



## **SUSTAINABLE TOURISM DEVELOPMENT: THE CASE OF BARBADOS**

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**Kevin Greenidge and Nathali Greenidge**

**ABSTRACT**

This study examines the sustainability of tourism development in Barbados. Barbados is heavily dependent on tourism and the industry is expected to contribute positively to the country's continued economic prosperity, social development, physical development and associated environmental health. Tourism can have adverse impacts on the society, if not managed and developed in a manner that is in harmony with the environment and the local population. Issues such as management of the island's water resources, over-crowding and the impact on the environment are of paramount importance. The analysis indicates that tourism development in Barbados is on a sustainable path in harmony with the environment. Specifically, the economic benefits of tourism will continue to accrue to the Barbadian economy well into the long-term, any negative social effects are manageable and the authorities are implementing various measures to deal with the adverse impacts the industry has had on the environment.

# 1. An Overview of the Tourism Industry in Barbados

## 1.1 Introduction

Travel to Barbados predates the period of this study by more than two centuries. However, it was not until the advent of the steamship in the nineteenth century that travel exclusively for pleasure blossomed. The industrial revolution which had produced the steamship, opened new avenues of prosperity and allowed wealthy persons to travel to exotic destinations around the world.

Until well into the 1960's, most of Barbados' tourist accommodation was of the exclusive variety, catering to visitors who preferred high quality and full service. Travelling to the Caribbean for holidays became extremely fashionable for a small group of wealthy North Americans who had become accustomed to spending winter in a warm climate. In addition, Barbados attracted visitors from the Caribbean who took advantage of inter-island shipping services to visit the island. They were generally less affluent than their North American counterparts and stayed primarily with friends and relatives or in guest houses.

The early development of the hotel industry in Barbados was marked by a high degree of foreign ownership. There was relatively little marketing done and practically no governmental guidance or control. The entrepreneurs were mainly European or North American businessmen with some experience in the travel and /or hospitality business and they organised all the elements of the tourist trade, from transportation to accommodation facilities and some ancillary services. Since the 1960's, however, increased participation by local entrepreneurs has been a significant feature of the growth in tourist accommodation. Today, it is estimated that approximately two-thirds of the accommodation establishments are owned by locals. **[SOURCE]**

Tourism in Barbados began to emerge as a significant economic activity in the late 1950's. Long-stay<sup>1</sup> visitors to the island have increased from 17,829 in 1956 to 547,501 in 2005. Barbados has also benefited from the development of the international cruise industry with an increase in cruise passengers from 12,391 in 1956 to 563,588 in 2005.<sup>2</sup> Moreover, the

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<sup>1</sup> Any tourist that enters Barbados via the airport is classified as a long-stay tourist, while those that arrive on cruise ships are referred to as cruise ship arrivals.

<sup>2</sup> See Annual Statistical Digest of the Central Bank of Barbados.

contribution of the tourism industry to real Gross Domestic Product (GDP), foreign exchange earnings and employment have risen considerably during the period under review.

## **1.2 Barbados Tourism Product – “Just Beyond your Imagination”<sup>3</sup>**

Barbados views its tourism product as the total vacation experience, starting from when the tourist travels to Barbados and includes the accommodation and transport facilities used, the activities in which the tourist participates, the services used, the infrastructure, the level of safety and security that exists and the quality of the physical, human, socio-cultural and natural environment. The island’s authorities recently adopted the slogan “Barbados-Just Beyond your Imagination.”

While Barbados, like most tropical island destinations, is appealing to tourists because of natural attributes such as its climate and coastal environment, other components, particularly its stable political environment, friendly people and well-developed culture and natural heritage are also of critical importance. Barbados’ product is also diverse in terms of quality and quantity and includes an accommodation complement of 11,237 hotel beds (Table H14, of the Annual Statistical Digest of the Central Bank of Barbados, 2005), many restaurants and other food and beverage facilities, nature attractions including underground caves and marine parks, historic sites, festivals, golf courses and a range of other activities (see Table A4 in Appendix and also the Barbados Ministry of Tourism website).

The Government of Barbados has contributed significantly to the Island’s tourism product. In deed, as discussed in Greenidge (2006), the government made considerable effort to reposition and rejuvenate its tourism industry in the early 1990s. In this regard, the Ministry of Tourism was given overall coordinating responsibility for all the various activities of the different stakeholders in the industry. In addition, the Barbados Tourism Authority (BTA) was established in 1993 as a statutory corporation under the Ministry of Tourism with sole responsibility for

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<sup>3</sup> The official slogan for the Barbados tourism product is usually accompanied by a logo which is a picture of a flying fish, a fish that is plentiful in the waters surrounding the island and has the remarkable ability to glide through the air up to distances of 30-40 metres.

marketing.<sup>4</sup> Since then a number of public and private sector agencies were formed to deal with aspects of the industry.

One of the main tasks of the Ministry of Tourism is to encourage the upgrading and expansion of the hotel facilities on the island. To this end a number of projects are undertaken by the Ministry. For example, the “Gems of Barbados project”, is an alliance of smaller properties acquired by the Government which benefit from common sourcing as well as shared sales and marketing in order to remain more competitive. They are Blue Horizons (129 rooms), Time Out at the Gap (76), Silver Rock (70) and the Savannah (100)<sup>5</sup>. Although there has been heated debate<sup>6</sup> as to whether or not the government should have spent the vast amount of money it did on the project, which some argue is in excess of US\$60 million, there is no doubt that it has improved the tourism product.

Government also provides various fiscal incentives, loans and grants, which a number of hotels have benefited from. For example, the Accra Beach Hotel was converted from a small inexpensive hotel to a four-star hotel with room rates ten times as high. Other examples include the upgrading of Coral Reef Club Hotel and the construction of the largest hotel on the island, the all-inclusive Almond Beach Village with 330 rooms. Perhaps the best example of where extensive renovation and refurbishment has been done to a hotel to transform it into a luxurious resort is the Sandy Lane Hotel and Golf course. Costing over US\$180 million, the changes include a world class health spa and a 9-hole and two 18-hole golf courses.

The largest rejuvenation hotel project was that of the Hilton Barbados Hotel, the only hotel on the island with significant international interest. In 1999, it was completely demolished and an entirely new 350-room ultra modern hotel with state-of-the-art facilities was constructed and completed in August, 2005. It is estimated that since the early 1990s Barbados overall tourism capacity has increased by more than 75 percent (Potter and Phillips, 2003, pp. 245).

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<sup>4</sup> The Barbados Tourism Authority was established under the Barbados Tourism Authority Act of 1993, which is downloadable from <http://barbadosbusiness.gov.bb>.

<sup>5</sup> Details of these hotels can be found at <http://www.gemsbarbados.com/home.asp>.

Considerable investment also went into the development of new upmarket tourism and leisure complexes (Potter and Phillips, 2003, pp. 244). Most notable among these is the Royal Westmoreland, which has been voted one of the best residential and golf club communities in the Caribbean. It is constructed on five hundred acres of beautiful countryside overlooking the West Coast and offers an exclusive 18-hole, par-72 golf resort with 350 villas and five tennis courts.<sup>7</sup>

The development of Royal Westmoreland was also part of the drive to develop a niche market in sports tourism, particular golf tourism, and as such the 1990s saw five championship golf courses being constructed on the island. In fact, golf tourism has grown to such an extent that Barbados successfully hosted the 2006 World Golf Championship World Cup.<sup>8</sup> There are also plans to construct at least two other 18-hole championship golf courses over the next several years. Barbados also hosted several matches including the finals of the Cricket World Cup in 2007.

Other major projects include the upgrade and expansion of the Grantley Adams International Airport, between 2003 and 2006, the expansion of cargo and container activities for cruise and pleasure craft at the island's main harbour, the Urban Rehabilitation programme aimed at upgrading and improving the infrastructure of the capital city and other popular entertainment and tourism areas (Barbados Tourism Investment Inc., 2005).<sup>9</sup>

In recent years the degradation of several of the island's beaches became evident. In response, the Ministry of Tourism, in collaboration with the Coastal Zone Management Unit, launched the 'Adopt-a-beach' programme in 1995, which seeks to encourage businesses, schools, and community groups to contribute to the upkeep of the island's beaches by adopting one of them. It attained national consensus under the belief that the coastal and marine environments can be sustained if each Barbadian contribution to the upkeep of the island's beaches and reefs. The programme includes: regular beach and underwater clean ups; the design and provision of creative and effective garbage receptacles, benches and tables; and, the replanting of palm trees

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<sup>6</sup> See Barbados Nation Newspaper (5/8/03, pp.14) on the parliamentary debate on the viability of the Gems Project.

<sup>7</sup> <http://www.royal-westmoreland.com/>

<sup>8</sup> See the BTA golf site for details [http://www.barbados.org/golf\\_wgc.htm](http://www.barbados.org/golf_wgc.htm).

<sup>9</sup> See the Barbados Tourism Investment Inc. website at <http://barbadostourisminvestment.com/index.cfm>.

and various vegetations around the beaches. The programme has been hailed as a success and has received international recognition.<sup>10</sup>

### **1.3 Importance of the Industry**

The Government's tourism policy has been predicated on the economic benefits that would accrue from the increased employment, foreign earnings and domestic income. Accordingly, it has invested heavily in the tourism industry. The analysis suggests that the industry has made significant contributions to the economy and the overall development of Barbados.

Table 1 shows the contribution of tourism to real GDP. The tourism industry currently makes the third largest direct contribution to economic output (15.4 percent) behind the wholesale and retail (20.2 percent) and the business and other services (17.2 percent) sectors. Moreover, when the sectors are grouped into those that are net foreign exchange earners and those that are net foreign exchange users, tourism emerges as the largest contributor to GDP among the foreign exchange earning sectors. It should be noted that the 15.4 percent contribution from tourism represents an estimate of the industry's direct contribution to GDP (that is the output of hotels and restaurants) but excludes the indirect contributions of ancillary services of tourism. For example, the output for the wholesale and retail sector is driven by the demand for imports, which increases with tourism.

The table also highlights an important feature of the structure of the Barbados economy over the years and that is the decline in the contribution of some of the more traditional sectors (especially agriculture) to total production. The share of sugar in total GDP has fallen from 10.6 percent in 1970 to 1.5 percent in 2005, while the contribution of non-sugar agriculture declined from 4.1 percent to 3.4 percent over the period. Similarly, the share of manufacturing in total output declined from 8.3 percent to 6.1 percent over the period. At the same time, the tourism industry recorded an increase in its contribution to GDP from 8.3 percent in 1970 to 15.4 percent in 2005.

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<sup>10</sup> See the Barbados Coastal Zone Management Unit website. <http://www.coastal.gov.bb/index.cfm>

**Table 1: Sectoral Contributions to Real GDP in Barbados  
(1970-2005) in percent**

	1970	1975	1980	1985	1990	1995	2000	2005
<b>Foreign Exchange Earning Sectors</b>								
Sugar	10.6	9.6	7.2	5.4	3.4	2.0	2.6	1.5
Non-Sugar Agriculture & Fishing	4.1	3.8	3.1	4.2	4.0	4.3	3.7	3.4
Manufacturing	8.3	10.3	11.8	10.4	10.0	9.9	7.1	6.1
<b>Tourism</b>	<b>8.3</b>	<b>9.3</b>	<b>13.8</b>	<b>11.5</b>	<b>13.9</b>	<b>15.4</b>	<b>16.1</b>	<b>15.4</b>
<b>Foreign Exchange Using Sectors</b>								
Mining & Quarrying	0.2	0.2	0.5	0.9	0.8	0.7	1.1	0.9
Electricity, Gas & Water	1.2	1.5	2.1	2.7	3.0	3.5	3.5	3.6
Construction	7.3	6.6	7.0	6.3	6.8	5.6	7.5	9.3
Wholesale & Retail	19.6	18.2	19.5	19.6	19.6	19.1	19.4	20.2
Government	13.7	15.0	12.7	13.6	13.7	13.7	13.8	13.9
Transportation, Storage & Communication	7.1	7.2	6.2	7.5	7.8	8.3	8.4	8.5
Business & Other Services	19.8	14.2	16.0	17.9	17.1	17.4	17.0	17.2

Source: Table II of the Central Bank of Barbados **Annual Statistical Digest** (2005, 2000, 1995)

Table 2, shows the contribution of the various industries to Barbados foreign currency earnings. Tourism is the largest contributor to foreign exchange earnings and in 2005, 38.6 percent of total foreign exchange earnings came from the industry. Although this percentage has remained stable or fallen in recent years the industry is still the leading foreign exchange earner.

**Table 2: Sectoral Contributions to Foreign Exchange Earnings in Barbados  
(1970 – 2005) in percent**

	1970	1975	1980	1985	1990	1995	2000	2005
Goods	32.7	39.8	29.0	41.8	22.8	20.1	18.4	18.4
Services	57.1	52.8	63.8	51.3	68.3	71.2	70.1	71.1
<b>Tourism</b>	<b>36.9</b>	<b>32.6</b>	<b>40.5</b>	<b>37.0</b>	<b>53.1</b>	<b>51.1</b>	<b>46.5</b>	<b>38.6</b>
Transportation	6.8	9.6	11.5	2.2	0.7	1.3	1.6	2.3
Government	2.9	2.4	2.2	2.2	2.8	1.9	2.2	3.1
Other Services	10.4	8.3	9.6	10.0	11.7	16.9	19.8	27.1
Income	3.2	2.4	1.7	3.1	3.1	4.0	4.5	3.8
Current Transfer	7.0	5.0	5.4	3.8	5.7	4.7	7.0	6.7

Source: Table 2 of the Central Bank of Barbados **Balance of Payments of Barbados** (2005, 2000, 1995, 1984)

Tourism would have also contributed to the foreign earnings of some of the other industries, in particular that of 'Other services', through its multiplier effect. Thus, its overall contribution to the Barbados economy in terms of foreign exchange is greater than the estimates in Table 2-6 under tourism would suggest.

The importance of tourism to Barbados can also be seen in the contribution the industry makes to employment. In 2005 approximately 12,000 people were directly employed in hotel rooms and restaurants, representing about 16 percent of the country's labour force. It is estimated that an additional 25,560 people were also indirectly employed by the industry, which brings the total tourism employment to over 20 percent. See WTTC, 2006, pp. 12).

Tourism has also helped to promote local art, song, music, handicraft, dance, dress and culinary arts. It has provided a means of demonstrating to the visitor the special characteristics which distinguish Barbados from other destinations. Thus, the tourism product is enhanced by an added cultural dimension (BTA, 2005, pp. 15).

The promotion of tourism has resulted in significant investment in developing the infrastructure of Barbados: improved port facilities; better road and communications networks and improved recreational facilities. Barbados has also promoted rural tourism, catering to the tourist whose interest lies beyond the traditional sun, sea and sand product and who seeks to embrace a greater visitor experience through learning about the indigenous life and folk culture.

Tourism has also led to the locals taking greater care of, and appreciating even more, the beaches, caves, parks, botanical gardens and gullies; since these are the major attractions for visitors and therefore are seen as part of the country's natural assets. Tourism operators, who depend on a healthy reef for their activity, assist in educating the public about the importance of protecting the reefs and often lobby for their protection against unscrupulous operators and uncaring users. As noted earlier, the 'Adopt-A-Beach' project and the annual Coastal Clean-up are examples of this.

## **1.4 Costs and Challenges of Tourism**

Although the industry has made significant contributions to the economy and the overall development of Barbados, there are also some costs associated with the industry.

### *1.4.1 Environmental Issues*

First, being a small island the coral reefs, especially, are very fragile and hence vulnerable to negative environmental impacts. For example, divers often topple and damage the corals, and even remove them for souvenirs. Dive boats have carelessly dropped anchors on the reefs and are also guilty of dragging their anchors across the sensitive ecosystems.

Tourism has also placed a strain on the limited resources of the island. For example, Gajraj (1981, pp. 5) notes that on average tourists in Barbados use 6-10 times more water than locals.<sup>11</sup> In addition, accommodation establishments need adequate supplies of freshwater to meet the immediate needs of their guests as well as for keeping golf courses lush and green. Farmers depend on fresh water for irrigation, especially during the January to April dry season, and increasingly locals demand water to wash vehicles and water their gardens (Drosfoff, 2004). The Barbados Water Authority estimates that locals use 60 to 63 gallons of fresh water a day while hotels and resorts use 179 gallons a day (cited in Drosfoff, 2004). Managing the strain on the water resources is even more important considering that the United Nations Commission on Water has classified Barbados as a “water scare” country, putting it only slightly ahead of the desert nations of the Middle East in terms of availability per capita (United Nations, 2002).

The tourism authorities have indeed recognised this problem and part of their response was to construct a desalination plant but this can only deal with sourcing water. There is still the question of water use and disposal. Given the highly porous nature of the island limestone geology, water contamination from chemical use and disposal at the various resorts can be a problem. There is the question of the pollution of coastal waters, destruction of the reefs and damage of marine flora and fauna. Perhaps what is needed is the formulation of a land-use policy framework to deal with the increasing number of environment issues arising.

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<sup>11</sup> This estimate is probably on the high side given estimates by the Barbados Water Authority.

The additional strain on resources is not only with respect to the quantity of water but also in terms of other utilities such as electricity consumption. In this regard, the energy spent on each tourist is significantly larger than that of a local since most visitors to the island are from developed countries, and as such, the Tourism industry seeks to provide the visitor with “first world” amenities. For example, where the average Barbadian lives in a naturally ventilated house, washes dishes by hand, and dries the laundry on a clothesline, the tourist stays in air-conditioned facilities, washes and dries his or her laundry and any dishes used with electric appliances. These differences in consumption patterns impact greatly on the island’s resources (Ministry of Physical Development and Environment, 2001, pp. 20).

#### 1.4.2 *Socio-cultural Issues*

Since the annual influx of tourists out-numbers the local population by a ratio of more than 4 to 1, the potential socio-cultural problems of tourism are also of immense importance. Some argue that the inflow of luxury goods and services along with tourists has changed the consumption needs and desires of the local population. The commodification<sup>12</sup> of the local culture and of land also has an adverse impact on how the locals view themselves (Barry et al., 1984, pp. 137). Moreover, as the economy becomes more dependent on tourism, it also becomes more vulnerable to external shocks. For example, the September 11 terrorists’ attacks in the USA discouraged air travel worldwide and arrivals to Barbados fell by 6.9 percent for that year, while the economy slipped into recession as real GDP declined by approximately 2 percent.

There is also the question of tourism capacity and over-crowding. Barbados’ population was estimated at 279,912 at July 2005, which places it as the World’s 15<sup>th</sup> most densely populated country with 627 persons per square kilometre (United Nations, 2005). Add to this, over 1 million tourists each year (cruise and long-stay arrivals combined) and the obvious question is whether or not the island can accommodate this volume of visitors without it adversely impacting not only on the local population but on the visitors themselves. Indeed, it has been suggested that the “crowding factor’ is important for the tourist and can impair the image of the

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<sup>12</sup> Commodification (or *commoditization*) is the transformation of what is normally a non-commodity into a commodity, or, in other words, to assign value. As the word *commodity* has distinct meanings in business and theory, *commodification* has different meanings depending on the context.

destination, leading to a decline in the number of repeat visitors (Fridgen, 1984; Graefe and Vaske, 1987).

Doxey (1971), using Barbados and Niagra-on-the-lake as case studies argues that there were “reciprocating impacts” between tourists and residents which can be measured as varying degrees of “irritations”. As such there is a saturation point in the development of a tourist destination after which residents start to question the presence of tourists and the need for a tourism industry, while the authorities are concerned with increasing the level of infrastructure and attracting more tourists (Doxey, 1971, pp. 195). Eventually such “irritations are overtly expressed, both physically and verbally, while the authorities focus on how to increase the level of promotion of the region to overcome any negative image being created by the antagonism (Doxey, 1971, pp. 195). The findings of Doxey suggest that the local population perceived tourism as generally detrimental “as it tended to be an extension of the slave-plantation syndrome”, making reference to the poor treatment of the African slaves by the plantation owners in the early days of colonisation and the perceived poor treatment of modern Barbadians by tourist operators.

Doxey’s study was done in 1971 and since then considerable investment in public education on the benefits of tourism has occurred and the population generally supports tourism. However, it is still possible to find sources of irritation with respect to tourism. For example, locals often complain about the reduced access to beaches as some hotels attempt to make their beach front an exclusive area for their guest. There is even a case, which caused a public outcry, of a hotel wanting to charge a disable non-guest a fee for wanting to access a public beach through their lobby. Although it is against the law to block beach access, many hotels attempt to circumvent this by erecting boulders along the beach under the argument that they are preventing beach erosion.

Another possible source of irritation is the significant increases in house and land prices that often occur following the construction or expansion of a hotel or tourist attraction. Locals often complain that they are priced out of the market and even those that had owned property in the

area prior to the construction, find that they cannot afford the subsequent increase in land taxes and are forced to sell.

## **2. Sustainable Tourism**

### **2.1 The Concept of Sustainable Tourism Development**

The concept of sustainable tourism development is closely linked to that of the general term 'sustainable development'. The latter came to prominence in 1987 with the publication of the "Brundtland Report" by the World Commission on Environment and Development (WCED) as a response to increasing global concerns over the degradation of the world's natural resource base in the pursuit of economic development. The report defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, pp. 43). By concentrating on 'needs', this definition appears to emphasise the economic aspects of sustainable development but there are others that take a wider view. For example, Engel (1990, pp. 10-11) defines it as "the kind of human activity that nourishes and perpetuates the historical fulfilment of the whole community of life on earth".

The concept has since evolved, most notably through Agenda 21, the plan of action which emerged from the United Nations Conference on Environment and Development (Rio de Janeiro, 1992)<sup>13</sup>, and the plan of implementation from the World Summit on Sustainable Development (Johannesburg, 2002). It now encompasses three principles: economic sustainability, which means generating prosperity at different levels of society and addressing the cost effectiveness of all economic activity; social sustainability, which means respecting human rights and equal opportunities for all in society; and, environmental sustainability, which means conserving and managing resources (United Nations Environment Programme and World Tourism Organisation, 2005, pp. 9).

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<sup>13</sup> Agenda 21 is downloadable from <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>, while the Johannesburg Declaration on Sustainable development is available on [http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/POI\\_PD.htm](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm).

Sustainable development therefore implies achieving economic growth and social development in ways that do not exhaust a country's natural resources. The essence of this form of development is a stable relationship between human activities and the natural world, in which "the exploitation of resources, the direction of investments, the orientation of technological development, and institutional changes are made consistent with the future as well as present needs" (WCED, 1987, pp. 46). This means that the present generation should leave for the future generation a "stock of quality-of-life assets", including an environmental quality, which is no less than those it inherited (Mbaiwa, 2005, pp. 206). In other words, sustainability places an intergenerational responsibility on the current generation (Stabler, 1997, pp. 2).

It should however be noted that though sustainable development is about balancing growth with the social and environmental aspects of a country, it does not necessarily involve 'growth'. This is because it is essentially a process of realising "specific social and economic goals which may call for a stabilisation, increase, reduction, change of quality or even removal of existing products, firms, industries, or other elements" (Lui and Jones, 1996, pp. 217)

Extending the concept of sustainable development to the tourism industry implies that 'sustainable tourism development' is essentially "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" (United Nations Environment Programme and World Tourism Organisation, 2005, pp. 12). It is therefore seen as leading to the "management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, and biological diversity, and life support systems" (Goodall and Stabler, 1997, pp. 280).

It should be noted that sustainable tourism development was given limited attention in Agenda 21, with the only reference to tourism being in chapter 11 where the report recommends the promotion of ecotourism as a way to enhance sustainable forest management and planning. In this regard, Hunter (1995) argues that, based on the sustainability principles outlined in the Brundtland Report and in Agenda 21, sustainable tourism development should:

- meet the needs and wants of the local host community in terms of improved living standards and quality of life;
- satisfy the demands of tourists and the tourism industry, and continue to attract them in order to meet the first aim; and,
- safeguard the environmental resource base for tourism, encompassing natural, built and cultural components, in order to achieve both the preceding aims (Hunter, 1995, pp. 155-156).

In an effort to incorporate the principles set out in Agenda 21 in to the tourism industry and outline priority areas for its sustainable development, Agenda 21 for the Travel and Tourism Industry was developed by WTTC et al. (1997). This report argues that sustainable tourism should:

- assist people in leading healthy and productive lives in harmony with nature
- contribute to the conservation, protection, and restoration of the Earth's ecosystem;
- be based upon sustainable patterns of production and consumption;
- recognise and support the identity, culture, and interest of indigenous peoples;
- use its capacity to create employment for women and indigenous peoples to the fullest extent; and,
- feature environmental protection as an integral part of the tourism development process (WTTC et al., 1997, pp. 34).

These principles have been modified and fine-tuned in recent years and the WTO currently states that sustainable tourism should: make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity<sup>14</sup>; respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance; and, ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed,

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<sup>14</sup> Biodiversity describes the biological diversity or variety of life forms, including the different plants, animals, fungi and micro-organisms, the genes they contain, and the ecosystems they form (definition obtained from <http://twinshare.crctourism.com.au/GLOSSARY.HTM#carr>).

including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.<sup>15</sup> If tourism development fails to meet these objectives then it cannot be considered as sustainable.

### *Dimensions of Sustainable Development*

In general, it is possible to identify four dimensions of sustainable tourism development.

- First, economic sustainability, which means, promoting tourism and ensuring that tourism grows at a manageable rate while keeping an eye on the destination's capacities to accommodate greater demand in order to avoid tourists' dissatisfaction.
- Second, social sustainability, which refers to ability of the society to absorb increasing tourist arrivals without adversely affecting or damaging the indigenous culture.
- Third, environmental sustainability, which is related to the capacity of the natural and built environment to handle tourism without damage.
- Fourth, institutional sustainability which refers to the destination's commitment to sustainable tourism development as manifested by the incorporation of sustainable principles into development planning, the use of indicators for monitoring sustainability, the presence of monitoring and coordinating bodies for sustainable development, and the presence of laws that promote sustainable tourism development (United Nations Economic and Social Commission for Asia and the Pacific, 1993, pp. 85-116; UNCSD, 1996).

Thus, sustainable tourism development for a destination is all about balancing the economic and social benefits it gets from the industry, and any adverse effects the industry may have on the environment and society, so that the destination becomes a permanent beneficiary not the victim of tourism development. This would require tourism authorities to be constantly monitoring the effects of tourism development so that timely preventive and/or corrective actions can be taken whenever necessary (United Nations Environment Programme and World Tourism Organisation, 2005, pp. 11).

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<sup>15</sup> See WTO website at [http://www.world-tourism.org/frameset/frame\\_sustainable.html](http://www.world-tourism.org/frameset/frame_sustainable.html).

### *Carrying Capacity*

Before moving on to the next section, we should perhaps consider a related concept to tourism sustainability and that is carrying capacity. Several studies have attempted to define sustainable tourism development using the concept of carrying capacity (Welford and Ytterhus, 1998; Williams and Gill, 1994). Carrying capacity as a concept was initially developed in the area of wildlife management and is based on the belief that “the availability of suitable conditions for living determines the number of organisms that can exist in an environment” (Carey, 1993, pp.141). In the field of tourism sustainability carrying capacity is often referred to as “the maximum number of people who can use an area without an unacceptable reduction in the quality of the experiences that visitors may gain” (Mathieson and Wall, 1982, pp. 21). Similarly, McIntyre (1993, pp.23) defines carrying capacity as “ the maximum use of any site without causing negative effects on the resources, reducing visitor satisfaction, or exerting adverse impact upon the society, economy or culture of the area’. Likewise, the United Nations Environment Programme and World Tourism Organisation (2005; pp. 75) states that carrying capacity is “the number of tourists that a place can accommodate without detriment to the environment or host population or any reduction in tourists’ satisfaction”.

The concept of tourism carrying capacity has been criticised on the grounds that it is unrealistic and even misleading to put a precise capacity limit on the number of tourists, beyond which conditions will deteriorate. There are many different factors that affect capacity and these can be very complex as well as subjective because of changing economic, social and political conditions. That is, there may exist a measure of capacity under certain conditions, but this may change if circumstances are altered and therefore the measure becomes unstable. Nevertheless, there are many instances where it can be very useful and informative to quantify a threshold or optimum level of usage. For example, carrying capacities can be useful in helping to regulate the flow of visitors in order to avoid congestion, or to assist in decisions about the number of accommodation units that may be acceptable in an area. Thus, the concept of tourism carrying capacity is important and can be incorporated into any analysis of tourism sustainability. (McCool and Lime, 2001, pp. 374; World Tourism Organisation, 2004, pp. 309).

## 2.2 Assessing the sustainability of tourism development

In order for tourism managers and officials to assess whether or not their tourism industry is on a path of sustainable development, they need accurate information on the impacts of tourism on the environmental and socio-cultural conditions of the destination, as well as its economic contributions. In this regard, sustainability indicators have become the “essential tools for providing this information, and constitute fundamental building blocks in tourism planning, management and monitoring processes” (WTO, 1995, pp. 2).

Indicators are defined as “measures of the existence or severity of current issues, signals of upcoming situations or problems, measures of risk and potential need for action, and means to identify and measure the results of our actions” (WTO, 2004, pp. 8). Thus, they assist in decision making with respect to planning and in determining the implications of development within the destination itself in order to promote sustainability. Accordingly, the development of indicators in the tourism research can be seen as an effort to make sustainable development measurable. What is not measured can neither be managed nor sustained. Indeed, Butler (1999, pp. 16) argues that without indicators the term sustainable is ‘meaningless’, while Weaver (2001, pp. 14) blames the lack of progress in the implementation of sustainable tourism on the “overall lack of knowledge” and consensus with regard to indicators.

In fact, (WTTC et al., 1997) argue that there is a need for appropriate information that supports decision-making, and suggest that the establishment of realistic sustainable tourism indicators should be a top priority for national tourism organisations. Since then, there has been considerable research in the area of sustainable tourism indicators, and various models have been proposed, but the variables used often proved to be too numerous, too broad, or too technical to be useful for monitoring tourism’s sustainability (Cruz, 2003, pp. 6) Thus, the development of sustainable tourism indicators is still in its infancy and practical case studies are hard to come by (Goodall and Stabler, 1997, pp. 298; Twining-Ward and Butler, 2002, pp. 365)

In 1995 WTO attempted to rectify this problem by publishing a manual of guidelines on the development of indicators and also included 11 core indicators, shown in Table 3 (also see WTO, 1995, pp. 9). In 2004, WTO produced a revised *Guidebook on Indicators of Sustainable*

*Development for Tourism Destinations*. The new guide discusses a number of sustainability issues, grouped as socio-cultural, economic and environmental, and also makes recommendations for indicators to measure them. The list of issues and their indicators are now more than 200. However, the guide also cautions that these are not meant to be a prescription but rather to provide guidance, allowing managers to select the issues that are most relevant to their destination and to have clearer ideas on indicator application and measurement techniques (WTO, 2004, pp. 6). In this regard, the guide provides a smaller list of 12 issues and 29 corresponding indicators that can be considered as relevant to most destinations (Table 4).

Tourism managers in each destination must choose, from among all the possible data and information, those indicators that are most likely to reflect the key tourism sustainability risks and concerns or provide information that can help clarify issues and measure responses within a destination. Moreover, within each tourism area there exist certain data and information that could serve as sustainability indicators as long as their relevance is understood. For example, the most commonly used and understood indicators reflect economic phenomena such as tourism earnings and expenditures, tourist arrivals, nights spent in the destination and accommodation capacities. These can be reference points for business decisions but can also be used to assess tourism sustainability. For example, tourist arrivals can be considered a sustainability indicator when it is related to infrastructure capacity in the tourism area (such as the number of hotel beds available) or used to indicate potential level of stress on the system (such as water consumption per tourist). The number of tourist arrivals can also be compared with the number of local residents and the ratio (often called the penetration ratio) used as an indicator of potential social stress (WTO, 2004, pp. 10).

Indicators are usually quantitative in nature where the relevant economic, social or environmental states are expressed in numbers, percentage or ratios; for example, the number of tourists visiting a particular site relative to the size of that site. Qualitative measures are also used and these are normally descriptive in nature; for example, tourists' opinion of the quality of service at a particular site. Qualitative measures are normally obtained from questionnaires and interviews and can be used to support the quantitative indicators. However, surveys tend to be very expensive and time-consuming and this is perhaps why most investigations are based on

quantitative indicators which can often be computed from existing data. Moreover, information derived from questionnaires and interviews can at times be biased and short-sighted as experts in the industry often have their own political and tourism related interests, which sometimes lead to biased analysis. (See WTO, 1995 pp. 19; Laimer et al., 2004, pp. 49).

### *2.2.1 Possible Sustainability Indicators for Barbados*

Proposed indicators to assess tourism sustainability should be easy to understand, and the data collection should not be time consuming and expensive. At the same time they should be significant to the issues of the destination, examining: tourism trends and any environmental and social patterns that may be of significance; interactions between tourism, the environment and social conditions; and, economic linkages between tourism activities, the environment, society, and related policy aspects (WTO, 2004, pp. 8; Laimer et al., 2004, pp. 15).

Though there exist numerous groupings of indicators of sustainable development, our search found only five sets of indicators of tourism sustainability that covered the key dimensions discussed above. Perhaps this is because, as noted earlier, research into the development of indicators of tourism sustainability only began in earnest around the mid-nineties.

In this regard, the 1995 WTO 11 core indicators are perhaps the first published compiled set of indicators of sustainable tourism (Table 3). As noted by WTO (1995, pp. 8), these indicators were chosen because together they constitute the base level of information necessary to manage sustainable tourism in virtually any destination. Of the 11 core indicators, two are related to the economic dimension of sustainable tourism development (indicators 9 and 11), two deal with the social sustainability dimension (indicators 4 and 10), two examine the institutional sustainability dimension (indicators 5 and 7) while the remaining five deal with environmental and ecological issues. The other point to notice about these indicators is that they are mainly quantitative in nature (only indicators 9 and 10 are qualitative) and thus the data to compute them are less costly and easier to collect.

However, one of the main short-comings of the WTO's 1995 core set of indicators is that the report made no attempt to define sustainable tourism development nor justify the choice of

indicators (Twining-Ward and Butler, 2002, pp. 366). The 2004 WTO guide addressed both concerns and also offers a more equitable distribution of the indicators with respect to the different dimensions of sustainable tourism development (see Table 4). Thus, the number of socio-economic issues has increased (baseline issues 1 to 5) relative to those dealing with the environment and ecosystem (baseline issues 6 to 10). There is now a greater selection of indicators to choose from to address any particular issue. For example, on the issue of tourist satisfaction (no. 9 in Table 3 and no. 3 in Table 4), there are now three possible indicators as opposed to the single indicator in the earlier guide. Moreover, one of the indicators is quantitative, such that it is not necessary to rely on a questionnaire.

**Table 3: WTO (1995) Core Indicators of Sustainable Tourism**

	<b>Core Indicator</b>	<b>Specific measure</b>
1	<b>Site protection</b>	Category of site protection according to the International Union for the Conservation of Nature and Natural Resources (IUCN) index
2	<b>Stress</b>	Tourist numbers visiting site (per annum/peak month)
3	<b>Use intensity</b>	Intensity of use in peak period (persons/hectare)
4	<b>Social impact</b>	Ratio of tourists to locals (peak period and over time)
5	<b>Development control</b>	Existence of environmental review procedure or formal controls over development of site and use densities
6	<b>Waste management</b>	Percentage of sewage from site receiving treatment (additional indicators may include structural limits of other infrastructure on site, such as water supply)
7	<b>Planning process</b>	Existence of organised regional plan for tourist destination region (including tourism component)
8	<b>Critical ecosystems</b>	Number of rare / endangered species
9	<b>Consumer satisfaction</b>	Level of satisfaction by visitors (questionnaire based)
10	<b>Local satisfaction</b>	Level of satisfaction by locals (questionnaire based)
11	<b>Tourism contribution to local economy</b>	Proportion of total economic activity generated by tourism only

Source: Adapted from WTO (1995, pp. 9).

Table 5 shows the set of indicators recommended by the English Tourism Council (ETC) for the assessment of tourism sustainability<sup>16</sup>. There are 20 indicators grouped according to the ETC's

<sup>16</sup> Information on the ETC sustainable tourism indicators were obtained from [http://destinet.ewindows.eu.org/policies\\_resources/fo1955810/English\\_Tourism\\_Council\\_National\\_Sustainable\\_Tourism\\_Indicators\\_2002](http://destinet.ewindows.eu.org/policies_resources/fo1955810/English_Tourism_Council_National_Sustainable_Tourism_Indicators_2002).

three core objectives for the management of sustainable tourism: (1) to protect and enhance the built and natural environment; (2) to support local communities and their culture; and (3) to benefit the economies of tourism destinations.

**Table 4: WTO (2004) Baseline Issues and Baseline Indicators**

	<b>Baseline Issue</b>	<b>Suggested Baseline Indicator(s)</b>
1	Local satisfaction with tourism	<ul style="list-style-type: none"> <li>• Local satisfaction level with tourism (Questionnaire)</li> </ul>
2	Effects of tourism on communities	<ul style="list-style-type: none"> <li>• Ratio of tourists to locals (average and peak period/days)</li> </ul>
		<ul style="list-style-type: none"> <li>• % who believes that tourism has helped bring new services or infrastructure (questionnaire-based)</li> <li>• Number and capacity of social services available to the community (% which are attributed to tourism)</li> </ul>
3	Sustaining tourist satisfaction	<ul style="list-style-type: none"> <li>• Level of satisfaction by visitors (questionnaire-based)</li> </ul>
		<ul style="list-style-type: none"> <li>• Perception of value for money (questionnaire-based)</li> </ul>
		<ul style="list-style-type: none"> <li>• Percentage of return visitors</li> </ul>
4	Tourism seasonality	<ul style="list-style-type: none"> <li>• Tourist arrivals by month or quarter (distribution throughout the year)</li> </ul>
		<ul style="list-style-type: none"> <li>• Occupancy rates for licensed (official) accommodation by month (peak periods relative to low season) and % of all occupancy in peak quarter or month)</li> </ul>
		<ul style="list-style-type: none"> <li>• % of business establishments open all year</li> </ul>
		<ul style="list-style-type: none"> <li>• Number and % of tourism industry jobs which are permanent or full-year (compared to temporary jobs)</li> </ul>
5	Economic benefits of tourism	<ul style="list-style-type: none"> <li>• Number of local people (and ratio men to women) employed in tourism (also ratio of tourism employment to total employment)</li> </ul>
		<ul style="list-style-type: none"> <li>• Revenues generated by tourism as % of total revenues generated in the community</li> </ul>
6	Energy management	<ul style="list-style-type: none"> <li>• Per capita consumption of energy from all sources (overall, and by tourist sector- per person day)</li> </ul>
		<ul style="list-style-type: none"> <li>• % businesses participating in energy conservation programs, or applying energy saving policy and techniques</li> </ul>
		<ul style="list-style-type: none"> <li>• % of energy consumption from renewable resources (at destinations, establishments)</li> </ul>
7	Water availability and conservation	<ul style="list-style-type: none"> <li>• Water use (total volume consumed and litres per tourist per day)</li> </ul>
		<ul style="list-style-type: none"> <li>• Water saving (% reduced, recaptured or recycled)</li> </ul>
8	Drinking water quality	<ul style="list-style-type: none"> <li>• % of tourism establishments with water treated to international potable standards</li> </ul>
		<ul style="list-style-type: none"> <li>• Frequency of water-borne diseases: number/ % of visitors reporting water-borne illnesses during their stay</li> </ul>
9	Sewage treatment (waste water management)	<ul style="list-style-type: none"> <li>• % of sewage from site receiving treatment (to primary, secondary, tertiary levels)</li> </ul>
		<ul style="list-style-type: none"> <li>• % of tourism establishments (or accommodation) on treatment system(s)</li> </ul>
10	Solid waste management	<ul style="list-style-type: none"> <li>• Waste volume produced by the destination (tonnes) by month</li> </ul>
		<ul style="list-style-type: none"> <li>• Volume of waste recycled (m3) / Total volume of waste (m3) (specify by different types)</li> </ul>
		<ul style="list-style-type: none"> <li>• Quantity of waste strewn in public areas (litter counts)</li> </ul>
11	Development control	<ul style="list-style-type: none"> <li>• Existence of a land use or development planning process, including tourism</li> </ul>
		<ul style="list-style-type: none"> <li>• % of area subject to control (density, design, etc)</li> </ul>
12	Controlling use intensity	<ul style="list-style-type: none"> <li>• Total number of tourist arrivals</li> </ul>
		<ul style="list-style-type: none"> <li>• Number of tourists per square metre of the site (e.g. at attractions), per square kilometre of the destination, - mean number/peak period average</li> </ul>

Source: Adapted from WTO (2004, pp. 244-245).

**Table 5: English Tourism Council National Sustainable Tourism Indicators (2002)**

INDICATOR		MEASURE
<b>Group 1: Protect &amp; enhance the built and natural environment</b>		
1.	Number of businesses signed up to environmental management schemes	Number of businesses with e.g. David Bellamy Conservation Award, ISO14001, EMAS, GTBS, Green Lanterns etc.
2.	Number of English beaches with a Blue Flag and a Seaside Award.	Number of beaches, reported annually
3.	Carbon dioxide savings made by the hotel industry.	CO2 savings by hotels as a result of installing energy efficiency measures.
4.	Transport used on England holiday trips by UK residents.	% of trips by mode of transport (Public, private car, hired car, other)
5.	Local authorities with Tourism Action Plans.	% of Local Authorities with Tourism Action Plans
6.	Ratio of the land and historic buildings protected by national agencies against the amount of money spent on protection of these assets.	Ratio
<b>Group 2: Support local communities and their culture</b>		
7a.	Workforce employed in tourism.	% of total workforce
7b.	Average hourly earnings in tourism versus the average national hourly wage.	Ratio
8.	Local authorities with LA 21 strategies that include sustainable tourism elements.	% of Local Authorities
9.	Audit of community perceptions of tourism	No further information available
10.	English adults not taking a holiday of four nights or more.	% of English adults
11.	Accommodation registered as meeting National Accessible Scheme criteria for disabled people.	Percentage
12.	Local authorities with tourism strategies that incorporate cultural and heritage considerations.	Percentage of Local Authorities
<b>Group 3: Benefit the economies of tourism destinations</b>		
13.	Tourism accommodation enterprises in the tourism sector participating in Welcome Host training.	Number of tourism accommodation enterprises
14.	Accommodation registered with ETC, AA or RAC Quality Assurance Scheme.	Percentage of accommodation
15.	Extent of visitor satisfaction.	Survey with 6 point scale from 'not at all' to 'completely' satisfied.
16.	Domestic tourism spend by region.	No further information available
17.	Contribution of English tourism to UK economy.	Tourism contribution as a percentage of UK GDP
18.	Composition of tourism sector by business turnover	No further information available
19.	Trips to England by UK residents.	Total number of trips per month
20.	Net domestic holiday spend by UK tourists.	(English domestic holiday spend + Spend by other UK residents in England + Overseas' visitors spend in England) – Spend abroad on tourism by English residents = Net domestic inflow/outflow over time (£m)

Source: Data downloaded from [http://destinet.ewindows.eu.org/policies\\_resources/fo1955810/English\\_Tourism\\_Council\\_NationalSustainable\\_Tourism\\_Indicators\\_2002](http://destinet.ewindows.eu.org/policies_resources/fo1955810/English_Tourism_Council_NationalSustainable_Tourism_Indicators_2002).

**Table 6: Spanish System of Environmental Tourism Indicators (2003)**

INDICATOR		MEASURE
1.	Average number of bedspaces in tourist accommodations per establishment	No. bedspaces/ total no. establishments
2.	Annual distribution of tourism inflow	Annual distribution by Autonomous Community
3.	Total annual tourism expenditure	Total annual tourism expenditure (Euro millions) by Autonomous Community
4.	Percentage employment in hotel and restaurant sector	No. employees in the sector / total no. employees
5.	Percentage of tourism population equivalent (PTE)	$[(\text{Total no. tourists (inc. Spanish \& 2nd homes)} / 365) / \text{Total present population}] \times 100 = \text{PTE}$
6.	Collective accommodation establishments	Number per resident
7.	Potential pressure over natural habitats	No further information
8.	Tourist density in urban areas	PTE / Total urban area (ha)
9.	Tourist anthropisation factor	No further information
10.	Distance from airports to urban inhabited areas	Distance in km
11.	Presence of second-dwellings	No. second dwellings / each 100ha of municipal area
12.	Visitors to places of cultural and historical interest	No further information
13.	Interventions carried out by SEPRONA over tourism and sport activities in natural environments	No further information
14.	Equipped beaches	No. of equipped beaches per km coastline
15.	Moorings offered in sport harbours	No. moorings per km of coastline
16.	Tourism urban waste generation	$(\text{Annual waste generation} / \text{total present population}) \times \text{PTE}$
17.	Tourist consumption of urban drinking water supplies	No further information
18.	Electric power consumption due to tourism	No further information
19.	Modal distribution of tourist arrivals	No further information
20.	Degree of naturality of the environment	% of area of Sites of Community Interest over total Autonomous Community area
21.	Continental bathing water quality	No further information
22.	Marine bathing water quality	No further information
23.	Wastewater purification capacity per tourism population equivalent in main tourist towns	No further information
24.	Percentage of protected areas having controlled accesses and itineraries	No further information
25.	Hotel establishments certified according to environmental management regulation systems	No further information
26.	Selective collection of containers generated by tourism activities	No further information
27.	Incorporation of environmental criteria to tourism and territorial planning and legislation	No further information

Source: Information obtained from OECD (2005, pp 85-100).

Table 6 gives the set of sustainable development indicators developed by the OECD for Spain and discussed in OECD (2005, pp. 85-100). However, these 27 indicators are primary for evaluating the effects of tourism on the environment.

It is also suggested that part of the process in developing indicators of sustainable tourism should include an assessment of the destination's strengths, weaknesses, opportunities and threats (SWOT). A SWOT analysis would give a concise picture of the assets and short-comings of the destination's tourism industry and reveal the opportunities and challenges it faces, thus helping in the decision on what type of indicators will be appropriate in monitoring trends and progress towards achieving sustainability in tourism (WTO, 2004, pp.34). Table 7-shows the kind of structure and issues the SWOT analysis will address.

**Table 7: Guidelines for a SWOT Analysis**

<b>Strengths</b>	<p><b>Destination assets:</b> local, complementary attractions, natural and cultural assets, infrastructure and support services;  <b>Community support:</b> active participation, common objectives;  <b>Workforce:</b> availability, skill levels;  <b>Management capacity:</b> skill levels, funding available.</p>
<b>Opportunities</b>	<p><b>Economic opportunities:</b> for businesses, employment;  <b>Product and market opportunities:</b> unique, authentic products, product market match, niche markets;  <b>Community enhancement:</b> socio-cultural benefits;  <b>Conservation:</b> tourism's contribution to natural and cultural heritage.</p>
<b>Weaknesses</b>	<p><b>Lack of tourist appeal:</b> few significant or unique tourism attractions, poor accessibility, lack of infrastructure;  <b>No vision:</b> uncertainties in direction, lack of understanding or cohesion in the destination community;  <b>Preparedness:</b> lack of plans, training needs, funds, alternative priorities.</p>
<b>Threats</b>	<p><b>Environmental impacts:</b> disturbance of loss of habitat, increased use of (and constraints) resources, waste;  <b>Cultural degradation:</b> daily lives, customs and practices disrupted;  <b>Poor quality:</b> tourist dissatisfaction, lack of standards;  <b>External threats:</b> regulations, travel security, environmental impacts</p>

Source: Adapted from WTO (2004, pp. 34).

In the next section, we will attempt to assess the sustainability of tourism development in Barbados with the aid of a sufficient number of the above indicators. What is deemed sufficient will be guided by data available for the computation of the indicators and the issues that are of concern to tourism development on the island; some of these issues have already been noted earlier.

### **3. The Potential for Sustainable Tourism Development in Barbados**

As discussed earlier, the tourism industry is very important to Barbados, not only as the main economic activity and source of employment but also as a major catalyst in promoting infrastructure development, greater socio-culture awareness and an appreciation of the need to take care of and maintain the environment. However, Barbados, being a small island with limited resources and fragile ecosystems (including beaches, coastal wetlands and marine ecosystems) is particularly vulnerable to the impacts of tourism. In addition, the small size of the local population relative to the increasing number of visitors has heightened concerns about the social impacts of tourism. For example, local residents have complained of loss of access to some beaches and dislocation from areas of economic activity. Thus, the question arises as to whether the industry is on a sustainable development path or whether its long-term viability would require a different approach to the development.

The government of Barbados has recognised that in order for tourism to continue to play a major role in promoting economic, social and cultural development as well as environmental conservation, there needs to be a “proactive approach by all industry partners to develop, market and manage the industry in the most responsible manner so as to create a sustained competitive advantage”(Barbados Ministry of Tourism, 2001, pp. ii). In fact, the government of Barbados also argues that the current emphasis on sustainable tourism development comes from the recognition that “many of the practices of local tourism stakeholders in the past were either not economically, socially or environmentally sustainable. Consequently, the conclusion has been drawn that these practices must be altered if Barbados is to have a real and sustained future in tourism”(Barbados Ministry of Tourism, 2001, pp. ii). Moreover, there is a view among those in the industry that visitors to the island “are no longer satisfied that they are getting value for money” and that “if Barbados is to continue to capitalise on its market status it must improve the quality of its product, that is, the entire vacation experience. This includes improvement in the range and quantum of services offered to customers, and ensuring a culture of excellence in all aspects of the vacation experience” (Barbados Ministry of Finance and Economic Affairs, 2005, pp. 94).

This recognition of the need for Barbados to pursue sustainable tourism development has led the Ministry of Tourism to issue a 'Green Paper on Sustainable Tourism in Barbados', outlining broad guidelines for the sustainable development of the tourism industry in Barbados in the short to medium term. The document also states that the Barbados National Tourism Policy objective is:

*To pursue sustainable tourism development through improvement and optimal use of our land, human resources and services, and through the conservation and managed use of our cultural, built and natural heritage, in order to ensure a product of the highest quality whilst improving the life and economic development of the people of Barbados (Barbados Ministry of Tourism, 2001, pp. ii).*

The *Green Paper on Sustainable Tourism Development* gives very broad policy objectives as to what sustainable tourism development should entail and arises from discussions between various tourism officials, both in the public and private sector. In this regard, it has been quite useful in providing direction and a long-term vision for the industry. Indeed, it led to the 2002 Tourism Development Act, which seeks to encourage the development of the tourism industry by providing duty free concessions and income tax concessions for approved tourism projects and certain tourism entities and for other related matters.

However, the *Green Paper on Sustainable Tourism Development* does not attempt to assess the extent of tourism sustainability in Barbados which, as discussed in the preceding chapter, should be seen as a necessary and important part in the formulation and implementation of policy towards sustainable tourism development. In fact, there is no study known to the authors that explicitly deals with the question of whether tourism development in Barbados is currently sustainable or not. This reflects the fact that the concepts and issues of sustainable tourism development are still relatively new to Barbados and not clearly understood by many in the industry. Barbados is part of the United Nations Testing Programme on Sustainable Development Indicators and has committed to the development of a National Indicators Programme, which would seek to define national indicators for all policy areas, including sustainable tourism. Presently, the programme has reached the data collection stage in terms of trying to discover the level of existing available information and formats.

The indicators are grouped under the headings of economic, social, environmental and institutional sustainability, based on the analysis of the previous sections. In particular, we bear in mind that any proposed indicators should be (a) easy to understand, (b) be significant to the destination and (c) data collection should not be time consuming or expensive. Thus, we will give a description of each indicator used as well as its significance and data sources available.

The approach focuses mainly on quantitative indicators which can be computed from existing data. However, use is made of qualitative indicators, where possible, with heavy reliance on the Barbados Visitor Exit Survey conducted by the CTO for the Barbados Ministry of Tourism. This survey has been conducted on a quarterly basis since July 1995 via using a questionnaire at the island's only airport and covers a wide cross-section of departing passengers. Only one person per family or spending party is required to complete a questionnaire on the party's behalf. Thus, the number of visitors actually covered by the survey is significantly higher than the number of completed questionnaires.

The advantage of using this survey, as opposed to conducting a new survey, is that the methodology and broad questionnaire structure used by CTO are consistent with the recommendations of the WTO. Moreover, the use of a common approach in terms of data collection and processing greatly facilitates the comparison of data over time, which allows for the identification of trends in the indicators.

The quarterly surveys are aggregated into an annual survey, providing information on over 20,000 departing visitors for each year since 1996, which in most cases is almost 5 percent of total arrivals (see table below). Efforts are also made where possible to obtain official commentary on the issues being discussed.

**Table 8: Coverage of Caribbean Tourism Organisation's Surveys**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
No. Respondents	22,628	26,059	21,4563	24,588	18,845	18,754	18,701	21,276	23,781	23,568
% of Total Arrivals	5.1	5.5	4.2	4.8	3.5	3.7	3.8	4.0	4.3	4.3

Source: Caribbean Tourism Organisation

### 3.1 SWOT analysis of the Barbados tourism Industry

As noted in a preceding section, in analysing sustainable tourism development it is important to understand the different factors (opportunities, constraints, challenges) that can, and often do, have major influences on the industry. The key factors that impact on the industry are summarised in Table 9 below, drawing heavily from information in section 7 of the *Green Paper on the Sustainable Development of Tourism in Barbados* and on Appendix II of the *National Strategic Plan 2005-2025*.

**Table 9: SWOT Analysis of Barbados' Tourism Industry**

Strengths	Weaknesses	Opportunities	Threats
A diverse product;	Insufficient focus on service;	The ability to cater to changing travellers needs;	The emergence of competing destinations in Asia and the Pacific,
Year-round activities;	Relatively high operating costs;	The possible development of work exchange programmes with other destinations;	The possibility of natural disasters
Excellent transportation systems;	Physically run-down accommodation plants in some areas	Growing interest in heritage and ancestral linkages to Africa;	Dependence on foreign owned airlines;
Tourism and hospitality training at vocational and tertiary levels; a stable currency	Incidence of garbage pollution  Inadequate foreign language skills in the work force;	The introduction of enhanced legislative and regulatory framework;	Increased crime levels;
A mature destination;	Little or no participation of local communities in planning and development;	The possibility of the development of stronger inter-sectoral linkages with the productive and services sectors;	Globalisation of trade;
Established tourism institutions and organisations;	No clearly stated vision;  Limited national focus on intra-regional tourism;	Being part of the diversity offered by the Caribbean islands.	Negative attitudes and behaviour by some segments of the local populace;
A stable political climate;	Inadequate access to some activities and beaches;		The development of tourism in many source markets.
Excellent infrastructure and utilities.	General lack of awareness and understanding of the tourism industry and its contribution to national development.		

Source: Chapter 2 (sections 2.4 and 2.5) of this dissertation; Section 7 of *Green Paper on the Sustainable Development of Tourism in Barbados*, pp. 17-19; and, the *National Strategic Plan 2005-2025*, appendix II, pp. 91-103.

### 3.2 Economic Sustainability of Tourism

Economic sustainability of tourism is mainly about ensuring that tourism grows at a rate that is in line with the destination's ability to handle the increased influx of visitors without visitors becoming dissatisfied with their vacation experience. Therefore, it is not sufficient that tourism is

a major contributor to GDP and earnings. If the rate at which tourism is contributing is declining (perhaps because of a drop in the number of repeat visitors or maybe visitors are spending less because they are unhappy with the quality of service or various attractions offered), then tourism may not be sustainable as the rate at which economic benefits are accruing to the destination is slowing. Thus, what really matters for economic sustainability of tourism is that the visitor is satisfied with his or her experience, returns periodically and speaks favourably about the destination. The key issues are therefore whether or not tourist satisfaction is being sustained and whether or not economic benefits from tourism are accruing to the destination (see *baseline issues no. 3 and 5* in Table 4). Since the benefits of tourism to the Barbados economy have already been discussed, the next section concentrates on tourist satisfaction.

### *3.2.1 Sustaining Tourist Satisfaction*

Tourist satisfaction is an important indicator of the long-term economic viability of a destination. If tourists are not satisfied with the experience, they will not return and will not recommend the destination to others. Tourist satisfaction is influenced by a number of factors, including the various attractions of the destination, the quality of services (including the friendliness of the locals), the quality of accommodation (cleanliness), the quality of water and food, and the extent to which they feel safe and secure (strongly influenced by crime and acts of hostility).

The most direct way to assess the level of tourist satisfaction is to ask the tourist. Such data are normally obtained through a survey of visitors leaving the island, and for this we rely on the CTO exit survey described above.

#### *3.2.1.1 Indicator 1: Perception of value for money*

This measure questions the tourist as to whether or not they felt that they had received good value for money spent on tourism services. The responses obtained are used not only to gauge satisfaction or dissatisfaction but also to act as an early warning indicator of emerging problems or issues which have caused changes in visitor satisfaction levels.

The results in Table 10 suggest that on average, visitors felt that they had received good value for money. Moreover, this rating shows very little change over the years. In addition, none of the

categories were rated as below average value for money, while accommodation received the highest value for money rating over the period. Thus, this measure suggests that visitors' satisfaction levels are above average to good and therefore they are likely to revisit the island and recommend it to others. However, since none of the scores are higher than 8 on a scale of 10, there is room for improvement in what is being offered to the visitors, particularly in the area of transportation (taxis and hire cars), which is currently unregulated with respect to fares charged.

**Table 10: Perception of Value for Money**  
(on a scale of 0 to 10)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Overall cost of Visit	6.9	6.9	6.5	6.7	6.5	6.6	7.0	7.0	6.9	6.9
Accommodation	7.2	7.3	7.3	7.3	7.4	7.5	7.4	7.6	7.4	7.4
Meals and Drinks	6.6	6.3	6.4	6.5	6.5	6.3	6.7	6.7	6.8	6.8
Taxis/Hire Cars	6.3	6.2	6.4	6.4	6.4	6.3	6.6	6.6	6.7	6.7
	10 = Excellent	7.5 = Good	5 = Average	2.5 = Poor	0 = Very Poor					

Source: Data obtained directly from CTO on September 01, 2006.

### 3.2.1.2 Indicator 2: Percentage of Repeat Visits

The percentage of return visitors is also suggested as a leading gauge of tourists' satisfaction. The return of visitors indicates that they were happy with their experiences in previous visits (see WTO, 2004, pp. 88). Thus, repeat visitation is considered a positive indication of tourist satisfaction. This type of tourist is most likely to revisit the destination time and time again, and also recommend the destination to friends and relatives (Oppermann, 1998; Oppermann, 2000; Pritchard, 2003).

**Table 11: Frequency of Repeat Visits to Barbados**  
(percent of total visitors)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
First Visit	62.7	61.5	62.4	61.3	62.3	60.4	58.0	58.9	56.3	53.1
Second Visit	10.7	11.4	11.8	12.1	12.1	13.3	13.0	12.1	12.1	12.5
Third Visit	6.7	6.7	6.2	6.2	6.1	6.2	7.7	7.0	7.5	7.5
Four or more Visits	19.9	20.4	19.6	20.4	19.5	20.2	21.3	22.0	24.1	26.9
Total Returnees	37.3	38.5	37.6	38.7	37.7	39.7	42.0	41.1	43.7	46.9

Source: Data obtained directly from CTO on September 01, 2006.

Table 11 shows the frequency of visitations to Barbados. In 2005 almost half (46.9 percent) of all visitors to the island had visited before. Moreover, this ratio has been steadily rising over the years. In addition, for each of the years shown, more than half of the returnees had visited Barbados at least four times before. Indeed, the relatively high percentage of returnees to Barbados and the fact that this percentage has been rising, would suggest that visitors to Barbados are generally satisfy with the experiences that are offered.

Examining the number of returnees by purpose of visit is also useful in gauging the extent of visitor satisfaction and leads to direct implications for policy. However, we could only conduct such an analysis for a single year because the categories in the survey changed over the years. In this regard, we used the most recent data which is 2005 (Table 12). The evidence in Table 12 suggests that where there is likely to be a personal or business connection between tourists and locals or between tourists and events in the environment. Where such local connections or relationships could be formed, the chances of repeat visitations are much higher. For example, of all visitors to see family or relatives, almost three-quarters have been to the island before and for the same reason. Similarly, over 60 percent of tourists on business trips or visiting to take part in golf tournaments or in the crop-over festival have previously visited Barbados. Thus, visiting for such purposes appear to provide a greater level of satisfaction than if the tourist came strictly for the purpose of vacationing, to attend a wedding or on a honeymoon. Perhaps this is because the local connection the visitor has or subsequently establishes helps to ensure that he or she has a pleasant experience. Indeed, it is quite common in Barbadian culture for locals to go the extra mile to ensure visitors with which they have a personal or business connection enjoy their visit through participation in a variety of activities.

**Table 12: Frequency of Visits to Barbados by Purpose of Visit (percent of total visitors in 2005)**

	Vacation	Business Only	Vacation/ Business	Friends/ Relatives	Honey-moon	Wedding	Meeting/ Incentives	Golf	Festival	Sports Meet	Other
First Visit	56.8	34.3	45.3	28.1	87.7	70.1	45.6	37.5	34.4	52	42.4
Second Visit	12.8	14.3	12.9	12.8	5	13.4	11.5	0	13.4	6.3	12.6
Third Visit	7	11.1	8.3	9.7	1.1	5.1	9.7	12.5	9.5	11	10.8
Four or more Visits	23.4	40.3	33.5	49.4	6.2	11.4	33.2	50	42.7	30.7	34.2
Total Returnees	43.2	65.7	54.7	71.9	12.3	29.9	54.4	62.5	65.6	48	57.6

Source: Data obtained directly from CTO on September 01, 2006.

### 3.2.1.3 *Indicator 3: Willingness to return or recommend a friend*

Tourists were asked whether or not they would consider returning to Barbados or even recommending it to a friend. The results in Table 13 indicate that over the years more than half of visitors to Barbados were definite in their intention to return to the island or recommend it to a friend. More importantly, this ratio has been rising since 2001 and when combined with those who were less definite but still positive in their intentions, the ratio currently exceeds 90 percent. Again, this is a positive indication for the level of visitor satisfaction.

**Table 13: Willingness to Return to Barbados or Recommend it to a Friend (percent of total visitors)**

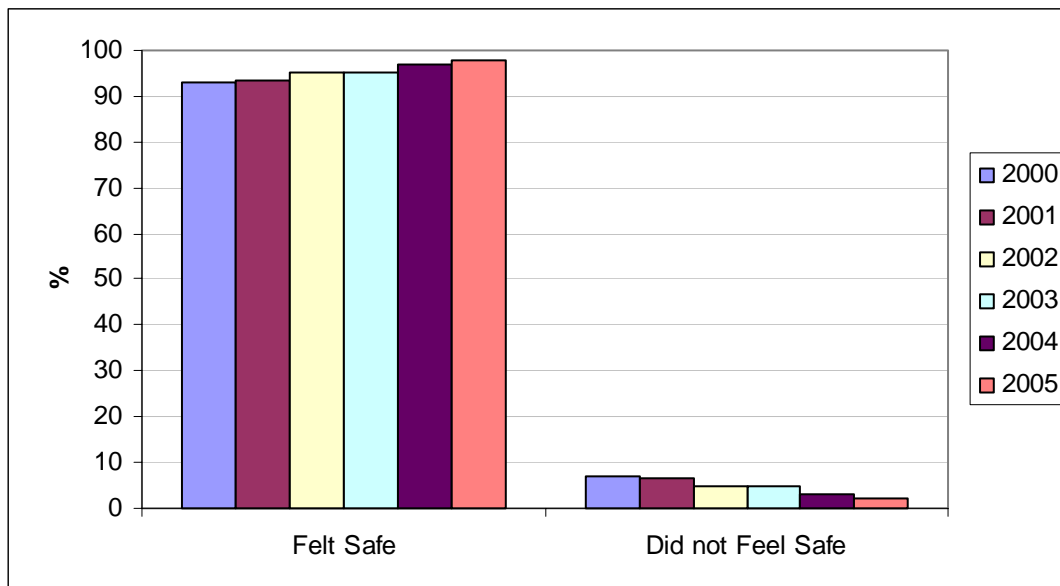
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Definitely	55.4	54.4	62.8	53.5	53.6	53.4	58.0	59.7	59.8	60.5
Probably	33.8	35.1	29.5	34.7	33.8	35.0	32.6	30.4	29.9	31.0
Probably Not	9.5	8.5	5.9	9.8	10.2	9.8	7.7	8.3	8.7	7.0
Definitely Not	1.2	2.0	1.9	1.9	2.4	1.9	1.7	1.5	1.6	1.5

Source: Data obtained directly from CTO on September 01, 2006

### 3.2.1.4 *Indicator 4: Visitor security*

The visitor's perception of safety at the destination highly affects their level of satisfaction and is particularly important for tourism. Incidences of crime, harassment, sickness or any act which the tourist perceives to be hostile or dangerous can ruin a trip. Tourists who have been the unfortunate victims of such incidents are likely to inform others of their experiences, and this could significantly affect the decisions of others on whether to visit a destination, and hamper the transfer of economic benefits of tourism to the local economy. In addition, ensuring good public security is a major factor in promoting a good image for a destination (WTO, 2004). Barbados has one of the lowest crime rates in the Caribbean region and has over the years been marketed as a safe destination and is indeed justified in doing so as can be seen from Figure 4-1. Over the years, on average more than 90 percent of visitors to the island felt safe during their trip. This is certainly a positive factor in favour of tourism in Barbados and would most certainly be positively related to sustaining visitors' satisfaction.

**Figure 1: Feeling of Safety in Barbados**  
(percent of total respondents)



Source: Data obtained directly from CTO on September 01, 2006

### 3.2.1.5 Indicator 5: Product rating

Visitors were also asked to rate the various components of the tourism product on a scale of 0 to 10 (where 0 represent a product of very poor quality; and, 10 represents a product of excellent quality) see Table 14. The tourist opinion of the quality of the tourism product and its components is a direct indication of the level of satisfaction they derive from it. In this regard, beaches were rated highest of all the product components, receiving a rating of ‘excellent’ in every year of the survey. Water sports, accommodation, restaurants and tours/excursions have all received high scores as well. Generally, the tourism product offered by Barbados has over the years been highly complimented by tourists and this suggests that visitors’ satisfaction is fairly high.

Another interesting point borne out in the data is that almost every component, with the exception of range and price of duty-free items, has sustained or increased its rating slightly over the last five years and this implies that not only is the level of visitors’ satisfaction high but it is also rising. It therefore appears that the tourism product components are of sufficient quality to sustain visitors’ satisfaction. It should however be noted that as there are different tourists giving ratings from year to year, slight variations in rating are not necessarily of significance.

**Table 14: Visitors' Rating of Barbados Tourism Product Components**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Airline Connections	7.2	7.2	7.2	7.3	7.4	7.5	7.4	7.4	7.4	7.4
Immigration	7.1	7	6.7	6.6	6	6	6.8	6.7	6.9	6.8
Customs	7.3	7.2	7	6.9	6.5	6.5	6.8	7	7.1	7.1
Accommodation	8.1	7.9	7.8	7.8	7.8	7.9	7.9	7.9	8	7.9
Restaurants	7.8	7.6	7.6	7.7	7.6	7.7	7.7	7.9	8	7.9
Night Life	6.8	6.8	6.7	6.8	6.8	6.7	6.9	7.1	7.2	7.2
Handicrafts/Souvenirs	6.3	6.4	6.3	6.3	6.3	6.4	6.5	6.6	6.7	6.7
Range of Duty-Free Goods	6.9	6.8	6.6	6.6	6.4	6.4	6.4	6.5	6.6	6.4
Price of Duty-Free Goods	6.2	6.1	6	6	5.8	5.9	6	6.2	6.5	6.3
Sales Personnel	7	6.9	6.8	6.8	6.7	6.7	6.8	6.8	6.9	6.8
Shopping	6.7	6.6	6.4	6.4	6.3	6.3	6.5	6.5	6.7	6.6
Beaches	8.9	8.9	8.9	8.8	8.8	9	9	9.1	9.1	9
Water Sports	8.1	8.1	7.9	8	8	8.1	8.2	8.2	8.3	8.1
Environment/ Cleanliness	6.8	6.6	6.4	6.4	6.4	6.8	6.9	6.9	7.1	6.9
Taxis/Hired Cars	7.1	7	7.1	7.1	7	7.1	7.2	7.2	7.4	7.4
Tours/ Excursions	7.4	7.4	7.4	7.4	7.4	7.4	7.6	7.6	7.7	7.6
Other	7.5	6.5	6.8	6.4	6.1	6.7	6.7	7.3	6.7	6.9

Source: Data obtained directly from CTO on September 01, 2006

Overall, the findings from the various measures suggest that visitors are generally satisfied with their experiences in Barbados. Moreover, it appears that their levels of satisfaction may have risen slightly over the years in some categories. However, there is also room to improve visitors' satisfaction.

### 3.3 Social Sustainability of Tourism

As discussed in section 2, social sustainability of tourism is about ensuring that tourism develops in a manner that does not cause social stress or disharmony. This may be indicated by arrival numbers and tourist density relative to the population or area (socio-cultural carrying capacity). We are also interested in the contribution tourism makes to employment since this directly affects society by providing opportunities for persons to earn a living. We also wanted to examine local satisfaction with tourism as this is also important for sustainability (WTO, 2004). However, this should be done through a yearly questionnaire and no such has been done for Barbados.

### 3.3.1 Socio-Cultural Carrying Capacity

Capacity measures frequently used in the literature include the “penetration ratio” (the annual number of tourist-days divided by resident-days) and the (“density ratio” the annual number of tourist-days divided by the total land area of the destination) (Thomas et al., 2005, pp. 16).

#### 3.3.1.1 Indicator 6: Tourism density ratio

Tourist density ratio (*TDR*) gives the number of tourists per square kilometre and is an attempt to show the density of tourists in the country at any one time on average. It is calculated as (see CTO, 2003, pp. 251):

$$\frac{\text{Average length of stay} \times \text{number of visitor}}{365 \times \text{area in square kilometers}}$$

As noted above, there may be a relationship between tourism density and the growth of resentment towards tourists. The inference here is that tourism density is an indicator of the degree of confrontation between tourists and indigenous population and that this confrontation gives rise to the resentment of tourists.

**Table 15: Tourism Density Ratio for Barbados (1992-2005)**

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
26	28	30	31	30	31	36	33	35	33	35	34	35	35

Source: Data obtained from CTO (2005) and directly from CTO

Table 15 shows the *TDR* for Barbados. It suggests that there were approximately 26 tourists per square kilometre in 1992 and this ratio has risen to 35 in 2005. Thus, tourist density in Barbados has increased significantly over the years. It is difficult to say whether or not 35 tourists per square kilometres are too many and generating negative social effects. However, placing a maximum number on a carrying capacity ratio (and the tourism density ratio is in fact measuring social carrying capacity) is not recommended. In this regard, we compare the *TDR* ratio for Barbados with that of a number of other Caribbean countries over a two-year period in order to have an idea of what is an average *TDR* for the region (Table 15).

**Table 15: Tourism Density Ratio for Selected Caribbean Countries (2003 & 2004)**

Destination	Anguilla	Aruba	Bahamas	Barbados	Bermuda	Bonaire	British Virgin Islands	Cayman Islands	Curacao	Dominica	Dominican Rep.	Grenada	Jamaica	Martinique	Puerto Rico	St. Lucia	St. Vincent & Gren.	Turks & Caicos	US Virgin Islands	Average
2003	12	74	2	34	94	5	54	18	11	2	2	8	3	16	n.a	10	7	8	18	21.0
2004	11	81	2	35	82	5	52	16	12	3	2	9	3	16	3	11	4	8	19	19.7

Source: Caribbean Tourism Organisation

Table 15 shows Barbados as having one of the highest *TDR* in the region, only lower than that of Aruba, Bermuda and the British Virgin Islands but significantly higher than the average for the region. Thus, there are more tourists-days spent in Barbados per square kilometre of land area than any of the other 18 islands examined. Therefore, Barbados' *TDR* is a cause for concern, as Barbados appears to face more visitor "pressure" per square kilometre than most of the other islands. It should however be noted that one of the main limitations of the *TDR* is the fact that tourism activity tends to be concentrated in specific geographical areas like towns and along coast lines and this is certainly the case with Barbados.

### 3.3.1.2 Indicator 7: Tourist penetration ratio

The tourist penetration ratio (*TPR*) is considered a more rigorous indicator as it attempts to avoid the geographical limitation of the tourist density ratio by expressing density as the average number of tourists per thousand of the population in the country at any one time (CTO, 2003):

$$\frac{\text{Average length of stay} \times \text{number of visitor}}{365 \times \text{mid - year population}}$$

The *TPR* for Barbados shows a similar picture to the *TDR*, being significantly higher in 2005 than it was in 1992 (Table 16). The *TPR* suggests that in 1992 there were on average 43 tourists per 1000 of the local population. However, when compared to the region (Table 17) Barbados ranks 10<sup>th</sup> out of the 19 countries (in terms of the lowest *TPR*) and, more importantly, its *TPR* is near the regional average. This suggests that the number of tourists visiting Barbados relative to the number of residents is about the regional average. However, a wider study of 29 Caribbean

countries using arrivals over population ranked Barbados much lower at 18 of 29 countries – See Craigwell and Whitehall (2005).

**Table 16: Tourism Penetration Ratio for Barbados (1992-2005)**

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
43	46	50	50	50	51	59	54	56	52	55	69	69	68

Source: Caribbean Tourism Organisation

**Table 17: Tourism Penetration Ratio for Selected Caribbean Countries**

Destination	Anguilla	Aruba	Bahamas	Barbados	Bermuda	Bonaire	British Virgin Islands	Cayman Islands	Curacao	Dominica	Dominican Rep.	Grenada	Jamaica	Martinique	Puerto Rico	St. Lucia	St. Vincent & Gren.	Turks & Caicos	US Virgin Islands	Average
<b>2003</b>	85	143	77	69	110	97	389	113	31	23	9	26	13	n.a	n.a	39	23	145	57	85.2
<b>2004</b>	89	155	77	69	115	99	360	120	35	28	10	29	14	50	7	43	15	150	57	80.1

Source: Caribbean Tourism Organisation

Therefore, while the TDR indicates significant pressure per square kilometre, the TPR suggests there is pressure with respect to the population, but it is not necessarily critical. Together these indicators seem to suggest that the influx of tourists may be placing a strain on the resources of the country but less so on the population of the country. Thus, there may be more of an environmental issue than a social one. This conclusion is supported by the Barbados Tourism Authority which acknowledges that the carrying capacity of some beaches and reefs especially on the south and west coast is under threat due, in part, to the concentration of both tourist and local populations in these areas. Additionally, anchoring shipping mainly for sailing vessels has contributed to the degradation in some areas particularly because of solid waste disposal. These issues will be discussed further in the environmental sustainability section.

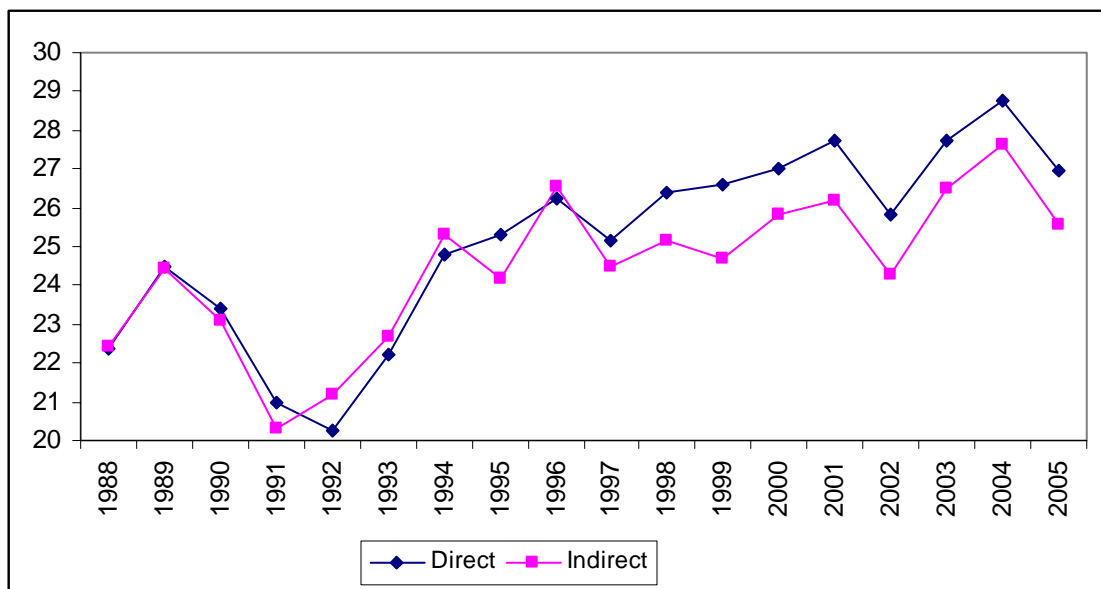
### 3.3.2 *Tourism related employment*

Tourism related employment reflects the importance of tourism to the labour market and is considered an indicator of social sustainability.

### 3.3.2.1 Indicator 8: Direct and indirect employment from tourism

Figure 2 shows the number of jobs that depend directly and indirectly on the tourism sector. Since 1992 the number of person earning a living from tourism has been rising. In 1992, 20,269 persons were directly employed in accommodation establishments and restaurants, while another 21,202 were employed in tourism related areas, which meant that 46.1 percent of all jobs in Barbados were tourism related. By 2005 the number employed directly in the industry had risen to 26,944 and those employed indirectly expanded to 25,565, bringing the total tourism related employment to 52,509 or 45.7 percent of total employment. Moreover, WTTC (2006, pp. 12) forecasts that by 2016, the tourism sector will provide 82,000 jobs, 56.5 percent of total employment or 1 in every 1.8 jobs.

**Figure 2: Barbados Tourism Employment ('000s of jobs)**



Source: Table II of the Central Bank of Barbados Annual Statistical Digest (2005, 2000) and WTTC (2006, pp.20).

Thus, the tourism industry has been, still is and will continue to be a significant source of employment for Barbadians. By doing so, the industry is helping to improve the living standards of a large proportion of the population. Moreover, since most tourism-related jobs tend to be of the unskilled or semi-skilled variety, the industry plays a vital role in reducing poverty. This is a positive indication that the industry is contributing to society and hence is socially sustainable.

### 3.4 Environmental Sustainability of Tourism

Tourism and its supporting infrastructure are likely to have the greatest impact on the environment, particularly on the marine and coastal ecosystems as well as water resources. The industry also impacts on the environment in the areas of waste generation, physical damage to corals from divers and from boat anchors, as well as sand compaction from the heavy usage of beaches by tourists and vehicles. The construction of tourism facilities (for example, golf courses) in ecologically sensitive areas is also a concern as is the usage of potable water. In fact, as discussed earlier, a tourist uses significantly more water than the average Barbadian.

#### 3.4.1 Indicator 9: Solid waste management

Tourism generates substantial amounts of solid waste and this has direct and indirect impacts on the environment. This problem has special significance for Barbados owing to the difficulty that the island faces in finding places to construct solid waste disposal facilities and because it is too small to be able to support economically viable re-cycling programs (Vlugman, 1994). It is estimated that each person generates approximately 0.9kg of solid waste per day and though it is difficult to get estimates that relate to tourism, at the national level it translates into an estimated 450 tonnes per day or 163,880 tonnes of solid waste per year<sup>17</sup>. There is some debate concerning the potential threats that this large amount of waste could pose to the environment if not adequately disposed of.

Barbados currently uses landfill technology for the disposal of solid waste. Very little is done in the areas of large scale recycling, composting or incineration. Thus, the majority of waste is disposed of at the landfill. However, landfills can be a threat to both ground water quality and marine coastal water quality through generation of leachate<sup>18</sup>. Leachate is toxic and is capable of impacting the near-shore marine flora and fauna. Additionally, it can affect human health through ingestion if the leachate gets into potable ground water or surface water resources. Over

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<sup>17</sup> Data obtained from the Government of Barbados Waste Management website at <http://www.solid.gov.bb>

<sup>18</sup> Leachate is formed when water passes through the waste in the landfill cell. The precipitation can be from rain or the waste itself. As the liquid moves through the landfill many organic and inorganic compounds, like heavy metals, are transported in the leachate. This moves to the base of the landfill cell and collects ([www.foe.org/site1/ptp/chapter3.html](http://www.foe.org/site1/ptp/chapter3.html)). How the landfill has been constructed determines whether the leachate pollutes groundwater. In landfill sites which have been created recently, liners are present and so this greatly limits the leachate leaking and the only way it will leave the cell is if the liner tears.

the years problems such as fires, offensive odours and concerns about ground water pollution have generated public discussions over the operation and management of the island's main landfill (Mangrove Pond Landfill) and this has contributed to the construction of a new national Landfill at Greenland. While the new landfill is not yet operational, the decision of the authorities to address the issue is notable.

#### *3.4.2 Indicator 10: Sewage treatment and wastewater management*

In Barbados, the location of hotels and related tourism properties mainly in the coastal belt has contributed significantly to the degradation of coastal water quality and ecosystems primarily through the generation of liquid waste, raw sewage, the presence of increasing quantities of oil and other waste from recreational vehicles (including cruise ships) along with herbicides, pesticides, and fertilisers from resort landscaping and golf course management. The increased percentage of concreted areas, roads and other impervious surfaces normally associated with hotel and resort development multiplies the level of rainwater runoff to coastal areas. Being so close to the sea, the water table beneath these properties is in many cases less than two metres deep, so many disposal systems do not function efficiently<sup>19</sup>. There is also little time for the harmful chemicals and bacteria in the wastewater to degrade before this water reaches the sea.

Concerns over the environmental impact that this was having along the south and the west coast of the island triggered the development of the Bridgetown sewage treatment plant and the recently constructed sewage treatment facility along the south coast (launched in 2004). With this system, sewage is to be piped from a 12 kilometre strip of the southern coastline extending about 500 metres inland, to undergo primary treatment before being discharged 1.1 kilometres out to sea. The west coast facility is scheduled to begin in 2006. Present capacity to treat or recycle wastewater (public sewerage scheme) is limited to the Bridgetown sewerage treatment plant with a capacity of approximately 9000 cubic meters/day. There are about 12 package plants at various hotels. Two hotels, Sam Lords Castle and Almond Village Resorts, treat the wastewater and reuse it for irrigation.<sup>20</sup>

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<sup>19</sup> Taken from the Government of Barbados Waste Management website at <http://www.solid.gov.bb>.

<sup>20</sup> The data for this paragraph is taken from the United Nations Sanitation Country Profile of Barbados <http://www.un.org/esa/agenda21/natlinfo/countr/barbados/sanitation.pdf>

Therefore, it appears that though there exist some environmental concerns with respect to sewage treatment and wastewater management, these are currently being addressed and in the coming years the negative environmental aspects of the tourism industry could be significantly reduced.

#### *3.4.3 Indicator 11: Natural Resources Issues and Land Use*

In the past, little importance had been placed on the natural environment, particularly the mangrove forests. These were often cut down for the development of hotels or marinas. Attention was not paid to the fact that these eco-systems are interdependent and that the destruction of one would lead to significant ecological degradation of the others. The St. Lawrence Gap area in Barbados is a characteristic example where a wetland area was sacrificed for hotel development.

Indeed, most of the negative effects of tourism along the coastline reflect inadequate planning and inappropriate physical changes which can be ameliorated or even resolved by improvements in land use planning, construction practice, engineering, architecture, and design processes. For example, the Needhams Point development on the south western coast of Barbados is a case where coastal engineering has taken into consideration the surrounding environment and has led to extensive beach build up. In addition, the Coastal Zone Management Unit (CZMU) was designed to correct physical changes from decades-old tourism development projects. Since its establishment, the CZMU has undertaken successful work in beach restoration at Accra Beach Hotel and coral habitat restoration on the reefs of the west coast of Barbados.

#### *3.4.4 Indicator 12: Potable Water and Energy*

As noted earlier the average Barbadian uses between 60 and 63 gallons of water per day while hotel guests use on average 179 gallons per day. This heavy use of potable water has significant environmental consequences for Barbados as the island depends almost entirely upon ground water for its potable water supply. Over extraction of this resource will lead to saline intrusion of the aquifers which will render them virtually useless as a source for potable fresh water.

Barbados is taking action on almost all of these fronts. It has built two desalination plants since 2000 and has leased a third one that is mounted in a trailer. The Barbados Water Authority plans

to recycle wastewater and to upgrade the distribution system to reduce leakage and other sources of waste. The west coast facility mentioned above will allow wastewater to be treated for agricultural use and for reinsertion into underground aquifers. The government estimates that it can recover up to 5 million gallons of wastewater a day for non-potable uses through new investments in treatment and recycling (Drosdoff, 2004).

### 3.4.5 Indicator 12: Green Globe 21

In 1994, WTTC initiated the Green Globe 21 accreditation scheme, which is an industry improvement programme that provides guidance materials and a certification process linked to the principles of Agenda 21. Green Globe 21 is thus designed to certify that companies or communities are implementing sustainable development criteria.

**Table 18: Hotels in Barbados with Green Globe Certification**

1999	2000	2006
<u>Treasure Beach Hotel</u>	<u>Treasure Beach Hotel</u> <u>Casuarina Beach Club</u>	<u>Allamanda Beach Hotel</u> <u>Almond Beach Club &amp; Spa</u> <u>Almond Beach Village</u> <u>Amaryllis Beach Resort</u> <u>Bougainvillea Beach</u> <u>Resort/Sand Acres Resort</u> <u>Hotel PomMarine</u>

Source: Green Globe Website (<http://www.greenglobe21.com>).

Only six of the many hotels in Barbados have Green Globe certification (see Table 18). However, this should be seen as a positive development since in 1999 there was only one hotel on the island with Green Globe certification. Moreover, the Government of Barbados has been encouraging tourism establishments to implement sustainable development policies and as such the Tourism Development Act (2002) makes specific provision for expenditure on acquiring eco-certification and on community tourism programmes to be offset at a rate of 150 per cent against tax assessable income.

#### **4. Conclusions**

Barbados is a tropical island in the Caribbean and is known primarily for its physical attributes, including a warm and pleasant climate all year round, beautiful sandy beaches which are safe for swimming and water sports, a varied landscape with contrasting coastlines and a well developed road network. In addition, its reputation for political stability, a hospitable and friendly people, a very strong British tradition and a good historical and cultural legacy are key components of the Barbadian tourism product. Barbados has also developed niche markets in nature-based tourism, sports tourism particularly golf, conferences and meetings, boating, and all-inclusive vacation packages. This paper addresses the issue of sustainable tourism development in Barbados. In doing so, the study develops a number of indicators to examine the long-term economic viability of the tourism industry along with its social and environmental impacts.

The prime motivation for this study is the fact that Barbados is heavily dependent on tourism and indeed tourism has become the most significant sector in the Barbadian economy and is identified as the industry that will contribute the most towards the continued economic prosperity for the country. It is also expected to propel the country into further social development, and act as a catalyst for the conservation of the physical environment. Therefore, the importance of tourism to the overall development of the country cannot be overstated. Yet, tourism can have adverse impacts on the environment and the society if not managed and developed in a manner that is in harmony with the surroundings and the locals. In this regard, some of the concerns that came out in the study include: the negative effects of tourism on the coastal ecosystem; the strain it has placed on the island's water and energy resources and on the waste disposal system; and, occasional friction with the local population for example, over beach access and dislocation from prime economic areas. Thus, the question arises as to whether the tourism industry is on a sustainable development path or whether its future would require a greener approach to development to ensure the adverse effects do not eventually outweigh the benefits it brings.

The main findings are summarised in Table 19. In general, the results suggest that tourism development in Barbados is on a sustainable path, meaning that over time the economic benefits accruing to the Barbadian economy likely to be increasing. The negative social effects appear to be manageable and the authorities are implementing various measures to deal with the adverse

impacts the industry has had on the environment. The measures are aimed at ensuring that the tourism industry develops in harmony with the environment.

On the question of the economic viability of tourism, all the indicators suggest that Barbados should continue to reap economic benefits from tourism for years to come. Tourists' satisfaction is generally high, which means arrivals should continue to rise and this is one of the main measures of the economic success of tourism. However, there is room for further gains in sustainability. In particular, some components of the tourism product have, over the years, been rated between average and good. For example, the range and prices of duty-free goods, nightlife, shopping and sales personnel are areas that require attention in order for the overall quality of the tourism industry to improve. The findings also suggest that when visitors have a local connection or relationship (either business or personal) they are likely to have a more enjoyable experience and desire to repeat their visit again and again. But those on a vacation or honeymoon have revealed that their experiences are most likely to depend on the quality of service they received from workers in the industry. Again, this is an area the authorities may want to focus on.

With respect to the social sustainability of tourism, it appears that the interactions between visitors and locals is not generally stressful and has not produced any antagonistic behaviour of major concern. However, there are instances where isolated practices by a few players in the industry (for example, the attempts of a few hotels to restrict beach access or locals being forced to relocate from developing areas), have caused concern, among elements of the population, about the impact of the industry on the Barbadian society. These instances are more the exception than the rule. Nevertheless, they need to be addressed.

**Table 19: Summary of Findings on Sustainable Tourism Development in Barbados**

OVERALL INDICATOR	SUMMARY FINDINGS	
<b>Economic Sustainability of Tourism</b>		
Contribution of tourism to the Barbadian economy.	A main contributor to GDP and foreign exchange earnings. Rising trends in economic contributions.	✓
Sustaining tourist satisfaction:		
Perception of value for money	Getting good value for money but some areas can be improved.	✓
Frequency of visits	More than half will return; relationships and good service matter.	
Visitor security	Over 90 percent of visitors feel safe.	
Product rating	Highly complimented by tourists, particularly beaches and water sports.	
<b>Social Sustainability of Tourism</b>		
Socio-cultural carrying capacity:		
Tourism density ratio	It has one of the highest TDR in the region; cause for concern and indicates pressure on resources.	✓
Tourism penetration ratio	Rising but still below regional average; not much stress on locals.	
Tourism related employment	Significant employer; almost 1 in every 2 jobs are tourism related.	
<b>Environmental Sustainability of Tourism</b>		
Solid waste management	Tourism sector generates substantial amounts of solid waste. Barbados uses landfill technology and the current landfill is almost 20 yrs old. New landfill ready but not in operation as yet. Landfills can be a threat to both ground and marine coastal water quality.	⋯
Sewage treatment and wastewater management	Inadequate sewage treatment and wastewater management by the sector has led to the degradation of coastal water quality and ecosystems.  Bridgetown sewage treatment plant and the south coast treatment facility were built in response to these issues.  West coast treatment facility to be constructed.	⋯
Natural resources issues and land use	Tourism development had a negative impact on natural environment.  Various institutions and programmes have been established to deal with beach and coral habitat restoration.  Development plans now take into consideration the natural environment.	⋯
Potable water and energy	Tourism has placed a strain on water and energy resources.  Three desalination plants have been built in response to this issue.	⋯
Accreditation schemes	Six hotels have Green Globe certification and others are being considered.  The number of hotels receiving certification has risen over time.	⋯

#### 4.1 Implications

A direct implication of the above results is that the tourism authorities should ensure that training and education (particularly on tourism development issues and the principles of sustainability) are at the forefront of tourism development. This includes integrating sustainable tourism

development in the education curricula of schools, universities and training institutions, involving all stakeholders groups. It also means ensuring that formal education and vocational training systems are adapted to the rapidly changing needs of the industry, covering a variety of skills and customer service. Similarly it is important to ensure that site developers carry out all the necessary research, information gathering and dissemination to ensure that locals do not end up feeling marginalized or displaced by tourism development. Regular surveys of the degree of local satisfaction with the tourism industry are recommended.

Training and education programmes are even more critical to the success of the industry if one considers that the concept of sustainable tourism development is quite recent and within the Barbados tourism industry there is very little understanding of what it is, what it involves or what it requires.

It was noted earlier that the environment is where the tourism industry has had the most negative impacts. However, it was also noted that the government is currently addressing most concerns. In this regard, it is recommended that the government invest in large-scale recycling, composting and incineration to a more significant degree. This would help to address issues associated with solid waste disposal, given the lack of space for landfills in Barbados. It may prove costly in the short-term but given the problems (including potential threats to the water resource) and public discontent with landfills, not to mention the ‘eye-sore’ that a mountain of refuse is to locals and visitors alike, it would be a worthwhile venture in the long-run.

The tourism authorities should also explore the role of technology in improving techniques for wastewater management at the various accommodation establishments. This may even be more pressing for establishments on the west coast of the island since the West Coast Sewage project will take a number of years to be completed (the South coast project began in 1991 and was only completed in 2004) The development and use of new and appropriate technologies that minimise the impact of tourism activities on the environment and conserve natural resources (particularly water) will help alleviate pressures on the environment caused by pollution and the excessive use of water resources.

## **4.2 Limitations and Suggestions for Further Research**

One area that this study has been unable to explore in detail is the extent of tourism leakages in the Barbados economy. This will require a model that links tourist arrivals and expenditure to imports, which in itself requires information on the responsiveness of imports to tourism. In other words, when tourist arrivals increase what is the corresponding rise in imports needed to meet the increased tourism demand. No such model currently exists for Barbados and more importantly we have been unsuccessful in obtaining data on the imported inputs into the tourism industry.

Another area the study was unable to assess in greater detail is the extent of local satisfaction with tourism. This is a critical aspect of tourism sustainability since rising levels of dissatisfaction can lead to hostility towards tourists and negative impact on the industry. The most effective way to assess local satisfaction is through a yearly questionnaire with customised questions on specific issues of local concern and then compare the answers from year to year. No such questionnaire has ever been done for Barbados and no such data exists. This is certainly an interesting area for further research.

Finally, it would be interesting to carryout further research into the factors that influence the tourist decision to visit Barbados. In other words, what are the main determinants of tourism demand in Barbados? However, though interesting with direct policy implications, such a study was beyond the scope of this paper.

## Appendix 1

**Table A1: Tourism Activities in Barbados**

Name	Brief description
<b>Heritage sites</b>	
The Barbados Museum & Historical Society	The museum displays artefacts of the early Amerindians and china, glass and silver from Barbados' African, European and Caribbean heritage. Also find furnish from an 18 <sup>th</sup> -century plantation house, a collection of rare maps and prints and paintings depicting Barbadian life.
Mount Gay Rum	The largest rum manufacturer in Barbados and which provide rum for the 1000 rum bars on the island. Visitors can experience the making of rum process at the world's oldest rum, Mount Gay.
Morgan Lewis Mill	This is a splendid example of a Dutch windmill from the days of the sugar cane planters. It has been completely restored and is open to the public.
Sunbury Great House	Learn about Barbados history by visiting the only great house (over 300 years) with all rooms open for viewing and appreciate featuring mahogany antiques and old prints.
Cherry Tree Hill	Enjoy the spectacular view of the entire east coast of the island. This is an absolute contrast to the flat and gentle landscape of the rest of the island. The approach to Cherry Tree Hill in not related to cherry tress but a road canopied by magnificent old mahogany trees.
St George's Church	Visit the oldest church in Barbados. It was built in 1836. An 18 <sup>th</sup> -century, and worth a visit for its wonderful altarpiece.
Speightstown	Typical West Indian village, with attractive wooden houses, shops and old churches.
<b>Beaches</b>	
Accra Beach Mullins Beach Sandy Beach Speightstown Beach	These beaches are one of the most visited by locals and tourists. Beaches along the West coast are famous for having fine, white sand and clear waters. They are ideal for a day with the family because the sea is calm and with gentle surfs, making them safe for children to swim and snorkel. Also, they host a number of activities, such as volleyball, snorkeling and water sports
Platinum Coast	This beautiful stretch of coast is also known as Millionaires Row. There are fine beaches of white sand and clear, turquoise waters.
<b>Mother Nature sites</b>	
The Harrison's Cave	A mile-long ride underground excursion where it is possible to see many stalactites and stalagmites beside other underground scenery, such as a crystal-clear waterfall and a deep emerald lake.
The Animal Flower Cave	A cavern carved out by the sea with coral rock tinted almost every imaginable colour.
Farley Hill National Park	This is a 17-acre pleasantly landscaped Government-owned national park. It is a commonly used picnic area for Barbadians and tourists.
The Barbados Wildlife Reserve	A forest where different species of animals can be viewed. Some of them include, monkeys, tortoises, deer, wallabies, pelicans, otters, peacocks and turkeys.
Andromeda Botanic Gardens	A 50-acre flower forest in which can be found almost every plant that grows on Barbados. Also, thousands of plants (including many rare species and hybrids) have been introduced from various parts of the world
Bathsheba	Visit the world renowned as one of the best location to surf, and each year in November the 'Independence Pro Surfing Championships' are held

<b>Tours, Cruises Rides</b>	
Atlantis Submarines Barbados	Dive 150 feet below the surface of the sea to view a veritable treasure of life and activity, such as exotic corals, fascinating sunken ships, fish and other marine creatures.
Catamaran Cruises	There is a wide offer of variety of cruises. From the sleek and luxurious mega-catamarans to the smaller, more intimate mono-hulls and the wild “party-your-face-off” fun cruise.
Helicopter Tours	Enjoy the unique view of Barbados from the comfort of jet helicopters.
Safari Tours	Step into one of the safari’s rigged 4X4 Land Rovers and prepare for a tour of the island.
The Atlantic Coast	This is the road to take to explore the sugar-cane country side, along with tiny towns and little churches.
<b>Sports Tourism</b>	
Golf	Visit one of the most well-known golf club in the world, such as
Cricket	Have a flavour of Barbados national sport by visiting the Kensington Oval, Barbados largest cricket ground.
Surfing	Visit the Soup Bowl at Bathsheba. This is the location for local and international surfing events. Surf boards are available for rent from surf shops on the South Coast.
Windsurfing and Kitesurfing	Take the opportunity of the trade winds, waves and crystal clear water of the South coast of Barbados for windsurfing and kitesurfing
Diving & Snorkeling	Enjoy the unique experience of Barbados’ sea, which include tropical fish, different types of turtles, sting rays, mantarays, barracudas and well as beautiful coral formations.
<b>Festivals</b>	
Independence Day Parade	Join the spectator’s line at Garrison Savannah to appreciate the parade which is on every 30 <sup>th</sup> of November to celebrate Barbados independence from Britain.
Barbados Jazz Festival	A week of Jazz performances featuring stars from all over the world.
Crop Over Festival	Enjoy and be part of Crop Over Festival. This festival takes the form of a series of national events during ..... Some of the events are: The Ceremonial Delivery of the Last Canes, the Fine Craft Exhibition, the Crop Over Promenade, the Bajan Cultural Village, Bridgetown Market, Calypso tents, the Party Monarch Competition and Grand Kadooment.

## References

- Barbados Ministry of Finance and Economic Affairs (2005), *Barbados National Strategic Plan 2005–2025: Global Excellence, Barbadian Traditions*, Economic Affairs Division of the Ministry of Finance and Economic Affairs: Bridgetown, Barbados.
- Barbados Ministry of Tourism. <http://www.barmot.gov.bb>. Ref Type: Generic
- Barbados Ministry of Tourism (2001), "Green Paper - Sustainable Development of Tourism in Barbados - A Policy Framework", *Barbados Ministry of Tourism*, [On-line]. Available: <http://www.barmot.gov.bb/>
- Barry, T., Preusch, D., and Wood, B. (1984), *The Other Side of Paradise: Foreign Control in the Caribbean*, Grove Press: New York.
- Butler, R. W. (1999), "Sustainable Tourism: A State of the Art Review," *Tourism Geographies* no. 1, pp. 7-25.
- Carey, D. I. (1993), "Development Based On Carrying Capacity: A Strategy For Environmental Protection", *Global Environmental Change*, vol. 3, no. 2, pp. 140-148.
- Caribbean Tourism Organisation (2003), *Caribbean Tourism Statistical Report*, Caribbean Tourism Organisation: Bridgetown, Barbados.
- Central Bank of Barbados (2005), *Annual Statistical Digest*, Research Department, Central Bank of Barbados: Bridgetown, Barbados.
- Cruz, R. G. (2003), "Towards Sustainable Tourism Development in the Philippines and Other Asean Countries: An Examination of Programs and Practices of National Tourism Organizations", *PASCN Discussion Paper* no. 2003-06, Philippine APEC Study Center Network, Philippine Institute for Development Studies, Makati City, Philippines.
- Doxey, G. V. (1971), *The Tourism Industry in Barbados*, Dusco Graphics: Ontario.
- Drosfuff, Daniel (2004), "Barbados Acts to Prevent Water Crisis", *Article in IDBAmerica: an online magazine (May, 2004 edition)*, Inter-American Development Bank, [On-line]. Available: <http://www.iadb.org/idbamerica/index.cfm?thisid=2793>
- Engel, J. R. (1990), "Introduction: The Ethics of Sustainable Development," in *Ethics of Environment and Development: Global Challenge, International Response*, J. R. Engel & J. G. Engel, eds., Belhaven Press: London.
- Fridgen, J. D. (1984), "Environmental Psychology and Tourism", *Annals of Tourism Research*, vol. 11, no. 1, pp. 19-40.
- Gajraj, A. (1981), "Threats to the Terrestrial Resources of the Caribbean", *Ambio*, vol. 10, no. 6, pp. 307-311.

- Goodall, B. and Stabler, M. J. (1997), "Principles Influencing the Determination of Environmental Standards for Sustainable Tourism," in *Tourism Sustainability: Principles and Practice*, M. J. Stabler, ed., pp. 279-304.
- Graefe, A. and Vaske, J. (1987), "A Framework for Managing Quality in the Tourist Experience", *Annals of Tourism Research*, vol. 14, no. 3, pp. 390-404.
- GREENIDGE (2006)
- Hunter, C. J. (1995), "On the Need to Re-Conceptualise Sustainable Tourism Development", *Journal of Sustainable Tourism*, vol. 3, no. 3, pp. 155-164.
- Laimer, P., Öhlböck, and Petra (2004), "Indicators Measuring the Sustainability of Tourism: Several Considerations and Results from the Austrian Perspective," Paper presented at the 7th International Forum on Tourism Statistics Stockholm: June 9-11, Sweden.
- Lui, Z. H. and Jones, E. (1996), "A System Perspective of Sustainable Tourism," in *Proceedings of the International Conference on Urban and Regional Tourism*, M. Saayman, ed., Potchefstroom: South Africa, pp. 209-221.
- Mathieson, A. and Wall, G. (1982), *Tourism: Economic, Physical and Social Impacts*, Longman: Harlow.
- Mbaiwa, J. E. (2005), "Sustainable Tourism Development in the Okavango Delta, Botswana", *Journal of Sustainable Tourism*, vol. 13, no. 3.
- McCool, S. F. and Lime, D. W. (2001), "Tourism Carrying Capacity: Tempting Fantasy or Useful Reality?", *Journal of Sustainable Tourism*, vol. 9, no. 5.
- McIntyre, G. (1993), *Sustainable Tourism Development: Guide for Local Planners*, World Tourism Organisation: Madrid, Spain.
- Ministry of Physical Development and Environment (2001), "Barbados' First National Communications to the United Nations Framework Convention on Climate Change," Ministry of Physical Development Environment: Bridgetown, Barbados.
- OECD (2005), "Spain: Tourism Environment Indicators," in *Proceedings from OECD-China Seminar on Environmental Indicators*, OECD: Madrid, Spain, pp. 85-100.
- Oppermann, M. (1998), "Destination Threshold Potential and the Law of Repeat Visitation", *Journal of Travel Research*, vol. 37, no. 2, pp. 131-37.
- Oppermann, M. (2000), "Tourism Destination Loyalty", *Journal of Travel Research*, vol. 39, no. 1, pp. 78-84.

POTTER AND PHILIPS

Pritchard, M. P. (2003), "The Attitudinal and Behavioural Consequences of Destination Performance", *Tourism Analysis*, vol. 8, no. 61, p. 73.

Stabler, M. J. (1997), *Tourism Sustainability: Principles and Practices*, CAB International: Oxon, UK.

Thomas, R. N., Pigozzi, B. W., and Sambrook, R. A. (2005), "Tourist Carrying Capacity Measures: Crowding Syndrome in the Caribbean", *The Professional Geographer*, vol. 57, no. 1, pp. 13-20.

Twining-Ward, L. and Butler, R. W. (2002), "Implementing STD on a Small Island: Development and Use of Sustainable Tourism Development Indicators in Samoa", *Journal of Sustainable Tourism*, vol. 10, no. 5, pp. 363-387.

United Nations (2002), "National Sustainable Development Report: Barbados", *United Nations Commission on Water*, United Nations, [On-line]. Available: <http://www.un.org/esa/agenda21/natlinfo/wssd/barbados.pdf>

United Nations (2005), *World Population Prospects: The 2004 Revision, Comprehensive Tables*, Department of Economic and Social Affairs, Population Division, United Nations: Geneva.

United Nations Conference on Environment and Development (1992), *Agenda 21: A Guide to the United Nations Conference on Environment and Development*, United Nations Publication Service: Geneva.

United Nations Environment Programme and World Tourism Organisation (2005), *Making Tourism More Sustainable: A Guide for Policy Makers*, The United Nations Environment Programme: United Nations, Paris.

United Nations (1993) Economic and Social Commission for Asia and the Pacific, pp. 85-116.

Vlugman, A. A. (1994), "Wastewater Management at Hotels and Resorts in the Caribbean," Report from Regional Conference on Environmental Health and Sustainable Tourism Development, Nassau, Bahamas (8 - 11 November, 1993).

WCED (1987), *Our Common Future*, Oxford University Press: London.

Weaver, D. B. (2001), *Ecotourism*, John Wiley and Sons: Milton, Australia.

Welford, R. and Ytterhus, B. (1998), "Conditions for the Transformation of Eco-Tourism into Sustainable Tourism", *European Environment*, vol. 8, no. 6, pp. 193-201.

WHITEHALL AND CRAIGWELL (2005)

- Williams, P. W. and Gill, A. (1994), "Tourism Carrying Capacity Management Issues," in *Global Tourism: The Next Decade*, W. F. Theobald, ed., Butterworth-Heinemann Ltd, Oxford, UK, pp. 174-187.
- World Tourism Organisation (1995), *What Tourism Managers Need To Know: A Practical Guide to the Development and Use of Indicators of Sustainable Tourism*, World Tourism Organisation: Madrid, Spain.
- World Tourism Organisation (2004), *Indicators of Sustainable Development for Tourism Destinations: A Guidebook*, World Tourism Organisation: Madrid, Spain.
- WTTC (2006), "Barbados: Travel and Tourism Climbing to New Heights - The 2006 Travel and Tourism Economic Research", *World Travel and Tourism Council*, [On-line]. Available: <http://www.wttc.org>
- WTTC, WTO, and Earth Council (1997), *Agenda 21 for the Travel and Tourism Industry: Towards Environmentally Sustainable Development*, World Tourism Organisation: Madrid, Spain.