. It is embedded within the sustainability concept itself, namely, that there is homogeneity within a society and hence some common

agreement (in terms of a societal consensus) with regard to the causes of environmental problems, policy responses, and environmental resource management strategies enacted (see for example, Redclift, 1992; Franks, 1996; O'Mahony and Skillington, 1996). A societal consensus suggests "agreement" so that within an island state or territory there will be collective responses across communities. This suggests compliance to sustainable environmental strategies, for example, such as those that relate to marine parks, mangrove protection schemes, soil erosion and land degradation strategies, reduction in sand mining, and so on. If such an assumption does not hold because local community members and external users misuse resources, then these states must develop the capacities to deal with such misuse or non-compliance, whether through educational programmes, exhortation, or enforcement. The cost of developing such capacity stretches the limits and scope of most Caribbean states and the relatively small external regions and overseas territories of EU member states. They require external funding and administrative support from international institutions and respective EU member states and the EU itself.

The second assumption relates to the time horizon, as represented by the World Commission on Environment and Development (1987) definition of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Within the context of the discussion, this gives rise first to expectations of significant reduction in irreversible damage to the natural environment within and around small islands. In this regard, Table 12.2 shows a number of international conventions, which apply to the EU member states' linked areas. As the table shows, most are associated with the Ramsar and World Heritage conventions, five are linked to the Biological Diversity Convention, and six are linked to the Convention of the International Trade in Endangered Species of Wild Faunal and Flora (CITES) (Coffey and Pienkowski, 1998). Second, it suggests the controlled use of renewable and nonrenewable resources within these areas to maintain the natural capital within their boundaries. This means that sustainable development should have minimal impact on the immediate local and wider environment at present and in the future. Island governments and peoples, as well as those in the wider international community, including profit seeking companies, therefore must manage resources in current and future usages in such a way that there is little or no damage or depletion of marine, coastal, and terrestrial resources (Beller et al., 1990; Dolman, 1990).

The main problem that arises within some island territories is the uneven dimensional typology (discussed above) and the recurrent cycle of problematic solutions. As Table 12.2 shows, four islands within the

Table 12.2 Ecological and Conservation Considerations and Conventions in EU Member States–Linked Caribbean Regions and Territories

Islands at Risk		Conservation Importance						Conventions			
Member State-Linked Region or Overseas Territory	Individual Islands of the Region or Territory	Terrestrial	Marine	Endemic Species	Threatened Species	Vulnerability Indicator	Special Features	CITES	Biological Diversity	Ramsar	World Heritage
France											
Guadeloupe								Y	Y	Y	Y
	Grand Terre	7	4	4	2	1	3				
	Basse Terre	14	5	8	5	2	6				
Martinique		10	3	7	8	2	3	Y	Y	Y	Y
Netherlands											
Aruba								Y		Y	N
Netherlands Antilles								N	Y	Y	Y
United Kingdom											
Anguilla		5	4	0	0	1	2	N	N	Y	Y
British Virgin Islands								Y	Y	Y	Y
	Tortola	4	2	1	9	1	0				
	Virgin Gorda	6	2	2	0	1	0				
	Anegada	7	2	3	1	1	2				
Cayman Islands								Y	Y	Y	Y
	Cayman Brac	8	2	2	1	1	0				
	Little Cayman	12	2	6	0	1	3				
Montserrat		12	5	9	5	3	2	Y	N	Y	Y
Turks and Caicos								N	N	Y	Y

Sources: UN System-wide Earthwatch; Coffey and Pienkowski, 1998.

groupings have high Terrestrial Conservation Importance Indices, above seven on the index and most have relatively low Marine Conservation Importance Indices (see UN System-wide Earthwatch for explanations and details of the indices). Table 12.2 also provides counts for the total endemic species. This index, as defined by UN System-wide Earthwatch, comprises plants, butterflies, land snails, reptiles, birds, and mammals. Higher species counts therefore reflect higher numbers of endemic species; a zero however may only indicate that the number is not known at present. In the case of Anguilla, the remote island of Sombrero is one of the rapidly diminishing important breeding grounds for seabirds in the Caribbean and although the UN Earthwatch data shows a zero (see Table 12.2), according to Stephenson (1998) it is home to the endemic Sombrero Black Lizard. Presently both UK and Caribbean environmental non-governmental organizations (NGOs) are working to oppose a plan to develop the site for the purpose of a commercial rocket assembly and launch site facilities. The development is considered unsustainable bearing in mind the environmental importance and sensitivity of the island.

On the human side, poor people in some island rural and coastal communities have little to forgo (Dolman, 1990; Connell, 1993). Being nearer to nature, they are dependent upon the short-term usage of natural resources to a greater extent than those in the urban centres. Their use of natural resources "near to hand" can create undesirable impacts upon the terrestrial and marine environments, and on ecosystems. Such patterns of resource use therefore require complex resource management schemes to plan efficient use of the scarce and often fragile resources (Ratter, 1997; Possekel, 1997). Resource management nevertheless has a direct bearing on the livelihood and quality of life of local people, many of whom exist on very low income below subsistence-level living conditions. Franks (1996) has argued that large proportions of poor people in developing countries are close to the environment on a day-to-day basis. This is especially true in small islands where daily interaction with the natural and biophysical resources of land, water, plants, and animals is an important part of their survival strategies. Forsyth (1996) has argued that although ecological modernization is increasing in developing countries, low-income groups have different priories that tend to relate to their immediate living and working environments. Sustainable environmentally related programmes and ecological imperatives therefore influence the way in which such people use both sea and land resources. Environmental policy programmes determine the usage of the marine environment, beach and coastal resources, land usage and allocation, housing provision and distribution, and land parcels for self-sufficient economic production.

The lives of people in most small island territories are based around marine, coastal, and terrestrial activities and resource usage so that sustainable development policies affect a wide cross-section of communities. It is important to understand how they perceive their own actions in the environment and the degree of importance they place on key socio-economic factors and their considered views of the opportunity cost outcomes of their actions and their reactions to environmental management policies. Understanding perceptions and attitudes to the environment and responses to sustainable criteria is of crucial importance if policy is to be applicable and workable. Thus, there is a need to monitor use of resources and consider the effects of usage rates and intensities on present and future generations.

DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

Although each of the territories is distinct according to its geographical, ecological, and socio-economic characteristics, they all face similar problems, many of which are interrelated. Such problems can be appreciated by examining size, number of islands within a territory, and population and socio-economic data. Table 12.3 provides data for associated areas of EU member states, on the number of islands in each of the territories. Guadeloupe and Martinique are the largest of the groupings, in terms of geographical size and population, and are also the most densely populated. They account for 69 percent of the total population of the EU member states-linked Caribbean areas, 35 percent of which reside in Guadeloupe and 34 percent in Martinique. The Netherlands-linked areas of Aruba and the Netherlands Antilles account for 6 percent and 17 percent, respectively, of the total population. Within the UK group of territories, the Cayman Islands are the largest in terms of population, though not in terms of geographical size (259 km^2 compared to the Turks and Caicos Islands, 430 km^2). The Cayman Islands have the highest population density (152 per km^2) within the UK group, while the Turks and Caicos have the lowest (39 per km^2). Aruba and Montserrat are single-island states, whereas the others are groups of islands. Archipelago territories such as the Turks and Caicos Islands and the British Virgin Islands include individual islands that may be relatively more densely populated than the data suggest. Typically population is unevenly distributed and tends to concentrate in the central or main island with the highest level of economic activity. Thus, there are high demands on infrastructure capacity in the main islands, with the possible result of differences in infrastructure provision arising between them and the smaller, outlying islands.

Table 12.3 Population Characteristics on EU Member States–Linked Caribbean Regions and Territories

Country	No. of Islands by Size >100 km² (<100 km² or Unknown)	Area (km²)	Population Density (Persons per km² Based on 1999 Population Estimates)	Population July 1999 *World Fact Book* Estimates	Population Distribution within Member State Territories (%)	Population Distribution between Member State External Territories (%)	Population Growth Rate 1999 Estimates (%)	Net Migration Rate per 1000 Population (1999 Estimates)
France								
Guadeloupe	3 (4)	1780	236	420,943	51	35	1.06	–0.16
Martinique	1 (7)	1079	381	411,539	49	34	1.03	–0.09
				832,482	100			
Netherlands								
Aruba	1	181	379	68,675	25	6	0.55	–1.31
Netherlands Antilles	3 (3)	1020	204	207,827	75	17	1.01	–0.43
				276,502	100			
United Kingdom								
Anguilla	1 (6)	91	126	11,510	12	1	3.16	20.24
British Virgin Islands	15	153	125	19,156	19	2	2.37	12.37
Cayman Islands	1 (2)	259	152	39,335	39	3	4.19	33.2
Montserrat	1	104	124	12,853	13	1	0.21	–1.94
Turks and Caicos	4 (41)	430	39	16,865	17	1	3.65	15.00
				99,719	100			
				1,208,703		100		

Sources: UN System-wide Earthwatch; CIA, 1999.

In these respects, the data relating to number of islands less than 100 km^2, constructed from the United Nations Environmental Programme information database, no doubt contains a number of extremely small, remote, and uninhabited islands, in some territories. This reinforces the point about the fragmented nature of islands within island groupings, typified by their different physical geographies and uneven patterns of development. Thus, the disaggregated and dispersed nature of the island archipelagos compounds the problem of uneven development. Also, travel between outer islands and the main island (which provides the base for economic activity, commerce, and employment) can be difficult and costly. The cost of inter-island commuting in archipelago states and territories, where workers and job seekers travel from the smaller or more remote islands to the main centres to work or seek employment, bears heavily on lower income groups and new entrants to the job market. It restricts growth and development potential and is therefore unsustainable. Table 12.3 also presents data for net migration for the territories. The net migration figures for four of the UK territories are alarmingly high. Questions must be raised with respect to sustainable socio-economic development possibilities, especially taken together with the population growth rates shown in Table 12.3, and where such increases are focused in a single, increasingly urbanized growth area of a small island.

The United Nation's development reports have considered the progress and the extent of deprivation in areas that determine people's quality of life. Life expectancy, health and sanitation, food and nutrition, income and poverty, education, women, children, human security, and environment are indicators that are considered to measure the levels and state of human development in and between countries. The importance of these factors as indicators of development is illustrated by Dasgupta and Weale (1992) in a study that shows a strong correlation between life expectancy, infant mortality, adult literacy, political rights, and civil rights. In presenting demographic data for the three groups of territories, Table 12.4 therefore includes data for age structure, birth and death rates, infant mortality rates, and life expectancy.

In terms of age structure, the UK territories appear to have a relatively young population in comparison to the French and Netherlands areas (Table 12.4). Anguilla, for example, has 27 percent of its population aged up to 14 years, and 66 percent under 64 years. The Turks and Caicos Islands have 32 percent under 14 years and 63 percent under 64 years. These factors when taken together with the high population growth rates and net migration flows point to the need for increased demands and provisions of general services, including housing, sanitation, water, health, and educational facilities. The health, education, and well-being

of a population have a direct bearing on the sustainable development potential of a country. Chapters 34, 35, and 36 of Agenda 21 allude to the important role of education, science, and technology in sustainable development. Williams (1986) has argued accordingly that "children are the future of the nation. This is not a sentimental or a nationalistic statement. It is obvious that no culture has any survival-value apart from its children" (p. 128).

It is expected that for relatively advanced countries such as the three EU member states, infant mortality rates will be lower than those in less developed countries generally, and life expectancy and literacy at least marginally higher (Williams, 1986; Dickenson et al., 1996). Convergence, in terms of sustainable quality of life conditions, is a major objective within the EU. It is also important in external areas directly linked to the member states. Thus, the sustainability paradigm leads to an expectation of convergence between EU-linked Caribbean territories and their respective member states. Where there are significant divergences sustainable socioeconomic policies are needed to address the problem. The data in Table 12.4 therefore allows comparison to be made between the Caribbean EU-linked territories and respective member states. The infant mortality rates in the three member states, 5.11 per thousand live births in the Netherlands, 5.62 in France, and 5.78 in the United Kingdom, are representative of the norm in developed countries. Infant mortality rates in Guadeloupe and Martinique are close to that of France, and those in Aruba and Cayman are also encouraging. The UK territories of Anguilla, British Virgin Islands, and Turks and Caicos have comparatively high infant mortality rates to the other islands and with that of the United Kingdom, which gives rise to concern. The table provides comparative data for literacy, which shows that the UK territories and the Netherlands have high literacy in comparison with Guadeloupe and Martinique.

Table 12.5 presents data that allow comparison of the relative economic performances between the territories. Although there are inherent problems of income measurements and perceptions of standard of living, researchers have used national income-based statistics to make comparisons between Caribbean countries (Potter, 1993; Momsen, 1993; Royle, 1998). In terms of GDP per capita, countries in each of the groupings have performed well. The GDP per capita for each of the highest in the groups were $24,500 per head in the Cayman Islands, $22,000 in Aruba, and $10,700 in Martinique. Further, in terms of GDP per capita each outperformed at least five Caribbean SIDS, having significantly higher GDP per capita than Dominica, Grenada, St Kitts–Nevis, St Lucia, and St Vincent and the Grenadines. This suggests that size of the islands, in terms of spatial and population size, has not necessarily hindered development potential, notwithstanding the fact that they are vulnerable to the vagaries

Table 12.4 Demographic Characteristics of EU Member States–Linked Caribbean Regions and Territories

Country	Population (July 1999 Estimates)	Age Structure (% up to 14 Years)	Age Structure (% 15–64 Years)	Age Structure (% 65 Years and Over)	Birth Rate per 1000	Death Rate per 1000	Infant Mortality Rate per 1000 Live Births	Life Expectancy at Birth	Infant Mortality Rate in Parent Member State	Life Expectancy in Parent Member State	Literacy (%)	Literacy in Parent Member State
France												
Guadeloupe	420,943	25.0	66.0	9.0	16.33	5.62	8.54	78.01	5.62	78.63	90.000	99
Martinique	411,539	23.0	67.0	10.0	16.30	5.94	6.76	79.27	5.62	78.63	93.000	99
Netherlands												
Aruba	68,675	22.0	69.0	9.0	13.28	6.48	7.84	77.04	5.11	78.15	n/a	99
Netherlands Antilles	207,827	26.0	67.0	7.0	17.11	6.58	12.59	74.25	5.11	78.15	98.000	99
United Kingdom												
Anguilla	11,510	27.0	66.0	7.0	16.68	5.30	18.72	77.71	5.78	77.37	95.000	99
British Virgin Islands	19,156	21.0	74.0	5.0	15.92	4.65	22.17	75.13	5.78	77.37	97.800	99
Cayman Islands	39,335	22.7	n/a	n/a	13.66	4.98	8.40	77.10	5.78	77.37	98.000	99
Montserrat	12,853*	n/a	n/a	n/a	13.87	9.88	12.00	75.56	5.78	77.37	97.000	99
Turks and Caicos	16,865	32.0	63.0	5.0	26.39	4.86	21.11	72.35	5.78	77.37	98.000	99

* This number includes an estimated 8,000 refugees who left the island following the resumption of volcanic activity in July 1995.

Sources: CIA, 1999; UN System-wide Earthwatch.

Table 12.5 Economic Characteristics of the Three Regional Groupings

Country	GDP per Capita US$ (1997 Estimate)	Exports (US$ Million)	Imports (US$ Million)	Balance of Payments on Export–Imports (US$ Million)	Export-Import Ratios	External Debt (US$ Million)	Aid	GDP Composition by Sector		
								Agriculture	Industry	Services
France										
Guadeloupe	9,000	133.00	1,700.00	–1,567.00	0.08	n/a	Substantial annual aid from France	6.00	9.00	85.00
Martinique	10,700	200.00	1,600.00	–1,400.00	0.13	180.0	Substantial annual aid from France	6.00	11.00	83.00
Netherlands										
Aruba	22,000	1,730.00	2,120.00	–390.00	0.82	n/a		n/a	n/a	n/a
Netherlands Antilles	11,500	268.20	1,400.00	–1,131.80	0.19	1350.0	Netherlands provided US$97 million in 1996	1.00	15.00	84.00
United Kingdom										
Anguilla	7,300	1.60	54.20	–52.60	0.03	8.5	US$3.5 million in 1995	4.00	16.00	80.00
British Virgin Islands	10,000	23.90	121.50	–97.60	0.20	34.8	US$2.6 million in 1995	1.00	1.40	97.60
Cayman Islands	24,500	2.65	379.40	–376.75	0.01			1.40	3.20	95.40
Montserrat	n/a	8.20	26.10	–17.90	0.31	8.9	US$9.8 million in 1995; $100 million reconstruction aid from UK 1996–1998	5.40	13.60	81.00
Turks and Caicos	7,700	4.70	46.60	–41.90	0.10			n/a	n/a	n/a

Sources: CIA, 1999; UN System-wide Earthwatch.

of external market factors (Armstrong and Read, 1998; Briguglio, 1998). As elsewhere in the Caribbean, tourism is the mainstay of these economies. Offshore banking and oil refining and storage are important to Aruba's economy. As is the case in other islands, especially Providenciales in the Turks and Caicos Islands and in Anguilla, the growth of the tourism sector has resulted in a substantial expansion of other activities, construction in particular. The Cayman Islands are a thriving centre for offshore finance, with more than 40,000 companies registered as of 1997, including almost 600 banks and trust companies, and banking assets that exceed $500 billion (CIA, 1999). Agriculture forms only a minute component of GDP, especially in the smallest of the territories, while services form the most important component in every case. Services contributed over 80 percent to total GDP in every case except for Anguilla, where services contributed 80 percent of GDP. The sector accounted for 95.4 percent of GDP in the case of the Cayman Islands and 97.6 percent in the case of the British Virgin Islands.

SUSTAINABILITY CRITERIA, RESPONSES, AND CONCERNS

This part of the study applied five criteria to test the application of the sustainable development paradigm in three of the five UK overseas territories.

1. The first relates to the general level of economic development and infrastructure provision and quality of life indicators. Various writers have argued that GDP does not necessarily provide a useful measure of living standards or reflect quality of life and basic needs within an apparently successful economy (Potter, 1993; World Bank, 1997). Thus, notwithstanding the apparent success of these micro economies, as suggested by the GDP indicators discussed above, social exclusion of sections of island communities may exist due to uneven development and unequal income distributions. Development analysts, such as Kloos (1994) and Phillips and Verhasselt (1994), have pointed to key indicators, including employment and income creation propensities, food, running water, sanitation, health care, and education, which must be considered in standard of living and quality of life studies. Furthermore, adequate provision and distribution of these resources and services are necessary in order to meet the aims of the sustainable development paradigm, not least from the human dimension.

2. The second criterion was the implied assumption of consensus and homogeneity in understanding and responses. As it stands, smallness of geographical size may suggest undifferentiated social groupings and short "vertical distance" between top and bottom in the social hierarchy of island communities. Smallness in such a case reduces social distance between groups, as for example between decision makers, administrators, and local people. In this way, people are aware of environmental problems and agree as to the policies proposed and enacted and thereby respond by reducing the impacts of their individual actions within the environment.
3. The third criterion relates to the principle of intergenerational equity. Sustainable development refers to being fair to the future and therefore it implies ensuring sufficient economic resources will always be available (Barbier, 1988; Barbier et al., 1991). The important emphasis is that sufficient resource and economic opportunities are available for future generations. The significance of this is that present generations are prepared to forgo or reduce current consumption of resources or to reinvest to regenerate resources and maintain the natural capital for future users.
4. The fourth relates to knowledge of sustainable development and the abilities and capacities to identify the sources of undesirable impacts on and within the territories and to act upon them. Environmental protection and environmental resource management programmes are likely to be more successful if authorities are able to identify and curtail the actions of the offending agents, whose actions have undesirable impacts on terrestrial and marine environments. The environment within and around small islands can be affected from external and internal sources. Externally generated environmental problems are those reflected in undesirable effects on small island environments, such as climatic changes, including air pollution and induced sea level rises resulting from production and consumption activities of other, mainly larger, industrialized nations (Pethick, 1993; Nicholls and Leatherman, 1995). Internal effects include the negative externalities of economic activities within the geographic areas of individual islands themselves, including those created by the tourism industry (Patullo, 1996).
5. The fifth relates to the identification of the social factors and issues and concerns most relevant to island communities. Commentators have emphasized both environmental and economic perspectives of the sustainability paradigm since the Brundtland

report (World Commission on Environment and Development, 1987). The debate has generally polarized between the environmentalists' "strong" sustainability approach, based on the precautionary principle, and that of the market-based approach of "weak" sustainability, with its emphasis on the polluter pay principle and market instruments-based intervention rather than the direct approach of the environmentalist. Notwithstanding opposing views as to the remedy, both are nevertheless based on concerns for the environment. Yet the human dimension, discussed earlier, and factors affecting the lives of communities are important aspects of the sustainability paradigm. Hence, this criterion considers socio-economic concerns within the territories.

One method of assessing or ascertaining the success of sustainable development principles is to approach community groups and request their views and opinions on such programmes and their particular situations. Of the five UK territories, Anguilla, the British Virgin Islands, and the Turks and Caicos Islands were selected for the first part of the research reported here. Anguilla was chosen in part because it was the smallest of the five in terms of area (91 km^2) and population size (11,510). The Turks and Caicos Islands are the largest of the five in area (420 km^2) and the British Virgin Islands were selected for their comparatively advanced economic development as represented by their relatively high per capita income, and also for their comparative proximity to the other two territories. Each of the territories is distinct according to geographic, ecological, and socio-economic characteristics, but nevertheless share common problems and the vulnerabilities associated with small islands (Chandra, 1995; Briguglio, 1998).

A series of formal interviews and informal discussions was carried out with people at various levels of island society in Anguilla, the British Virgin Islands and the Turks and Caicos Islands in 1997. Sixteen interviews were undertaken with public sector officials and officials from NGOs across the three territories, and thirty-five interviews were conducted with local people and business operators. The method encouraged free discussions and generated some frank views and statements, and allowed personal grass roots explanations of complexities, intricate processes, and views on governmental responses that affected the livelihoods of locals to surface through informal discussions. This type of qualitative methodology follows the approach suggested by Marshall and Rossman (1989) and Miles and Huberman (1994). Islanders were able to explain their understanding of environmental issues and give their views as to why

they believed policy was appropriate or inappropriate. Discussions involved both formal taped interviews and untaped, in-depth, semi-structured interviews with officials, NGOs, and professionals. Discussion with locals in the three groups of islands followed a more informal approach, yet nevertheless often involved informative discussions.

FINDINGS

The First Criterion: Economic Development and Infrastructure

The socio-economic characteristics that typify the situation in Caribbean islands, as discussed in the multidimensional conceptualization, are applicable to the case of these territories. As in archipelago states generally, economic activities within the British Virgin Islands and the Turks and Caicos Islands centres in the main island within each group. Tortola, the focus of economic activity in the British Virgin Islands, is the capital and seat of government. In the Turks and Caicos Islands the capital and seat of government is Grand Turks; the centre of economic activity is, however, in Providenciales. Anguilla has a relatively small centre at the Valley. Data in Tables 12.4 and 12.5 suggest cause for concern with regard to a number of demographic and economic indicators. These include the comparatively high infant mortality rates, high net migration, and possible uneven income distribution, especially given the concentration of economic activities within a single island in the two archipelago territories. There is clear evidence of reliance on services of which tourism and financial services are the main contributors. These are dependent upon external factors, including corporate and external government budgetary and monetary policy and legislation affecting offshore financial centres, which adds to the vulnerability of the local economies.

Interviewees pointed out that infrastructural provisions, including roads, transportation, public utilities such as water supply and electricity, and housing, cleansing and waste disposals were in need of improvement to satisfy sustainability criteria in some islands. Nevertheless, as one official explained, low standards of provision are difficult to solve, as is the case generally in developing countries, where availability of scarce financial resources is the main obstacle. Housing supply and availability is important in terms of socio-economic considerations. It is a private matter throughout the territories, as in the Caribbean generally. Single detached family units were the most popular across the islands. During the interviews it became apparent that supply was dependent upon social as well as economic factors. This included access to land through family or kinship ties, as well as economic factors such as income and employment. Housing completion rates were evidently low in the Turks and Caicos

Islands, as reflected by a large number of properties undergoing construction over an extended period. A respondent in Grand Turk explained that each section of a house under construction was financed out of current income, which was quite low for those working in the tourism service industry. Nearly all work opportunities were located in Providenciales, which involved costly air transport, which in turn came out of disposable income. When the owners of houses under construction were in employment, building materials could be imported from Puerto Rico so the building progressed. When they were out of work, especially during the low season, building stopped. Savings had to accumulate again once owners were back in work before the construction progressed. A number of respondents in Tortola, British Virgin Islands made the point that access to land or land ownership was an important factor. This was of concern to those originating from outside the islands because as non-belongers who had migrated from other Caribbean islands in search of work in the tourism industry, they found it difficult to purchase land for house building. None of the interviewees in Anguilla considered that they had a housing problem.

Typically in each of the territories, concerns arising from the immediacy and extensiveness of the land–sea interface and linked fragile ecosystems create a dominance of coastal management and conservation in comparison to social problems in the central islands, hinterland, and rural areas and more remote islands. Given the evidence of substantial immigration, people in the territories may be socially and economically differentiated, despite the smallness and compactness of the islands into the few increasingly urbanized centres. Education, employment, and income levels are factors that may explain differentiation. However, the apparently relatively large immigrant population with non-belonger status in the territories might well be an important factor, especially as such status was a prime factor in determining access to land and thereby to home ownership.

The Second Criterion: Homogeneity and Consensus

As in most countries, island peoples are economically and socially differentiated so that it is difficult to arrive at a consensus either in terms of the island's development policy or sustainable environmental and resource use policies. Franks (1996) has argued that it is difficult to apply sustainability concepts and adhere to the principles in underdeveloped and developing countries and this is true of these extremely small island territories. The comparatively low income and subsistence base from which many such island regions begin are factors that restrict development, constraining the process of moving from one development stage to

another. In this regard, Franks (1996) has argued that preservation or conservation was not generally the main impetus behind considerations in developing countries. The emphasis is on day-to-day survival that may dictate patterns of exploitative or extractive resource usage. The implication is that conservation may appear to be a potential luxury for future generations of groups in the lower strata of island communities.

Nearly all the local discussants had heard of the term "sustainable development". Once the idea of sustainable development was explained, all could recall a recent or ongoing project or programme that was initiated to promote sustainable development within the respective territory. The responses made by discussants did not suggest a collective consensus to programmes enacted. Whether they agreed or disagreed with the philosophy of the concept depended upon how directly it affected their livelihoods and whether or not constraints were imposed upon resources to which they previously had access. Thus, whereas government officials, NGOs, and professionals spoke of the advantages of sustainability oriented project and policies, those around the coastal communities tended to point to the restrictions that affected them.

Discussions with planning officials in each of the territories revealed a thorough understanding of relationships between terrestrial and marine ecosystems as linked environments. In each case, development plans included marine areas in the planning framework. As one planner explained, this allows development control to focus not only on terrestrial environments, but also on wetland and marine environments, and involved cooperation between different departments and government ministries. Thus, the three territories were actively promoting conservation both in terrestrial and marine environments, albeit with some difficulties to sectors of island communities in the Turks and Caicos Islands. As discussed below, fishermen in South Caicos, for example, experienced hardship during the closed conch season, as there was virtually no other employment on the island.

The Third Criterion: Intergenerational Equity

These points suggest, in line with the multidimensional conceptualization discussed above, a set of intergenerational production frontiers and welfare preference functions that transcend present and future generations. The view is taken here that disequilibrium occurs at and between points on the time horizon as represented by inequity, rivalry, and unequal shares. The mechanism that allocates and distributes resources is inefficient so economic and social fragmentation and uneven development results. There are no automatic sustainable reallocation mechanisms within the economic and social systems to improve intragenerational

equity and by which equitable distribution between generations occurs. Thus, uneven distribution in factors important to quality of life and resource use across generations continue. Interviewees were asked a number of questions relating to their concern about the welfare of future generations. All agreed that present generations should be concerned about future generations and most indicated that they strongly agreed that steps should be taken to ensure that there were enough resources available for the use of future generations. However, while none disagreed with this there were marked differences to responses to questions regarding how much of current resource use they were prepared to forgo. Of the thirty-three interviewees who were prepared to discuss this topic, 12.1 percent were prepared to forgo current resource use by a large amount, 45.5 percent by a medium amount, 30.3 percent by a small amount, and 12.1 percent none at all.

The Fourth Criterion: Knowledge of Sustainable Development, Identifying Sources of Impacts

Externally generated effects have been investigated and debated at numerous worldwide conferences, including the Rio Summit of 1992, UN Conference on Sustainable Development of Small Island States in 1994, Geneva Climatic Change Conference in 1996, and in Kyoto, Japan, 1997. With regard to internally generated impacts, commercial activities, local peoples, and governments can damage the environment in their attempts to create and maintain incomes and livelihoods, generate wealth, and increase economic growth. From time to time there is a need to clear land, open new industries, and develop hotel complexes to increase or maintain income and GNP, create employment opportunities, and improve infrastructure, public utilities, and social facilities. In some cases, such development initiatives can result in uncontrolled exploitation of natural resources and therefore environmentally friendly development is an absolute necessity. It is understandable that if the effects on soil, timber, and water resources are ignored the situation will give rise to increasing economic and social costs.

As in many Caribbean islands, environmental degradation has resulted from the effects of uncontrolled production and development activities in some cases. Girvan and Simmons (1991) have pointed to a number of problems, such as the risk of flooding, declining productivity of land, and reduced self-sufficiency leading to growing import demand for food, fuel, and timber, that are typically found in the Caribbean. These were applicable also in the territories under consideration. Salt mining has had detrimental effects on the environment in the Turks and Caicos Islands. During the first half of the century cotton and salt provided the

basis of the Anguillan economy (Connell, 1993). Sediment run-off created by economic activities is a problem in the hillside areas of the British Virgin Islands. Tourism has increased in all three territories during the last decade. As Pattullo (1996) has argued, the tourism product has generated substantial increases in income but its demand on resources and environment has been exceptionally high. Waste collection and disposal creates increasing problems for the authorities in these small islands. Discussions with public officials and conservationists in each of the territories focused attention upon internally created problems, in particular on local people such as coastal residents, divers, fishermen, and town dwellers. Interviewees were particularly concerned with damage to wetland areas, mangrove, coral reefs, and marine life. It was generally held that the actions of locals damaged the environment within the islands and depleted resources.

The Fifth Criterion: Social Factors, Issues, and Concerns

Some officials considered that the problems faced were not so much economic issues or economic development, but management of the social sector, which it was argued, was central to the sustainable socio-economic paradigm. In the British Virgin Islands, for example, 40 percent of the population were non-belongers, who had origins elsewhere. Furthermore, those born in the country whose parents were from other territories did not qualify as belongers either. An interviewee explained that the social problems arising were central to the understanding of sustainable socio-economic development and suggested research directions should concern immigration, educational developments, and health systems. Planners saw sustainability in terms of the willingness of businesses and locals to conform to land use plans and ordinances. This was an important factor as the three territories characteristically had a high proportion of private land ownership. Local people considered it their traditional right to use land as they saw fit, or as they have always done, which made land-use planning difficult to administer. Discussions with NGOs focused around environmental concerns, protection, and conservation strategies. Understandably, these discussions reflected the importance of protecting the islands' biodiversity and environments on land and sea. This was evident in well-publicized programmes and school based educational activities relating to environmental protection in wildlife, habitat areas, plants, and coastal and marine-park zones in each of the three territories.

The greater proportion of discussants were interested in sustainable development and had previously considered a range of environmental and resource problems (Table 12.6). Marine life and effects of tourism were the greatest areas of concern. Interviewees understood the underlying

Table 12.6 Concerns for Environment and Resources

	Very Concerned		Concerned		Only a Little Concerned		Not Concerned	
	No.	%	No.	%	No.	%	No.	%
Marine life and coral reef destruction	24	68.6	5	14.3			6	17.1
Threats to island fisheries	9	27.3	20	60.6			4	12.1
Beach erosion	18	51.4	4	11.4	9	25.7	4	11.4
Sand removal	16	45.7	10	28.6	7	20	2	5.7
Natural disasters	7	20	19	54.3	7	20	2	5.7
Water consumption rates	9	25.7	14	40	6	17.1	6	17.1
Waste generation	11	31.4	16	45.7	6	17.1	2	5.7
Reduction in agricultural resources	3	9.1	15	45.5	9	27.3	6	18.2
Land damage and erosion	7	21.2	22	66.7	2	6.1	2	6.1
Damage to hillsides	4	12.1	17	51.5	10	30.3	2	6.1
Reduction in natural resources	14	40	17	48.6			4	11.4
Threats to plant life and forest resources	14	40	11	31.4	6	17.1	4	11.4
Threats to island species	16	45.7	9	25.7	6	17.1	4	11.4
Public health from tourism	3	8.6	10	28.6	18	51.4	4	11.4
Effects of tourism	27	77.1			2	5.7	6	17.1

$n = 35$.

idea and the need for sustainable development policies and initiatives, although they did not feel that they shared in decision making. Most said that they believed they could play an active role to protect the environment and would like to participate more than they did at present. However, they did not see environmentally based sustainable imperatives as superior criteria to economic survival. This points to the relatively low starting points and levels of consumption, which lead to the survivalist response discussed earlier. In this respect, socio-economic considerations and infrastructure provisions were of immediate concern. In every case the discussion turned to immediate economic and social issues that affected islanders. There were differential reactions, aspirations, and perceptions of the benefits of protection, to whom these benefits accrued, and what was required. Some perceived sustainable development as protection, while others saw it as conservation for the tourist. An individual in Grand Turks made the comment that

> We are not allowed to dive or fish off the wall (the point from the beach where the coral reef begins) because we damage the coral. Who is more likely to damage the reef? The locals or inexperienced tourist and holiday divers?

One British Virgin Island commentator pointed out:

> Social factors are important here. You cannot buy land if you are not a belonger and you cannot build houses unless you own land. That is my main concern.

People in South Caicos were particularly concerned with inactivity during the period when they were not allowed to dive for conch, as there was no other industry on the island that could offer adequate employment. The "off-season", according to discussants was because of the Convention of the International Trade in Endangered Species of Wild Faunal and Flora (CITES). Conch fishermen appreciated the idea of sustainable development and understood the need for protection. They were nevertheless adamant that the situation was one of top-down policy, where decision makers either failed to understand the nature of the situation or showed a preference for protecting the species over their situation of inactivity and unemployment. These perceptions and reactions were understandable, but surprising in terms of the implied homogeneity and ubiquity in response to the sustainability paradigm discussed in the earlier section.

Discussants across the three territories identified nine areas of concern. These included employment, housing, transport, water supply, education, medical services, roads, tourism, and waste disposal. A business operator in the British Virgin Islands was particularly concerned with batteries discarded across the island, especially bearing in mind the island commitment to sustainability. Concerns across the three territories were similar. They differed in respect to factors relating to conditions within each and whether or not they were on the main or outer island within an archipelago group.

ACTIONS AND STRATEGIES IN EU-CONNECTED AREAS

The Maastricht Treaty has the promotion of sustainable non-inflationary growth, respecting the environment, as a key objective. The Treaty reflects this in the amended Article 2. Article B of the Common Provisions of the Treaty similarly refers to "economic and social progress which is balanced and sustainable" (Wilkinson, 1992). This reflects in the EU environmental policy through the Fifth Environmental Action Programme, "Towards Sustainability", endorsed by the Council in 1992. It also complements the Rio 1992 declaration on environment and development and corresponding programmes for sustainable development set out in Agenda 21. Thus, EU environmental objectives are set within a framework of balanced economic and social development. Sustainable development of territories linked to EU member states should be set in a similar framework. Socio-economic development should be a key priority that works hand in hand with environmental objectives.

Development nevertheless depends upon three sets of factors that are linked through the geopolitical realities of the European-Caribbean geography. The first relates to the situation in the territories themselves, where capacities for development rest on developing human resources, infrastructure investment and renewal, and generating new product and market areas to reduce the reliance on externally dependent service sectors. The second depends on the nature of relationships between each territory and its respective member state and the EU. Each differs according to status awarded by respective member state. Martinique, Guadeloupe, and St Martin are départments of France and are represented in the French Parliament and form part of the EU. This, however, does not mean that social realities are equal to that of citizens in France. Hintjens (1991: 65) has argued that sustained efforts are required to bring economic and social conditions in the French overseas départments into line with the national norms in France. The British overseas territories and the Netherlands

Antilles of Curaçao, Bonaire, St Maarten, St Eustatius and Saba and Aruba do not have representations similar to that of the French overseas départments, neither do they form part of the EU. In the United Kingdom, the Dependent Territories Review Interim Report (1998) has considered granting UK citizenship to the overseas territories. This would virtually incorporate them into the United Kingdom and thus extend the geography of the EU in the Caribbean, as in the case of the DOMs. No recommendations have been made, however, and this is still under review. The third depends upon relationships within the area through memberships of Caribbean organizations and associations. This points to the geographic–economic–political interactions and the confusing relations that exist. As economic integration develops in the area, it is unclear how far EU-linked regions and territories can progress in developing common objectives, strategies, and responses.

Various conferences and organizations, agencies, and institutions have recognized the need for planned sustainable development programmes. The 1994 Barbados Conference for Sustainable Development of Small Island States identified a programme of action covering a large number of important areas. The United Nations Industrial Development Organization (1994) considered sustainable industrial potentials and pointed to the need for an integrated approach. Such actions apply equally to island overseas territories of EU member states. Country Policy Plans form the basis of agreement between the UK dependent territories and the British government. These plans set out major policy objectives and principal programme targets. Nevertheless, policy must move quickly from considered actions and recurring reviews to effective action and definitive socio-economic developmental outcomes. Immediate actions and strategies within the territories as the twenty-first century begins must focus on considering relationships between developmental objectives, economic outcomes, and environmental consequences. The sustainable development paradigm must have a strong socio-economic development objective at its core. Suggested actions and strategies have been categorized into three sets of factors, involving socio-economic, administrative and technical factors, and environmental and ecological factors (Table 12.7).

CONCLUSIONS

Strategies for promoting sustainable socio-economic development require a balanced perspective between ecological determinism and human sociological considerations. The eco-green approach that embodies the philosophy of sustainable development based upon ecological principles and dogma can determine development outcomes, while leaving little room for

Table 12.7 Programmes of Action and Strategies for Sustainable Development

Socio-Economic Factors	Resource Management and Ecological Environmental Strategies	Administrative Factors and Technical Imperatives
Develop new economic activities and promote economic growth	Improve water consumption facilities and efficiency in water management	Integrate socio-economic and environmental planning
Develop infrastructural systems including public utilities and transport systems	Develop natural resource and land-use management	Strengthen institutional and administrative capacities
Develop educational systems including technical education	Develop disaster risk management and response strategies	Increase legislative and regulatory powers to promote environmental improvements
Improve training and capacity building for skills and development	Develop management of wastes and recycling	Develop capacity in science and technology
Develop cultural programmes and provide facilities	Improve coastal and marine resource management	Make low-cost technology transfer available
Introduce planned programmes for low-cost housing development across island areas	Monitor and prepare for climate change and sea level rise	Develop networks of communications
Improve public health and health systems provision	Manage energy resources and consumption	
Develop financial resources and institutions		
Improve food supply and food security		

human considerations. Sustainable development should consider economic aspirations and social imperatives as the foundation upon which sustainable policy is based. Initiatives should have equitable distribution of existing and future resources to develop island communities as a key criterion. It is important to achieve an appropriate balance between sustainability criteria and economic and social imperatives. Of course, the underlying philosophy of sustainable development should influence development possibilities, but it is important that the starting point of local people, who are in less than fortunate positions in terms of employment, housing, health, and other quality of life measures, are borne in mind. It is therefore important that considerations are given to the immediate plight of the lower community strata. Top-down strategies and initiatives must include a filtering mechanism that aims to enhance and speeds the trickle-down

process. It must filter through from top to middle and bottom recipients within island societies. Such a process will reflect the social dimension included in the conceptualization of sustainability by the United Nations Development Programme (UNDP). The human dimension, both social and economic, is as important as the environmental dimension in approaches to sustainable development. Thus, development programmes should meet objectives of protecting both natural resources and societal needs based upon environmental quality standards.

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