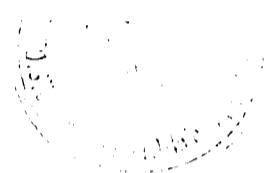


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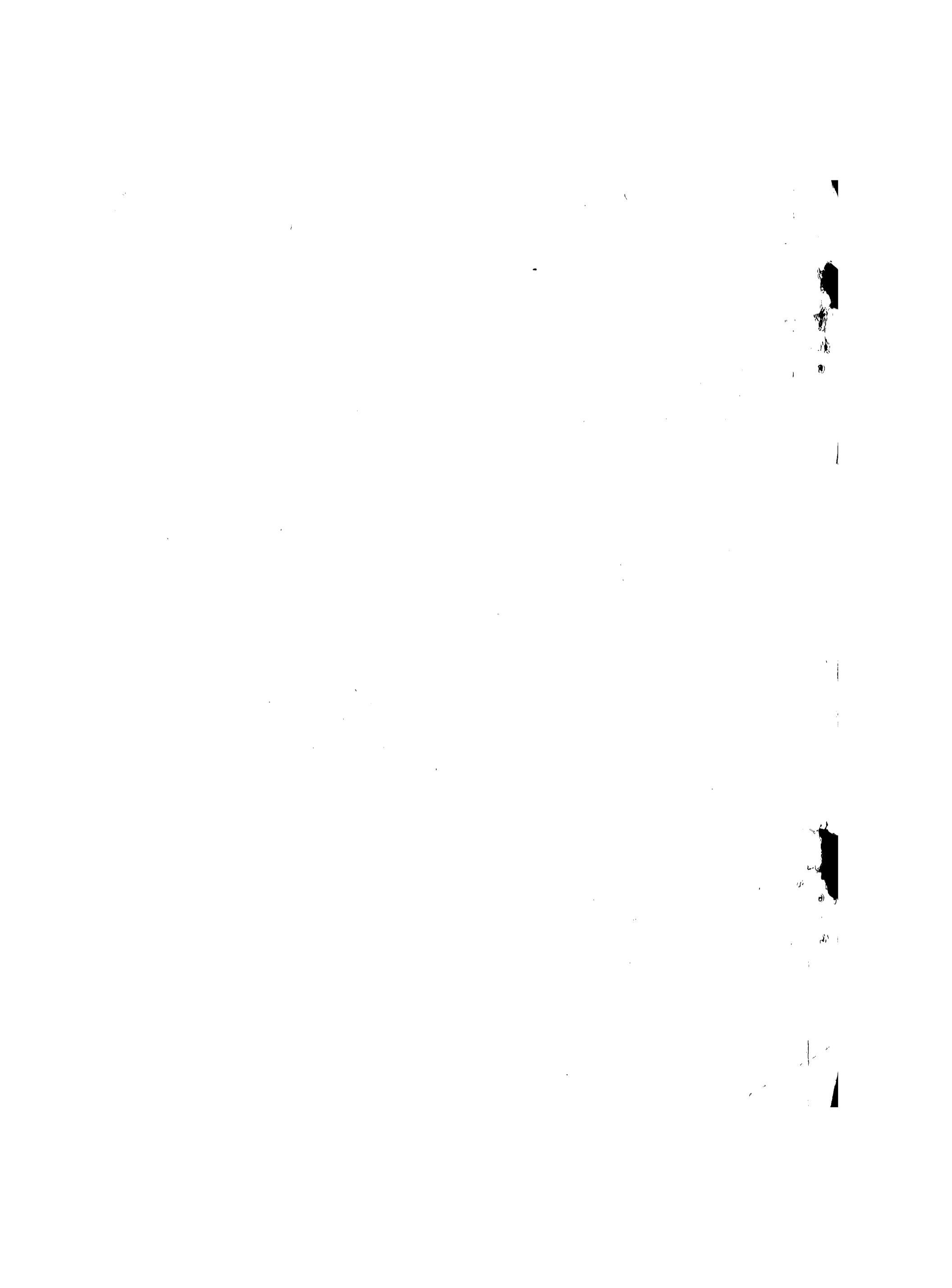
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ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
Subregional Headquarters for the Caribbean
UNITED NATIONS ENVIRONMENT PROGRAMME



TOURISM AND ENVIRONMENT IN CARIBBEAN DEVELOPMENT
WITH EMPHASIS ON THE EASTERN CARIBBEAN

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I. INTRODUCTION AND SYNTHESIS

1.1 Background

1. Tourism is a fast growing and significant economic activity in almost all CDCC member countries. Tourist arrivals in the island territories of the Caribbean comprised some six million people in 1982 and gross tourism receipts were estimated at about US\$3.6 billion. Although in absolute numbers tourist arrivals and gross receipts are higher in the larger Caribbean countries, in relative terms tourism is more important in the smaller islands, whether measured in economic terms like the ratios of gross tourism receipts to Gross Domestic Product (GDP) or to visible exports or measured in physical terms like the number of hotel rooms per square kilometer, tourist nights per 1,000 resident nights or any other commonly used yardstick.

2. In general tourism in the smaller economies of the region is based on a favourable climate and on the attraction of their coastal and marine resources along with other natural, cultural and human assets. These factors have resulted in a concentration of tourist facilities within a narrow zone from the highwater mark, and over the years the form of these tourist developments have gradually changed from exclusive resorts to encompass now also lower-cost facilities like cottages, apartments and condominiums, residential retirement homes and yachting-related construction works.

1.2 Tourism - Resource Use - Development

3. Given the high income elasticity of leisure and excluding unforeseen adverse global economic or national political events, it appears likely that tourism will continue to show high rates of growth. Consequently, tourism is seen by a number of countries as a major if not a most important stimulus to future economic growth. In addition, many of the smaller economies may have few alternatives which offer the same potential as tourism as regards its contribution to gross domestic product, balance of payments, government revenue and employment, all of which remain of continuing concern to most economies of the region.

4. The promotion of tourism as a significant element of a country's development strategy has sometimes been a controversial choice and its pros and cons have, at times, been subject to fierce debates. However, given the already important role of tourism, the question whether or not tourism has a positive or negative impact on the development process may be of less relevance to decision-makers in the public or private sector. A more pragmatic approach would be the establishment of criteria or ways and means which need to be incorporated in the development and management of the tourist sector such as to maximize a country's long term benefits, or alternatively to reduce its costs. From this perspective an analysis of positive or negative impacts is relevant if and when its conclusions can serve as an input in the establishment of such criteria.

5. By its very nature tourism can have profound economic, socio-cultural and environmental effects although there are no a priori reasons to indicate whether these effects will be positive or negative. A major criterion for an evaluation would then be related to the enhancement and sustained use of resources for long-term tourism development. Acceptance of such a criterion immediately leads to three further questions. The first one pertains to the choice between tourism and other potentially conflicting uses of environmental resources in order to maximize country benefits, the second one to the kind of tourism desired, while the latter pertains to the establishment of tourist activities in such a way that environmental resources are enhanced and accessible to nationals and tourist alike.

6. To a large extent tourism developments have been undertaken by the private sector in response to market demand and largely in the absence of policy guidelines and without the essential inputs of planning and environmental assessments, with governments responding in an ad hoc manner to developments and consequences. As a result short-term considerations appear to have had predominance over long-term ones. This has sometimes resulted in negative socio-cultural or environmental impacts since such effects extend beyond the planning horizon or, more often, extend beyond the confines of a tourism development project and hence do not form part of a private sector evaluation. Such external effects, like pollution, beach erosion and social stress can take significant proportions and examples are all too easily visible all over the region. It is the role of government to evaluate such effects at the project level and their various structural linkages at the intermediate level and, as far as possible, to anticipate these at the macro level.

7. On the other hand avoidance of loss of tourism earnings or the potential of increased earnings are sometimes, and increasingly so, used in the justification of projects of developments which have benefits that extend beyond the tourism sector. Sewerage schemes, restoration of historic buildings and the establishment of national parks are cases in point.

1.3 Planning and Management

8. Incorporation of these factors calls for a greater commitment to planning and management of tourism development at the macro and micro level than is hitherto evidenced in the region. Major aspects of tourism development and management comprise the setting of objectives as regards the impact and type of tourism desired, the preparation of a strategy to achieve these objectives, planning of tourism activities preferably as a component part of a comprehensive plan or, otherwise, an extensive sector plan, and at the micro level application of planning mechanisms and environmental impact assessments for larger projects or for those which require extensive habitat modification.

9. With respect to resource management the emphasis should be on avoiding potential resource management conflicts and on how these resources can be used to stimulate a country's development. Depending on the general level of development and the relative importance of the tourism sector this may result in some areas being earmarked for tourism and recreation, others for different uses, while for some absolute protection may be required.

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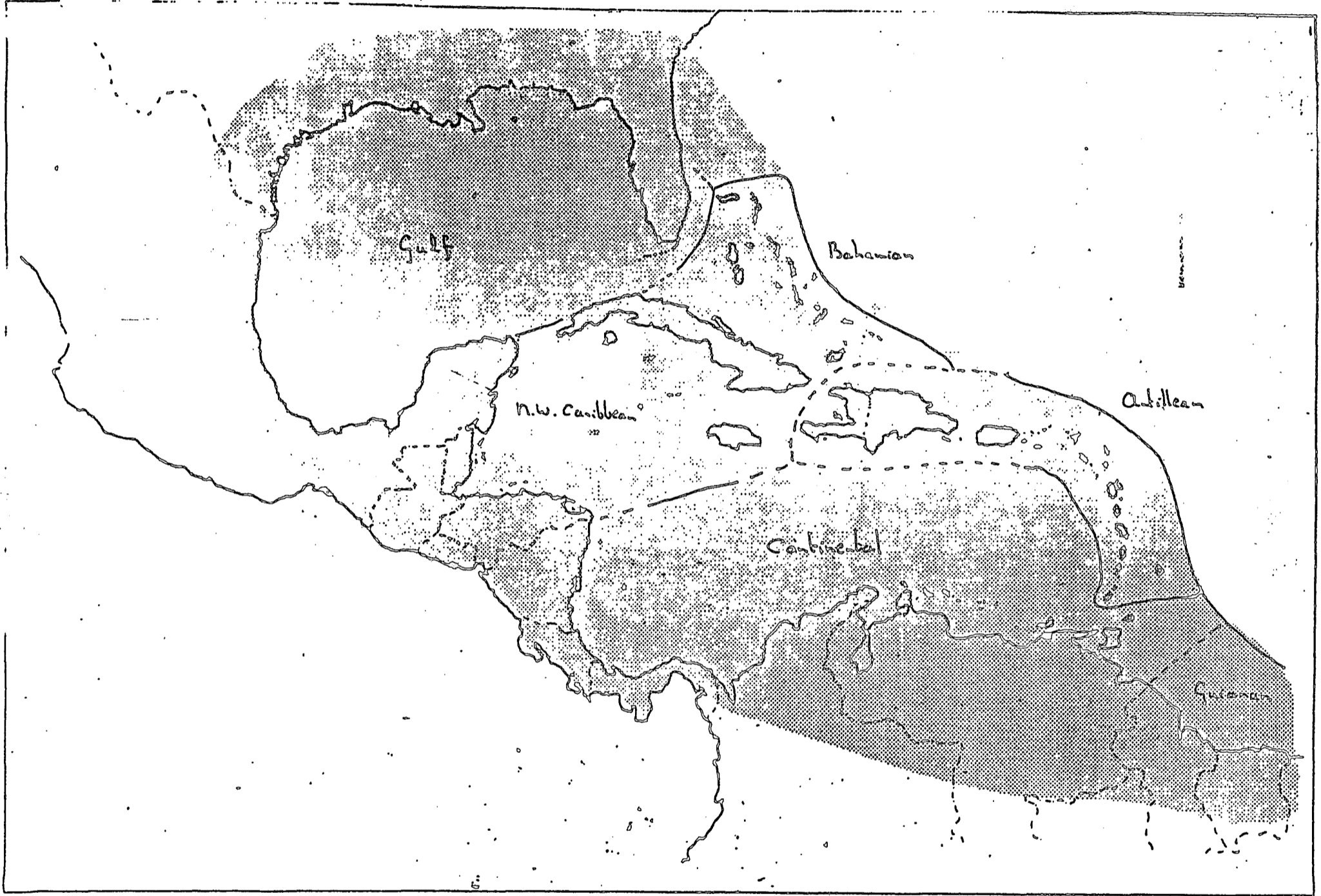


Figure 1 : The "Wider Caribbean Region", as defined in this document.

Source: ECLA/UNEP, 1979

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TABLE 1

Insular Caribbeans: Basic Indicators, 1982

	Area (Km ²)	1982 Popula- tion ('000)	Density	GDP (US\$m)	GDP per capita	1980 Unemploy- ment rate	Merchan- dise Exports (US\$m)
Antigua and Barbuda	442	77.2	175	128	1658	20.8 <u>1/</u>	34
Dominica	751	80.2	107	72	898	...	24
Grenada	344	107.4	312	108	1006	18.2	19
Montserrat	102	11.7	115	29	2479	10.5 <u>2/</u>	3
Saint Christopher/Nevis	269	45.0	167	59	1311	12.4 <u>2/</u>	19
Saint Lucia	616	124.0	201	134	1081	10.7 <u>2/</u>	42
Saint Vincent and the Grenadines	388	127.0	327	78	614	19.5 <u>2/</u>	32
Bahamas	13,935	217.5	16	1074 <u>3/</u>	...	...	221 <u>4/</u>
Barbados	431	251.0	582	998	3976	10.0 <u>2/</u>	259
Jamaica	10,991	2234.5	203	3184	1425	27.4 <u>1/</u>	726
Trinidad and Tobago	5,128	1200.0	234	7316	6097	11.6 <u>1/</u>	3072
Anguilla	91	6.7	74	...	...	...	...
British Virgin Islands	153	12.4	81	56	4516	4.5 <u>2/</u>	2
Cayman Islands	259	18.3	71	...	...	...	...
Turks and Caicos	417	7.7	18	24	3117	12.8 <u>2/</u>	...
Netherlands Antilles	...	249.9 <u>3/</u>	...	1753 <u>3/</u>	7015 <u>3/</u>	...	119 <u>4/</u>
Aruba	193	66.5	345	...	...	...	...
Bonaire	288	9.5	33	...	...	...	...
Curacao	444	164.6 <u>1/</u>	371	...	...	...	...
St. Martin	88	17.4	198	...	...	...	...
Cuba	114,524	9780	85	...	...	...	...
Dominican Republic	48,734	5740	118	7877	1372	...	768
Guadeloupe	1,779	328.7	185	917 <u>2/</u>	2790 <u>2/</u>	...	83
Haiti	27,750	5186	187	1517	293	...	162
Martinique	1,102	326.4	296	982 <u>2/</u>	3009 <u>2/</u>	...	116
Puerto Rico	8,897	3260	366	16969	5205	17.1 <u>2/</u>	...
U.S. Virgin Islands	344	101.2	294	706	6976	8.3	212 <u>4/</u>

1/ 19812/ 19803/ 19794/ Excludes oil which does not involve change of ownership.

Source: IFS, UN, CDB, 1980 Population Census, National Sources and ECLAC estimates.

II. ENVIRONMENTAL RESOURCES IN SUPPORT OF TOURISM

The Wider Caribbean Region as defined by United Nations Environment Programme (UNEP) comprises the states and territories in the Caribbean, including the Bahamas, the north-eastern parts of South America from Colombia to French Guiana, Panama, the States of Central America, Mexico, the Gulf States of the United States as well as the coastal and open waters of the Caribbean Sea proper, the Gulf of Mexico and the waters of the Atlantic Ocean adjacent to the states and territories mentioned above (ECLAC/UNEP 1979).

The International Union for the Conservation of Nature and Natural Resources (IUCN) has subdivided this region into six major subregions (see figure 1) which focus attention upon the major ecological units of the larger system (IUCN, 1979). Table 1 sets out the main characteristics of each of these subregions.

Within the Wider Caribbean the Eastern Caribbean or Lesser Antilles ranges from the atypical continental island of Trinidad to Puerto Rico the most eastern of the Greater Antilles. An outer chain, comprising Barbados, Antigua, Barbuda, Anguilla and Anegada consists of low lying coral limestone plateaux while the inner chain, comprised of the other islands, consists of steep and rugged volcanic islands. On the edge of the Caribbean plate and near the Atlantic/Caribbean subduction zone the islands are still being uplifted and subject to volcanic and seismic activity (Dalhousie 1984).

The Lesser Antilles encompass eight independent island or multi-island countries and a number of politically dependent territories linked to France, the Netherlands, the United Kingdom and the United States.

All the islands are small, densely populated with intensive development of the coastal zone. Tourism is a significant activity and tourism densities are among the highest in the world. They also share a common colonial legacy characterised by slavery and an export oriented plantation economy. While sharing these characteristics the islands are very diverse in culture, language, ecology and human and natural resource endowments (Towle, 1984).

TABLE 2

Subregion Characteristics

	Gulf	Bahamian	Northwest	Antillean	Southern	Guianan
ENVIRONMENT						
Shelf	Large	Large	Moderate	Small	Moderate	Large
Upwellings	Large	?	Large	Small	Large	?
Climate	Temp. Trop.	Cool Trop.	Tropical	Cool Trop.	Tropical	Tropical
Rivers	Many	None	Moderate	Fewerate	Many	Many
Productivity	High	Moderate	Moderate	Low	High	High
Major influence	Continental	Oceanic	Continental	Oceanic	Continental	Continental
HABITAT						
Wetlands	Many	Few	Many	Few	Many	Many
Bays, Estuaries & Lagoons	Many	Moderate	Many	Few	Many	Moderate
Living Reefs	Few	Dominant	Many	Moderate	Few	None
Sea Grasses	Many	Dominant	Many	Moderate	Moderate	Few
SPECIES						
Dominants	Shrimp	Corals	Corals	Lobster	Shrimp	Shrimp
	Demersal Fish	Sea Grasses	Sea Grasses	Moderate	Lobster	Demersal Fish
	Pelagic Fish	Conchs	Conchs	fish pop-ulations	Demersal Fish	Endangered Species
	Wading Birds	Lobster	Lobster	Sea Birds	Pelagic Fish	
	Endangered Species	Demersal Fish	Demersal Fish	Sea Turtles	Endangered Species	
		Endangered Species				
SOCIOECONOMIC						
Population	Moderate	Low	Low	High	Low	Low
Fisheries	Valuable	Valuable	Valuable	Low	High	Moderate
Ocean Traffic	Heavy	Moderate	Moderate to low	Heavy	Heavy	Low
Minerals	Rich (+oil and gas)	Low	Moderate to low	Low	Rich (+oil and gas)	Unknown
Coastal development	Moderate	High to low	Low	High	Moderate to low	Low

NOTE: There are many points of differentiation between the subregions. Only some major characteristics are included.

SOURCE: IUCN (1979)

2.1 Environmental Resources

In general tourism in the Eastern Caribbean is based on a favourable climate and on the attraction of the coastal and marine resources along with other natural cultural and human assets. However, apart from the climate, beaches provide the major attraction of the Caribbean to tourists and good coastal water quality and attractive beaches are basic requirements to the promotion of tourism development. 1/ In contrast the use of a country's other human, cultural and natural resources in support of tourism development has often been somewhat neglected as any cursory review of Caribbean travel brochures shows. In a certain sense this is ironic, as beaches and the sea tend to blur individual island characteristics. The diversity of the region and the uniqueness of each island is largely determined just by those differences in the endowment and management of their other resources.

Growing recognition of this and increased competition from within and outside the Caribbean region may reinforce the initial stimulus for a greater appreciation of a country's natural and cultural heritage and patrimony. Indeed tourism may provide the economic justification to the enhancement and adaptive use of such resources. One caveat: extreme care needs to be taken that such enhanced resources are accessible to both nationals and tourists alike. Restricted or limited access by nationals will be counter-productive and result ultimately in a disregard towards one's heritage and in negative attitudes towards tourism.

2.2 Historic Buildings

The appreciation process is well advanced in the restoration and adoptive use of major historic, often military, buildings like Nelson's Dockyard in Antigua, Brimstone Hill in St. Kitts and the fortifications in the French islands and of the historic districts like Willemstad, Charlotte Amalie, St. George's and Nassau. It appears though, that the restoration and use of smaller, individual historic and vernacular buildings are still somewhat neglected.

The historic patrimony ranges from domestic buildings, (including the slave quarters of Bonaire, individual houses and "great houses" which can be found in all islands), to commercial architecture, to industrial structures, to military works and to public buildings. (Buisseret, 1983). The buildings typify period and colonial origins and vernacular modifications to match needs with locally available skills and materials.

Notes: 1/ That climate and beaches are the major factors which has been confirmed by several Visitor Expenditure and Motivation Surveys and Demand Studies carried out in the region.

For the OECS countries it appears that there is a need and interest in upgrading the downtown areas and harbourfront facilities. Historic buildings and districts are present in all towns and all have a number of disused, delapidated or poorly maintained buildings whose restoration can be economically efficient while enhancing the downtown areas. While the towns are vibrant during the day they are quiet at night resulting from a lack of evening time attractions. Upgrading of the downtown areas should be aimed at an improvement in the welfare of the residents and tourism is perhaps the economic sector most able to offer real returns on money invested. (Jackson, 1985,b)

Although the restoration works are seldom instigated by tourism it is generally felt that tourism and the attendant conversion of historic buildings to generate income and employment has provided a positive stimulus to already existing efforts.^{1/} It is perhaps not by chance that funding for the restoration and maintenance of historic buildings appears to be more readily available in tourism oriented countries than for the less tourism dependent countries like Dominica or Trinidad and Tobago.

On the other hand tourism can create conflicts as when the exploitation for tourism purposes does not compliment the historic or cultural values, results in a real or perceived limitation of access by nationals or when existing historic sites conflict with the concept which a tourist developer may wish to create. The construction of a modern hotel atop the foundations and ruins of an old fort in the British Virgin Islands and the proposed construction of a hotel between the two Pitons in St. Lucia are examples of such conflicts.

A special case of concern is the preservation and conservation of the many shipwrecks in the region. Undoubtedly these form a major attraction but pilferage of artifacts, mainly by scubadivers, is common wherever wrecks are discovered.

2.3 Cultural Resources

The relationship between tourism and culture is generally under utilised and often limited to adapted versions of calypso or the ubiquitous limbo. At the same time it is an uneasy one as it is sometimes felt that the influence of tourism may result in the debasement of the cultural legacy.

The participants of the OAS/CTRC Seminar on Cultural Patrimony and the Tourism Product (OAS/CTRC 1983) advocated stronger linkages between tourism and culture, a need which is confirmed by Renard (1985) in his study of the Vieux Fort Area where he concludes that "this status quo of traditional sea-sun-sand tourism, is not appreciated by most parties

^{1/} ECLAC/UNEP: Tourism and Environment Project: Mission notes. Existing efforts include national historical societies, or trusts, CCA and the Carriacou Project.

involved." Parris (1983) stated that " a nation's pride in its culture should keep it from prostituting itself towards any industry. At the same time that same strong sense of cultural identity can lead to the fastening of a tourism product that is unique and different."

Culture in the form of the performing, visual and literary arts, folklore and crafts contribute to a more meaningful and understanding visit. At the same time the relationship is mutually beneficial as tourism enables the artist to enlarge his market and for those in the performing and visual arts to have more performances that otherwise would be possible in a small island context.

2.4 Natural Attractions

The natural attractions, other than beaches, are also significant resources which to a large extent enjoy only limited promotion and are underexploited in their use for tourism and recreation. The particular endowments of each island reflect the differences in geological and bio-physical attributes and the degree of human influence. Natural areas range from the desert type vegetation of Aruba and Curacao to the rainforests of Martinique and Dominica. Any particular life zone within islands tends to cover rather small areas as a result of variations in rainfall and steep gradients and thereby tends to pose special management problems. (Lugo et.al. 1981, Brown 1982). Wild life, attractive landscapes, volcanic features all vary among the islands and contribute to underline the diversity of a country's attractions.

The relationship between natural attractions and tourism is not always an easy one and resource utilization conflicts can and do frequently arise. Extensive modifications in especially the coastal zone, have not always contributed to the enhancement and sustained use of such resources and conversion to tourism related uses can conflict with other uses like fishing, habitation, agriculture, conservation, watershed management and national recreation. Such conflicts can arise from habitat modifications, limitation of access or from increased land values which result in land alienation, displacement of low-income housing and the withdrawal of land from agricultural towards speculative purposes (Lewsey 1978,). On the other hand the prospective use for recreation and tourism can be arguments for the designation of national parks or protected areas. The Virgin Islands National Park in the U.S. Virgin Islands, the Parc National de Guadeloupe and the Caroniswamp in Trinidad and Tobago are cases in point. However, prevention rather than abatement of resource use conflicts should be the guiding principle.

Conclusion

Any assessment of the tourism potential of the region needs to include not only beaches but also the other natural, cultural and historic resources. After such an assessment action plans need to be established to ensure that the use of such resources is promoted for nationals and tourists alike. Tourism can provide an additional stimulus or the economic justification of the enhancement and adoptive use of such resources.

III. ECONOMY

Caribbean economies are characterised by a high degree of openness, i.e. a strong dependence on trade in goods and services. The 1950s and 1960s witnessed the emergence of some kind of an export oriented 'modern sector'. While this was good for economic growth it did not solve the problems of poverty and rising unemployment (St. Cyr, 1983). The effect was that much of the economic growth in this period took place by simply adding the modern sector to the economy without truly integrating it into the national economies (Demas, 1981). This phenomenon led St. Cyr (1983) to conclude "that an export boom tends to bias consumption in the direction of imports and tends to destroy production capacity outside the export sector by changing the ratio of factor productivity between the booming sector and other productive sectors thereby rendering production unremunerative in the latter."

During the 1970s a major development concern was to achieve a larger measure of local ownership and control, but in 1981 Demas concluded: "Notwithstanding progress in some areas and because of the deterioration in the international economic situation, in many countries a number of structural problems inherited from the 1960s remained - growing unemployment, lack of diversification and intersectoral linkages in the structure of production and a profound malaise in the agricultural sector, both for export and local food consumption." (Demas 1981)

From 1979 growth of world output stagnated and virtually ceased by 1982. Led by a recovery in North America growth of world output recovered to a rate of 2.1 percent in 1983 and further improved in 1984. However, this recovery was not evenly distributed and indications are that growth will be less vigorous in 1985. With their dependency on external factors most countries in the region experienced little or no real economic growth during the recession period. Reflecting stagnating international demand commodity prices remained depressed and combined with a continued high demand for imports resulted in reduced foreign exchange earnings. These depressive effects on domestic output sharpened the focus on the regions structural problems as indicated by current account deficits, increased external indebtedness, increased public sector deficits and high unemployment. (ECLAC 1984, CDB 1984, 1985). While economic performance in 1983 and 1984 improved somewhat the interplay of internal and external factors resulted in a mixed performance and prospects for a significant improvement in 1986 are not bright. (CDB 1985)

In a reaction to these adverse external and internal economic circumstances the dominant development concern appears to have shifted towards structural adjustment to a new development path to accelerate development while adopting to major external or internal shocks to the economic system (Caribbean Community Secretariat 1984).

Tourism forms part of the 'modern, oriented' sector as referred to by Demas and St. Cyr, and indeed lacks integration in the structure of production which is signified by the high import content of the construction as well as the operating phase of the tourism sector.

In the early seventies the performance and contribution of the tourism sector was critically reviewed by Bryden (1973), who concluded that the net social benefits arising from the tourism sector were rather low. Although a similar, more recent, analytical review is lacking there is considerable, albeit fragmentary, evidence that a decade later backward and forward linkages are still not very well developed and hence the potential contribution of tourism to the development process has not been fully exploited.

With the increased focus on structural adjustment policies and on export promotion to alleviate foreign exchange shortages it is likely that the governments in the region will place an increased emphasis on further and accelerated development of the tourism sector.^{1/} This is also borne out by the provisions of the Nassau understanding with respect to tourism, which amongst others states that the region "pursue vigorously the preservation and maintenance of existing tourist attractions and the development and diversification of new tourist attractions so as to increase the attractiveness of Caribbean holidays and hence to induce increased visitor traffic and/or length of stay and/or tourism expenditures" (Caribbean Community Secretariat, 1984).

The emphasis on accelerated development of tourism embodies the danger that short-term exigencies like foreign exchange shortages and unemployment take precedence over medium - and long-term concerns and that developments will be pursued which are not consistent with the region's resources and, hence, are not environmentally sound or sustainable. Since a healthy environment is one of the major tourist attractions, such developments may very well threaten the long-term viability of the industry.

Notes: 2/ The recent discussion and proposals for the development of tourism in Trinidad and Tobago is a case in point. Until recently tourism has not been accorded high priority and price competitiveness and the physical infrastructure were allowed to deteriorate to a considerable extent. The Task Force Report (Trinidad and Tobago), however, proposed that Government make an unequivocal declaration of its support for the tourism industry.

IV. TOURISM DEVELOPMENTS IN THE CARIBBEAN

In a number of Caribbean countries tourism emerged as an important economic activity during the late fifties and early sixties as a result of improved transportation, the closure of the Cuban market ^{1/} and an increase of disposable incomes in the industrialised countries, the region's main potential markets. From Puerto Rico, Jamaica and the Bahamas, the increased flow of tourists spread to other islands so that in 1985 tourism is a significant activity in almost all Caribbean islands ^{2/}.

4.1 Tourist Arrivals

In 1982 tourist arrivals to the insular Caribbean comprised some six million people or about two percent of the world international tourist arrivals, roughly the same market share as in 1970. Excluding Cuba, gross tourism receipts were estimated at about US\$3.6 billion and about 70,000 rooms were available. Table sets out the basic tourism parameters for the insular Caribbean.

Table 3 below gives some insight in the historical growth of tourist arrivals for some selected destinations ^{3/}.

TABLE 3
Historical Growth of Tourist Arrivals
('000)

	1960	1970	1975	1980	1984
Antigua and Barbuda	16.0 ^{1/}	67.2	63.0	97.9	129.1
Barbados	35.5	156.4	221.6	369.9	367.7
Aruba	12.4 ^{1/}	75.0	128.9	188.9	210.2
Curacao	22.7 ^{1/}	101.6	103.3	184.7	...
US Virgin Islands	73.0	372.4	325.9	380.0	367.5
Bahamas	...	892.5	903.1	1181.3	1321.3
Saint Christopher/Nevis	5.9	13.5	14.7	32.8	...
St. Maarten	3.6 ^{2/}	33.5	117.0	204.7	319.9
Jamaica	...	309.1	395.8	395.3	603.4

^{1/} 1961

^{2/} 1962

Source: Bryden (1973), IBRD (1975), CTCRC (1984,b)
and various national sources.

^{1/} This market is again opening up however for non-US tourists. See Banco Nacional de Cuba (1985)

^{2/} The historical growth and its stimulating factors are well documented. See for example Bryden (1973), IBRD (1975) or Chernick (1978) for regional developments. Phillips (1982) and US Virgin Islands (1983) provide analyses in a national context.

^{3/} Due to dat and definitional problems the figures, especially for the earlier years, indicate an order of magnitude only. These data problems have still not been entirely overcome. See Busby (1984) for a recent discussion.

TABLE 4

Caribbean Tourism 1982
Basic Parameters

	Tourist arrivals ('000)	Visitor Expendi- ture (\$m)	Ave. length of stay (nights)	No. of rooms
Antigua and Barbuda	97.3	43.8	7.0e	2,282
Dominica	19.0	4.4	8.2	263
Grenada	23.2	17.3	8.5	460
Montserrat	15.0	5.3	8.0 1/	88
Saint Christopher/Nevis	34.5	9.4	8.1	706
Saint Lucia	70.2	37.0	9.0	1,384
Saint Vincent and the Grenadines	37.1	25.9	6.9 1/	527
Bahamas	1101.1	654.5	6.8	12,406
Barbados	303.8	251.1	8.3 1/	...
Jamaica	467.8	337.8	9.7	10,327
Trinidad and Tobago	...	150.0	...	1,749
Anguilla	6.7	2.5	...	240
British Virgin Islands	113.7	65.6	7.7	1,398
Cayman Islands	121.2	54.9	5.2	1,968
Turks and Caicos	13.3	5.1	...	329
Netherlands Antilles				
Aruba	220.2	148.3	6.2	2,177
Bonaire	30.3	6.6	4.5	324
Curacao	174.4	155.4	4.5	1,761
St. Maarten	258.2	123.5	...	1,913
Cuba	100.3	59.3 3/	...	...
Dominican Republic	341.2	228.9	...	4,305
Guadeloupe	189.4	107.5	...	3,206
Haiti	139.0	55.5	5.0	3,595
Martinique	176.2	81.6	5.6	3,070
Puerto Rico	1563.7	699.2	3.7	8,808
US Virgin Islands	340.0	312.5	7.6 1/	4,578
TOTAL	5956.8 2/	3583.6 4/		

e = Estimate

1/ Accommodation only.

2/ Excludes Trinidad and Tobago

3/ 1983

4/ Excluding Cuba.

Sources: CTCRC (1984) and various national sources.

In general the region experienced high growth rates during the sixties and early seventies, contracted during the 1974-1976 recession, recovered with high growth rates from 1977 to 1979 and was again adversely affected by the 1980-1982 recession.

This contraction was especially pronounced in the larger, more mature tourist destinations like Barbados, US Virgin Islands, Puerto Rico, Jamaica and the Netherland Antilles and aggravated the structural problems as indicated in the previous chapter. With increases in capacity this led to a dramatic decline in hotel occupancy rates which in turn resulted in an overall operating loss for the Caribbean hotel industry (Horwath and Horwath, 1984) Due to a high income elasticity of leisure, the number of tourist arrivals from the United States, reflecting the economic recovery there, increased significantly in 1983 and further increased in 1984. With the exception of the ABC islands of the Netherlands Antilles, this increase more than offset the indifferent growth or even decline in the number of Canadian and European visitors, partly caused by the appreciation of the US dollar to which the various Caribbean currencies are linked, partly by the slow recovery in Europe and partly by lower cost competitors in Asia and Africa, and the collapse of the Latin American market in response to the debt and balance of payments problems of that region.

4.2 Capacity

Data on supply and utilization of accommodation are limited but indications are that accommodation capacity has grown at about the same rate as tourist arrivals. The table below shows the development in room or bed capacity for some selected destinations.

TABLE 5

Room Capacity in Selected Countries

	1960	1965	1970	1980
Jamaica	...	4,152	7,026	10,092
Barbados (beds)	2,300 ^{1/}	3,300	6,100	13,400
US Virgin Islands	1,397	2,099	3,599	4,752
Bahamas	...	5,360	9,587	11,427
Curacao	...	385	1,158	1,668

^{1/} 1963

Sources: CTCRC (1984,b) and various national sources.

Over the years, the form of tourist accommodations have changed from small and exclusive resorts to encompass now also larger establishments and cheaper facilities like cottages, apartments or condominiums, residential retirement homes and yachting related facilities. For example in Barbados over 80 percent of the growth in tourist accommodations between 1971 and 1980 was represented by the expansion of apartments and apartment hotels. (Phillips, 1982)

This shift has reduced the labour generating potential of tourism as employment/room ratios are lower for apartments than for luxury hotels (Marshall 1978). In addition, it has also resulted in lower real spending per visitor. In Barbados average spending per visitor declined by over 60 percent during the same period 1971 to 1980 (Phillips, 1982). These effects led Worrell (1980) to conclude: "We tend to set our targets for tourism in terms of the number of visitors, but this is not really what we want out of the industry. The benefits are to be measured in foreign exchange and employment. There is a facile assumption that more tourists mean more jobs and more foreign exchange, but this can easily be shown to be false".

The tendency to equate numbers of tourists with benefits is quite widespread in the region. However, social and environmental costs rise with increased numbers and lower growth rates may result in higher national benefits and lower costs. Evaluation of such processes requires a significantly improved database and a well defined tourism policy as regards objectives, the impact and type of tourism desired and a strategy to achieve such objectives (Worrell 1980, Busby 1984, ECLAC/CDCC 1985).

4.3 Dependency

Although the figures of table 4 show the national and regional importance of tourism in absolute terms, they do not signify the varying levels of dependency on tourism by the individual economies.

Bryden (1973) used as indicators of dependency the ratio of gross tourism receipts to national income and visible exports and defines tourist countries as those in which tourist receipts exceed 5 percent of national income or 10 percent of visible exports. The ratio of tourism receipts to visible exports is illustrated in Table 6. Listed in descending order of dependency, all insular Caribbean countries with the exception of Trinidad and Tobago ^{1/} are highly dependent on tourism. For seven countries tourism receipts exceed visible exports. In these countries, however, dependency on tourism may have decreased somewhat over the last decade. In contrast, the other islands appear to have become more dependent on tourism. This conclusion, however, must remain tentative given the paucity of the data and the possibility that the data not only reflect growth of the tourism sector but also the depressed nature of commodity prices which reduced export earnings in 1982 as a result of the world wide recession.

The ratio of tourist receipts to gross domestic product, which is illustrated in Table 7, shows more or less the same picture, although here Haiti, Dominican Republic, Dominica and Trinidad and Tobago appear to be less dependent.

^{1/} No data for Cuba, Puerto Rico, Cayman Islands and Turks and Caicos Islands.

From the tables it is apparent that tourism can be a significant source of foreign exchange. Although in absolute terms tourism arrivals and receipts are higher in the larger Caribbean islands, in relative terms tourism is more important for the smaller islands of the Eastern Caribbean, the Netherlands Antilles, and the Bahamas.

4.4 Linkages

It was previously stated that tourism as part of the modern sector is not very well integrated with the remainder of the economy. This lack of linkages is borne out by the large share of gross tourism receipts which leaks out of the economy rather quickly. First and second round leakages, i.e. factor payments to abroad, direct tourism sector imports and imports through wholesalers, range from about 40 percent of gross tourism receipts in Barbados (Phillips, 1982) to about 60 to 70 percent for the OECS countries. These high import contents reflect the limited agricultural and industrial base of the individual countries, the degree of foreign investment and perhaps too generous investment incentives which may be biased against the provision of local or regional goods and services. When viewed in a regional context linkages improve somewhat but the improvements are not that substantial as many of the countries exhibit a similar productive structure. This is quite apart from existing problems affecting regional trade like cost, lack of information, quality control, marketing and transport.

Through CTCRC and national efforts economic impact studies have been carried out in a number of countries (Seward and Spinrad, 1982), but few of these are policy oriented with an aim to improve national and regional linkages. The recent CTCRC study on the improvement of linkages between the agricultural sector and tourism is a notable exception (Systems, 1984). There is a need for more of such studies covering other sectors and countries and which can form the framework of policy oriented action.

Informal or semi-formal sector activities can further linkages but information on this sector is not very well documented. However, its fragmentation and the lack of formal marketing structures together with a lack of awareness or even distrust of the sector's activities by the often expatriate management of tourist facilities are reasons that existing skills are under utilized. Occasionally formalisation of informal sector activities has taken place, an example of this is a boatbuilder in the British Virgin Islands who in a relative short period of time captured not only the local market for dinghies in the British Virgin Islands but also established a regional export market ranging from Puerto Rico to Saint Lucia.

TABLE 6

Tourism Receipts as Percentage of Visible Exports

	1982	1976	1965
British Virgin Islands	2,690		Infinite
Netherlands Antilles	365 <u>1/</u>		
Bahamas	296 <u>1/</u>	16 <u>2/</u>	316
Montserrat	177		316
U.S. Virgin Islands	147 <u>1/</u>		
Guadeloupe	130		
Antigua and Barbuda	129		275
Barbados	97	87	41
Grenada	91		54
Saint Lucia	88		14
Saint Vincent and the Grenadines	81		24
Martinique	70		
Saint Christopher/Nevis	49		
Jamaica	47	16	20
Haiti	34	25	
Dominican Republic	30	13	
Dominica	18		
Trinidad and Tobago	5	4	

1/ Excludes oil exports which do not involve change of ownership.
2/ Not comparable with 1982 since it includes oil exports.

Sources: 1976 Cleverdon (1979); 1965 Bryden (1973)
1982 IFS, Country estimates.

TABLE 7

Tourism Receipts as a Percentage of GDP (m.p.)

Country	1982	1976	1965
British Virgin Islands	118		49.1 <u>1/</u>
Bahamas	52 <u>2/</u>	64 <u>3/</u>	40 <u>3/</u>
U.S. Virgin Islands	44		
Antigua and Barbuda	34		40 <u>1/</u>
Saint Vincent and the Grenadines	33		5.8 <u>1/</u>
Saint Lucia	28		15.0 <u>1/</u>
Barbados	25	24 <u>3/</u>	17.8 <u>3/</u>
Montserrat	18		14.6 <u>1/</u>
Netherlands Antilles	18 <u>2/</u>		
Grenada	16		15.9 <u>1/</u>
Saint Christopher/Nevis	16		
Guadeloupe	12		
Jamaica	11	4 <u>3/</u>	5.9 <u>3/</u>
Martinique	8		
Dominica	6		
Haiti	4	3 <u>3/</u>	
Puerto Rico	4	6 <u>3/</u>	47 <u>3/</u>
Dominican Republic	3	3 <u>3/</u>	
Trinidad and Tobago	2	4 <u>3/</u>	

1/ GDD f.c.2/ 19793/ GNP m.p.

Sources: 1976: Cleverdon (1979); 1965: Bryden (1973)
 1982: CTCR, IFS, ECLAC and country estimates.

Informal or semi-formal sector activities can further linkages but information on this sector is not very well documented. However, its fragmentation and the lack of formal marketing structures together with a lack of awareness or even distrust of the sector's activities by the often expatriate management of tourist facilities are reasons that existing skills are underutilized. Occasionally formalisation of informal sector activities has taken place, an example of this is a boatbuilder in the British Virgin Islands who in a relative short period of time captured not only the local market for dinghies in the British Virgin Islands but also established a regional export market ranging from Puerto Rico to Saint Lucia.

Most governments of the region state that strengthening of linkages between tourism and the agricultural and industrial sector is an important policy objective when promoting tourism development, but few have devised actual strategies to achieve this. The objective is important though. For example in the DECS a reduction of first and second round leakages from say 65 to 55 percent of gross tourism receipts is equivalent to a growth of gross tourism receipts by about 15 percent without the attendant costs implied by increased tourist arrivals.

4.5 Employment

Apart from the contribution to foreign exchange the generation of employment is a second objective of promoting tourism development. Although tourism is a significant employer of labour there is a dearth of readily accessible data in many countries. This not only reflects a generally poor data collection system but also problems in defining a tourism sector and in distinguishing between direct and indirect employment, as well as problems caused by seasonality, part-time work, and informal sector activities. For this reason many surveys tend to concentrate on hotel employment while other direct and indirect employment is estimated on the basis of 'rules of thumb'.

Boxill (1982) estimated that in 1981 tourism generated some 220,000 jobs in the insular Caribbean excluding Cuba of which about 70,000 were accounted for by accommodation establishments. In the Eastern Caribbean tourism related employment ranges from 32.6 percent of the total employment labour force in the United States Virgin Islands to less than 2 percent in Trinidad and Tobago.

While tourism is a significant employer of labour it is less clear whether the sector is labour-intensive, and more specifically whether the tourism is more labour-intensive than other sectors relative to the amount of investment required to create a job (Marshall, 1978)

There are indications that the number of employees per room has been declining under the influence of a shift towards cheaper and self-service accommodations and through an increased productivity per employee. Data, however, are poor and such conclusions remain tentative.

A recent employment survey by the Caribbean Hotel Association (Personnel Management Service, 1984) noted that much of the management and senior technical staff came from metropolitan countries and that many local employees perceived that no matter how well they performed the chances of any of them achieving management status were nil. This suggests that the region should pay more attention to the training and promotion of nationals and expand the opportunities to receive management training.

V. TOURISM DENSITIES AND SATURATION

In the previous chapter the economic significance of tourism was illustrated by the use of indicators such as tourism arrivals, tourism receipts and the ratios of tourism receipts to Gross Domestic Product (GDP) and exports. However, these do not indicate the potential for social and environmental stress and to analyse such factors other indicators need to be studied.

Environmental and social stress are of course closely related to saturation, which can be defined as the number of tourist arrivals which can be accommodated without, on the supply side, leading to undue stress on the physical environment, resource availability and the socio/cultural fabric of the host community and, on the demand side, without creating a negative image of the host country.

Two remarks seem in order, firstly saturation levels as conceived by the host population or by tourists are not necessarily the same. Secondly, saturation levels are not constant and change over time under the influence of appropriate, or inappropriate as the case may be, government and private sector actions as well as by changing perceptions of a destination's population or visitors.

Saturation levels are synonymous with carrying capacity, although the latter has perhaps a more physical planning connotation. In a recent publication "Risk of saturation or tourist carrying capacity overload in holiday destinations" ^{1/} the World Tourism Organization (WTO) put forward a number of criteria affecting the physical, economic or sociocultural environment which will generally control the saturation level in sensitive areas, and which are tabulated in Table 9.

WTO recognizes that some of these criteria are measurable, in certain cases absolute but that others can only be assessed in empirical items ^{2/}.

In many countries measurement of such criteria, even where theoretically possible, is difficult due to data limitations, private and institutional constraints and, often, lack of finance. To our knowledge carrying capacity levels are only estimated for Barbados and probably for the U.S. Virgin Islands. In the case of Barbados capacity was established at one million visitors annually, but the estimate was limited to the physical carrying capacity levels only and did not include other factors. Concern, however, that social constraints may become operative before physical carrying capacity levels are reached, is quite widespread and borne out by the emphasis of many governments as well as by CTRC on means to educate their populations on the role of tourism and, hence on the reduction of social and cultural tensions.

^{1/} WTO (1983)

^{2/} op. cit.

TABLE 8

Criteria Controlling Capacity Thresholds

INDIGENOUS ENVIRONMENT

- physical: . the acceptable level of visual impact;
. the point at which ecological damage occurs;
. the need for conservation of wildlife and marine life.
- economic: . the volume of tourism providing optimum economic benefits;
. the level of employment suited to the local community.
- social/cultural: . the volume of tourism that can be absorbed without detriment to the social/cultural life of the community;
. the level of tourism that will help maintain monuments and cultural traditions without detrimental effects.
- resource availability: . the availability of public utilities (e.g. water);
. the availability of transport facilities;
. the availability of other essential facilities such as hospitals and adequately trained tourism personnel.

TOURISM IMAGE/PRODUCT

- physical: . the climatic characteristics combined with freedom from pollution;
. the attractiveness of the landscape or townscape;
. the quality of accommodation and attractions.
- economic: . the cost of the holiday.
- social/culture: . the intrinsic interest of the indigenous community and its culture;
. the quality of local crafts and gastronomic attractions;
- resource availability: . the standards of transport, infrastructure and tourism services.

Source: WTO (1983)

In view of the measurement problems several indicators linking tourism with various density concepts have been proposed (WTO 1981, OECD 1980, Cleverdon 1979) under the assumption that the volume of tourism in any particular country can be one of the causes of the growth of friction between tourists and the host community, environmental degradation and reduced resource availability. Bryden (1973) states that "tourism density, which is to some extent related also to dependence, is an indication of the degree of confrontation between tourists and indigenes, and that this confrontation gives rise to resentment of tourists."

Bryden then uses two indicators to express densities:

- the annual number of tourists as a proportion of the population; and
- The annual number of tourists per square mile of land area.

Such indicators, however, ignore differences in the length of stay and can be improved by using total tourist nights as a proportion of resident nights and total or average tourist nights per square mile. Table 9 shows these indicators as well as the number of hotel rooms per square kilometer 1/. The latter ranges from 21.7 rooms per square kilometer for St. Maarten 2/ and 16.7 rooms for Barbados to about one room per 10 square kilometers for the Dominican Republic and Haiti. Tourist nights per 1,000 resident population nights range from a high of 193.4 for the British Virgin Islands to a low of less than one for Haiti, while tourist nights per square kilometer range from 7,512 for the U.S. Virgin Islands to about 25 for Haiti. The data reveal high density levels in most of the smaller islands 3/, and not surprisingly, show a high degree of correlation between densities and economic dependency and size.

Seasonality is quite marked in Caribbean tourism and this can be quite easily incorporated in a density analysis by a distinction between high and low season months. Cleverdon (1979) still regards this as a preliminary step since "they relate to each country as a whole, rather than the specific tourist centres within those countries where tourist density is much higher." 4/ This criticism is justified since even in the smaller islands tourists tend to aggregate at the leeward side of the coastal zone area. Although data limitations are increasingly severe, the impact can be illustrated for a few countries. In Barbados most tourist activities are concentrated on a relatively narrow strip of land along the south-west coast comprising an area of 18.5 km². Using a conservative estimate that 80 percent of the available accommodation facilities are located in this region, then the average number of tourist nights per square kilometer ranges from 168 for September 1983 to 296 for March 1983, which differs an order of magnitude with 16, the average number of tourist nights per square kilometer for Barbados.

1/ "rooms" refer not only to hotel rooms but also to any mode of accommodation.

2/ Due to boundary and data difficulties the actual number may be even higher.

3/ The Bahamas is atypical in this respect as a result of its relatively large size but low population.

4/ In areas with a strong orientation towards yachting like the British Virgin Islands or the Grenadines this would lead to a reduction in tourist nights per square kilometer.

TABLE 9

Indicators of Tourism Density

Country	Tourist arrivals per km ² (1983)	Rooms per km ² (1982)	Tourist nights per 1000 resident nights (1982)	Tourist nights per km ² (1982)	Average tourist nights per km ² (1982)
Antigua and Barbuda	258	5.1	24.2	1541	4.22
Dominica	26	0.4	5.3	208	0.57
Grenada	102	1.3	5.0	537	1.57
Montserrat	140	0.9	28.1	1177	3.22
Saint Christopher/Nevis	128	2.6	17.0	1039	2.85
Saint Lucia	126	2.2	14.0	1026	2.18
Saint Vincent and the Grenadines	97	1.4	5.5	660	1.81
Bahamas	88	0.9	94.3	326	0.89
Barbados	762	16.7	27.5	5850	16.03
Jamaica	52	0.9	5.6	413	1.13
Trinidad and Tobago	36 ^{1/}	0.3	...	...	...
Anguilla	86	2.6	...	...	...
British Virgin Islands	777	9.1	193.4	5722	15.68
Cayman Islands	505	7.6	94.4	2433	6.67
Turks and Caicos Islands	31 ^{2/}	0.8	...	...	...
Aruba	1141 ^{2/}	11.3	56.2	7074	19.38
Bonaire	105 ^{2/}	1.1	39.2	474	1.30
Curacao	393 ^{2/}	4.0	13.1	1768	4.84
St. Maarten	2934 ^{2/}	21.7	...	...	...
Cuba	0.9 ^{2/}	...	...	...	...
Dominican Republic	7	0.1	...	...	...
Guadeloupe	109	1.8	...	...	...
Haiti	4	0.1	0.4	25	0.07
Martinique	160	2.8	8.3	897	2.46
Puerto Rico	172	1.0	4.9	650	1.78
U.S. Virgin Islands	1006	13.3	70.0	7512	20.58

^{1/} 1981^{2/} 1982

Sources: CTCRC (1984) and Tables 4 and 5

In the case of the Bahamas tourist activities are concentrated in New Providence and Grand Bahama and when separate density estimates are prepared a marked diversity is again noted as indicated in Table 10.

TABLE 10

Density Parameters in New Providence and Grand Bahamas
compared with those of the Bahamas

	NEW PROVIDENCE		GRAND BAHAMA		BAHAMAS
	March	Sept.	March	Sept.	
Rooms/sq. km	30.0		2.9		0.9
Tourist nights per 1000 resident nights	102.6 ₁ /	49.8 ₁ /	286.6 ₁ /	122.8 ₁ /	94.3
Average number of tourist nights/km ²	67.0 ₁ /	32.5 ₁ /	6.9	3.0	0.9

₁/ 1980

Sources: Commonwealth of the Bahamas: Statistical
Abstract 1982, 1980 Tourism Statistical
Review, and Table 10.

Lack of disaggregated data limits most density analysis to a country wide application. The above shows the inherent risk of applying country wide estimates for policy or planning decisions at the local or project level. High country wide density estimates, however, indicate a need for more intensive planning and management of the tourism sector in the awareness that, in all likelihood, saturation levels will be exceeded in some micro locations.

At the project or hotel development level the density parameters translate into direct standards with respect to rooms per square kilometer, plot size, site coverage etc. which may be imposed by town and country planning and development control authorities. Such standards directly reflect the type of tourism desired.

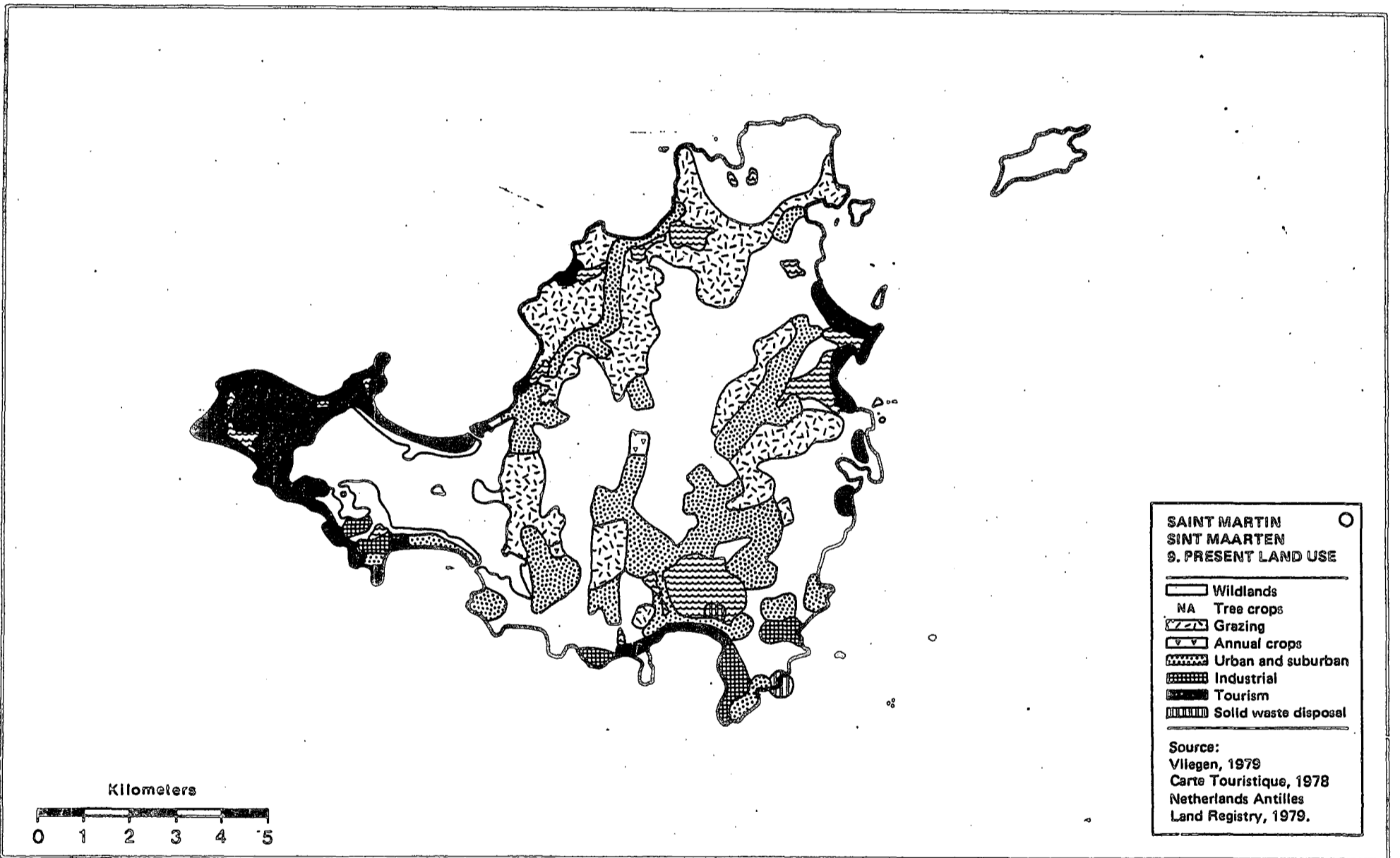
ECNAMP (1980) uses a different approach and gives the concept density a qualitative visual aspect in its survey of conservation priorities in the Lesser Antilles. ECNAMP used mapping and overlay techniques for the preparation of preliminary data atlases for 25 islands

or island groups. Table 9 of these atlases show present land use and identifies the areas where tourism is a dominant activity. Table 18, conservation synthesis, places areas with outstanding recreational value, i.e. areas with high tourism development potential, in relation to representative ecosystems, endangered or important species, important marine habitats, key watersheds and areas with outstanding historical or archeological value (see also Figures 2 and 3).

The information in the atlases contains no specific site data, and, hence, is of limited direct value for estimating the impact of a tourism project. It indicates, however, where the potential exists for conflicting multiple resource use and alerts the tourism planner on evaluation whether additional information is required. Putney (1982) states "Combined with other information, this tool can be used to better structure effective programmes for sustained development without impairment or thoughtless waste to natural or human resources of the islands."

FIGURE 2

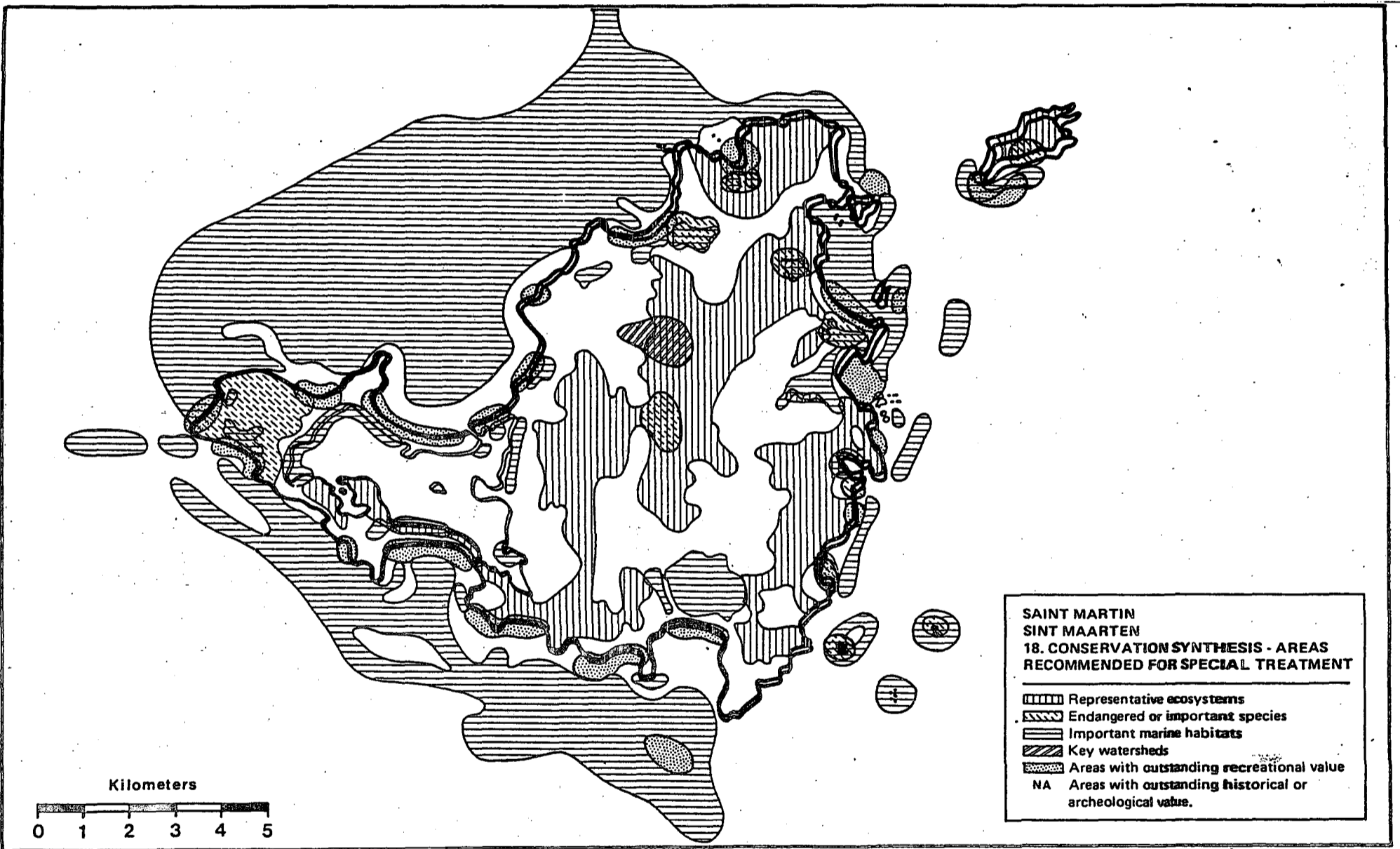
Land-Use: St. Maarten/St. Martin



Source: ECNAMP, 1980

FIGURE 3

Conservation Synthesis



Source: ECNAMP, 1980

VI. ENVIRONMENTAL CONSTRAINTS IN TOURISM

Proponents of tourism often emphasize its positive economic aspects while opponents tend to stress the negative socio-cultural ones, but for a long time impacts on the natural environment were largely ignored by both groups. Environmental degradation is, of course, not a new phenomenon in the Eastern Caribbean. The introduction of exotic species and customs linked to traditional habitation, forestry, hunting, peasant and plantation agriculture have resulted, and still eventuate, environmental problems with respect to land and watershed management. These consequences are fairly well known and documented, but until recently the effects of the modern sector, of which tourism forms a part, received little attention.

In the last decade, however, a growing body of literature dealing with environmental management problems in general with some focusing in particular on the tourism sector, has become available. This was partly in response to the manifestation and magnitude of a number of specific concerns, like beach erosion, pollution and habitat destruction to mention a few with regional significance. Another factor was the growing awareness of the fragility and interdependence of island ecosystems. With their lack of "hinterland" and small ecosystems, the impact in one will have repercussions in another (Towle, 1984). Finally it is increasingly realized that proper management of scarce natural resources is an necessary condition for long-term development.^{1/}

In one of the earlier publications, Carlotto and Carlotto (1968), advocated expansion of tourism but with a substantial input of physical and environmental planning. The tourism sector indeed evolved rapidly but, as will be discussed in some more detail later, largely in absence of policy guidelines and without the essential inputs of planning and environmental assessments, with governments responding in an ad hoc manner to developments and consequences.

Tourism has had negative effects on the natural and man-made resources, although of course it is only one, and not necessarily the most destructive one to that, of a whole array of human activities which either alone or in mutual reinforcement causes such negative influences. However, tourism exacerbates many of these influences or impacts. The impacts of tourism are significant, especially within a zone less than 800 meters from the high-water mark where the majority of tourist facilities are located. (Jackson, 1984). In addition tourism itself is sensitive to a healthy environment for its long-term viability and many of its detrimental effects primarily affect the tourism sector itself.

^{1/} For an interesting discussion on the relation environment vs. development in a wider Latin American context see Cepal Review, No. 12, December 1980.

Short-term considerations appear to have had predominance over long-term ones, and in the mid-seventies the World Bank noted that "many of the islands have neglected the protection of their natural environment and their fragile ecological systems, and if they do not move soon to protect their natural beauty, the opportunity may be lost" (IBRD, 1975).

In a number of publications the Islands Resources Foundation (IRF) has since the early seventies focused attention on the risk of adverse environmental impact as a result of transformations endured by developments of the modern sector. Special attention to the tourism sector was paid by Mc Eachern and Towle (1974). The study identifies major land-use activities and subactivities which are directly or indirectly linked with tourism development (see table 11) and the impact of these (sub) activities on aesthetic, ecological and cultural values is then evaluated and illustrated through a conceptual innovative matrix approach. Finally it proposes guidelines to minimize some of the adverse development impacts and to enhance certain resources. With respect to the direct impacts of tourism the study strongly recommends planning of tourism activities as a component part of a comprehensive resource management plan, the setting of objectives as regards the type of tourism desired and the strategy to be followed to achieve such objectives, limitation of tourism densities, of an island as a whole and of resort development areas and the setting of specific standards covering individual developments.

Although the explicit matrix approach has been largely abandoned, further work on the impact of tourism progressed mainly through the institutional efforts of the IRF, CCA/ECNAMP and CTRC/DAS. CCA/ECNAMP in its "Environmental Guidelines for Development in the Lesser Antilles" (Geoghegan et.al. 1984) developed management guidelines of critical resources and habitats. Using critical resources and habitats as a starting point it identifies critical activities which have negative effects on such habitats or resources, and then provides management guidelines with emphasis on avoiding potential resource management conflicts rather than solving existing ones.

The CTRC/DAS efforts are more directly focused at the tourism sector itself and a number of studies assessing at least partly the environmental impacts of tourism have been executed since the late seventies. Most of these studies, however, were carried out at the country level and, due to their restricted nature and limited distribution are not easily accessible. The DAS efforts culminated with the publication of five manuals to enhance the positive socio-cultural and environmental impacts of tourism (DAS 1984). The fifth volume "Enhancing the positive impact of tourism on the built and natural environment" (Jackson, 1984) uses, like the CCA/ECNAMP study, the critical resources and habitats as a starting point and then identifies activities with a direct environmental and related socio-economic impact. The manual also advocates the more stringent use of policy setting and planning to provide the framework for effective development control in the long term. For project evaluation the use of an Environment Impact Assessment (EIA) checklist or, for major projects, the commissioning of EIA studies is seen as a requirement for development control.

TABLE 11

Major Land-Use Activities and Subactivities or Agents Causing Adverse Impacts in Developing Islands

<u>Major Land-Use Activities</u>	<u>Subactivities or Agents</u>
ENERGY AND NATURAL RESOURCES	
A. Power Generation	1. Excavation and Earth Moving
B. Seawater Desalinization	2. Blasting Terrestrial and Underwater
C. Mining, Marine	3. Rock Crushing and Ore Treatment
D. Mining, Marine	4. Dredging
E. Made/Reclaimed Land	5. Channels, Cuts and Fills
F. Harvesting Biota	6. Wetland and Submerged Landfill
G. Logging (Capital Intensive)	7. Vegetation Clearing, Mangrove
	8. Vegetation Clearing, Upland
	9. Structures, Hostels and Residential
	10. Structures, Other
INDUSTRIAL, COMMERCIAL, AND RESIDENTIAL	
H. Industrial, Oil Refining and Storage	11. Demolition of Structures and Neglected Maintenance
I. Industrial, Other	12. Utilities
J. Commercial	13. Harinas
K. Residential	14. Docks, Piers, Slips, Berths
L. Research	15. Runways and Aprons
	16. Fences and Barriers
TRANSPORTATION INFRASTRUCTURE	
M. Airports and Seaplane Terminals	17. Landfills, Garbage and Solid Waste
N. Ports and Cruiseship Terminals	18. Dumps, Garbage and Solid Waste
O. Highways and Roads	19. Litter
P. Pipelines, Terrestrial and Marine	20. Sewage, Discharges and Outfalls
Q. Communication and Energy Corridors	21. Sewage, Septic Tanks
	22. Waste Water
	23. Fuel and Oil, Spills and Discharges
RECREATION	
R. Land-Oriented	24. Stack Emissions and Open Burning
S. Marine-Oriented	25. Airplanes and Seaplanes
	26. Yachts and Boats
	27. Ships and Tankers
WASTE ENPLACEMENT	
T. Waste Disposal	28. Vehicles
U. Ocean Dumping	29. Fishing
	30. Collecting Marine Flora and Fauna
	31. Collecting Terrestrial Flora and Fauna
	32. Collecting Artistic and Historic Objects

Source: McEachern and Towle (1974)

The above referred to publications provide the major significant macro and Eastern Caribbean oriented approaches towards avoiding environmental degradation. ^{1/} Their major aim is to provide simple guidelines for management of the complex and interrelated resources and habitats, centered on avoiding potential resource management problems rather than solving existing ones. (Geoghegan, 1984). Basically this is done by focusing on the relationship.

Habitat/Resource - Critical Activity - Impact on Resource/Habitat - Guidelines

The above approach provides a management tool for the preservation of certain important habitats and resources and as such it represents a second phase towards a more rational resource management methodology and strategy. However, it is one thing to provide management guidelines for the continuous existence of, for example, mangroves or salt ponds, it is quite another to prepare a convincing argument for the need of such a continuous existence other than for aesthetic reasons. In this respect it is not the physical planner who in the Eastern Caribbean is in general quite aware of the need to incorporate the environmental dimension in development planning, who needs to be addressed but rather the policy makers, economic planners and the private sector for whom long-term environmental considerations are often less important when faced with the socio-economic problems as highlighted in chapter III.

For the third phase it will be necessary to incorporate the strong interdependencies which are known to exist among the habitats as well as the mutual effects of the variety of activities which are carried out in the coastal zone as well as in the terrestrial hinterland. Inherent to such an approach is a clearer understanding of which impacts can be expected from certain major - or subactivities, their subsequent effects and their consequent influence on habitats, resources and other activities. To adhere this it will be necessary to close the above open-ended relationship by including feedback or loop-mechanisms. This will obviously complicate presentation, but depending on the use and even more important on the prospective user, it may be possible to extract a similarly simple open-ended relationship with any of the above elements as point of departure. This is not to advocate the use of complicated models but rather proposes an amalgamation of the previous work by McEachern and Towle (1974) with respect to a matrix oriented approach and the more recent studies as carried out by CCA/ECNAMP (Geoghegan, 1984)

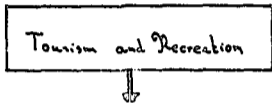
Within the process of coastal planning matrix methods were used by Neuman (1979) to illustrate the changes caused by an activity, to the effects such changes have on the marine environment and to the implications of these environmental alternatives for other uses of the coastal area, as illustrated in figure 4.

Activities - Wastes and Direct Changes in Physical Conditions -
Effects - Activities

^{1/} The UNEP Caribbean Action Programme for the Environment provides the major framework for action within the Wider Caribbean.

FIGURE 4

Tourism Impacts on the Marine Environment and on Other Uses of the Coastal Zone



Effects	Wastes and Direct Physical Changes										
	Sewage	Storm Runoff	Garbage	Inorganic Solid	Drudge Spills	Floating Solid Waste	Pesticides	Noise	Shoreline Profile	Beach Conditions	Sediment Transport
Salinity	x	x							(x)	x	x
Turbidity	x	x	x	x	x				(x)	x	x
Color	x	x			x				(x)	(x)	
Temperature	(x)	(x)							(x)	(x)	
pH	(x)										
Dissolved Oxygen	x	(x)	x	x	x					(x)	
BOD	x	(x)	x	x	x					(x)	
Nutrients	x	(x)	(x)	x	x					(x)	
Metals	x	x			x					x	
Other Dissolved Substances	x	x	(x)	x	x	(x)	(x)				
Microrganisms	x			x							
Fauna & Flora	x		(x)	x	x	(x)	x	(x)	x	x	x
Primary Productivity	x	(x)		x	(x)						
Erosion	x	x		x			(x)		x	x	x
Deposition and Accretion	x	x	x	x	x				x	x	x
Acoustic Value	x		x	x	(x)	(x)		x	x	x	x



Effects	Other Uses of Coastal Area											
	Urban Dev't	Tourism	Ports & Harbors	Fish Processing	Marine Fuel Storage	Power Plants	Open Space	Commercial Fishing	Municipalities	Navigation	Recreation	Sea-Shell Production
			x			x	(x)	x	x		x	x
		x				x		x	x		x	x
		x						x	x			(x)
		x					(x)	x	(x)			
								x	x			
	x	x		x		x		x	x		x	x
	(x)	x	x			x		x	x		x	x
		x						x	x			
		x	x					x	x		x	
	x	x										

Adapted from Lawrence B. Newman - Methodologies for Coastal Area Management: Matrix Approaches in Proceedings of the Workshop on Coastal Area Development and Management in Asia and the Pacific Islands, Philippines 20-22 December 1979. Mark J. Valone (ed.) East-West Center, Hawaii

Each of the segments (activities, wastes, effects, activities) are vectors comprising several variables and an impact matrix is developed to relate the subsequent segments with each other. Using the activity tourism as a point of departure figure 4 presents an overview in a combined format which allows for tracing the various relationships and interdependencies. It must be realized however that the variables included in the segments are not exhaustive, nor carries each of the potential impacts equal significance. To be functional within the Eastern Caribbean context it will be necessary to adjust the above discussed matrix to incorporate variables which have particular significance for the Lesser Antilles. Inclusion of terrestrial activities and of important habitats would probably be a requirement.

Region or island wide matrices do not require data but rather an understanding of the processes involved, and as such are mainly illustrative. The matrix approach, however, provides a conceptual framework on which an actual assessment of the various impacts, interdependencies and effects of a development proposal, can be based.

At the third phase it will also become necessary to incorporate economic and social factors to contribute to a more rational resource management policy. Its major objective would be to develop a methodology to evaluate potentially conflicting uses of natural resources, or to evaluate alternatives for development. The emphasis of such a methodology should be on practical applicability and on capabilities to evaluate qualitative and quantitative effects and criteria. Such a methodology should also incorporate major constraints such as lack of data and limited availability of manpower and finance.

VII. SOME ENVIRONMENTAL IMPACTS OF TOURISM ACTIVITIES

Tourism can and does generate a number of positive and negative economic, socio-cultural and environmental impacts, which ought to be reviewed holistically in any evaluation procedure. The chapter below concentrates on some environmental concerns which are of regional significance. Exclusion of any other specific impact, however, does not imply that it is not important. The individual casestudies accompanying this document deal with specific impacts in more detail.

7.1 Energy

The tourism sector is an important user of energy. Much of this use is accounted for by the direct fuel consumption of the taxi and car rental sector and, indirectly, by the fuel used to generate the electricity purchased by hotels. In Antigua, for example, tourism accounted for about 23 percent of the internal petroleum consumption (USAID, 1981)

Given the definitional problems of identifying a tourism sector most energy studies have concentrated on hotels. Here energy end use consists mainly of electricity (lighting, air conditioning, other); fuel oil (stand-by power, water heating) and LPG gas (cooking, water heating). It varies considerably depending on occupancy rate, hotel classification, facilities offered, size and the availability and reliability of other infrastructure. Recent energy audits of St. Lucia (Rowe, 1981) and Grenada (Development Sciences Inc. 1981, b) reveal this wide variety in energy end use.

Energy assessments and audits such as the above have been carried out for the CDB and the CARICOM Secretariat as part of the Regional Energy Action Plan. (CARICOM 1983) The various studies indicate that many hotel managers lack energy consciousness and that substantial energy savings can be achieved by the adoption of low technology solutions like reducing low occupancy energy use, improved equipment maintenance and changing from incandescent to fluorescent lighting. (Development Sciences Inc. 1981, a).

By initiating such a concentrated energy conservation effort, one hotel in St. Lucia reported a reduction in electricity consumption from about 40 kwh per occupied room day to about 22 kwh. (Renard, 1985). Further reductions in energy consumption are possible with the application of more advanced techniques like heat recovery systems and solar heating or air conditioning. Here, however, the initial investment can be substantial and it may be difficult to retrofit existing accommodation facilities, but new hotels should be required to adopt economically efficient conservation measures, from the outset.

Another area of conservation would be to increase the reliability levels of the public power supply. Power outages are frequent in most islands and many tourist facilities use standby generators. Such equipment is less fuel efficient than the generators used by the public power systems and increased reliability would then result in a reduced, economy wide, fuel consumption per kwh generated. ^{1/}

Direct physical impacts caused by the tourism's energy consumption are limited and its indirect effects are those relating to the wider problem of energy production, transportation and consumption. Tourism itself is sensitive to impacts caused by the energy sector; especially by the attendant effects on beaches and seawalls of oil pollution. (UNEP/CEPAL, 1979).

Social impacts vary from island to island and can be positive or negative or both. Mostly focussed at electricity such impacts are often begotten by constraints in matching supply with demand. When capacity problems exist and load shedding becomes necessary, preference is sometimes given to supply the hotel sector thus increasing the outage costs to other consumers. On the other hand many hotels have stand-by power plants the use of which may reduce the number of power cuts by reducing load. In the early 1980's such arrangements between the Electricity Corporation and a hotel reduced the number of power cuts in the British Virgin Islands during a period of severe capacity problems. Finally the (anticipated) construction of hotel accommodation with a large power and energy demand may bring forward the implementation of rural electrification schemes by providing an economic justification to such projects.

Economic impacts arise from inappropriate pricing policies which may result in subsidizing consumers or in significant cross-subsidies between the tourism sector and other consumer groups. Pricing policies for the tourism sector form only part of the larger issues of an energy pricing policy and as such are addressed in the Regional Energy Action Plan.

Many planning authorities have little insight in typical tourist electricity demand as measured in electricity consumption per room. As stated, there are strong indications that this demand is positively correlated with hotel classification, facilities offered, occupancy rate etc. More knowledge on electricity consumption per room would assist in anticipating the additional demand which results from development proposals or from tourism plans. Conceivably cross-section analysis of electricity consumption per room and potential explanatory variables could assist in this process.

^{1/} This however is only one factor in deciding the optimum reliability level. Ideally an optimum level is reached when marginal system supply cost to achieve a higher level of reliability equals the marginal decline in outage costs (Nunasinghe, 1979).

7.2 Coastal Erosion

The coastal zone in general and beaches in particular represent a significant resource in the Eastern Caribbean. The existence of nearby high quality beaches is a major factor when a tourist chooses his holiday destination. Tourist developments reflect such preferences and hence are concentrated in the coastal zone.

That area is a complex, dynamic and often unstable system where land and sea continuously interact. During the winter months leeward beaches may be subjected to erosion as a result of a change in wave direction and of an increase in wave energy caused by Atlantic storms. Often accretion occurs during the remainder of the year when these coasts experience low wave energy. Apart from these seasonal movements there is also sustained erosion which occurs over the whole of the Eastern Caribbean.

Cambers (1984) reported long-term average annual rates of erosion of 0.4 m/yr for the West coast of Montserrat, 0.7 to 1.0 m/yr for the West and North coast of St. Kitts and Nevis, 2 m/yr for the South East coast of Barbados and 0.3 m/yr for the West coast of Barbados. Although not quantified, significant erosion has also been reported for St. Vincent and the Grenadines (Environment Improvement Committee 1983, Cambers 1983), Grenada (Jackson et.al 1984), St. Lucia (Towle, 1984, 1985; Williams 1985), the U.S. Virgin Islands (IRF 1976) and Antigua (Jackson 1985).

The causes for this erosion are multiple and of both natural/physical and man-made origin. The first includes factors as global climatic and sea level changes and Atlantic and tropical storms and hurricanes. The governments of the region cannot influence such causes, but should be aware of natural erosion and incorporate an allowance for continued erosion by modifying existing plans and planning legislation or both. In this respect Cambers (1984) recommended to increase the setback of buildings on a lowland coast to a 100 metres from the mean highwater mark as against the current requirement of a 50 to 100 ft. setback. In addition, such an increased setback would also enhance the aesthetic value of the coast, reduce the risk of storm damage, improve beach access and allow for the restoration of littoral vegetation.

Man-induced coastal erosion is caused by a number of factors whose relative importance may vary from island to island. For Barbados the Coastal Conservation Study (Ministry of Housing and Lands, 1984) identified a number of causes of the changes in coastal processes which are illustrated in figure 5 and summarized below:

- heavy use of the coastal zone beyond the capacity of nature to absorb the modifications
- pollution, causing degraded water quality and mortality of reefs

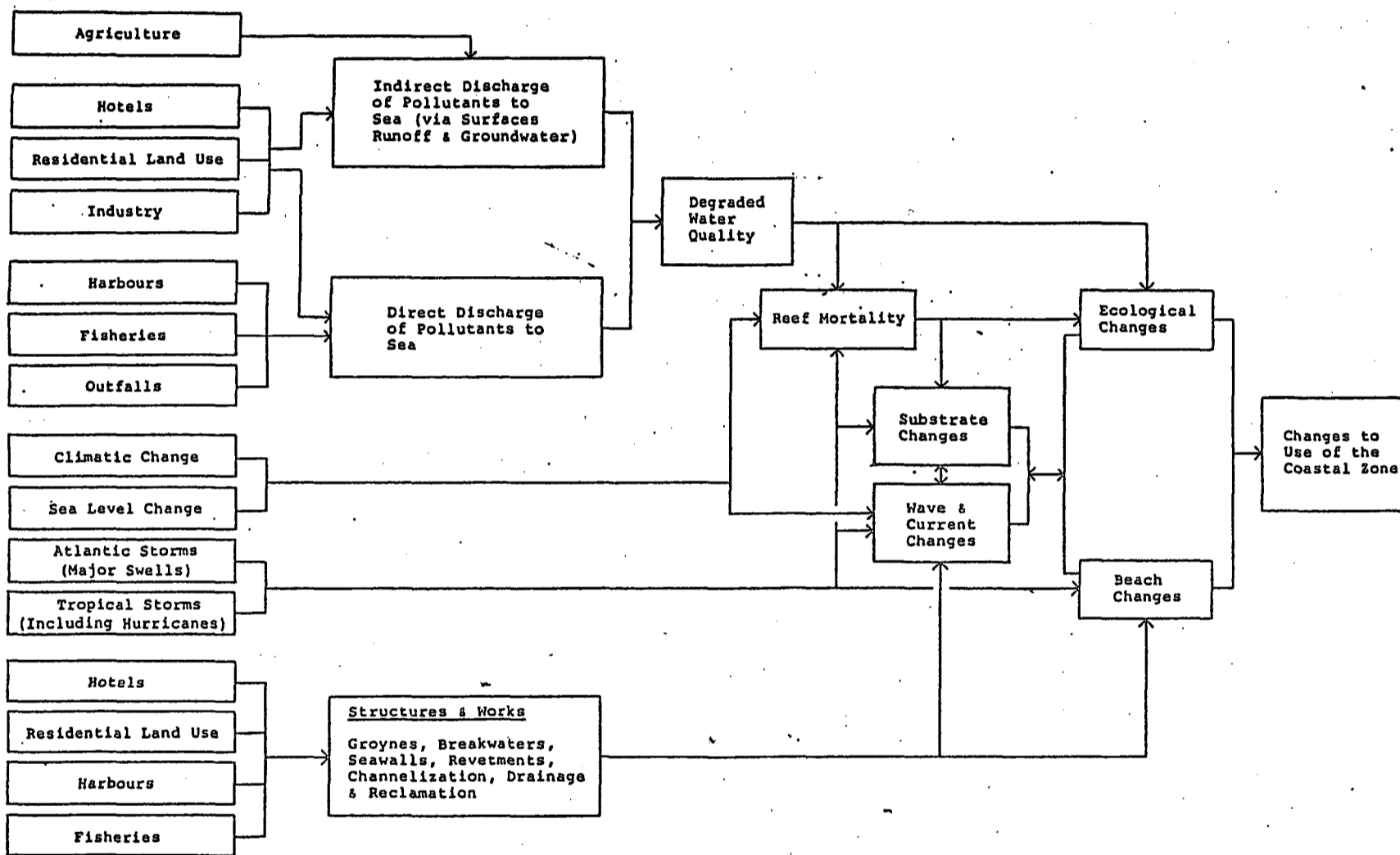


Fig. 5 Causes of Changes in the Coastal Processes

Source: Barbados Coastal Conservation Study

- storm water run-off contributing to pollution
- insensitively placed structures along the shoreline causing as well as solving problems
- lack of coastal management policy and enforcement
- inadequate data base

In other islands beach sand mining (Gelabert 1979; Cambers 1981, 1983, Williams 1985) or near shore dredging (IRF 1976) may also be significant factors. The Coastal Conservation Study concluded that impacts on any element of the coastal zone system (i.e. reefs-sea grass beds - beaches - land immediately behind the beach) may reinforce already existing trends of natural erosion.

The tourism industry is an important contributor to many of these causes leading to man induced erosion. Tourism developments are sometimes constructed right up to the backshore, while examples of other coastal zone modifications include the removal of beach vegetation or the substitution of deep rooted natural flora by shallow rooted ornamental ones; the infilling of wetlands or their transformation in marina's; the use of improperly designed and poorly maintained sewerage treatment plants or the dumping of raw sewerage into the sea without using an outfall of any appreciable length; the use of beach sand for construction purposes; and the increased mortality of reefs through the blasting of channels, the anchoring of yachts, the standing on reefs by inexperienced swimmers and the siltation and increased turbidity caused by dredging and their construction work. Examples are all too easily visible all over the region.

While the tourism sector contributes to the erosion problem the sector itself is most sensitive to the effects of erosion i.e. reduced beach area's. In well developed tourist zone's this may translate in a reduced beach carrying capacity and hence in lower room occupancy rates. To alleviate locational erosion problems and to improve beach build-up many hotels have constructed inadequately designed structures like groynes, which may result in improved beach build up in one site. But by interfering with the littoral sand drift process such structures may cause accelerated and severe erosion at beaches down drift of such a groyne thereby aggravating the problem. In mature tourist destinations like Barbados and the U.S. Virgin Islands such cause and effect processes are especially prevalent (Cambers, 1984; IRF 1976), but a similar process can now also be seen in the Dickenson Bay - Fort James area in Antigua (Jackson, 1985). Such occurrences strongly suggest that private solutions to erosion problems are not sufficient and the erosion needs to be remedied in a larger framework, preferably in the form of coastal zone management plans (Cambers, 1984).

In defence of the tourism sector it must be stated that it is only one among many others activities which contributes to erosion as is illustrated in figure 5. Also many tourism developments were undertaken when there was little awareness about the extent and nature of the coastal erosion problems in the region, and some of the tourism induced impacts, but no means all, can be attributed to this lack of understanding.

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Although being partly responsible the tourism sector may also provide the justification for dealing with the problem. The prevention of reduced tourism earnings and a reduction of property values can be a quite large benefit of remedial measures. Such benefits will be larger in the more developed and mature tourism destinations and their quantification may assist in justifying economically efficient mitigation works. This, in turn, may make financing of remedial works possible.

Beach erosion is conceivably one of the more serious long term threats to tourism development in the region. Although the process is still not fully understood the Barbados Coastal Conservation Study identified a number of causes which may also be applicable to other islands in the region. Tourism and recreation is most sensitive to beach erosion and to avoid the loss of future tourism earnings a region wide program on coastal erosion prevention and mitigation measures needs to be carried out with some urgency.

7.3 Pollution

Pollution of the coastal and marine environment is becoming a serious problem in many of the Eastern Caribbean countries (Archer, 1985). The uncontrolled disposal of industrial waste and sewerage is not only destroying valuable fishing and nursery habitats, but it is also a factor in the high incidence of waterborne diseases in the region. In addition it has negative impacts on tourism through the adverse visual impact of exposed faecal wastes or through the lowering of the quality of coastal bathing water or both (Archer, 1985). Already some beaches have high levels of coliforms counts which on occasion may exceed recognized water quality standards. 1/ Continuation of such poor public sanitation practices will eventually inhibit future growth of tourism which may have severe economic consequences. For example a reduction by one percentage point in the rate of growth of tourist arrivals could reduce potential gross tourism earnings by as much as US\$1 million per year in the OECS region and by US\$11 million per year in the Eastern Caribbean. 2/ In addition it is also linked to beach erosion through the increased mortality of reefs, sea grass beds and other habitats which by reducing incoming wave energy, provide a vital function in the protection of the regions beaches.

Sceptic tanks and extended aeration sewage package plants form the major effluent disposal methods used by hotels, apartments and other tourist accommodations. The package plants are with few exceptions poorly operated and maintained (Archer 1984, Jackson 1985, Williams) and Archer (1984) stated "It was common to find plants with floating solids coming over effluent weirs, and discharged in the effluents, chlorinating malfunctioning equipment, yet the effluents being used for irrigation of

gardens and golf courses, or being discharged by short ill-designed and constructed outfalls into the sea via mangroves, salt-ponds, or within close reach of coral and other marine ecosystems". Jackson (1985) noted "Sewage waste generated by tourism facilities, along with oil and associated wastes originating from the oil refinery are major sources of pollution impact or threat to Fort James-Dickenson Bay."

Apart from its possible effect on public health pollution should be of concern to those involved in tourism and managers of tourism amenities should pay more attention to the proper functioning of package plants. That this is possible is shown by the example of a hotel in St. Thomas which has reputedly the best managed sewage plant in the U.S. Virgin Islands.

Together with beach erosion pollution is possibly the most serious threat to tourism. As beach erosion and pollution are closely linked there is considerable urgency in establishing an investment oriented programme of region wide sewage disposal and coastal conservation studies.

7.4 Land Values

Tourism has been responsible for rapidly increasing land values in most of the tourism development zones in the region. The most visible effects of this include land alienation, increased development densities, the displacement of low-income housing and the withdrawal of agricultural land for speculative purpose. Lack of land use planning and development control are aggravated by a tax system which often provides income tax incentives and does not tax capital or speculative gains.

7.5 Fisheries

Fisheries in the Eastern Caribbean is an important activity both in terms of employment and in the provision of protein. The people of the region are significant fish consumers with annual per capita fish consumption ranging from about 15 kilo's in (Trinidad) to over 40 kilo's in Grenada. Due to the lack of upwellings on currents, the small shelf areas which support the highly productive and integrated ecosystems of coral reefs, mangroves and seagrass beds, form the basis for the coastal fisheries of the region (du Bois, 1984; Ogden, 1983).

Increased coastal development has its attendant effects on natural habitats like mangroves which are critical for the reproduction, growth and survival of commercially important species and their juvenile stages. The Western Central Atlantic (WECAFC) recognizes habitat destruction as perhaps the most significant threat to fisheries development (WECAFC, 1983).

1/ Water quality is only measured in a few countries on a regular basis. However, in other countries the water quality in a number of recreational and tourist beaches is at least occasionally, also suspect.

2/ ECLAC estimate, 1982 dollars.

Tourism development with its affinity for flat coastal land is a major factor in this coastal modification process and such negative impacts have been analysed by Towle in his study of the Rodney Bay area, St. Lucia. (Towle, 1984, 1985). Demand factors, however, are perhaps more significant. The initial effect of tourism is an increased demand for high value species. This increase in demand results in higher prices for fish and hence in a greater fishing effort. The latter, combined with poor fisheries management can result in over exploitation of the resource and ultimately demand exceeds local supply. To meet demand local catches are supplemented by regional and extraregional imports. Already some islands have become net importers of fish (Barbados, Guadeloupe, Martinique, St. Maarten, U.S. Virgin Islands) and there is a growing concern that over fishing of high value species may transfer from a local problem to one of regional proportions (du Bois, 1984).

VIII. PLANNING AND MANAGEMENT

To a large extent tourism developments have been undertaken by the private sector in response to market demand and largely in the absence of policy guidelines and without the essential inputs of planning, with governments responding in an ad-hoc manner to developments and consequences.

The lack of tourism planning reflects the weak commitment to formal comprehensive national planning in the Caribbean. As Farrell (1979) states: "The prevailing attitude in much of the Caribbean can be characterized as one of disillusionment with, disinterest in, or ignorance of, the role that planning can play in development."

Referring to Barbados Worrell (1980) stated; "I am not sure that this country can boast a clearly articulated strategy for tourism development. There are at least three elements that I would see in such a strategy: 1) A statement of objectives 2) Clear documentation of the current status of the industry and of its historical growth and 3) A strategy which outlines quantitative targets for benefits and for costs, and which gives a time schedule for their achievements."

In a certain sense this is ironic as Barbados has been preparing comprehensive development plans ever since gaining independence in 1966, and Barbados is more advanced in the setting of a tourism policy than most other countries of the Eastern Caribbean. Worrell's conclusion seems to be valid for the region as a whole.

At the national and sectoral level this disenchantment with planning may be due to a lack of realism in terms of constraints and barriers to achieve stated goals. Also because many plans have been formulated by experts without much participation by other national economic and social agents, they do not reflect the aspirations of the longer community or even those of the political directorate. Consequently, many plans never go beyond the status of a technical document.

This weak commitment also applies to the project level. Williams (quoted in Renard, 1985) stated "the passage of an application through the formal planning permission process in the Caribbean comes long after a number of 'understandings' may be arrived at regarding the project", and "very often even the need for planning permission is viewed by the developer and the other agencies of government as a nuisance and waste of time." This attitude arises from a perception that at the project level evaluation and/or control are restrictive rather than development oriented. This is especially true when impacts which are not easily translated in monetary terms need to be assessed, but even financial or economic evaluations are often precluded.

In the preceding chapters the need for or lack of planning has been continuously referred to and it reinforces the conclusions reached by

Farrell (1979) and Worrell (1980). Implicit in these references is that this lack of planning is one of the major reasons that both the potential contribution of tourism development to Caribbean development has not been fully realised, and that social and environmental costs have been incurred which to a large extent could have been avoided. The question is whether the region can continue this when it is faced with the realities of balance of payment deficits, high unemployment, public sector deficits rapid structural changes in the rest of the world, and a need to mitigate environmental and social changes which become progressively more costly.

By its very nature tourism can have profound economic, socio-cultural and environmental impacts although there are no a priori reasons to indicate whether such effects will be positive or negative. Rather concerted efforts are needed to maximise a country's benefits, and reduce costs. Given the sensitivity of tourism to a 'healthy' environment a major criterion is then related to the enhancement and sustained use of resources for long-term development.

At the same time it must be realized that tourism can and does generate a number of resource use and social conflicts especially because of the concentration of human activities and environmental impacts in the coastal zone. Efforts are needed to ensure the integrated management of littoral resources and the rational development of all activities while leaving options open for the future (Renard, 1985)

Tourism planning and management can obviate many of such problems. Tourism planning in this context assumes a holistic approach by explicitly considering economic, social, financial, environmental and physical aspects. However, for planning or management to be meaningful a number of constraints need to be overcome.

- At the political level more attention needs to be given to the setting of clear objectives as regards the kind and impact of tourism desired. All too often objectives are implicit and not clear to the planner, other public sector departments and the private sector. This can not only result in ambiguities and lack of guidance but also in inconsistent strategies. For example the shift towards apartment and other low cost facilities might not be consistent with objectives like attracting high income tourists, or maximising net foreign exchange and employment.
- At the same time environmental considerations need to be given more emphasis at the political and decision making levels. Political will to incorporate environmental factors varies considerably within the region and can be influenced by increased public awareness and by efforts to quantify the economic costs of environmental degradation.

- Thanks to efforts by CTCRC the tourism database has improved considerably over the last decade. This improvement, however, reflects mainly marketing oriented data. Statistics showing the contribution of tourism to the economy are still hard to come by and need often to be estimated on an ad-hoc basis. As definitions and estimating methods often differ ad-hoc procedures make it difficult to make comparisons over time. The database is even less complete with respect to social, environmental and natural resource processes. Especially lacking are the scientific data needed to help monitor and interpret changes to critical resources and environmental processes like beach erosion and pollution.
- Tourism goes across many sectors. Therefore it is rather difficult for any single agency to prepare or evaluate tourism plans and development proposals. Quite surprisingly in many countries there is no established mechanism for co-ordination and integration of the planning process among the various government ministries, departments and statutory bodies, along with closer collaboration with the private sector.
- An urgent need in most countries is a better integration of spatial elements in development planning. The largely artificial boundaries between physical and economic planning need to be dismantled and integration of both forms of planning needs to be considered with some urgency.
- At the same time the planners of the region need to create a better understanding that planning can be positive and development oriented rather than restrictive. Plans need to become more realistic by acknowledging the constraints which limit the type of intervention or corrective management procedures which are available by a country to achieve its development objectives. The planners should also ensure that the social and economic perceptions of the various groups within a society are included through continuous consultations and inquiries on the concrete and specific needs of the population.
- Most of the planning offices and ministries of tourism in the region are small and perennially understaffed. There is a definite need for training in tourism planning and in the related areas of coastal zone management planning and natural resource management.

The case of tourism planning does not imply the preparation of massive and expensive masterplans which have a tendency to be shelved upon completion. Within the Eastern Caribbean macro and sectoral planning is more indicative than directive. However most Governments do have at least some instruments to ensure that at the project level developments can be undertaken consistent with the overall planning framework. Rather than these masterplans a more pragmatic planning approach could involve:

8.1 Statement of objectives

The decision making level should clearly articulate what is to be achieved by promoting tourism development and the role of tourism in the overall development process. This requires a clear set of socio-economic objectives relating to the contribution to employment, net foreign exchange, GDP, income distribution etc. For any particular planning period these objectives need to be quantified in specific targets. Following this the decision making level needs to state what kind or combination of tourism is to be promoted, and which characteristics of tourism are wanted. This secondary set of objectives relates to issues like high income versus low income tourism, degree of foreign investment, participation by nationals, environmental integrity, and to the role assigned to the various economic and social agents, and to the role of Government in promoting tourism development.

8.2 Definition of the tourism product

The definition of the tourism product should not be limited to climate and beaches but needs to include an assessment of actual or potential natural, cultural and historic resources which could be used to promote tourism development. The choice of tourism product will have its implications on marketing strategies as well as on the overall tourism development strategy and facilities.

8.3 Identification of Constraints

A major constraint concerns the perceived role of government intervention versus its actual role. The economies of the region are all mixed economies with varying degrees of government intervention. Also consequence much of the plan implementation will depend on private sector activities whose intentions may not coincide with those of governments. In general any plan needs to specify the kind of environmental, social, economic, financial and political restrictions which are likely to arise during the plan execution. Apart from this constraints may arise from different development aspirations and needs of the various segments in society. Prevention is to be preferred to mitigation but may not always be possible. Finally constraints may arise from different and sometimes inconsistent sectoral development strategies. Whatever the origin of the constraints a tourism planning effort should state the difficulties or preconditions for achieving the objectives and it may be necessary to revise certain targets.

8.4 Evaluation of alternatives

A justification of planning is to achieve a better resource allocation and more effective use of scarce resources. While a tourism planner may prepare tourism development proposals there are no 'a priori' reasons to assure that such tourism developments reflect an optimal use of resources. Evaluation of alternatives uses of resources is frequently needed.

8.5 Priorities

The confrontation between objectives on the one hand and the constraints, means and alternatives on the other requires that a set of priorities be established. Such priorities provide not only a guideline to the private sector, but also identify what a government considers as urgent and important, and suggests which kind of projects need to be carried out in the short, medium or long-term.

8.6 Action Plans

The above provides the outline for a longer term tourism policy or strategy and indicates a Government's vision. The development vision however needs to be made concrete in the implementation of actual projects within the framework of a two to four year strategy and action plans with qualitative and quantitative targets. Components of such a medium term plan could include emphasis on product development, enhancement of natural resources, the creation of linkages, institutional developments and project proposals evaluated up to the prefeasibility level.

8.7 Environmental considerations

Many plans and projects may have impacts on natural resources. Such impacts often extend beyond the time horizon of the planning exercise or extend beyond the confines of tourism development project and as such have a tendency to remain neglected. It is the role of government to anticipate such effects at the macro level, to evaluate the various structural linkages at the intermediate level and to ensure that environmental standards are complied with at the project level. If it forms an integral part of the whole planning exercise environmental impact assessment techniques can play a valuable role by indicating potential conflicts, assisting in the evaluation of resource use alternatives and in the establishment of standards. There are, however, also indications that in a number of countries the institutional framework is not quite equipped to deal with environmental considerations in an effective manner. Prime environmental resources which are suitable for recreation and tourism development are often managed by a multitude of entities with conflicting objectives and effective co-ordination is hardly existent. This is especially true for the coastal zone, where beach protection and improvement is possibly the most critical issue facing tourism development, management and planning.

IX. RECOMMENDATIONS FOR THE INCORPORATION OF THE ENVIRONMENTAL DIMENSION IN TOURISM DEVELOPMENT

Most Governments of the region have decided to promote tourism as a significant element of their development strategy. Quality tourism in the Eastern Caribbean requires that the existing quality of the environment be maintained or enhanced while remaining accessible to both nationals and tourists. A major dilemma remains on how to manage environmental dynamics in order to improve the contribution towards a more equitable, sustainable and endogenous development. When using natural and cultural resources for tourism development some of the major problems are:

- how to develop tourism to the extent possible within a certain time horizon while leaving options open for the future
- how to promote the rational use of local resources and at the same time reduce or prevent negative environmental impacts and potential resource use conflicts
- how to promote tourism in such a way that its development conforms to the perceptions and aspirations of the various social groups of the region
- how to diversify the tourism product

The recommendations made below are made with the objective of increasing the potential contribution of tourism to the economy or alternatively to reduce its costs.

9.1 Planning and Management Mechanisms

- Future tourism developments need to be guided by a public and clear statement of objectives which indicates the assigned role of tourism in the development process; the kind and impact of tourism desired and their related socio-economic objectives. For any particular time period such objectives need to be quantified.
- For the short to medium term there is a need for two to four year strategy and action plans which state targets, identifies constraints to implementation and includes projects evaluated up to the feasibility level.
- There is a need to improve co-ordination and consultations among the various government ministries, departments, other public entities and the private sector.
- The element of space needs to be incorporated in tourism planning and the integration of physical and economic planning in the preparation of tourism plans needs to be stimulated.

- Governments should make increased use of environmental impact assessments in its evaluation of development alternatives either within the tourism sector itself or relating to available opportunities in other sectors.
- Greater efforts are needed to improve a database suitable for planning and decision making. Especially needed are data describing the current status of the tourism industry as well as the scientific data needed to monitor and interpret changes relating to social and environmental processes. Regional exchange of such data needs to be promoted.
- For large projects or for those which are suspected to have significant impacts a mandatory environmental impact assessment should form part of the project evaluation process. The use of such environmental impact assessments will also assist with data collection. Such data can provide standards to which smaller projects must conform.
- Develop techniques explicitly designed to evaluate criteria which are measured in various units or expressed in qualitative terms only. Such a methodology would assist with the integration of environmental, economic and social considerations.
- Assign the responsibility for managing specific tourism areas to a single government or semi-public entity whose aim is to enhance the environmental resources for recreation and tourism.
- Develop region wide training programme's in tourism planning and in related areas of coastal zone and natural resource management.
- Further regionwide public awareness and environmental education programmes to sensitize decision makers and the larger community to the need to incorporate environmental considerations in the planning process.

9.2 Coastal Zone Modifications

- In view of serious region-wide coastal erosion problems a regional program on coastal conservation and mitigation measures needs to be carried out with some urgency. Elements of such a programme should include a determination of the extent of coastal erosion, an analysis of coastal ecosystems, determination of the factors causing beach and other coastal area erosion, recommendations for remedial measures, preliminary engineering drawings and cost-benefit analysis.
- In low lying coastal areas which are subject to erosion it is recommended that setback levels of at least 50 m. be applied. Wherever possible introduction of a 100 m. setback needs to be considered.

- Beach sand mining should be discouraged and alternative sources of supply of sand or substitutes need to be developed.
- Discourage or limit any further destruction of mangroves and other wetlands. These habitats are important fish nurseries and nesting and feeding areas for birds and also perform a significant drainage function.
- Construction on ridges and upslopes should not be allowed to minimize water run-off. Regulations should also ensure that buildings do not drastically alter the landscape.
- Identify areas which qualify for the establishment of national marine or terrestrial parks.

9.3 Pollution

- Sewage pre-feasibility studies have a high priority, as there is serious pollution of the coastal and marine environment. Such disposal studies could include water quality measurements, recommendations on the collection, treatment and disposal of domestic and industrial waste into rivers and coastal waters, preliminary engineering designs and cost estimates for the technology, operation and maintenance of the various methods of collection, treatment and disposal in densely populated areas, tourism development zones and other sensitive areas.
- Consideration should be given to the simultaneous carrying out of the sewage disposal and coastal conservation studies because pollution and coastal erosion are closely linked.
- Tourism facilities should only be allowed to operate extended aeration package plants if they show evidence that trained operators are available.
- A regular maintenance programme of package plants should be mandatory and the establishment of private sector enterprises to maintain such plants should be stimulated.

9.4 Energy

- Intensify existing efforts in raising the tourism sector's awareness of the potential savings arising from low-cost and low technology energy conservation measures.
- Require that new tourism facilities incorporate from the outset economically efficient conservation measures like heat recovery systems and solar heating or air conditioning.

- Increase the understanding of typical tourist electricity demand by carrying out a cross-sectional analysis of electricity consumption per room and potential explanatory variables. Such insight would assist in anticipating the additional energy demand which results from new development proposals.

9.5 Natural and Cultural Attractions

- Any assessment of tourism potential needs to include not only beaches but also the other natural, cultural and historic resources.
- There is a need and interest in upgrading many downtown areas and harbour facilities. Adoptive use of historic buildings should be stimulated.
- The OECS could consider the establishment of a 'cultural desk' with the objective of stimulating the inter-island exchange of artists, and promoting a mutually beneficial relationship between artists and tourism.

9.6 Rational Use of National Resources

- Governments need to develop specific strategies to ensure a better integration of the tourism sector with the remainder of the economy, and to reduce leakages.
- At a national or regional level policy oriented studies need to be carried out to improve national and regional linkages. Agriculture, construction, furniture and fittings could be the sectors which offer the greatest immediate scope for improvement.
- Informal sector activities need to be stimulated and courses to improve the marketing skills of small businessmen need to be regularly held.

GLOSSARY OF ABBREVIATIONS

CCA	Caribbean Conservation Association
CCS	Caribbean Community Secretariat
CDB	Caribbean Development Bank
CHA	Caribbean Hotel Association
CTRC	Caribbean Tourism Research and Development Centre
ECLAC	Economic Commission for Latin America and the Caribbean
ECNAMP	Eastern Caribbean National Area Management Program
IRF	Island Resources Foundation
IUCN	International Union for the Conservation of Nature and Natural Resources
OAS	Organisation of American States
OECS	Organisation of Eastern Caribbean States
UNEP	United Nations Environment Programme
WTO	World Tourism Organisation

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