Impacts of hotel siting and design on biodiversity in the insular Caribbean: a situation analysis

A report prepared as part of the IUCN Business and Biodiversity Programme and the IUCN Caribbean Initiative project "*Integrating Biodiversity in the Caribbean Hotel Sector".*

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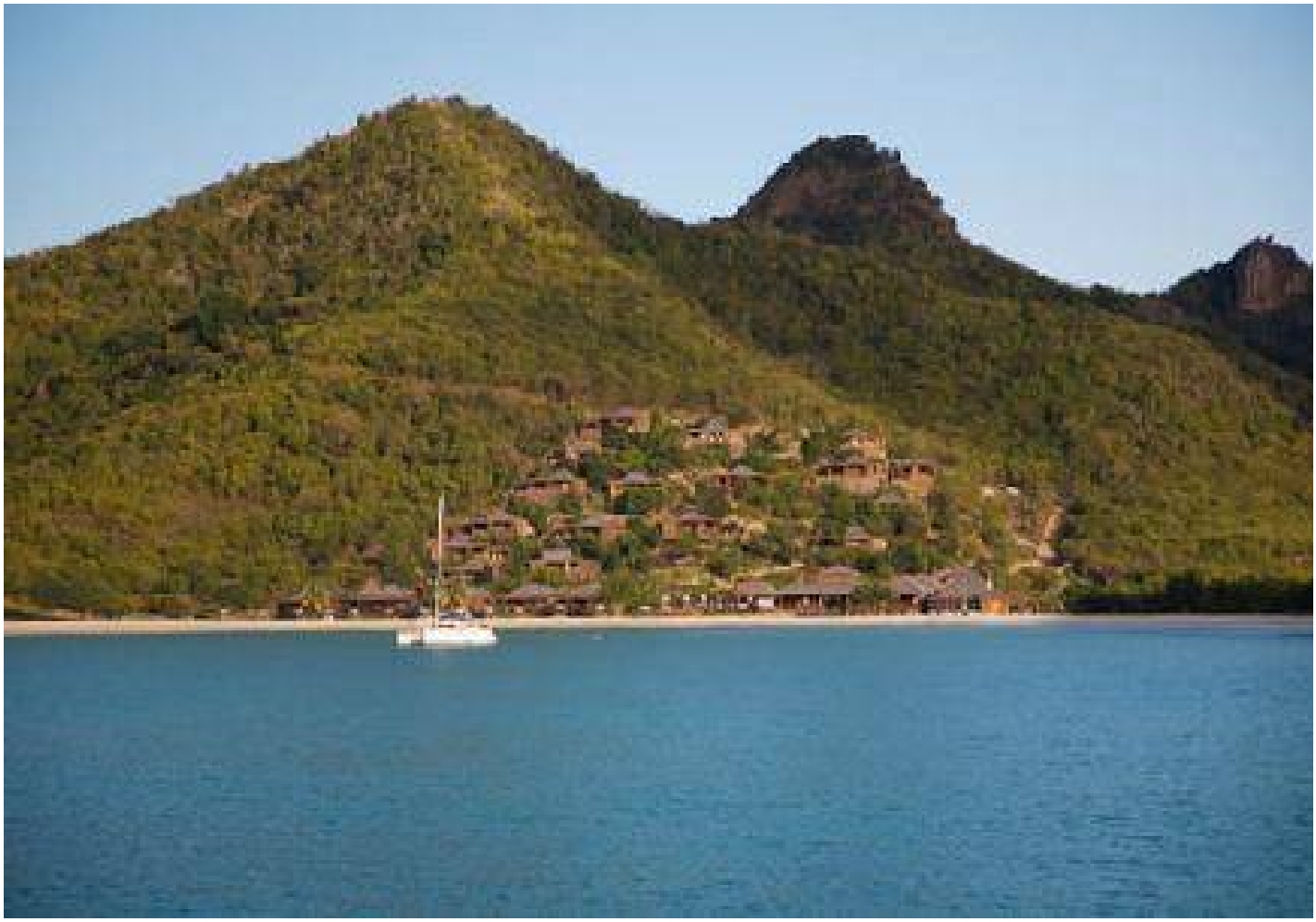

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ACRONYMS

AZE	Alliance for Zero Extinction
BVI	British Virgin Islands
CAREC	Caribbean Epidemiology Centre
CARICOM	Caribbean Community
CAST	Caribbean Action for Sustainable Tourism
CDB	Caribbean Development Bank
CEHI	Caribbean Environmental Health Institute
CEP	Caribbean Environment Programme
CEPF	Critical Ecosystem Partnership Fund
CHTA	Caribbean Hotel and Tourism Association
CSO	civil society organization
CSR	corporate social responsibility
CTO	Caribbean Tourism Organisation
DROB	Department of Physical Planning, Bonaire Island Government
ECLAC	Economic Commission for Latin America and the Caribbean
EIA	environmental impact assessment
EIB	European Investment Bank
EP	Equator Principles
FDI	foreign direct investment
GDP	Gross Domestic Product
GEF	Global Environment Facility
GSTC	Global Sustainable Tourism Criteria
IBAT	Integrated Biodiversity Assessment Tool
IDB	Inter-American Development Bank
IBA	important bird area
IBLF	International Business Leadership Forum
IFC	International Finance Corporation
ITP	International Tourism Partnership
IUCN	International Union for Conservation of Nature
JET	Jamaica Environmental Trust
KBA	key biodiversity area
LEED	Leadership in Energy and Environmental Design
MDB	multilateral development bank
MPA	marine protected area
NBSAP	National Biodiversity Strategy and Action Plan
NEMS	National Environmental Management Strategy
NGO	non-governmental organization
NSDS	National Sustainable Development Strategy
OAS	Organization of American States
OE	Oxford Economics
OECS	Organisation of Eastern Caribbean States
PAHO	Pan American Health Organisation

REIT	Real Estate Investment Trust
SDC	Sustainable Hotel Siting, Design and Construction Guideline document
SME	small and medium size enterprise
STINAPA	Stichting Nationale Parken (National Parks Foundation) Bonaire
TNB	turtle nesting beach
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNWTO	United Nations World Tourism Organization
UK	United Kingdom
US	United States
USAID	United States Agency for International Development
USD	United States dollar
WIDECAST	Wider Caribbean Sea Turtle Conservation Network
WTTC	World Travel and Tourism Council

1. INTRODUCTION

Section 1 overview of key issues and opportunities

- The insular Caribbean has a very rich, unique and diverse biological diversity.
- Tourism is critical to the region's development. GDP and employment shares are as high as 70% in smaller Caribbean economies.
- Nature and natural features – beaches, clear seawater, coral reefs, forests and its landscapes are at the basis of the tourism industry and visitor experience.
- The vast majority of vacation accommodation is built within the coastal zone where biodiversity is very rich.
- Conservation and management of the health of the region's coastal ecosystems are critical to the prosperity of hotels as well as the region's overall development.

Background and overview

This study has been prepared in response to the needs identified by Caribbean IUCN Members and stakeholders concerned about the impacts of hotel siting and design on coastal ecosystems critical to biodiversity (see Brown *et. al.* 2007; USAID 2008; CEPF 2010). It forms part of a project of the IUCN Global Business and Biodiversity Programme and IUCN Caribbean Initiative titled *Integrating Biodiversity in the Caribbean Hotel Sector.* The study is an analysis of the current threats to biodiversity in the Caribbean linked to the siting and design of hotels and other vacation accommodation and is aimed at generating the interest of key stakeholders by evidencing biodiversity impacts as a result of siting and design of hotels and at demonstrating the needs to address this issue for the long term well-being of the Caribbean region. It also identifies examples of positive relationships, and draws conclusions and recommendations aimed to benefit conservation and sustainable tourism development.

The report is structured as follows. This introduction discusses the importance of tourism to the region, the uniqueness of Caribbean biodiversity and the tensions between hotel development and biodiversity conservation in the coastal zone which is both critical to biodiversity and the hub of hotel development. Section 2 provides an overview of the hotel sector and main trends in the development and construction sector using a value chain analysis. Section 3 discusses the main negative impacts to biodiversity from current hotel siting and design trends, drawing on evidence collected from the region. It also identifies some examples of good hotel siting and design practices that have been implemented by hotels to minimize biodiversity impacts. Tools available such as guideline documents and certification schemes as well as corporate policies to influence practice are assessed in Section 4, followed, in Section 5, by an overview of public policies and instruments relevant to the management of biodiversity in the development

process. An analysis of the problems and gaps in the development planning process is also presented here.

Scope and limitations of the study

The geographical scope of the study refers to the insular Caribbean, which includes island nations as well as island dependent territories. Continental countries of the region (e.g. Belize and the Guianas) have not been included.

The title of the study and project refers to the 'hotel sector', but the study is actually concerned with the entire vacation accommodation sector, which includes hotels, villas, resorts, integrated hotel and real estate developments, condominiums and guest houses. The term 'accommodation' and 'hotel' will be used interchangeably in the study but both are intended to convey the full breadth of vacation accommodation types.

This situation analysis is primarily based on a desk-based study. To gather evidence on biodiversity threats from hotel siting and design, information was sourced from 'grey literature' on websites, in project documents and reports, in newspaper articles and in a limited number of environmental impact assessment (EIA) reports, published case studies and reports about the impacts of developments on coastal ecosystems and critical habitats (see Annex 1). A significant amount of information on cases of siting that have caused negative biodiversity impact is not documented, and this has been sourced primarily from IUCN Members in the region as well as other stakeholders such as natural resource and tourism development practitioners and managers (see Annex 2).

The research has documented approximately 40 cases of negative biodiversity impacts from accommodation siting and design choices, located in 16 countries and territories in the region, and 20 cases of good siting and design practices from 13 countries and territories. Cases mentioned in this document do not reflect any judgment on the properties themselves, and this list is not aimed to be exhaustive, as its purpose is simply to provide evidence to demonstrate trends and to make the case for action. It should be noted that no field studies were undertaken by the consultants to verify the biodiversity impacts (both positive and negative) identified from interviews and literature sourced.

Biodiversity is understood as the variety of life on Earth: the wide variety of ecosystems and living organisms including animals, plants, their habitats and their genes. Ecosystem refers to a community of plants, animals and smaller organisms that live, feed, reproduce and interact in the same area or environment. An 'ecosystem service' refers to a service people obtain from the environment such as food and water, flood and coastline protection, spiritual, recreational, and cultural benefits or nutrient cycling[1]. This study is particularly concerned with biodiversity impacts related to the damage or disturbance to the functioning of critical ecosystems, habitats and species that are endemic, vulnerable or threatened.

[1] http://www.iucn.org/iyb/about/

The study looks only at biodiversity impacts from hotel siting and design. Social and economic impacts of siting and design, apart from where there is an economic valuation argument based on biodiversity impact, have not been considered in this study.

Tourism: a driver of the Caribbean economy

Tourism has grown steadily in the Caribbean in the last two decades (Calderón *et al*. 2008). The industry plays a proportionately stronger role in the Caribbean region's Gross Domestic Product (GDP) and employment than any other region (World Travel and Tourism Council and Oxford Economics 2010). For the smaller Caribbean economies, GDP and employment shares can be as high as 70%. The direct travel and tourism industry is forecast to total USD11.684bn or 3.7% of Caribbean GDP in 2010 (ibid).

While the majority of the Caribbean accommodation sector is made up of small and medium sized enterprises (SME) - roughly 75% of accommodation operations in the region have less than 75 rooms[2] - it is the large hotels and all-inclusive chains, with over 400 rooms, that dominate the market and are expected to continue growing (De Caires pers. comm.). According to ECLAC (2010), the region has consistently attracted approximately 3% of global tourism arrivals. In 2006, there were 22.2 million stay-over visitors [3] (Andrew 2007 *in* ECLAC 2010).

The Caribbean's rich biological diversity

The geography, climate and geographical expanse of the Caribbean Islands have resulted in a diverse range of habitats and ecosystems which support high levels of species richness and a high proportion of endemicity, making the region biologically unique. The Caribbean is home to 11,000 terrestrial plant species, 72 percent of which are endemics. 100 percent of 189 amphibians, 95 percent of 520 reptiles and 26 percent of 560 bird species that exist in the region are found nowhere else in the world (CEPF 2010). A number of habitat zones in the Caribbean have been identified as Alliance for Zero Extinction (AZE)[4] sites due to the sites' value for global biodiversity but present threats to species extinction.

The coastal waters of the Caribbean islands are the heart of the Atlantic's marine diversity (ibid). Around 8 percent of 35 species within the major marine taxa found globally are endemic to this sub-region. The shallow marine environment contains 25 coral genera, 117 sponges, 633 molluscs, and over 1,400 fishes (ibid). Annex 3 identifies the ecosystem services in the Caribbean and their critical contribution to the region's economic, social and cultural development.

[2] CHTA defines small hotels as those with 75 rooms or less (De Caires pers. comm.).
[3] This figure should actually be higher as it does not include statistics for the French *départements.*.
[4] http://www.zeroextinction.org/index.htm

Coastal and marine habitats of the Caribbean[5] are particularly important. Over 70 percent of the Caribbean's key biodiversity areas[6] (KBA) and biodiversity corridors[7] that contain:

- one or more globally threatened species;
- one or more endemic species which are globally restricted to the site or surrounding region;
- significant concentrations of a species and/or;
- globally significant examples of unique habitat type, species and assemblages,

are found in coastal and marine ecosystems. Beaches and mangroves in particular support exceptionally high numbers of globally threatened species (ibid).

The importance of biodiversity to the Caribbean tourism industry

Considering the importance of nature and landscapes as essential components of the Caribbean's tourism product, it can safely be assumed that the prosperity of the hotel and tourism sector rests on the continued conservation and health of the region's biodiversity and ecosystems. The majority of Caribbean hotels are located within 800 meters from the high water mark (Zappino 2005), and this demonstrates the interconnectedness as well as the potential tension between healthy coastal ecosystems and a thriving hotel and tourism industry. It is therefore critical that vacation accommodation is not developed at the expense of the valuable services provided by the region's biological diversity and play an active role in biodiversity conservation.

In Tobago and Saint Lucia[8], economic valuation studies show that the direct economic impacts from visitor spending on accommodation, reef recreation and related expenditure is estimated at USD 43.5 million for Tobago and USD 91.6 million for Saint Lucia annually (Burke *et al*. 2008). This represents 15% and 11% of GDP in those countries respectively (ibid). The combined direct and indirect impacts (based on the value of ancillary goods and services) from coral reef associated tourism equal an estimated USD101-130 million for Tobago and USD160-194 million for Saint Lucia in 2006 (ibid). On the flip side, where healthy ecosystems have not been maintained, losses can be significant, and a study of the economic consequences of beach erosion caused by degraded coral reefs off one of the main tourist strips of all-inclusive resorts in the Dominican Republic shows that hotels could lose USD 52-100 million over the next ten years from beach erosion (Wielgus *et al.* 2010).

[5] The islands are surrounded by 10,000 km^2 of coral reef, 22,000 km^2 of mangrove and 33,000 km^2 of seagrass beds

[6] KBAs contain (a) one or more globally threatened species; (b) one or more endemic species which are globally restricted to the site or surrounding region; (c) significant concentrations of a species; and/or (d) globally significant examples of unique habitat types and species assemblages.

[7] Corridors encompass groupings of these key biodiversity areas of high priority due to their importance for maintaining ecosystem resilience, ecosystem service values, and the health and richness of the hotspot's biological diversity.

[8] These two destinations – Tobago and Saint Lucia, were selected for this study because 40 percent and 25 percent of respective visitors chose this destination because of an interest in coral reef recreation (see Burke *et al.* 2008)

'Seascape' views and easy access to the beach are highly valued for the perceived best visitor experience. Beach view rooms command the highest rates and hotel and resort developers believe that all guests want immediate access to the beach. Without a doubt, the attraction and prosperity of the Caribbean tourism industry is based primarily on the region's nature and natural features - beaches, clear seawater, coral reefs, lush landscapes, luxuriant rainforests and unique wildlife (see Box 1). The culture of Caribbean countries, also a key aspect of 'the brand', is closely intertwined with the natural environment. Visitor experience is therefore based, much more than is commonly realized, on the many services provided by Caribbean biodiversity and ecosystems.

Box1: The Caribbean tourism industry and biodiversity are intimately related

- ***Corals make beach***: White sand beaches are not only a result of the limestone geology of many Caribbean islands but they are also replenished by the breakdown of offshore coral reefs and calcareous algae that reside in seagrass meadows.
- ***Coral reefs protect hotel investment***: Coral reefs are the first and most effective barrier from the impacts of waves and wind that can damage coastal developments. They are critical for the absorption of wave energy during storms and hurricanes.
- ***Trees on land means clear water***: Clear and calm sea water is the result of low levels of silt and sediment in the water which is retained by vegetation cover on land and filtered by fringing mangrove ecosystems.
- ***Wildlife and landscapes make each island unique***: Flora and fauna unique to each island are the result of their geological isolation.
- ***Diving tourism needs healthy coral reefs***: Coral reefs are the single most important attraction for divers and snorkelers. Reefs contain 25% of global marine species. Dive tourism's net benefits to the region in 2000 were estimated at USD 2.1 billion.

2. THE STRUCTURE OF THE CARIBBEAN HOTEL SECTOR: ISSUES AND TRENDS

Section 2 overview of key issues and opportunities

- The Caribbean hotel sector is very varied. Although there is a strong presence of large global hotel chains, smaller chains and independent hotels are a significant component of the sector.
- The current trend is moving towards large-scale hotel and real estate development projects incorporating resorts, second homes, and luxury services such as golf courses and marinas.
- Developments display a complex value chain involving many stakeholders but showing developers/development firms and investors as key to siting and design decisions.
- The current development model is characterized by diverse, complex and often risky financing arrangements.
- The hotel 'brand' and turn-key supply firms can be brought into the development processes at different stages. This arrangement facilitates expansion and spreads risk.
- Financing institutions have paid greater attention to sustainability criteria over the last 10 years in their application process, but they do not drive the development process.
- The complex resort development value chain makes it difficult to pinpoint lines of accountability for siting and design. Developers, investors, and hotel managers all have different interests and responsibilities.

The vacation accommodation sector

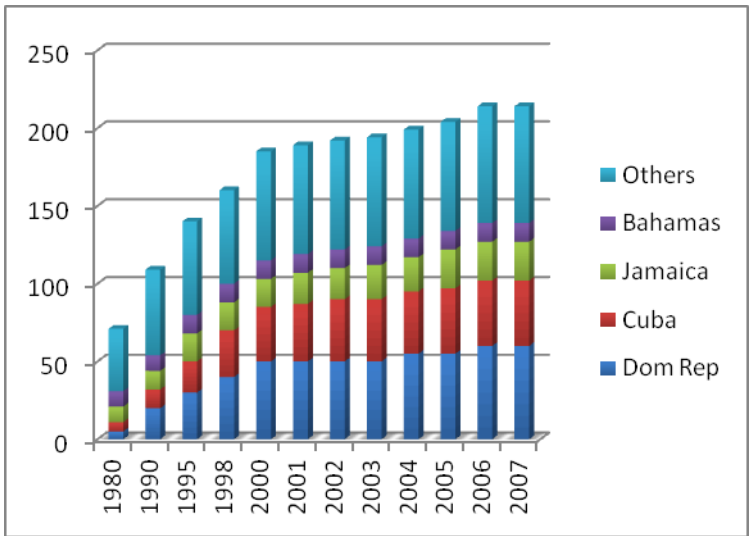
Tourism is a complex industry involving a multitude of actors and products. Since the 1980s, economic globalization has added further complexity to the tourism value chain, including the hotel and resort development, construction and management sectors of the industry. Tourism, and specifically accommodation demand, is shaped and controlled almost exclusively by corporations based in tourist-generating countries who hold greatest knowledge about the market and latest technological innovations for reservations and marketing (Calderón *et al*. 2008).

The accommodation offer in the Caribbean is very varied today and includes full service hotels and all-inclusive resorts, integrated hotel and real estate complexes, time-share units, vacation clubs, holiday homes, villas, condominium hotels and apartments as well as more modest inns and hostels. The number of hotel rooms has increased considerably in recent decades, especially in Cuba, the Dominican Republic and Jamaica. These three countries along with the Bahamas account for two thirds of all rooms in the region (see Figure 1). Patterns of investment and origins of visiting tourists reflect the focus of marketing campaigns, cultural and language

affinity, economic and political relations with former colonies, and the strong presence of European firms, mainly hotel chains closely associated with tour operators.

Since the 1980s, the larger countries such as Cuba, the Dominican Republic and Jamaica have been dominated by the all-inclusive hotel oriented towards standardized mass tourism while the smaller islands with less developed infrastructure have generally focused on more exclusive and costly tourism products.

Figure 1: Caribbean hotel room growth, 1980 – 2007
(*Thousands of rooms*)



Source: Calderon *et al.* (2008),

As Table 1 and Figure 2 show, some of the world's largest hotel firms do operate in the region. However, there is still a large percentage of the hotel sector run by smaller chains and independent hotels. Large firms account for 5% of the global market, so the industry remains quite fragmented despite consolidation of the largest hotel firms at the top (Endo 2006). Affiliation with an international chain is considered critical in many Caribbean destinations because it is viewed as giving investors a competitive edge over locally owned hotels, particularly in marketing, reservations, technology and standards, as well as bulk access to goods at lower marginal costs[9]. Box 2 presents the main forms of affiliation with hotel chains.

Box 2: Main forms of investment used by hotel chains

Most of the large chains no longer seek to own property, preferring "lighter" arrangements which require less financial commitment and reduce risk, such as:

1. Equity investment
2. Management contracts
3. Hotel leasing agreements, whereby the corporation pays the hotel owner a percentage of the profits
4. Franchise agreements, whereby the owner uses the multinational's corporate name, services and trademarks for a fee while maintaining certain operating standards
5. Technical service agreements, whereby the multinational provides the local hotel with a consultant for management, marketing and technology

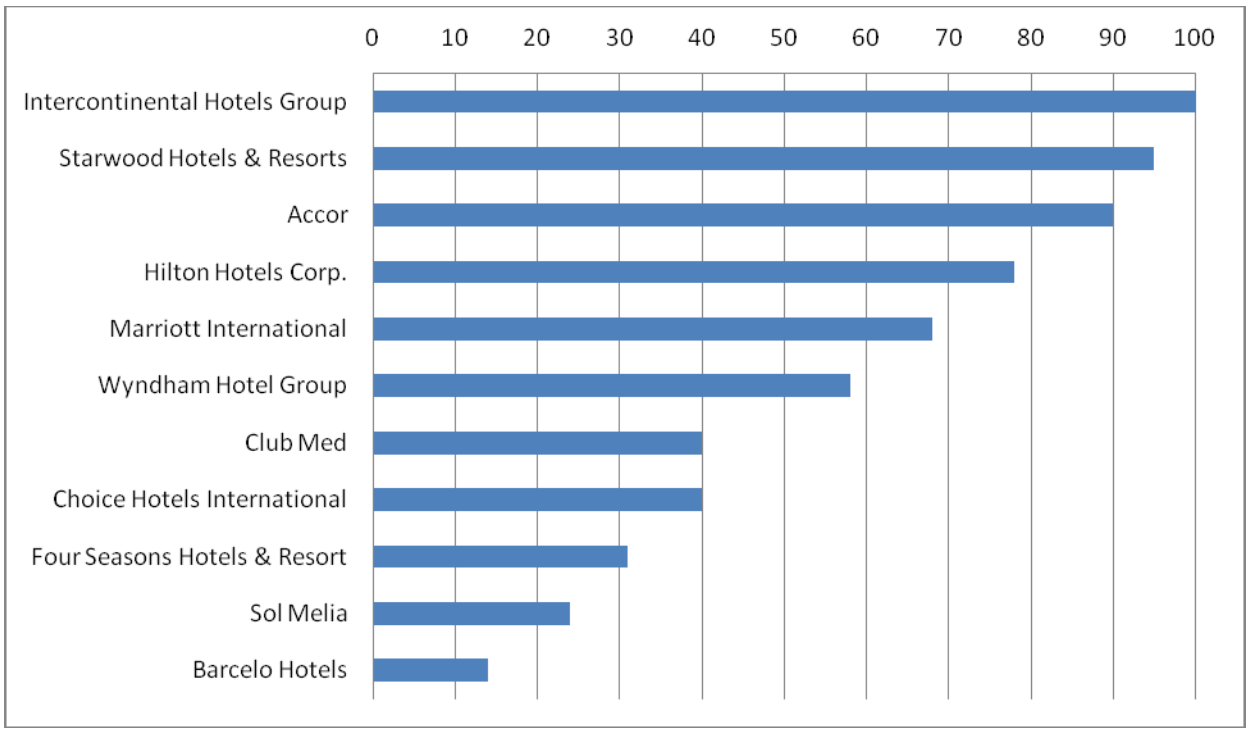
Source: Honey and Krantz (2007)

Table 1: Main sun, sand and sea hotel chains with a presence in the Caribbean, 2007

	Origin	Dom Rep	Jamaica	Cuba	Other Caribbean destinations	Total
High end chains		**6**	**1**	**-**	**16**	**23**
Rosewood	US				3	3
Four Seasons	Canada				2	2
One and Only	US				1	1
Wyndham	US	6			1	7
Marriott	US				6	6
Ritz Carlton	US		1		3	3
All-inclusive chains		**31**	**21**	**38**	**11**	**101**
Barceló	Spain	10		3		13
Club Med	France	1			2	3
Iberostar	Spain	5	1	5		11
RIU Hotels & Resorts	Spain	9	3	2	2	16
Sol Meliá	Spain	5		26		31
Sandals	Jamaica		7	1	6	14
SuperClubs	Jamaica	1	10	2	2	15
Total		**37**	**22**	**38**	**27**	**124**

Source (Table 1 and Figure 3): Calderon *et al.* 2008. ECLAC

Figure 2: International presence of the largest hotel chains, 2007 (number of countries)



Small and medium sized hotels in the region are represented by their national membership based hotel associations that together make up the Caribbean Hotel and Tourism Association (CHTA). The national associations are responsible for destination marketing (in collaboration with the national tourist boards and the Ministries of Tourism), advocating for the interests of their membership on matters related to tourism policy as well as product development, to improve service, infrastructure and communication. The CHTA, in turn, works to improve tourism development at a regional level. CHTA represents 36 national hotel associations and has over 850 hotel members. 60 percent of the CHTA's membership is made up of hotels of 75 rooms or less. Few of the region's large corporate hotel chains (over 400 rooms) are members of the CHTA (de Caires pers. comm.).

In the last decade, diverse needs of consumers, namely rising income levels of the wealthiest brackets of society in origin countries, demand for less standardized vacation options as well as new entrants in the tourism industry such as construction and real estate firms, have driven a structural shift in the market. High-end chains have became more involved in projects that integrate hotel and real estate developments (second homes), incorporating luxury hotel infrastructure, real estate, golf courses and other commercial and leisure facilities. The high prices in real estate in the US and an increase in the retired population of the 'baby boomer' generation have also acted as strong drivers of this recent trend in resort and real-estate projects. Some chains have been involved in new urban coastal developments designed for

foreigners[10] (Calderón *et al*. 2008). At the same time, all-inclusive chains have had to improve quality, diversify services and offer higher standards due to the changes in consumer demand mentioned above (ibid).

The hotel development value chain[11]

For the purpose of this analysis, the development stages of hotels are of greatest interest, since this is when siting and design decisions are made. As with most global industries, the development of large-scale vacation accommodation development projects has become increasingly fragmented across geographical space and between firms. A value chain analysis helps to identify the main actors and decision points in the complex project development process. As an example, Figure 3 shows the project development value chain of the environmentally controversial *Le Paradis* resort in Saint Lucia.

The developer or development firm: Developers are the centrepiece of a hotel and resort development. They put together the project, bring in other players, organize the various steps and raise the financing. Developers are responsible for negotiations with the relevant government agencies and decision-makers. Developers and resort managers along with government decision-makers and local landowners are in negotiation long before any formal planning process is set in motion[12]. Developers must select the proposed site (the land) and assess its viability (infrastructure, labour availability and cost). A large proportion of developers feeding the boom in resort and real estate development over the last decade are entrepreneurs who have not previously been involved in tourism and have been involved in other fields, such as software and finance.

Financiers: Resort financing comes from diverse sources. The dominant financiers are still larger banks and financial institutions, but equity funds, retirement funds, and private money are also major sources. Banks and financial institutions include multi-lateral development banks (MDB) such as the European Investment Bank (EIB), the Caribbean Development Bank (CDB), the Inter-American Development Bank (IDB) and the World Bank, as well as national development banks and national, regional and foreign commercial banks.

Banks are often hesitant to lend for resort projects overseas because the pay back is slower than other projects and considered risky. It is generally easier to get bank funding for vacation homes; so developers often finance their project by selling housing units or condos to pay for the resort. Many private investors who have some capital and access to more make the initial investment in return for a portion of profits and then go to normal lenders for construction loans.

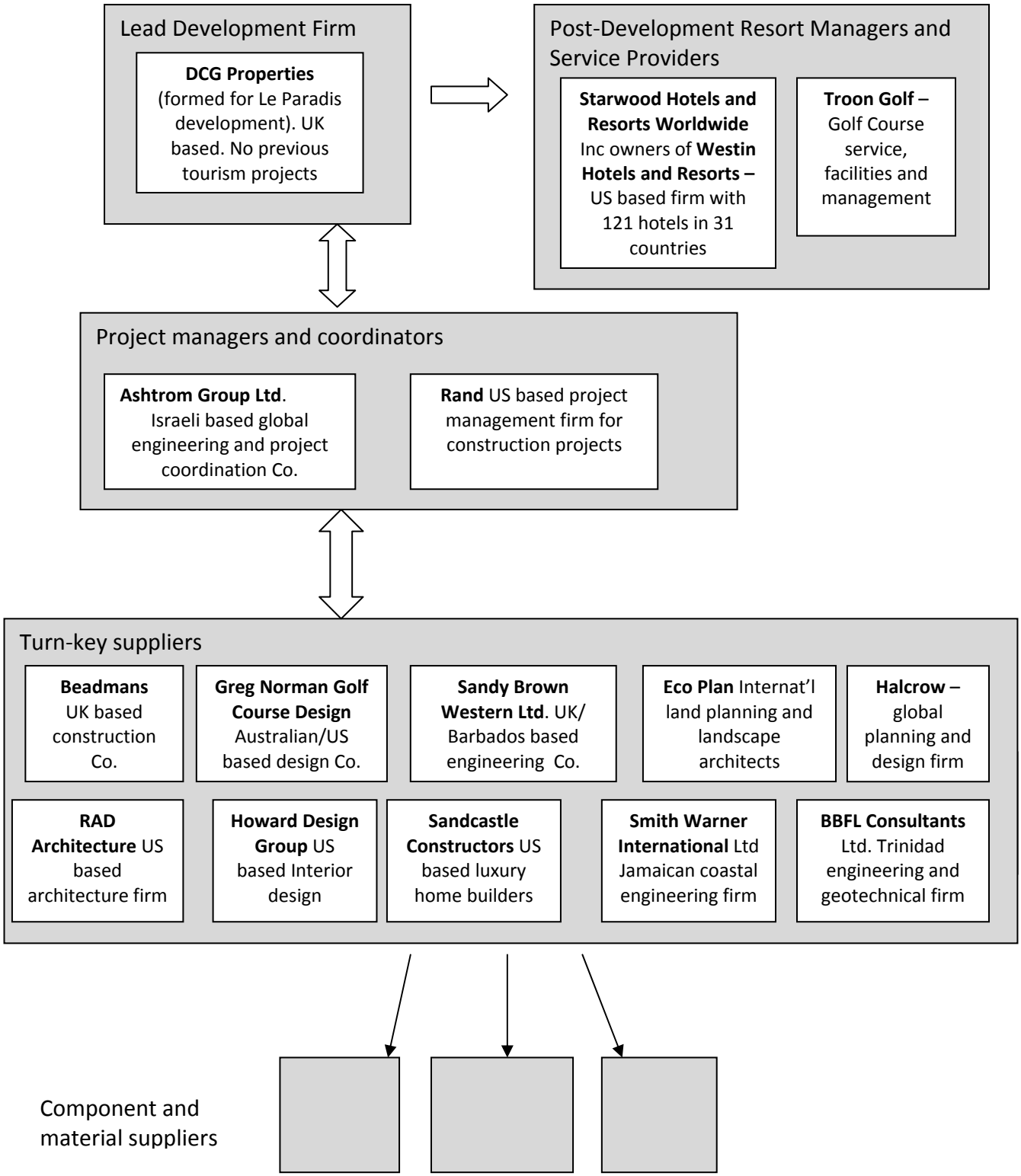
[10] Such as the Camana Bay Development by The Dart Group in the Cayman Islands.
[11] Much of the information in this section is drawn from Honey and Krantz (2007).
[12] See documentation on the Bimini Bay Development between Capo Group and Hilton Group http://www.restrictbiminibayresort.org/index.html and http://www.savebimini.org/news.html featured in Box 5.

Real Estate Investment Trusts (REIT) are also important players. REITs pool money from a large group of investors (e.g. mutual funds) and seek to invest in real estate assets.

Many investors are also owners of properties. However, the problem with this arrangement is that some investors who are the owners on paper are frequently investing on a maximum time horizon of 25 years and expect a return in 5 – 10 years after which they are often uninterested as to what happens to the development. Moreover, the 'owners' may only own one piece of the whole and may have no real commitment to the country and community in which they invest.

The recent financial crisis has further complicated the financing of projects that had already begun construction. In projects that will be discussed in more detail in Section 3 (see Box 3), site clearance and construction had already commenced before funding met with difficulties, at which point construction was halted. However, habitat loss has already taken place.

Figure 3: Value chain of the *Le Paradis* development, Saint Lucia



Sources: http://www.leparadisstlucia.com/ and Gereffi *et al*. (2005)

The 'Brand': Typically, developers want to bring in the brand of an international chain hotel in order to handle marketing, reservations, and give instant recognition to the project. Governments are also keen to attract well known hotel brands for the same reason. International brands do not generally own hotels. They are owned by a local or international investor or group of investors, and the brand has the management contract. For instance, 80% of Marriott hotels are owned by separate investors, not by Marriott, so Marriot has input in the design and running of the hotel but does not have greatest financial risk.

Turn-key suppliers: Architects, planners, engineers, designers and other professionals and contractors are brought in at various stages in a project's development. Honey and Krantz (2007: 86-87) report that most large projects use 'boiler plate conventional developments' as developers and investors 'feel more confident if they see what they view as a tried and true successful model'. Relational advantage (i.e. knowledge of working on other, similar projects, or a previous relationship with any of the other firms involved, as well as geographical proximity or speciality) is also important in this 'modular' arrangement (Gereffi *et al.* 2005). For example, RAD Architects[13] who worked on the *Le Paradis* development also designed the *Palmera de Cabarete* development in the Dominican Republic and the Mandalay Hotel in Turks and Caicos. Large projects are welcomed by turn-key firms for the opportunity to build up their capacities and portfolio.

Local 'facilitators': There is a range of local individuals and institutions that play a formal or informal facilitating role in the hotel development process, including a growing local network of media outlets advertising property for sale, real estate agents and financial institutions that are on the lookout for overseas investors. Business agents and law firms that help set up companies and negotiate land transactions as well as government incentives are also very important locally. Politicians are frequently involved in deal brokering by cultivating developers and/or investors and facilitating the planning and approval process. Governments are also key facilitators, since they determine the laws and regulations governing land acquisition, investment parameters and development guidelines for foreigners and companies. The role of governments will be discussed more thoroughly in Section 5. Generally, the more liberal a country's national regulations, the more options to enter business arrangements exist.

The place of financing institutions in the development chain

A range of development agencies fund tourism related projects[14]. International development banks, such as the International Finance Corporation (IFC), tend to fund infrastructure development, particularly accommodations, through concessional loans, while much smaller regional technical agencies, such as the Organization of American States (OAS), provide project funds and technical assistance for SMEs. Large donors often require a bankable business plan and a recognized operator as a partner, which mean that mainly large, well-established and usually foreign owned projects are funded through these channels (Honey and Krantz 2007).

[13] http://www.radmiami.com/
[14] See http://www.dantei.org/dev_ass.html

Mainstreaming of environmental concerns into economic sectors has evolved in the last three decades[15] and is now a high priority for the international donor community. Large financial institutions and donor agencies such as World Bank, IFC and IDB have environment and safeguard compliance policies in which biodiversity conservation is considered as part of the project[16] (Alleng pers. comm.). Some of the financial institutions investing in the region are signatories of the Equator Principles[17] (CEPF 2010), a benchmark for financing institutions to assess and manage social and environmental risk in the projects that they fund.

In the modular development arrangement discussed above, developers often apply to donors for financing for part of the development, but this may be after construction and/or development planning approval has been granted. In the case of *Le Paradis* illustrated above, the developers went to the European Investment Bank (EIB) for financing for certain aspects of the project. EIB requested another environmental impact assessment (EIA) study to meet EIB requirements (Ernest *et al.* 2006) but this would not have affected construction which had already commenced. While donors can influence, it is the investors and developers who are the primary drivers of hotel and resort development.

The hotel life cycle and issues in decision-making on siting and design

A hotel's life cycle can be broken down into four distinct stages: (1) planning (2) construction (3) operation and (4) closure. A hotel impacts biodiversity at each stage of its life cycle, from planning through to closure. At the planning stage, the most important issue in determining the level of impact that a hotel will have relates to choices about its siting and design. Even the most sustainably operated hotel will have major impacts if it is built in a biodiversity-rich area. Choices about the fixtures in the hotel such as types of lighting that may affect nesting sea turtles on the beach, materials that will be used to construct the hotel, where those materials will come from and the total physical footprint of the hotel will also influence how significant its impacts will be in the operational stage (IUCN 2008).

At the construction stage, impact is determined by the size and location of the area cleared for development and the location of construction activities, the choice of construction methods, the sources and amount and type of materials, and the amount of construction waste that has to be disposed of (ibid).

[15] See Honey and Krantz 2007 for a review of donor funding over this period.
[16] See IDB's environment and safeguards compliance policy http://www.iadb.org/en/topics/environment/environment,1663.html
[17] www.equator-principles.com : The Equator Principles (EP) are a voluntary set of standards for determining, assessing and managing social and environmental risk in project financing. The EPs are considered the financial industry 'gold standard' for sustainable project finance. The EPs, based on the IFC Performance Standards on social and environmental sustainability, and on the World Bank Group's Environmental, Health and Safety general guidelines, are intended to serve as a common baseline and framework for the implementation by each adopting institution of its own internal social and environmental policies, procedures and standards related to its project financing activities.

The structure of the resort development value chain, where suppliers can be added and subtracted from the development chain as needed, results in a very fluid and flexible network of firms (Gereffi *et al.* 2005), which may be expedient for spreading risk and rapid expansion, but makes it difficult to assign accountability in siting and design decisions. Many of the issues and impacts related to biodiversity can be linked to this complexity.

While developers are the deal brokers and first in the value chain to determine where a development is sited, the management company or the brand owner can also determine the impacts of a hotel during the construction and planning phase. Intentions of hotel brand companies are evidenced in the corporate environmental and responsibility policies that will be discussed in Section 4. However as raised by Projects Director for Design, Construction and Engineering for Starwood Hotels, their control at the development stage, even when involved in the design early on, meets 'with varying degrees of success'[18] depending on the countries in which they work.

[18] Quote via email correspondence between Fiona Whittenbury of International Tourism Partnership and Brad Davidson of Starwood Hotels on the question of Starwood's use and effectiveness of the *Sustainable Hotel Siting, Design and Construction* (SDC).

3. HOTEL SITING AND DESIGN IMPACTS ON BIODIVERSITY IN THE CARIBBEAN

Section 3 overview of key points and opportunities

- There is a growing trend of landscape modification, habitat loss, destruction and ecosystem disruption in the coastal zone, in part as a result of vacation accommodation and related infrastructural development.
- Much data on biodiversity impacts from hotel siting and design in the region exists as unpublished 'grey' material, while many of these impacts are not documented.
- All coastal ecosystems and habitats (mangroves, beaches, wetlands, coastal forests, coral reefs, seagrass beds and offshore islands) are critical biodiversity habitats and at risk from poorly managed and planned tourism development projects throughout the region.
- Poorly executed tourism developments have caused significant impacts to biodiversity in the last decade. The main impacts on biodiversity are:
    - Destruction and fragmentation of coastal vegetation and habitat.
    - Damage to nearshore marine habitat.
    - Siltation and disturbance to the beach ecosystem.
- These disturbances often come from the cumulative impacts of several vacation accommodations on coastal ecosystems and habitat.
- There are a number of innovative projects that demonstrate the positive linkages that can exist between biodiversity and vacation accommodation siting and design.

Main negative impacts on biodiversity

Documented cases show a growing trend of habitat loss and degradation along the coast and within the nearshore marine environment which, if continued, will lead to further biodiversity loss. Mangroves, wetlands, dry coastal forests, beaches, offshore islands and cays, seagrass meadows and coral reef habitats are particularly at risk from tourism development. Table 2 cross-references cases of poor hotel siting and design that have negatively impacted identified key biodiversity areas (KBA), important bird areas (IBA) and turtle nesting beaches (TNB).

Destruction and fragmentation of coastal habitat

Landscape modification due to tourism development is believed to be one of the main contemporary drivers of habitat loss in the Caribbean (Christ *et al.* 2003; McElroy 2003; White 2009). Ongoing habitat loss, degradation and fragmentation of the natural habitat represent the principal sources of impact on threatened species such as those in the Caribbean, which are generally confined to a small habitat range (Anthony 2005; White 2009).

Table 2: Key biodiversity areas, important bird areas and turtle nesting beaches threatened by current and proposed resort developments (selected examples).
KBA = key biodiversity areas; IBA = important bird areas; TNB = turtle nesting beaches

Country	Priority biodiversity site – KBA, IBA or TNB	Impact[19]
Anguilla	Cove Pond IBA	Cove Pond at south-western end of Anguilla. Part of a large coastal lagoon. Anguilla's highest dune system borders the pond to the Southern shore. Affected by Cap Juluca Resort (built causeway through pond) and unconfirmed reports of nutrient runoff from the golf course leased by Cap Juluca.
Antigua and Barbuda	McKinnon's Saltpond IBA	McKinnon's Saltpond on the west facing coast of north-west Antigua. Once a mangrove lined lagoon but cut off from the sea by road development behind the dense tourist strip. A number of hotel and resort developments have also affected the site from wastewater disposal into the pond.
	Valley Church IBA	Located along the west coast. Once a large swamp. Large hotel occupies part of the original mangrove and road development to resorts and tourist facilities has divided the pond.
Aruba	Palm Beach TNB	Beach is only site of Loggerhead Turtle nesting on the island. Approval granted for Ritz-Carlton luxury hotel. EIA not done for Ritz Carlton. Used an EIA from 2005 for a different development. Poor attention is given to turtle nesting in the EIA of 2005.
Bahamas	Cays and off-shore islands (out-islands) – 39 IBAs	Over 30 IBAs on offshore islands. Limited protection. Important sites for a rich diversity of wildlife Cays and offshore islands are under pressure and have already experienced significant land use changes due to large scale tourism/real estate projects.
British Virgin Islands	Cays and off-shore islands - TNB	Hawksbill and green sea turtles frequently nest on the beaches of Scrub Island, Virgin Gorda where developments are currently underway. A few cays are protected but the majority are unprotected. Development on Beef Island (site of important remaining wetland) recently quashed due to public protest.
Dominican Republic	Parque del Este, KBA, TNB	National park on the south-eastern tip of the Dominican Republic. Park is nursery for 112 of the Dominican Republic's 303 bird species; endemics; sea turtles and large coral reef system. Luxury hotels outside the park threaten the coral reefs and natural resources. Controversial Bahia Principe resort development was allowed to build within the park in 2006 but was later halted.

Grenada	Levera Beach TNB	Leatherback turtle nesting site affected by runoff from Phase I development of the Levera Beach Development. Project collapsed before Phase I complete. However, development recently bought by UK developer and plans underway to continue construction.
	Mt Hartman KBA	An important area of dry forest habitat for a number of species including the endangered Grenada Dove. Currently unprotected having been de-gazetted as a national park, to allow for first Phase development of Mt. Hartman Resort (Four Seasons). Project now suspended due to the global economic crisis.
Jamaica	Negril KBA	An important biodiversity area. It is a large protected area but under enormous tourism pressure from a number of developments e.g. Jamaicotel RIU which built within an MPA and breached agreements to conserve coastal habitat.
	Black River Great Morass KBA, IBA	Entire Black River Morass is largest freshwater wetland in south-west Jamaica, also seagrass beds and coral reefs. Unprotected. Partial Ramsar site. Font Hill wetland (Luana Point) threatened by proposed development by Fiesta Hotel Group (see issues with Grand Palladium Lady Hamilton Resort Annex 4). Font Hill is 25 year research site of Smithsonian Institute – migratory, endemic species habitat.
St. Kitts and Nevis	South East Peninsula Ponds IBA and TNB	Eight salt ponds of St. Kitts south-east peninsula and beaches currently not protected and important for sea birds, waterbirds and adjacent beaches for nesting Leatherback, Hawksbill and Green sea turtles. Northern section of peninsula is already developed and new Christophe Harbour will affect entire peninsula including plans to dredge for a mega yacht marina.
Saint Lucia	Mandele Dry Forest KBA and IBA	An unprotected area of dry forest. Important offshore islands used as “invasive-free” safe havens for globally threatened reptiles and endemic, endangered birds. Threatened due to Le Paradis development at Praslin Bay (600 acres).
	North-east coast – KBA, IBA and TNB	An unprotected area of dry forest. In a new region for tourist development. The beaches are important for three species of sea turtle. Threatened by proposed developments Louvet Bay marina and hotel development proposed at Dennery (584 acres) and Grand Anse development at Grand Anse (709 acres).
	Pitons IBA	Important IBA for endangered endemics, migratory birds and other biodiversity. World Heritage Site. Mountains support productive forest ecosystem and offshore fringing reef. Area under pressure from tourism and permission recently granted for 420,000 sq ft. luxury resort and real estate development
Turks and Caicos	East Caicos & adjacent areas IBA TNB	Uninhabited island – dry forest, wetlands, caves. Unprotected. Earmarked in the past for large resort development.
	Grand Turk Salina and Shores IBA	It includes all major wetlands area on Grand Turk. 40% of Grand Turk is unprotected wetlands unprotected, threatened by tourism.

Box 3: Destruction of the dry forest and critical habitat for threatened and endemic species: Le Paradis, Saint Lucia and Mt. Hartman, Grenada

Saint Lucia's *Le Paradis* is a 600 acre real estate and hotel complex developed by UK based DCG Properties. If completed, it would include hotel, villas, golf course, deep water marina, helipad and equestrian centre managed by Westin Hotels (part of the Starwood Hotel Group). The complex began construction in 2006 but ran into financial difficulties and has been on hold.

The Le Paradis site, part of the Mandélé forest, is part of a former estate (Praslin Estate), and a section of the property had been earmarked as a nature reserve but never legally declared. The coastal dry forest habitat is home to the endangered and endemic Saint Lucia Whiptail Lizard, 40% of the endangered White Breasted Thrasher (35% of its global range) and other rare species and endemics such as the Saint Lucia pewee, Gray Trembler, Forest Thrush, Saint Lucia oriole, Saint Lucia Boa and Saint Lucia Tree Lizard. All of these species are found in this habitat, only on Saint Lucia or on a few islands in the Lesser Antilles.

In Grenada, developers Cinnamon 88 (a UK and Barbados registered company) began construction in 2006 of the Mt Hartman estate hotel, another ultra-luxury resort and real estate complex including golf course, and hundreds of luxury villas to be managed by the Four Seasons Hotel Group. The site, also a dry forest habitat, is home to the last remaining habitats for approximately 90% of the endangered Grenada Dove population. The coastal dry forest ecosystem was a protected area but was de-gazetted to facilitate the area's tourism development. This project also ran into financial difficulties and had been on hold.

Both projects met with a great deal of local and international opposition and despite the fact that construction was halted, significant clearance of the natural vegetation and fragmentation of the forest took place. Disturbance and new routes during the construction phases would have negatively affected the wildlife populations.

Sources: Wege 2007; White 2009; Young *et al.* 2009.

Forest cleared for golf course, Le Paradis, Saint Lucia.

In particular, mangrove forests, a critical habitat for fisheries and migratory birds, have suffered significant loss due to tourism development pressure (see example in Box 4). Overall the region has lost 42 percent of its mangroves in the last 25 years (Conservation International, 2007). Around 80 percent of the mangroves of the British Virgin Islands (BVI) have been destroyed, largely to make way for tourist development (BVIHCG 2007 in CEPF, 2010), and, in Aruba, recent research shows that over 70% of mangroves have been lost on the island in the last 30 years to make way for resorts and tourism related activities (Ponson pers. comm.).

Other developments identified in this study where critical coastal vegetation was destroyed include: Lignumvitae Bay, Antigua; Great Guana Cay, Bahamas; Heywoods, Barbados; Seven Mile Beach, Grand Cayman; Levera, Grenada; Mount Hartman, Grenada; Tyrrel Bay, Carriacou, Grenada; Runaway Bay, Jamaica; Mammee Bay, Jamaica; and Praslin Bay, Saint Lucia (see Table 2).

Introducing and facilitating the spread of invasive species and predators
Current levels of clearance of natural habitat are likely to facilitate the spread and increase in the number of invasive predators, such as the mongoose and rats (Anthony 2005). This is a significant threat for the Grenada Dove (Box 3) which is a ground dwelling bird (Rusk 2007) but also for other threatened species such as the White Breasted Thrasher (Anthony 2005), although no studies have yet tested for this (White 2009).

Other unconfirmed reports state that hotel developments have inadvertently caused the introduction of invasive species such as the Giant African Snail in Anguilla and the Cuban Tree Frog in Antigua, through the importation of ornamental vegetation used for landscaping.

Destruction to the nearshore marine habitats
Large scale hotel developments that include marinas and the installation of jetties in their design require excavation activities such as dredging to create the necessary depth for boats to bring in construction materials and create marina channels and jetties (see Bimini Bay development in Box 4). Dredging causes disruption to the nearshore and marine habitat because of the removal of substratum, the creation of anoxic sediment, changes to the biological community and significant increases in water turbidity (Newell 1998).

As discussed in the introduction, nearshore marine environments such as seagrass beds and coral reefs host unique assemblages of flora and fauna of high global and national importance for fisheries and tourism. Approximately 35% (9,000 km^2) of the entire Caribbean region's coral reefs are threatened by increasing siltation and sedimentation related to land use activities (ICRI 2008).

Developers have also undertaken ecologically risky projects such as seagrass and coral relocation, possibly to demonstrate awareness and concern for conservation of critical habitat. Relocation of seagrass and coral is almost impossible and likely to cause further damage in the long-run (JET 2006b).

Box 4: The Bimini Bay real estate and hotel development, Bahamas.

In 2006, the Conrad Bimini Bay Resort and Casino, the luxury brand of Hilton Hotels, began construction on the tiny 'out island', Bimini, in the Bahamas. Bimini is approximately 9 square miles and the landscape is dominated by a lagoon wetland. The Hilton real estate and resort development complex was scheduled to include 1,590 residential units spread over 700 acres, 500 marina berths, a golf course and a 250-room hotel with spa and casino.

In 2000 the Government of Bahamas declared Bimini the highest priority site in the country for a proposed marine protected area (MPA) but it was never implemented. Bimini has been a site of scientific research for over 20 years because of the value and significance of the island's ecosystems.

Bimini is home to a variety of protected, threatened and endangered species including the Nassau Grouper, Small Tooth Sawfish, hawksbill turtles, great hammerhead sharks and the endemic Bimini Boa. The mangroves and seagrass of the North Sound lagoon on Bimini provides habitat for over 100 species of fish and invertebrates. Bimini is the only mangrove habitat on the western Great Bahama Bank. Average species density in the mangroves of Bimini is 19 times that of neighbouring sea grass beds. Species density in the mangroves is also significantly higher than other mangrove areas in the country.

The first phase of construction destroyed acres of Bimini's mangroves (see photo). Mangroves were bulldozed to build a golf course on the northern tip of the island. The sea bed around Bimini was dredged to make a channel for the marina and the dredged material was used to build up the low lying island for construction. The dredging process, in addition to the runoff of dredged sediment into the sea, buried acres of seagrass meadows.

A diverse consortium of campaigners tried to stop the project from going ahead as planned and they were very critical of the EIA study which did not draw on the extensive scientific information that already exists about the natural resources of Bimini. Phase II of the project's construction was eventually halted. Phase I hotel and condominiums were opened in 2008.

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Nearshore marine habitats have been or could be significantly affected through dredging and excavation and habitat relocation activities in the following cases reviewed for this study: Lignumvitae Bay, Antigua; New Providence Island, Bahamas; Scrub Island, BVI; Oil Nut Bay, BVI; Bacolet Bay, Grenada; Grand Baie, Guadeloupe; Mammee Bay, RIU, Jamaica; Montego Bay, Jamaica; and Southeast Peninsula, St. Kitts (see Table 2).

Where coastal vegetation has been cleared away for construction, control of runoff into the nearshore environment is difficult to eliminate or even control (e.g. with use of silt curtains). Goreau (2007) observed that during construction of the luxury 230 acre villa and marina resort at Scrub Island, BVI (developers: Main Sail Development Group), sediment from construction moved under, around and through the silt curtains installed, directly threatening reefs and the nearby Cam Bay MPA.

As mentioned earlier in this section, it is also critical that, at the time of planning the siting and design, developers pay attention to operational issues that will have a negative impact on biodiversity. The treatment of wastewater, for example, continues to be inadequately dealt with by many hotel developers in the region at the time of siting and design, and treatment facilities are still absent or grossly insufficient in many countries of the region (UNEP, 2004; Caribbean 360, *05 May 2008*). See Box 5 for a positive approach to hotel wastewater treatment. According to ICRI (2008), only 25% of hotel and resort wastewater treatment plants in the region were in good operating condition and even the best treatment plants have overload or other problems on occasions (Saffache pers. comm.).

Box 5: Operational issues that must be considered when planning siting and design
Advanced water treatment, Captain Don's Habitat, Bonaire

Few hotel wastewater treatment systems achieve the levels of discharge required to keep coral reefs healthy, yet most siting and design decisions are made on the assumption that systems will function optimally. Nitrogen and phosphorus, which are responsible for the pollution of marine waters and contribute to the loss of corals, can only be removed by advanced wastewater systems.

Captain Don's Habitat in Bonaire is a good example of a development that has taken these concerns into consideration. It is a 68 room hotel specializing in dive tourism. Rather than wait for the promised municipal sewage system to be installed, the Habitat's hotel manager installed a customized wastewater treatment plant in 2001. The first model was developed with the assistance of the Harbor Branch Oceanographic Institute based in the US and in the following five years a number of changes were made to the design to improve its effectiveness. The Advanced Water Treatment Plant utilizes anaerobic bacterial cultures to turn both black and grey water back to 80% purity, a process called *denitrification*. Through the process, nitrogen waste is converted to nitrogen gas and released. The resulting clear discharge water is used to irrigate the gardens around Habitat, which further removes nutrients through plant uptake. The plant is maintained by its hotel staff but requires periodic monitoring from a US based water quality engineer and scientist.

Sources: Chalk pers. comm.; CEHI (c.2010); Goreau (2007).

Inadequate wastewater treatment has greatest impact on coral reef ecosystems. Coral reefs are hypersensitive and adapted to extremely clear and clean water so that even small amounts of additional nutrients in the water can quickly become excessive (Goreau, 2003).

A number of hotels and locations have been identified in this study where sewage treatment was inadequately dealt with at the time of siting and design: Maundays Bay, Anguilla; Great Guana Cay, Bahamas; Mammee Bay, Jamaica; Montego Bay, Jamaica; Rose Hall, Jamaica; Rodney Bay, Saint Lucia; and Crown Point, Grafton Beach, Scarborough, Tobago.

Siltation and disturbance to critical beach habitat

The removal of vegetation from land and beach during construction also causes the runoff of mud and sediment leading to siltation of beaches and nearshore habitats such as seagrass beds and coral reefs that do not thrive in turbid water conditions. Runoff is worst during construction but will almost inevitably continue after the construction phase.

Siltation onto beaches has had a negative impact on turtle nesting sites. Research carried out between 2001 and 2005 at Levera Beach, Grenada, where a 243 acre hotel development project including 18-hole golf course was planned, shows that there was ongoing run-off onto 15% of this turtle nesting beach. It is likely that the deposition of finer material onto the beach may reduce hatch success of nests due to changes in air exchange and temperature between eggs and finer sand (Maison *et al.*, 2010).

Removal of native beach vegetation also eliminates important habitat for globally important marine turtle species and beach nourishment uses sand of different grain size which can cause water turbidity, siltation and the compacting of turtle nesting beaches (Choi and Eckert 2010).

Developments identified in this study and that are causing impacts to beach habitats include the following hotels and locations: Maundays Bay, Anguilla; Crocus Bay, Anguilla; Meads Bay and Barnes Bay, Anguilla; Lighthouse Bay, Barbuda; Scrub Island, BVI; Oil Nut Bay, BVI; Cayo Levantado, Dominican Republic; and Negril, Jamaica (see Table 2).

Innovative siting and design practices that minimize disturbance to natural habitat

On the positive side, examples in boxes 6-8 show that there have been a number of innovative approaches in hotel developments to minimize habitat destruction. Experts consulted during the research as well as grey literature sources (see Annex 1) have noted that there is a small but growing trend, mainly in the last decade, in the use of development approaches that attempt to integrate and in some cases avoid negative impacts to natural vegetation and habitat (Lurel pers. comm., Vermeij pers. comm. and Duffy-Mayers pers. comm.). See Table 3 for a more comprehensive but non-exhaustive list of good siting and design practices identified, primarily through interviews. No field studies have been done to confirm their biodiversity impact.

Box 6: Transforming a hotel with a bad siting record to one that minimizes current and future biodiversity impacts.

Villa Las Brujas, Cuba; Spice Island Beach Resort, Grenada; Kawann Hotel, Guadeloupe; Anse Chastenet, and Ladera, Saint Lucia were hotels built in the 1960s and 70s but redeveloped and renovated to include improved siting and design models. An interesting case is that of the former Hotel Cohoba in Marie-Galante, Guadeloupe, which encroached on a dry forest under protected status (some of these lands were de-gazetted to allow for the project to go ahead, against the advice of environmental agencies), and with a beach that is a very important turtle nesting site. Hotel Cohoba went bankrupt and its new owners, Blue Season Hotels, have radically modified the policies and approach, with the new Kawann Hotel having received environmental certification and high praise for its behaviour. It has stopped encroachment on the forest, modified its lighting in ways that no longer affect turtles and employs the full range of good environmental practices (including renewable energy and energy efficiency, composting of food and garden waste, drainage control, procurement of sustainable products, eco-tourism activities and community sponsorship). While their good practices include mainly environmentally conscious *operational* practices, it is a good example of transforming a hotel with a bad siting record into an enterprise that minimizes its current and future biodiversity impacts.

Source: Lurel pers. comm.

Box 7: Good hotel siting and design practice in the beach habitat
Beach gardens, Jumby Bay Island, Antigua

Managers and owners of exclusive villas on the Jumby Bay island resort have created 'beach gardens' that support nesting hawksbill turtles while maintaining an aesthetically beautiful landscape for villa owners and resort guests. Native coastal plants such as the ink berry (*Scaevola plumeria*), sea-grape (*Coccoloba uvifera*), bay cedar (*Suriana maritima*), beach morning glory (*Ipomoea pes-caprae*), and sea bean (*Canavalia maritima*) were planted in groupings on Pasture Bay beach. Beach gardens have provided additional nesting habitat for turtles.

Sources: Choi and Eckert, 2009; Muenz and Andrews, 2003

Box 8: Good practice to minimize disturbance to vegetation and conserve forest: Jungle Bay, Dominica and Tiamo Resort, Bahamas

Jungle Bay Dominica's 35 cottages have been elevated on wooden posts beneath the canopy of Gomier and Cedar trees to minimize disturbance to the forest ecosystem. A well thought out process during planning was employed to reduce disturbance and the need for air conditioning as well as enhance natural lighting.

In the Bahamas, Tiamo Resort's developers built an off-site, proto-type cottage in order to determine how best to minimize disturbance to the natural environment and to accurately inventory how much material was needed so as to reduce waste deposit when it was built on site on Andros island.

During construction, vegetation was cut by hand using machetes and chainsaws to preserve as much vegetation as possible and cottages were built within the vegetation.

As with Jungle Bay, Tiamo cottages were built on stilts to minimize disturbance and land clearance. Materials were transported using a raft boat so that beach dredging was not necessary to bring in the building materials.

The original owner of Tiamo gradually bought the land around the resort for preservation. Tiamo is now surrounded by 125 acres of private coastal dry forest.

Sources: www.tiamoresorts.com and http://www.sidsnet.org/eco-tourism/tiamo.html and www.junglebaydominica.com

Table 3: Innovative siting and design approaches in hotels in the Caribbean

Country	Hotel/Resort	Date built	Size	Innovative siting and design approaches
Aruba	**Bucuti Beach** www.bucuti.com	1987	• 62 rooms and 42 suites	• Grey and black water treatment system • Sea turtle conservation • Guest awareness and community conservation work
Antigua	**Hermitage Bay Hotel** www.hermitagebay.com	2007	• 10 acres • 25 cottages	• Vegetation cut by hand during construction • Cottages set within beach vegetation and against hillside • Grey and black water treatment system
Bahamas	**Tiamo** www.tiamoresorts.com	2000	• 125 acres • 11 cottages	• Vegetation cut by hand during construction • Built cottage proto-type off site to minimize disturbance during construction on site • Original owner purchased surrounding land for preservation – 125 acres • Composting toilets
Bonaire	**Captain Don's Habitat** www.habitatbonaire.com	1976	• 63 units	• Advanced grey and black water treatment system
Cayman Islands	**Camana Bay** www.camanabay.com	2005 - 2009	• 500 acre development	• Construction led by LEED principles • Saved large native trees and have rescued large native trees from other properties, and operate native plant nursery
	Lighthouse Point www.lighthouse-point-cayman.com/	2009	• 9, 2-bed apts	• LEED certified project • Advanced wastewater system
Cuba	**Sol Melia Cayo Coco**	1999	• 250 rooms	• Built on stilts over lagoon • Built with good setback from beach • Designed to minimize impact and integrate nature
	Villa Las Brujas http://www.cubahotelreservation.com/	Renovated in 2006	• 35 acres • 24 cottages	• Built within the mangroves on stilts • Use of wooden walkway to join the cottages

Dominica	**Jungle Bay Resort and Spa** www.junglebaydominica.com/		• cottages	• Vegetation cut by hand during construction, Cottages built on stilts to minimize disturbance to forest ecosystem,
	Rosalie Bay Nature Resort www.rosaliebay.com/	2010	• 22 acres • 28 units	• Cottages set against hillside • Guest awareness and sea turtle conservation awareness
Dominican Republic	**Terrazas de Coson** www.terrazasdecoson.com/	2009 – on going	• 370 acres • 72 'villa estates', 28 room hotel	• Building built within the vegetation against the hillside • Sustainable design construction
Grenada	**Spice Island Beach Resort** www.spiceislandbeachresort.com	1961 (renovated 2000)	• 64 suites	• Built with effective setback on busy tourist strip
Guadeloupe	**Kawann Hotel** http://www.kawann-beach-hotel.com/	renovated	• 100 rooms	• Renovated old hotel that had bad environmental practices and had encroached on protected area • Now has very good environmental record • Installed turtle-friendly lighting on beach
Jamaica	**Hotel Mockingbird** www.hotelmockingbirdhill.com	1970	• 10 rooms • 6.5 acres	• Hotel converted from an existing building set on the hillside • Guest awareness
Saint Lucia	**Jade Mountain and Anse Chastanet** http://www.jademountain.com	2006, 1968 (renovated 2004)	• 600 acres • 20 rooms (JM) • 49 rooms (AC)	• 'organic architecture' to take advantage of nature; each room individualized • Use of all local material and craftsmanship
	Ladera www.ladera.com	1972 (renovated 2004)	• 32 rooms	• Luxury eco lodge style rooms built into the hillside • Unique architecture
	Ti Kaye Village www.tikaye.com	2001	• 33 rooms • 10 acres	• Cottages built into the hillside • Designed to look like small village

Trinidad and Tobago	**Asa Wright Nature Centre** www.asawright.org	1967	• 26 rooms • 1,500 acres	• Cottages and main building within the natural forest habitat • Surrounded by 1,500 acres of land bought by the Centre • Guest awareness
	Footprints Tobago www.footprints eco-resort.com	1997	• 9 rooms • 62 acres	• Reforestation of land with native species • Use of reclaimed material for building

4. VOLUNTARY INITIATIVES AND MARKET-BASED INSTRUMENTS

Section 4 overview of key issues and opportunities

- There are very few environmental guideline documents for hotel developers focusing on siting and design (most focus on operations, and especially on energy), but those available provide good and relevant information.
- The impact of guideline documents may be limited due to their voluntary nature, current information overload on hotel managers, the complexity of the development process and varying levels of control along the chain.
- Environmental certification schemes have had a positive impact on operational environmental practices but have paid very little attention to siting and design concerns.
- Leadership in Energy and Environmental Design (LEED) certification may have growing influence in the region in the future.
- Corporate environmental policies show a promising trend towards improved attention to minimizing negative impacts to biodiversity and sustainable building design.
- Significant gaps still exist between hotel policy and practice.

Overview

This section looks at the voluntary initiatives that have been developed for and by the hotel sector to help guide and inform biodiversity sensitive siting and design approaches. Initiatives reviewed here include guideline documents and certification schemes as well as individual corporate environmental and social responsibility policies[20]. Their attention to biodiversity and siting and design is reviewed and where possible, their level of uptake and effectiveness in guiding the practice of hoteliers and developers is discussed. Annexes 4, 5 and 6 provide an inventory and summary description of documents, and schemes are discussed in more detail.

The vast majority of guideline documents and certification schemes available for hotels, as well as corporate environmental policies, are focused on the operational aspects of hotel management, and examples of specific attention to biodiversity and siting and design are limited. However, the few tools and policies that have a focus on, or provide a framework from which to build in further integration of, biodiversity and siting and design considerations have been singled out for this study.

[20] Research on hotels in the Dominican Republic and Cuba has shown that when sustainable siting choices and land use practices are employed during the development phase, good practices cascade down to the hotel operations (Stewart 2006).

Guideline documents

Guideline documents that look specifically at hotel siting and design at a global, regional, national and corporate level are limited (see Annex 4). However, over ten years ago, the Caribbean Environment Programme (CEP) in collaboration with Caribbean Action for Sustainable Tourism (CAST), produced a series of publications relating to sustainable tourism, one of which was a Caribbean regional training manual on *Environmentally Sound Tourist Facility Design and Development for the Tourism Industry*[21]. This document is a training module for environmentalists and development planners, and is part of a 'package' of training materials to improve sustainability in the tourism industry. A number of courses attended by hotel managers, coastal area planners and staff from governmental departments and authorities accompanied the publications' development.

The manual discusses environmental impacts broadly, but it is still relevant to biodiversity conservation needs. Some of the language is now outdated but would only need revision, as its contents remain relevant to current needs. The document is broken down into seven modules on:

- Environmental impacts of tourism
- Common environmental impacts from poor siting
- The coastal regulatory system (overview of regulatory instruments)
- Sustainable project planning
- Sustainable infrastructure and masterplanning
- Sustainable building design guidelines
- Monitoring guidelines for sustainability

Information on the uptake, use and influence of this course and its publications would be very useful for the understanding of the impact, usefulness and barriers to the implementation of the manual's key messages.

At a global level, Conservation International's (CI) *The Green Host Effect* (Sweeting *et al.* 1999) may have been one of the first documents to offer recommendations to hotel and resort developers on siting and design approaches. It also includes public sector recommendations to encourage land use planning practices. In 2005, CI and the International Tourism Partnership (ITP) published *Sustainable Hotel Siting, Design and Construction* (SDC). This document remains one of the few available publications which looks specifically at siting and design of hotels. SDC is targeted specifically at firms involved in the development and construction phases and helpfully recognizes the complexity of the hotel development process as well as the large range of stakeholders involved. The document endeavours to provide recommendations for all major stakeholders in the development process, but because of its focus on a global scale, it necessarily glosses over nationally or regionally specific issues, such as biodiversity considerations or local features of the decision-making process.

[21] http://www.cep.unep.org/about-cep/spaw/copy_of_sustainable-tourism

The *Global Sustainable Tourism Criteria* (GSTC), developed by Rainforest Alliance, the United Nations Environment Programme (UNEP), the United Nations Foundation**,** and the United Nations World Tourism Organization (UNWTO), are a set of 37 voluntary standards representing the minimum that any tourism business should aspire to. The criteria provide a framework for mainstreaming tourism sustainability that can be used by all tourism businesses, certification programmes, the public sector and NGOs as a starting point for sustainable tourism programmes or guidelines.

One of the four criteria: *(A) demonstrate effective sustainable development* is directly relevant. Sub criterion *A.6 Design and construction of buildings and infrastructure* specifies:

- *A.6.1 comply with local zoning and protected or heritage area requirements;*
- *A.6.2 respect the natural or cultural heritage surroundings in siting, design, impact assessment and land rights and acquisition;*
- *A.6.3 use locally appropriate principles of sustainable construction.*

Box 9 presents the relevant potential indicators for sub criteria A.6.2. At present, these indicators read as a checklist and because they are designed to provide minimum criteria which may be important for biodiversity of national or local importance would not be covered. In addition, as noted earlier, the usefulness of criteria and indicators may be limited without knowledge and existence of baseline data. However, they provide a very good starting point from which more detailed steps and prerequisites can be fleshed out. The GSTC has recently been launched so there are as yet no examples of GSTC's application in the region, but there is no doubt that they would be very relevant to Caribbean countries.

Guidelines have also been recently published (March 2011) by a global tour operator corporation, TUI: *Guidelines for Environmental Sustainability in Hotels*. This document has a large section on siting and design and shows some links to the information in the SDC. The sections on (a) planning and pre-design and (b) construction and renovation include recommendations on how to conserve habitats, use native species and minimize impact on the natural environment. The document gives an outline of what to include in an Environmental Management Plan at the time of construction or renovation to ensure that all EIA mitigation measures are addressed.

Other useful guideline documents that address hotel siting and design needs are restricted to niche sectors, namely ecotourism and ecolodge design (Mehta *et al*. 2002; TNC n.d.) and best practice guidelines for sea turtle nesting beaches (Choi and Eckert 2009). Despite their focus on niche interests, these documents would effectively inform and could be used to develop hotel siting and design guidelines. Choi and Eckert (2009) in particular have been prepared with deep knowledge of the Caribbean context.

Box 9 Siting and design relevant criteria and indicators in the Global Sustainable Tourism Criteria

A. Demonstrated effective sustainable management

A.6. Design and construction of buildings and infrastructure

A.6.2. Respect the natural or cultural heritage surroundings in siting, design, impact assessment, and land rights and acquisition.

Potential indicators

6.2.1. Siting respects natural and cultural heritage surroundings

- Endangered wildlife has not been displaced or reproductive habitat destroyed (yes/no)
- Buildings do not destroy scenic beauty (photos of landscape profile before and after construction)
- Earth movements have been minimized(m3 of earth moved) / (m2 of construction)
- Water courses have not been altered (water course map before and after construction) (yes/no)
- Runoff from buildings, parking lots, and grounds is channelled and filtered.
- Location of buildings not over water bodies and wetland s (yes/no)
- Location of buildings and roads not in designated 'no-build' zones (yes/no)
- Vegetation disturbance has been minimized and restored with native vegetation (m2 of disturbed vegetation); (text description & photos of restoration)
- Gardens, green areas, golf courses, and sporting fields use native vegetation where possible or grasses that are adapted to the local climate

6.2.2. Design respects natural and cultural heritage surroundings

- Buildings use regional construction materials, as long as these are obtained sustainably (which materials; sources indicated).
- Existing structures have been adapted where possible (yes/no)

6.2.3. Natural and cultural impact has been assessed

- Environmental and social impact assessment has been completed (yes/no)
- Plans are in compliance with recommendations (documentation of compliance with recommendations)

Source: www.sustainabletourismcriteria.org

At the national level there are very few examples of published guidelines, and only three have been found in this study, two of which have been formulated by physical development planning and have been discussed in Box13 under the section on governmental development planning instruments in Section 5[22]. The third is Construction Guidelines[23] that have been development

[22] Mehta *et al.* (2002) has been noted as having informed both national guidelines in Bonaire and Dominica presented in Annex 7.

[23] http://www.bmp.org/pdfs/Construction-guidelines-bonaire.pdf

by the National Parks Foundation of Bonaire (STINAPA), who manages a large protected area on that island (see Box 15). The construction guidelines were developed in collaboration with the Bonaire Island Government Department of Physical Planning (DROB), construction companies, land owners and developers and targeted at owners, construction companies and developers. These provide standards for design of a building site plan, advice on how to preserve vegetation, and standards for screening sites. They are voluntary guidelines but are closely aligned to the requirements of the DROB.

Effectiveness of guideline documents

The impact of guideline documents on behaviour and practices in the hotel and resort sector is uncertain. Hotel managers are under enormous pressure and already suffer from an information overload (Duffy-Mayers pers. comm.), and many informants familiar with the sector attest that guidelines and similar documents are generally not used by hoteliers in the region. Managers and developers also have varying levels of control along the chain of stakeholders involved in the development process (see Section 2) and, as a result, the points at which guidelines can be introduced and monitored vary from project to project and from place to place.

Documents such as the SDC are designed and used as 'suggested' approaches rather than strict guidelines and are therefore more appealing to already 'enlightened' managers. According to Fiona Whittenbury (pers. comm.), Programme Manager at ITP, the organization that co-authored and published the SDC, they consistently sell a modest 50 – 70 copies of the guideline document a year and she believes that the relatively low sale is due to minimal marketing. Members of the ITP who were consulted on their use of the SDC confirmed that they have 'referenced it from time to time'[24]. Others noted that they 'include the handbook ... at the beginning of projects' but that '[they] meet with varying degrees of success given the enormously different markets in which we operate'[25] [26].

Environmental certification schemes

Interviews with hotel and tourism associations in the region revealed that rather than guideline documents, SME hoteliers and key tourism players are far more influenced by environmental certification programmes[27] (also see Howell n.d.). Despite warranted criticism of 'green washing' and facilitating false eco-credentials, environmental certification schemes can be credited with raising awareness within the hotel sector of operational issues such as energy efficiency and water conservation.

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[24] Fairmont hotels - quote via email correspondence with Fiona Whittenbury, International Tourism Partnership re: use of the SDC

[25] Brad Davidson, Starwood Projects Director, Design, Construction and Engineering

[26] Quote via email conversation between Brad Davidson and Fiona Whittenbury, International Tourism Partnership re: use of the SDC

[27] Green Globe is the most widely known and used certification scheme in the region. See Table in Annex 6).

The market-based approach of certification schemes brings incentive and impetus of market advantage, once certified, and therefore shows potential for their application to siting and design criteria. However, the potential impact of certification for siting and design may be limited where site specific baseline data and relevant legislation is not present or enforced. Development control instruments and enforcement will be discussed in more detail in Section 5. Certification schemes are also costly and could therefore exclude many SMEs who are unable to afford the fees.

Two certification schemes deserve mention for their attention to siting and design: Leadership in Energy and Environmental Design (LEED) and Blue Flag.

LEED

LEED was developed by the U.S. Green Building Council in 1998 primarily for new commercial offices but has since been revised and upgraded a number of times and is used for existing as well as new buildings. It is now the most widely used green-building measure in the US (NY Times 19 May 2010). Recent attention on LEED by one of the Caribbean region's major funding institutions, the IDB, as a benchmark for a number of Marriott hotels to be built in Trinidad and Jamaica and other countries in Latin and Central America (Caribbean 360 *15 December 2010*), would suggest that interest in LEED for hotel developments is likely to increase within the Caribbean in the future.

For construction of new buildings and renovations, a number of prerequisites and credits in seven topics must be earned. Criteria relevant to siting and design concerns in the region include sustainable sites, water efficiency and innovation in design. Box 10 outlines the relevant prerequisites and credits to siting, design and biodiversity under LEED (see Annex 5 for further information).

LEED is clearly a very positive step in the right direction. However, it does not address some biodiversity conservation considerations specific to the Caribbean. The scheme has endeavoured to factor in geographically and regionally specific environmental priorities in its accreditation but does not currently include the Caribbean as a specific region[28].

Blue Flag

Blue Flag began in Europe and is now an international voluntary certification scheme for beaches and hotels with marinas, with a focus on cleanliness and safety for recreational use of beaches and marinas. While Blue Flag is not concerned specifically with biodiversity, its focus on water quality - specifically that 'no industrial, waste-water or sewage related discharge ...' as well as environmental management - specifically that 'coral reefs in the vicinity of the beach must be monitored' are important requirements that have a direct bearing on hotel siting and design impacts discussed in Section 3. Criteria for marinas in particular, stress sewage treatment and no sewage discharge.

[28] Regional and geographic priorities are determined by LEED chapters all of which currently reside in the US; there are no chapters in the Caribbean.

Box 10: Siting and design relevant credits to meet Leadership in Energy and Environmental Design (LEED) certification.

SUSTAINABLE SITES (SS)

SS Prerequisite 1: Construction Activity Pollution Prevention
Intent: To reduce pollution from construction activities by controllin erosion, waterway sedimentation and airborne dust generation.

SS Credit 1: Site Selection (1 Point)
Intent: To avoid the development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

SS Credit 5.1: Site Development – Protect or Restore Habitat (1 Point)
Intent: To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity

SS Credit 5.2: Site Development – Maximize Open Space (1 Point)
Intent: To promote biodiversity by providing a high ratio of open space to development footprint.

SS Credit 6.1: Stormwater Design – Quantity Control (1 Point)
Intent: To limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff and eliminating contaminants.

SS Credit 6.2: Stormwater Design – Quantity Control (1 Point)
Intent: To limit disruption and pollution of natural water flows by managing storm water runoff.

SS Credit 8: Light Pollution Reduction (1 Point)
Intent: To minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve night-time visibility through glare reduction and reduce development impact from lighting on nocturnal environments

WATER EFFICIENCY (WE)

WE Credit 2: Innovative Wastewater Technologies (2 Points)
Intent: To reduce wastewater generation and potable water demand while increasing the local aquifer recharge.

INNOVATION IN DESIGN (ID)

ID Credit 1: Innovation in Design (1-5 Points)
Intent: To provide design teams and projects the opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.

Source: http://www.usgbc.org/ShowFile.aspx?DocumentID=7244

According to Choi and Eckert (2009), the organizations Reef Check and Wider Caribbean Sea Turtle Conservation Network (WIDECAST) are exploring the possibility of a partnership with Blue Flag to improve its requirements and to support coral reef and sea turtle nesting monitoring and awareness.

Hotel corporation policies

The corporate policies of seventeen of the major high end and inclusive chains were reviewed for this study. Annex 6 lists their key corporate policies and the relevant aspects to biodiversity and siting and design from each of the documents. The research shows an encouraging level of awareness at the policy level to overall environmental and sustainability considerations, although specific attention to biodiversity and siting and design is relatively limited. However, a number of corporate policies standout, namely:

- Barceló includes a specific section on sustainable construction and ecosystem recovery in the corporation's sustainability and environment corporate statement and programmes. Barceló states that 'newly *constructed hotels … ensure both the design and implementation of the project respects the environment and incorporates ecological materials*'.
- Club Med has a specific policy on Protecting the Environment with a section on biodiversity, which states: '*Club Med introduced High Environmental Quality project management support for all its major construction and renovation projects, backed up by written environmental construction guidelines …*' *Club Med's 'buildings occupy no more than 11 percent of total land area covered by our villages'*.
- Sol Meliá has a Sustainable Development Strategic Plan (2008) which states: '*we will identify the environmental impact of our operations, reducing it and helping preserve biological diversity in the destinations in which we operate*'.
- Three of the corporate policies reviewed: Accor, Marriott and Hilton state their use of LEED as a benchmark for their hotel construction.

Effectiveness of corporate policies
Sol Melia's development in Cuba, Cayo Coco (see Table 3) suggests that the corporation has put its policy into practice at this hotel. The 250 room hotel, built in 1999, was designed to minimize impact to natural habitat. A number of rooms were built on stilts over the wetland lagoon and those built on the beach were set well back from the beach active zone (Saffache pers. comm.).

However, for a number of hotel corporations, hotel developments in the region attest to a gap between policy and practice. For example:

- The Bimini Bay Development in the Bahamas (see Box 5) is in contradiction with Hilton's corporate sustainability commitment, which states as one of Hilton's four goals the

‘advancement of sustainable buildings and operations’ and indicates that LEED standards are used as a benchmark for construction and design standards.

- Four Seasons, which states in its Corporate Values statement that ‘*we engage in sustainable practices that conserve natural resources and reduce environmental impact*’ has not lived up to these values at the Mount Hartman development in Grenada (see Box 3).
- Ritz Carlton’s Community Footprints statement says that the company ‘*is committed to working towards a more sustainable future by protecting and preserving natural resources*’ but its development- in Aruba (see Table 2)suggest otherwise.
- RIU has had a series of controversial developments that have created serious negative impacts to natural habitat in Jamaica (see one example in Table 2 in Negril), yet its ‘We Care About the Environment’ statement says that ‘*we are aware of our activity’s direct impact on the environment*’ and that ‘*caring for the environment is especially key* …’

This section has shown the achievements, potentials and shortcomings of market-based and voluntary instruments to guide design and planning of hotels in the region. As illustrated in section 2, decisions and actions that are relevant to the design and siting of hotels involve a wide range of stakeholders, including public sector agencies. The following section examines the public policy frameworks and instruments that are relevant to such decisions and actions.

5. PUBLIC POLICIES AND INSTRUMENTS

Section 5 overview of key issues and opportunities

- Comprehensive tourism and sustainable development policies exist in the region, but there remains a gap between policy and practice.
- While the situation varies greatly between countries, land use planning is generally weak and there is poor integration of biodiversity information and issues in planning and decision-making, resulting at times in inappropriate developments in ecologically important sites.
- Protected areas have also not been immune to development, with some sites having been de-gazetted to facilitate investors.
- A number of development controls exist but enforcement is weak.
- EIA processes are critical to mitigating adverse biodiversity impacts from hotel developments. Although EIA processes and legislation have improved over the years, many gaps and weaknesses remain.
- The EIA instrument is usually ineffective in helping to manage and mitigate the cumulative impact of several developments in a given geographic area. In those instances, other planning instruments are needed.
- Examples of enforcement, incentives and involvement of civil society in decision-making demonstrate that governments can create an environment in which the private sector is encouraged to integrate biodiversity considerations in its siting decisions as well as in its operations.

Tourism policies

Most countries have national tourism policies and plans. In all cases, biodiversity conservation is not a feature of policy statements. Most tourism plans pay little attention to biodiversity, although some provide a guide on how tourism will be developed sustainably, therefore minimising biodiversity impacts and guiding siting and design requirements. In some cases, tourism plans and policies are little more than a sales promotion with little or no reference to issues of sustainability (much less reference to siting and design). Plans and policies do not provide instruments for managing development planning which is part of the development planning process discussed below. Table 4 shows the range and status of relevant policy documents in Caribbean countries.

In 2000, the Caribbean Tourism Organisation (CTO) and Caribbean Hotel and Tourism Association (CHTA) undertook a project to develop a Regional Sustainable Tourism Policy Framework (McHardy 2000). This project aimed to establish a consensus on sustainable

tourism principles and act as reference for the development of national sustainable tourism policies or the remodelling of existing plans more closely aligned to sustainability principles. The framework makes specific mention of 'a sustainable approach to site planning and building design', improving EIA requirements and monitoring in the development process, along with other biodiversity related considerations (McHardy 2000: 7-17). This policy was not accepted by the Caribbean Community (CARICOM) or the Organisation of Eastern Caribbean States (OECS), and this affected its adoption by countries in the region. CTO and CHTA were unable to monitor the use of this framework to determine its level of uptake and other reasons for and against its use (Henry pers. comm.).

The OECS has recently (March 2011) embarked on the development of a harmonized tourism policy for its Member States of the OECS but it is not yet known what level of attention will

Table 4: Range and status of tourism development and biodiversity related policies in Caribbean countries.

Plan/Policy	Established
1. Strategy for sustainable tourism development	Barbados; Cayman; Guadeloupe; Haiti;
2. National Tourism Plan or Tourism Master Plan	Antigua and Barbuda, Anguilla, Bahamas, Barbados, Cayman, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Martinique, Saint Lucia, Trinidad and Tobago
3. Integrated National Development Plan *or* National Sustainable Development Strategy	Aruba, Bahamas, Barbados, Cayman, Jamaica;
4. Coastal Zone Management	Barbados, BVI, Cuba, Guadeloupe, Martinique, Puerto Rico, USVI
5. Land Use plan	Bonaire, Guadeloupe, Martinique
6. National environmental action plan	Antigua and Barbuda, Bahamas, BVI, Cuba, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent
7. National biodiversity strategy and action plan	Antigua and Barbuda, Bahamas, Barbados, Cayman, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Jamaica, Martinique, Saint Lucia, Trinidad and Tobago
8. Protected area strategy/ plan	BVI, Bonaire, Cuba, Curaçao, Grenada, Guadeloupe, Jamaica, Martinique, Saba, Saint Lucia, Trinidad and Tobago

Sources: McHardy (2000); CEPF 2010; national policy and planning documents

be given to biodiversity conservation and issues related to development planning and practice. Several individual countries, such as Anguilla, Barbados and Trinidad and Tobago, are currently reviewing or have recently updated their tourism policies (Henry pers. comm.).

Land use policies and integrated land use planning

Land use policies and integrated land use plans, including coastal zone management plans, are critical to guide tourism development, but few countries have approved land use, coastal zone or integrated development plans (see Table 4). Coastal zone management policies, though uncommon, are important because of their potential to guide the complexity of uses in this zone, including development of vacation accommodation, so that they do not negatively impact critical ecosystems and habitats.

The region has however developed valuable experience in the use of integrated plans and multiple-use management arrangements for critical areas (some of which are legally designated protected areas while others have less rigorous legal bases) where a number of potentially conflicting uses and tourism-related activities need to be carefully managed. Examples include the integrated management of the Samana Bay in the Dominican Republic, the Negril Environmental Protection Plan in Jamaica and the Soufriere Marine Management Area in Saint Lucia. These examples illustrate the value of locally-specific instruments to harmonize human activities, including a range of tourism uses, in ways that sustain natural resources while enhancing livelihoods and promoting economic development.

Biodiversity conservation instruments

Three instruments contribute directly to the conservation of biodiversity and to the prevention of negative impacts by vacation accommodation on species and ecosystems.

Biodiversity Inventories
The status of knowledge on biological diversity varies greatly between islands. The ecosystem profile carried out in 2009 by the Critical Ecosystems Partnership Fund (CEPF 2010) and BirdLife's study of IBAs in the Caribbean (Wege and Anadón-Irizarry 2008) are perhaps the best and most current summaries of that knowledge. They show that several islands have conducted detailed inventories of species and critical ecosystems. The quality and comprehensiveness of the inventories is generally dependent on the existence of specialized scientific institutions (e.g. the *Centro Nacional de Áreas Protegidas* and the *Instituto de Ecología y Sistemática* in Cuba or the *Parque Zoológico Nacional* in the Dominican Republic), on statutory requirements (e.g. the programme ZNIEFF – *zones naturelles d'intérêt écologique faunistique et floristique* in the French territories) or as the basis for the formulation of plans for systems of protected areas (e.g. Grenada or Saint Lucia).

National Biodiversity Strategies and Action Plans (NBSAP) The National Biodiversity Strategies and Action Plans (NBSAP) which are prepared in accordance with the requirements of the Convention on Biological Diversity (CBD) constitute the most comprehensive policy documents

to guide biodiversity conservation in most islands. All countries of the region are signatories to the CBD, and are therefore expected to report periodically on the status of implementation of their NBSAP and on progress in biodiversity conservation. Several of the NBSAPs make specific reference to tourism and to the need to link biodiversity conservation with sustainable approaches to tourism development.

Protected areas

Protected areas remain the primary instrument for *in situ* biodiversity conservation, an instrument that is directly relevant to the management of the relationship between biodiversity and hotel siting, because protected areas typically aim at conserving valuable natural landscapes that could be attractive to hotel development. Several countries of the region have comprehensive national systems of protected areas, while others have a more *ad hoc* approach to designation. In the Caribbean, the main issue remains the effectiveness of management in the protected areas that are already established, as a significant majority of these areas suffer from weak or deficient management regimes.

In addition, in most countries of the region, the proportion of land area protected has not been systematic to ensure that a representative spread of key ecosystem types is conserved. Neither has the scale of designation in many instances been large enough to conserve biodiversity or to adequately cover KBAs. Some of the under-represented ecosystem types are dry coastal woodlands, dry scrubs, mangrove forests and lowland and coastal ecosystems (CEPF 2010), ecosystems that are all particularly at risk from inappropriate hotel and resort developments.

Development control instruments

All countries of the region have a development planning process where permission must first be granted before any development or construction activity can proceed. Development planning legislation outlines the steps and instruments that apply as part of the process. Annex 8 identifies the relevant legislation for selected countries. The development control and planning permission process is typically managed by the departments responsible for land use planning and physical development. The other main instruments that relate to siting and design for hotel and resort developments include:

- Environmental impact assessments
- Coastal setback distances
- Building codes

In some countries there are more specific control instruments such as water pollution mitigation measures (Barbados)[29], density and overcrowding regulations (Barbados)[30] and beach licensing (Jamaica)[31].

[29] See Mycoo (2006)
[30] ibid
[31] Under the Beach Control Act (1956 – revised in 1976) a beach license is granted to property owners for the right to use the 'foreshore'. The content of the license differs depending on the activity on the beach. The license must be renewed annually. http://www.nepa.gov.jm/policies/beach/Background.htm

Environmental impact assessments

EIA is one of the main tools within the planning process where potential biodiversity issues could and should be identified and remedial measures established to minimize impact prior to the development of a hotel.

EIAs have become standard practice for developers. Revisions to the planning laws of the majority of Caribbean countries within the last decade now provide a legal basis for requiring EIAs of medium and large scale developments. In some countries there is no legal mandate for smaller scaled developments where the requirement for an EIA is typically at the discretion of the office responsible for physical planning. In some countries, there are exceptions to the rules, as in the case of the BVI, where the Premier has the discretion to approve developments over USD10 million. The OECS Secretariat has recently initiated a project to review and make appropriate recommendations for reform of the EIA process in OECS member countries. Particular attention will be placed on coastal development for tourism purposes (OAS 2010).

In the region, EIAs are conducted almost entirely by the private sector – either by local, regional or, in the case of a number of large scale projects, international environmental consulting firms. The globalization of firms involved in EIAs is also a feature of the resort development and construction process described in section 2[32].

The following issues have been identified with EIA processes and environmental monitoring capacity in the region:

- *Evaluating EIAs*: 'Evaluating' EIAs and ensuring adherence to the recommendations of the study is the responsibility of the State. In all countries there is a system in place for reviewing EIAs. Usually the completed EIA is circulated to a number of different ministries or departments for comment. In some cases a review team is put together at which time findings, omissions and deficiencies are discussed with the developer's EIA team. However, the human and financial resources of environmental departments are usually not enough to give the attention required to carefully critique EIAs (CEPF 2010).

- *Baseline data does not always exist*. Where species inventories and ecosystem baseline data do not exist, developers are often unwilling to fund collection of such data (Gobin 2001).

- *Inadequate attention to alternatives:* EIA preparers often do not pay enough attention to proposing alternative scenarios (JET and ELAW 2005, 2007; Gobin 2001). This may be

[32] See firms such as US based ATM Applied Technology and Management http://www.appliedtm.com/services/international.htm that undertook the EIA for Scrub Island Resort, BVI, Beef Island Development, BVI (quashed) and Atlantis, Bahamas. Also Netherlands based firm, DHV International *www.dhv.com* that conducted the EIA for RIU Hotel Tropical Bay resort in Jamaica. DHV in fact wrote a letter to RIU objecting to the way the permit conditions and EIA recommendations had been ignored (JET, 2005b).

the product of inadequate enforcement and/or legislation. In Martinique, where EIA processes are more robust, a hotel proposal at Pointe Faula was abandoned by the developer due to remedial measures requested by the EIA (Saffache pers. comm.).

- *Inadequate attention to cumulative impacts*. Critics of the EIA process have also found that, particularly in the case of large scale resort developments, all aspects of the development are not reviewed at the same time so that the entire impact of a development can be assessed. For example, a sewage plant, golf course permit and beach license are assessed at different times and sometimes well after construction has commenced (JET 2006a). In addition, the cumulative impacts upon an area where several resorts and other coastal developments already exist, not just the impact of a specific development (see Box 11), are rarely considered by the EIA (Saffache pers. comm.)

Coastal setback limits

Over the past two to three decades, coastal setback limits have been used in the Caribbean to provide access for public use, create buffer zones between the nearshore marine environment and coastal infrastructure, and allow the beach zone to expand and contract naturally (Mycoo 2006). The distances vary depending on shoreline characteristics but typically range from 15m to 100m (Choi and Eckert 2009). This is an important instrument for maintaining the beach ecosystem (vegetation, sand dunes and the natural accretion and erosion of the beach system) and protecting nesting sea turtles. The setback should also ensure that the beach can recover following storms and high wave events.

Setbacks have typically been calculated as a prescribed distance from the high water mark. In practice, however, the application of the high water mark has been difficult to implement. The position of high water mark varies considerably from day to day and season to season. It is also subjective unless established by an accurate vertical height (Mycoo 2006). As a result, development continues to take place within the beach zone. Setbacks using the line of permanent vegetation from which the distance is calculated may be more appropriate for maintaining the beach ecosystem functions (Wason and Nurse 1994).

Building codes

In the last decade, greater attention by government planning and development departments has been placed on the review and revision of the Caribbean building codes due to the threat of more powerful hurricanes and disaster mitigation on the built environment. In 2010, the CARICOM Regional Organisation for Standards and Quality began a programme, funded by the CDB, to develop regional building standards based on international building standards but specific to the Caribbean region[33]. The emphasis of building codes is to safeguard health and property by proper planning and spatial requirements rather than consideration to

[33] http://www.crosq.org/

Box 11: A combination of impacts on the eastern shoreline of the Dominican Republic

Playa Bávaro and Punta Cana have heavy concentrations of large all-inclusive hotels. It is a good and well-documented example of a case where impacts cannot be attributed to a single hotel, but where the cumulative impacts of several hotels have caused very significant damage.

The beaches of these resort towns are protected and supplied by small patch coral reefs. Over the last few years, the region has been suffering from increased rates of beach erosion. Researchers believe beach erosion is linked to a combination of factors such as pollution and sedimentation coming from hotel developments and operations and other land based sources, as well as diseases and overfishing. Live corals currently represent only 9.4 percent of the total cover of the reefs protecting these two resort towns.

A study carried out by the World Resources Institute's Coastal Capital project determined that if the remaining live coral disappears from the reefs, beach erosion rates could increase by more than 80 percent. Ten years after the disappearance of live corals, erosion rates could increase by more than 100 percent in Playa Bávaro and Punta Cana. This would have long-term damaging impact on the income for resorts and would greatly increase their vulnerability.

Sources: Wielgus *et al*. 2010 and Leavenworth 2002

biodiversity or habitat conservation. In some countries such as those of the Eastern Caribbean, building codes have been incorporated into existing planning or building legislation as a schedule of the building and planning regulations (Wason 2001).

Problems and gaps in the development planning process

Lack of co-ordination

Caribbean governments have shown their commitment to biodiversity conservation through a number of national policies and programmes such as the National Sustainable Development Strategies, National Environmental Management Strategies, as well as integrated coastal zone management policies and plans and NBSAPs. The location of many key biodiversity areas has been identified in NBSAPs as well as in surveys, protected area plans and programmes undertaken by national and international conservation organizations.

However, this information on biodiversity conservation requirements is still not fully integrated into decision-making and planning processes (CEPF 2010). Policies and plans are often managed by several government departments which do not work sufficiently together or do not fully integrate their respective programmes. As a result, plans have been developed in isolation of other sectors dealing with conservation, the environment and national planning. According to McHale Andrew, Executive Vice-President of the Saint Lucia Hotel and Tourism Association (pers. comm.), the private sector is poorly involved in planning. In the absence of collaborative approaches, plans are not and cannot be used as a guide in development planning.

Powerful interests

Governments need to attract foreign direct investment (FDI) to remain globally competitive, and hotel developments are one of the few sectors for foreign investment for small Caribbean states. However many decisions on hotel developments are made behind closed doors between powerful local politicians and businesspeople, with politicians viewing hotel developments as an important source of job creation. As discussed in Section 2, hotel developers and investors develop powerful alliances backed by finance, links with politicians, other elite interests and lofty promises.

Environmental departments, within governments, have frequently found themselves sidelined and at odds with powerful decision-makers resulting in conflicts or disillusionment. As an example, Box 12 illustrates past conflicts between the Ministry of Environment and more powerful decision-makers, including the Ministry of Tourism, in the Dominican Republic regarding development approval within protected areas.

Low importance placed on biodiversity conservation and ecosystem wide planning

Understanding amongst decision-makers in non-environment sectors of the linkages between biodiversity and ecosystem services, local livelihoods, national development options and economic interests is generally poor (CEPF, 2010). The lack of capacity in environmental departments dealing with EIAs, for example, is also a reflection of the poor understanding and low importance placed on ecosystem wide planning and thinking amongst decision-makers.

Box 13 provides two examples where physical planning agencies in the region have understood the linkages between biodiversity and economic interests and have developed or are in the process of developing guidelines to minimize negative impacts to natural resources from the siting and design of accommodation.

In a number of instances, protected area systems plans have been drawn up, but they have not been officially approved, and implementation remains slow. A large percentage of the KBAs and IBAs listed in Table 2 (Section 3) that are threatened with development have no legal protection despite documented evidence of their global significance. There have also been instances where sites already under protection have been de-gazetted to facilitate development (see Boxes 3 and 12), further demonstrating the lack of awareness of, or low commitment to, the long term implications to ecosystem services of development within ecologically important sites.

Box 12: Conflicts re: inappropriate development in protected areas, Dominican Republic

In August 2007, Minister of the Environment for three years, Max Puig was removed from his post and appointed advisor to the President without portfolio. Puig's change of post followed a number of conflicts involving the Ministry of the Environment over permits issued for industrial activities, including hotel development, within the country's protected areas.

Two well-known controversial hotel projects included a hotel development in the Parque del Este by Grupo Pinero, one of the largest hotel chains operating in the Dominican Republic, and the second, from a French architect and investor, François Fontes, was to build in the Bahia de las Aguillas. The latter site is located within the Jaragua-Bahoruco-Enriquillo Biosphere Reserve, one of the richest areas of biodiversity in the Dominican Republic. Both hotel developments were approved by the Ministry of Tourism but later blocked by Puig's Ministry.

Seven days after Puig was removed from his Ministerial post, he resigned from government stating that he did not feel that he could best serve his country's needs in his new role. In his letter of resignation he cited his concerns: 'elements from different political inclinations that tried, and are still trying, unfortunately, to reduce the protected areas of the country."

A new law, which enables the categories and limits of some protected areas to be changed to allow development of hotels, has recently been pushed through parliament despite strong objections by local NGOs. The case against the new law was taken to the Supreme Court but has been overruled.

Sources: DR1 *05 June 2007;* DR1 *10 September 2007;* CEPF, 2010.

Inadequate enforcement

In some countries, legislation is too weak to enforce mitigation measures, or penalties are not specified in the conditions for approval for development (Gore pers. comm.). However, in many countries the legislative instruments exist but are not enforced. In Jamaica, for example, policy and legislation is considered robust but lack of enforcement and monitoring, as well as insufficient coordination between agencies, undermines the implementation of the law (CEPF 2010). Box 14 briefly discusses the differences in the environmental performance of an hotel where there is a strong national regulatory and enforcement system (Cuba) in comparison to its performance in a country where enforcement is less rigorous (Jamaica).

Box 13: Guidelines developed by the Physical Planning Departments of Dominica and Bonaire to minimize siting and design impacts to natural habitats

In Dominica, an island which markets itself as 'the Nature Isle' of the Caribbean, the Chief Town Planner is currently in the process of developing *Design Guidelines for Sustainable Tourism Development in Dominica*. The document, when complete, will provide a comprehensive framework for the physical development of tourism in Dominica. The development of the document was felt necessary to upgrade weak policies and regulations which did not support sustainable development of this ecotourism destination.

The guidelines are divided into four sections looking at site selection and planning, ecosystem considerations, architectural design and cultural and socioeconomic factors. For each section basic information that should be gathered and the relevant actions that should be carried out to ensure sustainable outcomes for the planning, construction and management of sites and establishments are outlined.

In Bonaire, an island which is largely dependent on dive tourism, the Department of Physical Planning (DROB) has developed its first Land Use Plan (2010) and which includes Eco Lodge Standards (See Annex 7). Bonaire's Ecolodge standards have drawn on international guidelines such as Mehta *et. al.* (2002) to develop these criteria that can be applied in the development and assessment of ecolodges.

In Bonaire's guide, site selection, use of land and natural resources, design of structures, landscaping, 'eco' operational guides and monitoring and evaluation guidelines are presented.

Capacity to monitor and lack of reliable data

Skilled staff within environmental departments are often overburdened (CEPF 2010) and, in many small island States, lacking. With regard to evaluation of EIAs, for example, ministries and other government agencies either cannot devote the required time due to overload or lack the relevant training in the special areas covered in the EIA to critically review the assessment (Gobin 2001).

Despite the preparation of NBSAPs and other biodiversity related surveys, there is still limited baseline information about flora and fauna of many areas of the region and ecosystem services (Gore pers. comm.), particularly in the marine and coastal zones (Gobin 2001).

Few countries have the necessary systems to collect reliable data on a regular basis (CEPF 2010). For example, with regard to cumulative impacts to coastal ecosystems discussed in Section 3, few if any coastal zone management agencies know how much nutrients are entering the coastal zone and there has been no regional level assessment of sewage management needs in the region in the last ten years (CEHI c. 2010). In many cases, adequate financial resources have not been allocated to properly monitor building activities and ensure that developers stick to their siting and design plans. In countries with many outlying islands such as the BVI and the Bahamas, capacity to monitor is also logistically and financially challenging (Massicott pers. comm.).

Box 14: Strengths and weakness of a proactive regulatory regime, Cuba.

Stewart's (2006) comparative study of the national decision-making context in Cuba and the Dominican Republic and its impact on corporate environmental practice of hotels shows that in Cuba, a proactive regulatory regime has played a large role in stimulating higher environmental performance (including siting and land use) among hotel chains operating there, as compared to those same companies in other countries of the region. A manager from SuperClubs was quoted: "In Jamaica, the environmental standards are high, but there is more motivation to comply with the law in Cuba, whereas Jamaica is more lax about it. SuperClubs has its own standards but each installation is really influenced most by the country of operation" (Stewart, 2006: 8).

Stewart (2006) concludes that hotel management corporations adapt their practices to the national regulatory context.

Closed decision-making 'spaces'

Civil society plays a critical role in advocating for appropriate development choices and in galvanising support and providing evidence to demonstrate the value of biodiversity resources to decision makers when inappropriate hotel siting and design choices have been made. Transparency has improved and many planning departments will now make EIAs available for public comment if requested. However, as noted in Annex 8, the requirement for public consultation as part of the evaluation process remains vague.

NGOs have also provided important critiques of EIAs for developments, assuming the role of 'watch dog' (the Jamaica Environmental Trust is a good example). Civil society organizations (CSO) are however often viewed as 'anti-development' and excluded from decision-making. As Box 15 shows, when CSOs are involved in decision-making, the national context for sustainable development and governance can be made stronger.

Worryingly, recent research has confirmed what many perceive to be a decline in the role of civil society and academia in development policy in the region, which is thought to have been undermined by a growing complexity of development challenges, funding constraints and donor requirements (CANARI, GPC and SEDU 2011). Given the greater complexity and structural changes in the hotel development sector as a result of globalization and the challenges of sustainable tourism choices, the role of CSOs will be needed now more than ever.

Box 15: When civil society has a meaningful stake in the management of biodiversity resources, Bonaire

The Dutch Caribbean territory of Bonaire (population 15,000) is a dive based tourism economy. Environmental conservation has been given a relatively high priority in national decision-making since the 1970s, as evidenced by the comprehensive nature legislation and by the active management of its protected areas. The entire perimeter of the island is a marine protected area to a depth of 60m.

Control of the management of the island's protected areas was ceded to an NGO, STINAPA in the 1970s and it operates under a management contract with government. Legislation also gives control of all user fees (USD25 for scuba divers and USD10 for non divers) to STINAPA for management of the park. The fees are enough to ensure the financial self sufficiency of the 20-person NGO, plus some additional project grant funds.

Since 1991, when dive fees were implemented, this NGO has grown to become a powerful player in decision-making on nature management on the island. STINAPA maintains an open and transparent relationship with government and is responsible for, enforcement of legislation within the MPA. The organization has been a strong proponent for the recent development of the island's land use plan and sewage treatment plant for the heavily developed coastline of Kralendjik and has been involved in the drafting of environmental legislation over the past two to three decades.

A number of other NGOs also exist on Bonaire with specific focus on discrete aspects of nature and biodiversity conservation.

Insufficient sharing of lessons and expertise

An important part of the decision-making process is drawing lessons from past experiences and from others but too little of this is being done in the region. For example, according to Toppin-Allahar (2000), countries are not learning from each other's experience with regard to EIA processes, and there are reasons to believe that this is still the case.

There is insufficient data and information exchange between countries on environmental issues, which is partly a reflection of language and cultural barriers, a lack of funding for regional activities (CEPF 2010) and overburdened practitioners who find it difficult to stop and reflect. According to Pascal Saffache of the *Université des Antilles et de la Guyane* (pers. comm.) expertise to conduct and review EIAs *does* exist within the region among scientists who know the field and can provide advice that is well-informed and relevant, but that expertise is not sufficiently utilized by government agencies and the private sector.

Actors in tourism development and conservation in the Caribbean also do not take systematic opportunities to learn from the experience in other parts of the world. For example, incentives to promote sustainable development, such as tax breaks plus other financial incentives for good practice to developers for sustainable practices and better conservation planning, are not widespread in the region (CEPF 2010) but have been tried elsewhere and could be used to inform practice in the region.

6. CONCLUSION

The tensions between the development of holiday accommodation and biodiversity conservation in the coastal zone are inevitable, and careful and effective management is therefore critical. Coastal and marine habitats, where hotel, resort and other accommodation developments are concentrated, host 70 percent of the region's key biodiversity areas.

In the quest for the perfect seascape vista, mega-hotel and real estate projects are occupying hundreds of acres of land and have tended to choose remote areas away from the tourist strip, such as offshore islands and relatively undeveloped coastal areas, to promote exclusivity to the high-end market. On busy hotel strips, the negative impacts to coastal ecosystems are not generated by one hotel property but by the cumulative effects of a number of hotels along the coast.

The complexity of the hotel development value chain means there is usually no coherent or explicit strategy for all the firms in the development process and it is difficult to assign responsibility for habitat destruction when it occurs. Several hotel corporate policies show an intention to minimize habitat loss and destruction, but there is a gap between policy and practice, or an ability on the part of 'the brand' to control practice of the developer.

Guidelines and certification schemes show promise to improve practice, but the voluntary nature of these tools provides them with no 'teeth'. Government controls and instruments have a critical role to play, and the national development planning process provides one of the few controls on developers. Yet important sites are still targeted for inappropriate development, despite the fact that guiding policies and plans exist. Commitment at the policy level has not always translated into political support for biodiversity conservation, and short term gain and political interests often take precedence.

In the few cases where there is a national, political vision for sustainable development and where the environment is consciously made part of the tourism product, such as in Dominica and Bonaire, there is a greater likelihood that developers and hoteliers will adopt sustainable practices in their choice of site.

The continued prosperity of the hotel and tourism sector rests on the conservation and health of the region's biodiversity and ecosystems, but at the moment this has not been sufficiently recognized by decision-makers, hotel developers and corporations.

Needs to be addressed
If the region wants to ensure that vacation accommodation is not developed at the expense of the valuable economic, social and cultural services and benefits provided by the region's biological diversity, it is critical that:

for all stakeholders

- Nature and biodiversity are recognized as key elements of the tourism attraction and as resources that must be conserved to benefit the tourism and hotel sector.
- Hotels siting and design does not result in the destruction or disturbance of ecosystems and habitats identified as critical habitats (KBAs, IBAs or reproductive habitat for threatened species).

for governments

- There is a clear and explicit vision of sustainable development that informs appropriate tourism and hotel development choices.
- Land use and integrated development planning are developed and used as a guide to determine long-term development objectives.
- The EIA process is thoroughly reviewed and revamped, and creative solutions are developed to optimize the use of regional expertise and improve capacity to design requirements and evaluate EIAs.
- In addition to EIAs, environmental policies of hotel corporations and developer financing arrangements are scrutinized before approving development projects.
- Where development is permitted in sensitive areas (including all coastal zones), strict rules and guidelines are applied and enforced to minimize negative impacts.
- Incentives (including financial) for good practice are formulated and introduced.
- Preference is given to developers and investors that have a good track record of integrating developments with biodiversity conservation.

for hotel corporations

- Hotel management and development companies are guided by a long-term vision that incorporates ecosystem and biodiversity impacts.
- Greater innovation is employed within the sector to better integrate biodiversity conservation in vacation accommodation developments.
- They play a bigger role in biodiversity monitoring (rather than environmental ‘activities’ targeted at guests) to determine the impacts of their property(ies) and of the sector as a whole on biodiversity.

for hotel associations and region tourism bodies

- They document and share best practice information, and advocate and support the use of applicable guidelines.
- They support the improvement of standards in certification schemes and to pay closer attention to Caribbean biodiversity concerns/needs and siting and design requirements.

In order to address the issues identified in this study, there is also a need for planning and action in the following areas:

Further research

- Analysis of the dynamics of the 'developer-investor' arrangements and ways in which to influence sustainable practice.
- Analysis of the policy environment, with an identification of the most effective policy measures.
- Analysis of the effectiveness of tour operator guidelines (such as TUI's) on hotel siting choices.
- Documentation and analysis of cases where good practice has been developed to guide where and how to catalyse change.

Awareness raising with Caribbean tourism development agencies

- Greater awareness within the national and regional tourism agencies of the global dimensions and structural shifts of the hotel development sector and its implications.
- Advocacy and the provision of support to governments to strengthen development controls, enforcement, land-use planning and EIA evaluation.
- Advocacy for improved and enforced standards.
- Participation in regional processes such as the current OECS harmonized tourism policy to influence siting and design guidance.

Production and sharing of information and networking

- Making information on sensitive and critical biodiversity resources and areas available to planners and decision-makers, including through access to web-based resources such as the Integrated Biodiversity Assessment Tool (IBAT)[34].
- Promotion of ecosystem-based thinking and working – support and review of Caribbean Sea based initiatives.
- Greater sharing of information between stakeholders within the region.
- Wider documentation and communication of good practice.
- Economic evaluation of poor practice resulting in biodiversity loss and degradation and its impact on the tourism sector.

Support to the EIA process

- Identification of ways in which to strengthen the regional EIA process and the EIA consultant sector to ensure that rigorous assessment is conducted that takes into account biodiversity impacts from siting and design choices and that appropriate mitigation measures are proposed. This may be through:
    - Provision of training to EIA practitioners, public and private sector planners, public sector EIA reviewers.
    - Establishment of standards for biodiversity impacts.

[34] See www.ibatforbusiness.org

    - Sharing sources of information, data, sharing of information and facilitation of ‘access’ to regional experts.

- Conduct of an assessment and inventory of regional level expertise that can be shared amongst development planners, authorities and the EIA sector.

Advocacy within the accommodation sector and other tourism stakeholders

- Greater awareness within the hotel sector on biodiversity impacts from poor siting and design choices and of implications for the prosperity of the whole sector and the risks to their product.
- Greater awareness within the tourism sector that vacation accommodation does not need to be built on the beach front.

Working with existing voluntary tools

- Promotion of increased attention of siting and design criteria by well-established certification programmes in the region and promote uptake of those that effectively address siting and design criteria (such as LEED).

Support to civil society organizations

- Provision of support to CSOs through dialogue, sharing of lessons, training and advocacy in campaigns (if appropriate) that would strengthen, provide additional legitimacy and build CSO capacity.
- Build capacity of community based organizations and stakeholders to review and input into EIA processes

Awareness among the design and construction sector

- Greater awareness within the architects, designers and construction sector on biodiversity impact from poor siting and design choices and its implications.

ANNEX 1: BIBLIOGRAPHY

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ANNEX 2: PEOPLE INTERVIEWED AND CONTACTED FOR RESOURCES AND INFORMATION

***In person**:*

Eva Aimable	Manager, Policy and Research, World Travel and Tourism Council, London. UK
Elsmarie Bleukenboom	Director, Stichting Nationale Parken (STINAPA), Bonaire
Ronald Massicott	Terrestrial Parks Manager, BVI National Parks Trust, British Virgin Islands
Julie Middleton	Industry Programmes Manager, Hotel Energy Conservation and Consumption, Travel Foundation, UK
Peter Montanus	Environmental Resource Policy Advisor, Department of Physical Planning, Environmental Resources and Infrastructure, Island Government of Bonaire
Farah Mukhida	Executive Director, Anguilla National Trust, Anguilla
Ellie Noij	Urban Planning, Department of Physical Planning, Island Government of Bonaire
John Passmore	Caribbean Programme Manager, Travel Foundation, UK
Frank van Slobbe	Environmental Resources Policy Advisor, Department of Physical Planning, Environmental Resources and Infrastructure, Island Government of Bonaire
Marion Wilson	Manager, Bonaire Hotel and Tourism Association, Bonaire

By phone or skype

McHale Andrew	Executive Vice President, Saint Lucia Hotel and Tourism Association, Saint Lucia
Natalie De Caires	Manager, Advocacy and Industry Affairs, Caribbean Hotel and Tourism Association, Barbados
Loreto Duffy-Mayers	Project Manager, Caribbean Hotel Energy Efficiency Action Programme (CHENACT), Caribbean Hotel and Tourism Association, Barbados
Annie Edwards	Chief Town and Country Planner, Physical Planning Division, Dominica
Gail Henry	Sustainable Tourism Product Specialist, Caribbean Tourism Organisation, Barbados
Pete Marra	Research Scientist, Smithsonian Institution, Washington DC, USA
Fiona Whittenbury	Programme Manager, International Tourism Partnership, London, UK
Dan Whittle	Senior Attorney and Director, Cuba Program, Environmental Defence Fund, USA

By email:

Gerard Alleng	Clean Energy and Climate Change Specialist, Sustainable Energy and Climate Change Initiatives, Inter-American Development Bank, Washington, USA
Frank Balderamos	Director, National Trust of Cayman Islands, Grand Cayman, Cayman Islands
Martin Barriteau	Project Manager, Sustainable Grenadines Project (SusGren), Union Island, St. Vincent and the Grenadines
Jack Chalk	General Manager, Captain Don's Habitat, Kralendjik, Bonaire.
Chris Corbin	Programme Officer, Assessment and Management of Environmental Pollution, Regional Coordinating Unit, Caribbean Environment Programme, Jamaica
Susanna De Beauville-Scott	Project Coordinator, OECS Protected Areas and Associated Livelihoods (OPAAL), Organisation of Eastern Caribbean States, Environment and Sustainable Development Unit, Saint Lucia
Kalli de Meyer	Executive Director, Dutch Caribbean Nature Alliance, Bonaire
Karen Eckert	Executive Director, Wider Caribbean Sea Turtle Conservation Network (WIDECAST), Missouri, USA
Lani Edghill	Green Business Coordinator, Future Centre Trust, Barbados
Ethlyn Gibbs-Williams	Director, Turks and Caicos Islands National Trust, Providenciales, Turks and Caicos
Shannon Gore	Marine Biologist, Department of Conservation and Fisheries, British Virgin Islands
Lyndon John	Assistant Chief Forest Officer, Forestry Department, Saint Lucia
Liana Jarecki	Lecturer, H. Lavity Stoutt Community College, British Virgin Islands
Patricia Lamelas	Director, Centre for the Conservation and Eco-Development of Samana Bay (CEBSE), Dominican Republic
Natalya Lawrence	Offshore Island Conservation Project Coordinator, Environmental Awareness Group, Antigua
Kevel Lindsay	Island Resources Foundation, Washington D.C., USA
Felix Lurel	Association Conseil Environnement Développement Durable, Guadeloupe
Diana McCaulay	Director, Jamaica Environment Trust, Jamaica
Lucia Mings	Managing Director, Environment and Tourism Inc., Antigua
Matthew Morton	Durrell Wildlife Conservation Trust, c/o Saint Lucia Forestry Department, Saint Lucia
Lia Nicholson	Executive Director, Environmental Awareness Group, Antigua
Cindy O'Hara	Managing Director, Design Cayman (LEED AP), Grand Cayman
José Ottenwalder	Director de Medio Ambiente, Salud y Seguridad Ocupacional, Dominican Republic
Betty Perry	Consultant, Dominica
Milton Ponson	President, Rainbow Warriors International, Aruba

Lolita Raffoul	Product Development/Marketing Executive, Discover Dominica, Dominica
Caroline Rogers	US Government Service Caribbean Field Station, St. John US Virgin Islands
Pascal Saffache	Doyen de la Faculté des lettres et sciences humaines, Université des Antilles et de la Guyane, Martinique
Dennis Sammy	Manager, Nature Seekers, Toco, Trinidad and Tobago
Ann Sutton	Consultant, Jamaica and Society for Conservation and Study of Caribbean Birds, Jamaica
Pat Turpin	Director, Environment Tobago, Trinidad and Tobago
Mark Vermeji	Science Director, CARMABI Foundation, Curaçao
Paul Watler	Environmental Programs Manager, National Parks Trust of Cayman Islands
David Wege	Senior Caribbean Program Manager, BirdLife International, UK
Jean Wiener	Fondation pour la Biodiversité Marine, Haiti
Susan Zaluski	Director, Jost van Dyke Preservation Society, Jost van Dyke, British Virgin Islands

ANNEX 3: ECOSYSTEM SERVICES AND THEIR CONTRIBUTION TO TOURISM AND ECONOMIC DEVELOPMENT IN THE CARIBBEAN

Ecosystem	Main benefit and service
Land	• Provision of a base for agricultural and industrial activities • Food security • Habitat • Biodiversity
Forests and other plant species	• Promotion of infiltration of rainwater • Moderation of local climate • Promotion of rainfall • Timber products • Habitat for wide array of species • Attraction for visitors and naturalists (ecotourism, ambiance) • Non-timber forest products e.g. honey, handicraft materials, thatch, ornamental and household plants, spices, oils, medicinal plants, pharmaceutical products, seeds, tree seedlings, orchids, fruit
Mangroves	• Export of nutrients to other ecosystems such as coral reefs and seagrass beds through tides and currents • Habitat for a wide array of terrestrial and aquatic species • Nursery, breeding and feeding area for fish and other species • Fish and shellfish stocks • Stabilization of coastlines, acting as a buffer between the land and the sea; especially important during hurricanes • Protection of adjacent coral reefs from suspended solids and drastic changes in salinity due to inflow of freshwater • Removal of contaminants from surface inflows • Nutrient retention and removal
Beaches	• Habitat and nesting sites for sea turtles • Base for tourism and recreational activities
Coral reefs	• Habitat for a large number of species • Hydrodynamic barrier to wave energy, thereby protecting the shoreline from erosion; allowing formation of sandy beaches; and, growth of seagrass • Fish and shellfish stocks • Provision of sediment for the formation and maintenance of sandy beaches from the breakdown of carbonate skeleton • Ecotourism attraction • Source of shellfish used in craft
Seagrass meadows	• Habitat for a variety of animals • A nursery, feeding area and shelter for fish and crustaceans • Source of detritus to reef system and nutrient cycling • Settlement and binding of suspended sediments and accretion • Habitat for algae, including calcareous algae such as *Halimeda sp*. These algae have high concentrations of calcium carbonate and contribute to the sediment budget of beaches

Adapted from Heileman (2005) and CEPF (2010)

ANNEX 4: GUIDELINE DOCUMENTS RELATED TO SUSTAINABLE HOTEL SITING AND DESIGN

GLOBAL GUIDELINES

CBD Guidelines on Biodiversity and Tourism (2004) CBD Secretariat. 34pp.
The Guidelines are aimed at Parties to the Convention on Biological Diversity. It is targeted for public authorities and stakeholders at all levels, to apply the provisions of the Convention to the sustainable development and management of tourism policies, strategies, projects and activities. The document covers all forms and activities of tourism: mass tourism, ecotourism, nature- and culture-based tourism, heritage and traditional tourism, cruise tourism, leisure and sports tourism. Siting choices are mentioned as needing to be addressed as part of the planning process and assessed in the impact assessment stages. The document is broad and provides a general guide.
http://www.cbd.int/doc/publications/tou-gdl-en.pdf

Ecolodge Guidelines The Nature Conservancy (n.d.) 12pp
More a checklist, this document outlines criteria to distinguish an ecolodge from a tourism facility that utilizes natural resources. Site selection and facility design approaches, along with benefits to the local community are the main pre-conditions discussed in this guideline document. It has been prepared for site managers and ecotourism planners. Useful guidelines targeted at investors, taken from the EcoEnterprises Fund, are annexed to the main document with a more detailed checklist of minimal criteria to assess whether a facility or activity is really ecologically designed.

This document would need to be supported by more detailed information to effectively inform tourism managers and developers on site selection and design.

A Good Practice Guide for Nature and Development. The Secretariat of the CDB (2009) 54 pp.
The document provides a good overview of the links between tourism development, biological diversity conservation, and development. The primarily target audience for the guide is government officers and decision-makers in the ministries and agencies related to tourism at all levels: global to local. The guide gives some idea of global tourism trends. The importance of comprehensive policies and plans to guide sustainable development is discussed and a number of case studies of 'good practice' are provided. Siting and design issues are discussed, but not extensively, as well as the debates around tourism over-development in fragile areas. The ITP/CI (2005) publication is cited as an important resource.
http://69.90.183.227/development/doc/cbd-good-practice-guide-tourism-booklet-web-en.pdf

Global Sustainable Tourism Criteria

Launched at the World Conservation Congress in October 2008, The Global Sustainable Tourism Criteria (GSTC) are a set of 37 voluntary standards representing the minimum that any tourism business should aspire to reach in order to protect and sustain natural and cultural resources and provide a tool for poverty alleviation. The criteria were developed by Rainforest Alliance**,** the United Nations Environment Programme (UNEP), the United Nations Foundation**,** and the United Nations World Tourism Organization (UNWTO) in consultation with stakeholders in tourism destinations around the world. The criteria provide a framework for mainstreaming tourism sustainability that can be used by all tourism businesses, certification programmes, the public sector and NGOs as a starting point for sustainable tourism programmes or guidelines.

One of the four criteria: (A) demonstrate effective sustainable development is directly relevant. Each of these topics specifies additional sub-criteria and indicators which provide further guidance. Sub criteria A.6: Design and construction of buildings and infrastructure: specifies:

- A.6.1 comply with local zoning and protected or heritage area requirements;
- A.6.2 respect the natural or cultural heritage surroundings in siting, design, impact assessment and land rights and acquisition;
- A.6.3 use locally appropriate principles of sustainable construction;

Potential indicators for A 6.2.1 provide a useful checklist (listed in Box 9 in the main text). Due to the fact that these criteria are designed to provide minimum standards, criteria which may be important for biodiversity of national or local importance would not be covered. However, they are a very good starting point from which more detailed steps and prerequisites can be fleshed out. The research did not find any examples of GSTC's application or use in the region but its content would be very relevant for Caribbean countries.
http://www.sustainabletourismcriteria.org/index.php?option=com_content&task=view&id=13&Itemid=47

Green Hotelier

Green Hotelier is the main communications tool for the International Tourism Partnership (ITP); previously a print magazine and now a website. Its purpose is to provide practical solutions and to showcase best practice in the industry (in particular of the ITP's members), latest trends and insight into sustainable tourism. Some of the largest travel and tourism companies are members of the ITP. Green Hotelier plans to feature an issue on siting and design based on the CI/ITP 2005 publication (see below) in the summer of 2011.
http://www.greenhotelier.org/

Indicators of Sustainable Development for Tourism Destinations: A Guidebook by World Tourism Organisation (2004). 507pp

This guide has been designed to provide 'building blocks and references' for developing indicators for policy and management challenges in tourism destinations – looking at impacts to host communities and their assets, health and safety, natural resources, managing use of

resources, planning and management, and products and services. The importance and relevance of indicators as a means to provide an early warning of impacts to environment and natural resources as well as socio-economic issues; as a means to monitor and evaluate performance and to guide decision-making are discussed alongside a thorough 12 step framework on how to develop indicators.

With regard to biodiversity impacts, the guide looks at developing indicators for ways in which (a) tourism can contribute to nature conservation; (b) destinations can protect critical ecosystems and (c) natural and sensitive ecological sites can be managed for tourism use. The guide does not discuss indicators for minimizing biodiversity impacts due to hotel siting and design, however the framework on developing indicators provides a useful tool that can be used to develop indicators for biodiversity sensitive site selection and design of hotels.

International Ecolodge Guidelines by Mehta, H, A. L. Baez and P. O'Loughlin eds. (2002) The International Ecotourism Society and World Tourism Organisation. 192 pp.

A comprehensive document that devotes nearly 50 percent of the document to siting and design needs for ecolodges. Criteria for site selection based on ecological as well as social needs are considered. Operational and management characteristics of ecolodges as well as a monitoring and evaluation framework to ensure sustainability are also examined. Though targeted at a niche sector of tourism accommodations, the guidelines and principles could inform all hotel and tourism developments and guidelines.

Sustainable Hotel Siting, Design and Construction by IBLF and CI (2005) International Business Leaders Forum and Conservation International 140pp

Recognising the complexity of the hotel development chain, this guideline document aims to provide a resource for companies and individuals involved at all stages of the development process – planners, investors, developers and architects. It has been designed for use in any country or region in the world, which makes its information generic rather than specific.

The document goes through eight phases of the hotel development process: Inception (putting together the project team and financing); pre-design; developing the design brief; architectural and physical design; operational design; construction and refurbishment; operation; interior design and monitoring performance. The maintenance of biodiversity and ecosystem processes is discussed and informs the criteria at each stage. In its preparation, building professionals and hotel specialists were consulted through steering committee meetings, working groups and individual consultation.
http://www.tourismpartnership.org/Publications/SDCGuidelines.html

The Green Host Effect: An Integrated Approach to Sustainable Tourism and Resort Development. by J.E.N. Sweeting, A. G. Bruner, A.B. Rosenfeld. (1999) Conservation International Policy Papers, Washington D.C., USA. 103pp.

The document is designed as a resource for private and public sector actors involved in tourism development. It provides recommendations to minimize negative environmental and social impacts as well as increase the contribution that tourism can make to conservation and social well-being are discussed. The document is aimed at developers as well as governments and presents management practices and technologies as well as a series of planning and policy tools that can be used to inform destination management.

Site selection, land clearance, the importance of coastal ecosystems and wastewater treatment needs are all discussed along with landuse planning, EIAs and participatory planning. Due to its focus on developing countries, the document is very relevant to the Caribbean context because it looks at the needs of the public as well as the private sector to achieve sustainability.
http://www.conservation.org/Documents/CI_ecotourism_green_host_effect.pdf

TUI Guidelines for Environmental Sustainability in Hotels, March 2011
Recently published by global tour operator corporation, this document has a large section on siting and design and shows some links to the information in the SDC. The sections on (a) planning and pre-design and (b) construction and renovation are very relevant. These sections include recommendations on how to conserve habitat, use native species and minimize impact to the natural environment. The document gives an outline of what to include in an Environmental Management Plan at the time of hotel construction or renovation to ensure that all EIA mitigation measures are addressed.
http://www.tuitravelplc.com/tui/uploads/dlibrary/documents/NEW_TUITravelPLCGuidelinesforEnvironmentalSustainabilityinHotelsMarch20111.pdf

REGIONAL GUIDELINES

Caribbean Regional Training Manual: Environmentally Sound Tourist Facility Design and Development for the Tourism Industry (1999) UNEP CEP and CAST. Produced as part of project funded by USAID

UNEP's Caribbean Environment Programme (UNEP CEP) in collaboration with CAST, produced a series of publications relating to sustainable tourism one of which was a Caribbean regional training manual on *Environmentally Sound Tourist Facility Design and Development for the Tourism Industry*. This document is aimed as a training module for environmentalists and development planners as part of a 'package' of training materials to improve sustainability in the tourism industry. A number of courses attended by hotel managers, coastal area planners, staff from governmental departments and authorities, accompanied the publications' development.

The manual discusses environmental impacts broadly but is relevant to biodiversity conservation needs and is still very relevant today. Some of the language is now outdated but would only need revision. The document is broken down into seven modules on:

- Environmental impacts of tourism
- Common environmental impacts from poor siting
- The coastal regulatory system (overview of regulatory instruments)
- Sustainable project planning

- Sustainable infrastructure and masterplanning
- Sustainable building design guidelines
- Monitoring guidelines for sustainability

Information on the uptake, use and influence of this course and its publications would be very useful for the understanding of the impact, usefulness and barriers to the implementation of the manual's key messages.
http://www.cep.unep.org/issues/design-siting%20manual.htm
http://www.cep.unep.org/about-cep/spaw/copy_of_sustainable-tourism

Manual of Best Practice for Safeguarding Sea Turtle Nesting Beaches by G. Choi, and K. Eckert (2009). Wider Caribbean Sea Turtle Network (WIDECAST) and the Caribbean Alliance for Sustainable Tourism (CAST). 86 pp

This manual, though focusing on one aspect of biodiversity conservation in the Caribbean – sea turtle conservation is devoted to the pre-construction phase, siting and design and construction and maintenance of coastal hotels and resorts in the context of their Environmental Management Systems. The guide is, therefore, also relevant for broader biodiversity conservation concerns for the sector. Planning, building setbacks, coastal lighting, beach management and vegetation and landscaping are all discussed in detail. The manual includes a Sea Turtle Policy Statement which provides standard guidelines and criteria that can be adopted by the hotel sector, and a check list for the policy's implementation.

The manual is a response to recommendations made by industry representatives attending a WIDECAST and Barbados Sea Turtle Project workshop sponsored by the Tourism Development Corporation in Barbados. WIDECAST is a network of Country Coordinators in more than 40 countries of the Caribbean and includes scientists, conservationists, policy-makers and, industry groups among others, to promote sea turtle conservation in the Caribbean region.
www.widecast.org/Resources/Pubs.html

COUNTRY SPECIFIC GUIDELINES

Construction Guidelines, Bonaire. (n.d.) National Parks Foundation Bonaire, Department of Physical Planning Bonaire Island Government, SELIBON NV, Fundashon Tene Boneiru Limpi, L.V.V Amigu di tera. 30 pp

Any individual, or company building on Bonaire, particularly those close to the edge of the MPA that surrounds the entire island, is asked to adhere to these guidelines. These provide standards, examples of best practice for design of a building site plan, how to preserve vegetation and standards, keeping the site clean during construction, standards for shoreline modifications, sanitary waste systems and landscaping and gardening. These are suggested guidelines but are closely aligned to the requirements of the DROB.
http://www.bmp.org/pdfs/Construction-guidelines-bonaire.pdf

Design Guidelines for Sustainable Tourism Development, Dominica. In Draft. Dominica Physical Planning Authority. 84 pp.

Written and developed by the Chief Town and Country Planner in Dominica, this guideline document is designed to provide a comprehensive framework for the physical development of tourism in Dominica. Although marketed as an ecotourism destination, Dominica has few policies and land-use guidance to inform tourism development. The document draws on Australia's Sustainable Tourism guidelines and Mehta et al.'s (2002) International Ecolodge Guidelines.

The guidelines are divided into four sections looking at site selection and planning, ecosystem considerations, architectural design and cultural and socioeconomic factors. For each section basic information that should be gathered and the relevant actions that should be carried out to ensure sustainable outcomes for the planning, construction and management of sites and establishments are discussed.

Eco Lodge Standards for Bonaire in: Ruimtelijk Ontwikkelingsplan Bonaire (2010) Department of Physical Planning

See Annex 8. Developed alongside the territory's first Land Use Plan (2010), Bonaire's Ecolodge standards have drawn on International Guidelines such as Mehta *et. al.* (2002) to develop these criteria that can be applied in the development and assessment of ecolodges. Only one ecolodge currently exists on the island, so this policy aims to pre-empt inaccurate marketing of eco-lodges and to guide further developments of this nature. Site selection, use of land and natural resources, design of structures, landscaping, 'eco' operational guides and monitoring and evaluation guidelines are presented in this standards document. http://www.bonairegov.an/attachments/998_Ruimtelijk_Ontwikkelingsplan_Bonaire_vastgesteld.pdf

ANNEX 5: CERTIFICATION SCHEMES USED IN THE CARIBBEAN HOTEL SECTOR

Table showing main certification schemes, numbers of hotels certified broken down by size of hotel (Small: 75 rooms and under (Sm); Medium 76-399 rooms (M); Large: 400 rooms and over (Lg))

	Blue Flag	Earth Check			Green Globe			Travelife		
	Sm/M/Lg	***Sm/M/Lg***			***Sm/M/Lg***			***Sm/M/Lg***		
Antigua and Barbuda		**1**			**4**			**2**		
		-	*1*	*-*	*2*	*2*	*-*	*-*	*2*	*-*
Aruba		**4**			**3**					
		1	*2*	*1*	*1*	*1*	*1*			
Bahamas	**3**[35]	**1**			**1**			**3**		
			1			*1*		*1*	*1*	*1*
Barbados		**4**			**10**			**2**		
		1	*3*		*8*	*2*	*-*	*1*	*1*	*-*
Bonaire					**1**					
					1					
Cayman Islands					**4**					
					4					
Dominica					**1**					
					1					
Dominican Republic	**11**[36]				**4**					
							4			
Grenada		**2**			**3**					
		2			*3*					
Jamaica	**11**[37]	**5**			**6**			**18**		
		1	*4*		*4*		*2*	*3*	*13*	*2*
Martinique	**1**[38]									
Puerto Rico					**3**					
							3			
Saint Lucia					**4**			**4**		
					3	*1*		*1*	*3*	
St Vincent & the Grenadines					**1**					
					1					
Turks and Caicos Islands	3[39]				**1**			**1**		
					1					*1*
Totals	**29**	**17**			**46**			**30**		
		5	*11*	*1*	*29*	*7*	*10*	*6*	*20*	*4*

[35] 3 marinas
[36] 11 beaches
[37] 10 beaches – 8 in Negril, 1 in Westmoreland and 1 in Ocho Rios and 1 marina in Portland
[38] 1 marina
[39] 3 beaches

Blue Flag
Blue Flag began in Europe and is now an international voluntary certification scheme for beaches and marinas. The certification's focus is on cleanliness and safety for recreational use of beaches and marina. Its criteria categories include water quality, environmental management, beach cleanliness, safety and environmental education. Beaches and marinas certified must undergo regular monitoring to ensure that standards are being met.

While Blue Flag is not focused specifically on biodiversity, its focus on water quality - specifically that 'no industrial, waste-water or sewage related discharge ...' as well as environmental management - specifically that 'coral reefs in the vicinity of the beach must be monitored' are important requirements that have a bearing on siting and design concerns of hotels. Criteria for marinas in particular, stress sewage treatment and no sewage discharge.

According to Choi and Eckert (2009), REEF CHECK and WIDECAST are exploring the possibility of a Blue Flag partnership to improve the Blue Flag requirements and support for coral reef and turtle nesting monitoring and awareness.
http://www.blueflag.org/Menu/Criteria

Earth Check
A software benchmarking system designed for the travel and tourism industry that focuses on operational issues such as energy, emissions, water, waste, community involvement, paper use , cleaning and pesticides. Siting issues are not included.

Green Globe
A global benchmarking and certification programme to promote sustainable tourism. The scheme was originally initiated by the WTTC in 1994. The programme is now run by Green Globe International, a US public company (WTTC owns 5% of the company) . Green Globe provides a framework for environmental and social performance improvement. Standards are performance-oriented with a framework to measure environmental impact and then develop strategies to reduce impacts. Green Globe standards are available in five categories: Company (Enterprise), Community /Destination, Design and Construct, Precinct and EcoTourism. Within the Community Standard category, there is a sustainability policy, environmental investment, and a commitment to biodiversity conservation (Choi and Eckert, 2009). Site location and construction phase impacts of hotels and resorts are not considered in the Green Globe certification standards.

Green Leaf
A global certification scheme operated by The Audubon Society focuses on four main areas: Energy Efficiency, Resource Conservation, Pollution Prevention and Environmental Management. The programme provides information and tools to help reduce operating costs and demonstrate environmental commitment. A couple of national Green Leaf certifications also exist: Hotel Association of Canada and the Thai Green Leaf Foundation which may have influenced Caribbean hotel operations and certification. Site location and environmental

impacts during the construction phase of vacation accommodation are not considered in the Green Leaf certification.
http://audubonintemational.org/PDFs/AI-GLSampleSurveyQuestions.pdf

Leadership in Energy and Environmental Design (LEED)
LEED is now the most widely used green-building measure in the US (NY Times, 19 May 2010) and now used worldwide and likely to gain greater interest in the Caribbean (Caribbean 360, 31 December 2010). The certification was developed by the U.S. Green Building Council in 1998 and was designed primarily for new commercial offices but it can now be used for all commercial and institutional buildings –new and existing as well as for 'neighbourhood developments'. It is aimed to be a set of guidelines for architects, engineers and stakeholders in the construction sector to make buildings energy efficient and sustainably sited. Buildings are certified for projects pursuing LEED. In addition, professionals in the construction industry can be accredited for their knowledge of the LEED rating.

The benchmarking system now covers six interrelated standards in the construction process: Sustainable sites, water efficiency, energy and atmosphere, material resources, indoor environmental quality and innovation in design. The 'sustainable sites' standard assesses the burdens arising from the building's construction and management on humans, environment and land.

Projects are allocated points against specific credits under each of the categories. The result is a weighted average that combines impacts and the relative value of the impact category. Credits for the most important category are given the greatest weight. Projects are awarded according to a four tiered scale from Certified (up to 49 points) to Platinum (80 points and over. http://www.gbci.org/ and http://www.usgbc.org/ShowFile.aspx?DocumentID=7244

Quality Tourism for the Caribbean (QTC)
A Caribbean developed, regional-wide tourism industry standard developed by CAREC/PAHO and CHA/CAST with funding from the IDB and CDB. The twelve standards combine health and the environment dimensions. A certification scheme is being implemented as a tool for promoting the adoption of standards through the National Standards Bureaus. Biodiversity related standards include: environmental management system; sewage treatment management; and protecting natural resources and managing the use of coastal areas. Siting and design considerations for hotels prior and during construction are not included in the standards.
http://www.onecaribbean.org/content/files/GailHenryTourismStandardsGuyanaJune2009.pdf
http://www.onecaribbean.org/content/files/qtcpresentationworkshop.pdf

Travel Foundation: Sustainable Tourism Good for Business
A simple basic needs sustainability and self-assessment criteria for hotels. The focus is on operations and reduction of consumption – water, energy, waste management and social and community issues are all outlined. No focus on siting and design outside of operational issues.

Travelife

Travelife is marketed as a ‘collection’ and directory of responsible hotels. Hotels that are part of the Travelife Collection are audited by an independent Travelife auditor. Energy, water use, chemical usage and community relations are assessed and hotels can achieve bronze, silver or gold awards. The details on the criteria are not publicized but siting does not appear to be included.

ANNEX 6: CORPORATE POLICIES OF THE MAIN SUN, SAND, SEA CHAINS IN THE CARIBBEAN

	Environmental or CSR policy	Relevant quotes
Accor	Sustainable Development International Guidelines: Construction and Refurbishment Environmental Charter of 65 actions that accompanies its sustainable development guidelines http://www.accor.com/fileadmin/user_upload/Contenus_Accor/Developpement_Durable/pdf/EN/Accor_International_Sustainability__Guidelines_2008.pdf	• '…highly recommends' that design and building of hotels are implemented through a certified design and building programme such as LEED. • Integration into local architecture and environment identified as a key requirement • An environmental pollution survey shall be carried out on site prior to construction (but focus is on the presence of 'harmful materials') • Re biodiversity: existing elements should be preserved or re-located and landscaping must favour local species. • Wastewater much be 'effectively treated' (but it does not state to what level of treatment)
Barceló	Sustainability and environment corporate statement and programmes http://www.barcelo.com/Group/es-ES/CorporateInformation/Environment.htm There is a lot of information on Barcelo's programme and a specific section on sustainable construction and ecosystem recovery	• '...one of its most important objectives is the preservation of the environment and its impact on the local population' • Design and sustainable construction: • 'newly constructed hotels... ensures both the design and implementation of the project respects the environment and incorporates ecological materials' • 'ensures that operation of the establishment is sustainable' • Indigenous ecosystem recovery: • 'initiatives undertaken by Barcelo have been rehabilitating mangroves after the executing of projects (Mexico and Dominican Republic) .. turtle preservation ...'

	Environmental or CSR policy	Relevant quotes
Club Med	Sustainable Development Statement and policies: http://www.clubmed-corporate.com/?cat=203 Specific policy on Protecting the Environment with section on Biodiversity: http://www.clubmed-corporate.com/wp-content/uploads/2010/01/Enviro-ENG.pdf	• 'Wastewater treatment plants are built wherever there are no satisfactory local water treatment system' • 'Buildings occupy no more that 11% of total area covered by our Villages' • Construction: improvement of environmental performance: • 'Club Med introduced High Environmental Quality project management support for all its major construction and renovation projects, backed up by written environmental construction guidelines ... set out the Group's environmental construction requirements...'
Fairmont Hotels	Green Partnership Programme http://www.fairmont.com/EN_FA/AboutFairmont/environment/GreenPartnershipProgram/Index.htm	• Looks at four main areas: waste management, sustainability, energy and water conservation and community outreach and partnerships. • '...committed to complying with applicable environmental legislation; and, making environmental considerations an important aspect of decision-making'. • Very little is discussed in its policy with regard to siting and design
Four Seasons	Four Season's Corporate Values http://www.fourseasons.com/about_us/corporate_values/	• 'supporting sustainability' • 'We engage in sustainable practices that conserve natural resources and reduce environmental impact' • '...sustainable tourism will enhance and protect destinations where Four Seasons operates ...'

	Environmental or CSR policy	Relevant quotes
Hilton International	Sustainability Commitment and Framework for Action http://www.hiltonworldwide.com/aboutus/commitmentaction.htm	• 'Hilton uses a 'lightstay' system of measurement for its sustainability performance' • One of Hilton's four goals includes 'advancement of sustainable buildings and operations'. • LEED standards are used as a benchmark for construction and design standards for Hilton hotels
Iberostar	Iberostar Corporate Social Responsibility statement: http://prensa.iberostar.com/documentacion-corporativa/responsabilidad-social-corporativa/(173-182).html	• 'Our company's philosophy is aimed at the preservation of the environment' • 'Respect for the local environment, adapting the design of the hotel and real estate projects to nature' • 'The recovery of native flora' • 'Promotion of the creation of natural spaces for the survival of the local fauna' • 'Iberostar group adapts their hotels to the natural environment of the area ... to maintain and restore the flora and fauna of the place'
Marriott	Marriott's environmental vision http://www.marriott.com/marriott.mi?page=environmentalInitiatives There is a lot of information on Marriott's environmental projects and vision	• Green Buildings policy o Use of LEED in 40 hotels • Waste Water and Energy Reduction policy • Greening our supply chain policy

	Environmental or CSR policy	Relevant quotes
One and Only	Not available	
Ritz Carlton	Ritz Carlton Community Footprints statement: http://corporate.ritzcarlton.com/en/About/Community.htm	• 'The Ritz Carlton is committed to working towards a more sustainable future by protecting and preserving natural resources.' • Ritz Carlton Environmental Action Conservation Teams (REACT) implement environmental best practices ...'
RIU Hotels	RIU 'We Care About the Environment' statement: http://www.riu.com/en/Acerca_de_RIU/medio_ambiente/index.jsp	• 'We are aware of our activity's direct impact on the environment ...' • 'Caring for the environment is especially key in the hotel industry since beautiful surroundings are a part of our product offering.' • 'RIU Hotel ...favours building of its own rather than management, strengthens our ties to the territory, natural wealth and communities ..' • Focus on: Water Use/Waste Management/Energy Conservation/Paper use and recycling/Noise Pollution/Environmental Awareness
Rosewood	Rosewood Pledge: VERDES (**V**alue the **E**arth's **R**esources and **D**emonstrate **E**nvironmental **S**ensitivity) http://www.rosewoodhotels.com/greeninitiative.cfm	• 'prioritize conservation and sustainability in each Rosewood location' • 'respect unique setting ... environmental sensibilities ... in which we are located' • 'help preserve clean ... water'
Sandals	Sandals Foundation: Our Promise to our Environment http://www.sandalsfoundation.org/envio	• The Sandals Foundation believes in the preservation of our unique surroundings from the delicate reefs, ...marine life ...beaches...trees and flora'

	Environmental or CSR policy	Relevant quotes
	rment	• Projects include: • Marine Protected Areas in Jamaica, • Build, monitor and maintain coral reefs in 'our regions'
Sol Meliá	Sol Meliá Sustainability Report 2009: http://www.solmelia.com/html/dsostenible/en/index.html Sol Melia also has a Sustainable Development Strategic Plan (2008) The company was awarded Biosphere Hotel Company certification	• The vision of sustainability consists of a dual mission: to create value for all stakeholders, involving them through dialogue and alliances, and to create value for Sol Melia, making sustainability a competitive advantage ... • 'We will identify the environmental impact of our operations, reducing it and helping preserve biological diversity in the destinations in which we operate' • • 29 hotels with environmental certification – 3 in Dominican Republic, 1 in Puerto Rico and 2 in Cuba
SuperClubs	Not available	
Wyndham Worldwide	Wyndham environmental responsibility statement: http://www.wyndhamworldwide.com/about/corporate-responsibility.cfm	• 'we will work globally and act locally by (1) developing environmental best practices ... • setting environmental impact targets and measuring performance • Working with ...local communities to minimize our environmental impact

ANNEX 7: BONAIREAN ECO-DEVELOPMENT

(near complete translation from Dutch)

Introduction

Given Bonaire's historic commitment to preservation, any 'eco' development (hotel, lodge, camp, housing etc) on Bonaire must meet certain standards that assure the protection of the environment in all ways possible and the preservation of Bonaire's reputation as a world leader in conservation. This Bonaire policy includes the use of land and materials that have the least impact on local conditions and a continued use of that land that assures the long-term protection of its native state. Simply stated, to be a true Bonairean eco-development, an eco-lodge footprint should be so 'light' on the land that, should the development be removed, there would be little trace that it was ever there.

The following guidelines were created to assure that a Bonairean Eco-Development is more than a marketing ploy but a true statement about a love for this island, its people and its species. The policy also acknowledges that without the possibility for profit, even sustainable development will not occur. Therefore, these guidelines have also been prepared with commercial viability of a development in mind. This document proposes a set of standards against which all 'eco-'development on Bonaire will be judged in the future.

Bonaire Eco Lodge Standards

These standards apply to eco lodge development on Bonaire. In addition, all aspects of a development must abide by all applicable national and local laws, administrative requirements and international treaties and agreements that have force in Bonaire.

1. Spatiality

1.1. A maximum of 15 eco lodges may be built.

1.2. Each lodge is allowed a maximum surface area of 100m^2.

1.3. The maximum height of the eco lodge may not exceed 5m.

2. Exploitation

2.1 Eco development on Bonaire should strive to preserve bio-diversity, minimize the impact on organic and soils resources, limit the use of noxious chemicals and support and buffer natural habitats

2.2 Nature Impact Study – ideally any proposed eco-lodge or eco facility will first perform a study of the possible impact on the flora, fauna, sea, land and neighboring areas.

2.3 Planning – efforts must be made to involve local stakeholders in the planning process, especially those whose property abuts the planned development.

2.4 Clearing – the developer may clear only the minimal amount needed to accommodate the design. This amount of clearing must first be approved by DROB. Clear-cutting of the property before construction is not allowed. It is highly recommended to mark trees, cactus and other important vegetation to in insure that it is protected.

2.4.1 A maximum of 10??XX% of the total property may be developed. The remainder must remain in its natural state.

2.5 Native vegetation – as much as possible, native vegetation must be preserved. See Landscaping Section for the logic of this requirement.

2.6 Native animal life – care must be taken not to disturb nesting areas of local birds, bats and reptiles.

3. Access roads

3.1 Roadbed – the roadbed must be local *diabase* of large grade to minimize dust and must be maintained over time.

3.2 Width – roads should be no wider than 5 meters plus drainage ditches

3.3 Profile – All roads must be graded, rolled and crowned to minimize erosion and wear

3.4 Destruction of large trees and cactus to construct roads is not allowed. The course of the road must be altered to avoid destroying large local vegetation.

3.5 All efforts must be made to maintain the canopy overhang for roads

3.6. Dust control – roads should be treated with an environmentally friendly dust-control agent at a rate that the manufacturer estimates will last at least one year. A list of acceptable agents is available from DROB.

3.5.1 Dust control agent must be re-applied at manufacturer's suggested intervals.

3.5.2 Road building materials

3.5.3 Approved list of road building materials (to be added)

3.6 Trails must be no wider than 1.5 meters and should avoid nesting areas of local fauna

3.6.1 Trails should be constructed of native dirt or with elevated boardwalks

3.6.2 All trails should incorporate erosion control measures

4. Facility Construction

4.1. Footprint – The development as a whole should have a minimal impact on the local topography, flora and fauna. Excavations should be limited to the least required for waste disposal and foundations. Fills should be limited and should not change the basic

topography. No large cactus or trees are to be eliminated but should be incorporated into the design. Concrete and asphalt should be used sparingly.

4.2. Design – While a wide range of design options are acceptable, developers should strive to achieve a 'Bonairean" feel to their structures. A true eco-development 'fits' into the environment and respects the local architecture and building practices. However, new concepts and technologies are to be encouraged if their impact is low and the goals of fitting into nature are accomplished.

4.2.1. All structures should be designed to be minimally visible from surrounding properties and roads

4.2.2. The design of all structures should stress passive cooling and ventilation so as to avoid the need for air conditioning and fans.

4.3. Density – When completely occupied, the number of guests plus resident employees must not exceed XX per hectare

4.4. Height – The height of all structures shall be such that they do not obstruct views of the surrounding landscape unnecessarily but, in no case, shall be more than 6 (six) meters from the pre-existing ground level.

4.5. Archeological and culturally important sites, structures or artifacts should be respected and not negatively impacted

4.6. Sensitive natural areas such as caves, water courses etc must be preserved

4.7. Impact on neighboring areas

4.7.1. Visual – The structures shall blend as much as possible with the surrounding landscape. This includes size, color, materials and mass.

4.7.2. Traffic – The development shall make every effort to minimize local traffic and to encourage the use of walking or of vehicles that do not use fossil fuels.

4.7.3. Noise – There shall be no loud music or equipment (such as electrical generators) allowed except for emergency use. In any case, the use of electrical generators after 22:00 is not allowed. Sound travels very far on Bonaire, especially at night and in the mundi, and will annoy neighbors who are kilometers away as well as eco-lodge guests.

4.7.4. Odors – Smoke and cooking odors must be contained and, in the event of complaint by neighboring *kunukus*, must be remedied at the expense of the developer or operator

4.7.5. Potential damage – Any damage caused by failure to follow these guidelines will be determined by _____

4.8. Approved materials (full list needs to be developed for final draft)

4.8.1. All concrete must be of the aerated type and must meet local building code standards for tensile and compression strength.

4.8.2. All blocks must be of the aerated type with a concrete content not to exceed XX%

4.8.3. The use of natural, sustainably harvested materials should be maximized. The use of concrete and steel should be minimized.

4.8.4. Consideration should be given to durability and re-cycle-ability of all materials used in construction and all furniture and appliances installed

4.8.5. Consideration must be given to fire risk of all materials in light of the extended dry periods experienced on Bonaire

4.8.6. Use of recycled plastic lumber and other eco-friendly materials is encouraged, especially in place of arsenic or other chemically treated woods.

4.8.7. Recycled – the use of recycled materials is encouraged such as:

- 4.8.7.1 Crushed building debris for foundations or in new concrete mixing
- 4.8.7.2. Recycled plastic lumber with at least XX% post consumer waste content.

4.9 Building techniques & practices

4.9.1. Construction practices should be labor-intensive and avoid the unnecessary use of heavy equipment. The developer must carefully monitor this. The developer shall be held responsible for any destruction to the land, trees, cactus or animal life caused by this equipment.

4.9.2. Construction sites must be screened to contain blowing trash and debris

4.9.3. Construction sites must be cleaned at least once per week to remove trash and debris so that local animals do not attempt to eat them

4.9.4. Contractors must provide toilet and trash facilities for all workers

4.9.5. Concrete mixing areas must be limited to locations where new structures or platforms will be built. Concrete mixing areas must be lined with plastic to keep concrete dust and liquid concrete from penetrating the ground

4.9.6. Electrical needs during construction – It is recommended that the planned electrical plant be installed early so that generators will not be needed at the site.

5. Landscaping

5.9. Preservation of native growth – Large (taller than 4 meters) trees and cactus shall be preserved unless specific permission has been granted by DROB/MNB.

5.10. Permitted planting – No non-native plant species should be introduced (e.g. palms, bougainvillea, neem, etc). Preservation of existing native plants will be the most cost-effective method of landscaping. Native species may be planted but irrigation should be limited to the first few years after planting.

5.11. Irrigation – In general, native species do not require irrigation after they are established. Planting should be done only in the wet season to minimize the need for irrigation. Irrigation encourages the breeding of mosquitoes so this practice should be minimized.

5.12. Fencing – The perimeter of the development should be fenced to exclude grazing animals (goats, donkeys). Minimal acceptable fencing consists of goat wire installed with the small openings at the bottom. Fence posts should be green-harvested local stakes or recycled plastic. If concrete stakes are used they must be constructed off-site of aerated concrete.

6. Energy

6.1 Solar and/or Wind generated energy is encouraged due to the generally good sunshine and prevailing winds. Sufficient storage should be allowed for times of cloud and low wind so that generator power will not be needed.

6.2 WEB connection is permitted but all power lines must be underground

6.3 Emergency backup – diesel backup generators are allowed for emergency use only.

6.4 Generators must be housed in double-skinned, soundproofed structures.

6.5 Other – new technologies will be evaluated on a case-by-case basis

6.6 Energy storage and usage

6.7 All petrol and oil tanks must be secured in their own reservoir (of sufficient volume and aboveground) to avoid leakage into the environment.

6.8 Lead acid batteries are permitted

6.9 Hydrogen cells are encouraged

6.9.1 Energy-saving lights/appliances should be used as much as possible

6.9.2 Minimize outdoor lighting to avoid disturbing wildlife and to avoid light pollution of the skies

6.9.3 Timers and ‘smart bulbs’ should be used to shut off unnecessary power usage

6.9.4 Guests should be advised of ways to conserve energy and water

7 Drinking water

7.1 The preferred water source is captured rainwater which must be stored in screened cisterns and filtered according to WEB standards.

7.2 WEB connection is permitted

7.3 Use of WEB trucked water should be minimized and cannot be used for swimming pools or hot tubs

7.4 Water heating may only be done with passive solar heaters. The use of fossil fuels to heat water is not allowed.

7.5 The developer is responsible for providing appropriate treatment facilities for potable drinking water, which includes treatment of captured rainwater.

7.5.1 All drinking water must meet the standards of the Bonaire Hygiene Department

7.5.2 All drinking water must be tested on a schedule provided by the Bonaire Hygiene Department at the expense of the developer or operator

8 Waste water

8.1 Cleaning and bathing supplies should be biodegradable

8.2 Treatment – a minimum of four-chamber septic tanks are required with sufficient capacity for the size of the development

8.3 Septic tanks shall not be constructed of block but instead of poured concrete

8.4 Standard toilets may be used if they are of the low-flow type

8.4.1 The use of composting toilets is highly encouraged

8.5 Washing and shower facilities must be constructed with low-flow fixtures

8.6 Recycling of waste water

8.6.1 5.6.1. ‘Grey’ water may be recycled if passed through a four-chamber septic tank reserved only for ‘grey’ water and which provides treatment to a level acceptable for agricultural use.

8.6.2 5.6.2. ‘Black’ water may not be recycled unless the four-chamber septic system is fully aerated and which provides treatment to a level acceptable for agricultural use.

8.7 Disposal – non-aerated ‘black’ water tanks must be pumped out regularly and this waste water may only be dumped in an island-approved location.

9 Cooking energy

9.1 Propane may be used for cooking purposes. Electric cooking is discouraged if the facility is tied into the island system.

9.2 The use of solar cookers is encouraged

9.3 BBQ pits must be constructed of local stone and must be screened appropriately to contain flying ash and embers

9.4 Growing and raising of food locally is encouraged, as is the use of composted waste for fertilization.

10 Refrigeration

10.1 Short-term (cold box or refrigerator) or long-term (freezers).

10.1.1 Refrigerators must be of the low-energy-use type or propane

10.2 Air conditioning

10.2.1 Air conditioning is only allowed if it is powered solely by renewable energy sources.

11 Trash and garbage management

11.1 Recycling and re-use should be maximized in all areas. The use of disposables is discouraged.

11.2 Storage – all trash and garbage must be kept in standard SELIBON-approved containers

11.2.1 Separation of trash for possible recycling is encouraged. In any case, trash storage must comply with local laws.

11.3 Composting – all vegetable garbage should be composted

11.4 Burning of trash or brush is not allowed without permission of the *brantweer* but is strongly discouraged in a nature environment.

11.5 Removal – the developer or operator must make appropriate arrangements for regular collection and disposal of trash and garbage

12 Local Culture and environment

12.1 Hire, train and educate local staff in such areas as environment, conservation, pollution and visitor expectations

12.2 Incorporate programs on local culture for visitors

12.3 Work with and avoid competing with local cultural activities

12.4 Minimize negative impact on local culture and respect local customs

12.5 Promote access to local residents and allow participation in educational and cultural activities.

12.6 Maximize employment opportunities for local residents

12.7 Buy supplies locally whenever possible

12.8 The involvement of local residents in management and ownership is encouraged

13 Closing of development

13.1 In the event that the development is abandoned or permanently closed it is the responsibility of the developer to remove all structures and infrastructure.

13.1.1 To assure such removal, a bond must be posted before construction. The value of the bond will be calculated based on the actual design footprint of the development and the estimated costs to remove it.

13.1.2 The bond will only be reimbursed after approval of the site-condition (post-removal) by the Government Island of Bonaire (DROB)

14 Submission of plans

14.1 Need to specify what is required for approval and any other requirements

14.2 Acceptance of Plan and Certification

14.2.1 Levels

14.2.1.1.1 Level B complies with all of the requirements above and grants the development the right to use the designation “a Bonaire eco lodge”

14.2.1.1.2 Level A complies with all of the requirements AND the at least 50% of the suggestions listed above and grants the development the right to use the designation “a CERTIFIED Bonaire eco-lodge”.

15 Monitoring and enforcement

15.1 Inspections will be conducted during construction by XXXXX to assure compliance

15.2 Annual inspections will be conducted by XXXXX to maintain compliance

15.3 Failure to comply with requirements may result in any or all of the following:

15.3.1 Correction of faults at the expense of the developer and/or operator

15.3.2 Revocation of eco lodge status

15.3.3 Penalties or fines as defined by local law

16 Fees

17 Plan evaluation US$

17.1.1 Annual fee – to cover costs of inspection and enforcement

17.1.2 Level B US$

14.2.2. Level A US$

14.3. Removal bond – see above

ANNEX 8: A COMPARATIVE ANALYSIS OF EIA LEGISLATION IN SELECTED CARIBBEAN COUNTRIES

	Applicable law and responsible agency	Responsible Agency	In what cases is EIA required?	Is there a formal screening process	How is the scope or TOR of the EIA determined	Can conceptual approval be obtained before EIA has been completed	Who does the EIA?
BVI	Physical Planning Act (2004)	Town and Country Planning Authority (TCP)	Medium sized and large scale projects including : • Hotels over 12 rooms • Marinas • Coastal zone developments, wetlands, conservation areas.		Within 30 days of application, a TOR for the EIA will be set out by the TCP and the time period in which the EIA should be completed.	No. Outline permission will not be allowed for developments to begin that require an EIA	No provision – although states that The Minister may prescribe the qualifications, skills, knowledge and experience of persons conducting the EIA
French West Indies	"Grenelle II" (Loi n° 2010-788 du 12 juillet 2010 portant engagement national pour l'environnement)	The 'local' branch of the French Ministry of Ecology, Sustainable Development, Transport and Housing	The relevant planning agency determines the EIA requirement at the time of application for planning permission. Criteria are defined by law and consistent with EC policy – provided by the relevant Directives from the European Commission	Yes	The agency requiring the EIA determines the terms of reference of the EIA study.	No	Consultants paid by the developer/applicant for the planning permission.
Jamaica	Natural Resources Conservation Authority Act 1991	Natural Resources Conservation Authority Act 1991	Any existing or proposed enterprise, construction or development of a prescribed category in a prescribed area	No provision	NRCA to prescribe information required and applicant must comply	No provision	No provision
Trinidad and Tobago	Environmental Management Act 1995 (re-enacted 2000); Certificate of Environ-mental Clearance (Designated Activities) Order 2000 & Certificate of Environmental Clearance Rules 2000	Environmental Management Authority (EMA)	Any listed activity designated as one for which a CEC is required	Responsibility assigned to EMA, no procedure specified	EMA prepares draft TOR; Developer may submit written representations for modification after consulting relevant agencies, NGOs and members of the public; EMA issues final TOR	No other agency can grant any documentary authorization with respect to the activity until a CEC has been issued by the EMA	EMA to be carried out by persons with expertise and experience in the specific areas for which information is required

	Must the state provide information to the developer?	What is the role of the public in the EIA	How is the EIA evaluated?	What is the outcome of the process?	Is there an avenue for appeal?	Is there a time-line for the process?
BVI	No provision	The process requires that the EIA report be available for public inspection for a period of time. Notice is published in the Gazette	No strict guidelines. The TCP can request advice from the relevant authorities and other stakeholders with regard to the impacts of the development and the EIA content.	Grant of development permission OR Grant of development permission with condition(s). In the case of conditions, the developer must enter into a 'performance bond'	Yes	60 days after receipt of application for development TCP will notify decision
French West Indies		When issuing the requirement for the EIA, the planning agency will determine the type and level of public information and consultation required, usually significant for large projects. EIA studies are public documents available for perusals in municipal offices.	By the staff of the planning agency.	The planning agency, on the basis of the EIA studies, may reject or approve the request for planning permission, or may request modifications to design. If these modifications are substantial, a new EIA study may be required.	Yes.	
Jamaica	No provision	No provision	No provision	Permit issued by NRCA	Appeal to the Minister if permit refused or approved conditionally	NRCA sets deadline for completion of EIA
Trinidad and Tobago	No provision	Any application for which EMA requires an EIA must be submitted for public comment before a CEC is issued; Not less than 30 days must be allowed for the submission of written comments; EMA may hold public hearing if there is sufficient public interest in the matter; the administrative record and copies of the final action must be kept available to the public for not less than 45 days after decision published.	No provision	Certificate of Environmental Clearance (CEC) issued by EMA	Any participant may appeal about failure to comply with public participation requirements; applicant may appeal final decision on CEC to Environmental Commission (special court); and from there to Court of Appeal on a point of law	EMA has 10 days to decide if EIA required & 21 days to prepare draft TOR; Developer has 28 days to request modifications; EMA has 10 days to finalize TOR; minimum of 30 days must be allowed for public comment; EMA must give decision on CEC within 80 days after EIA submitted.