



## **Fact Sheet #5: Sustainable Coastal Development and Tourism: Siting, Design, & Construction**

### **What's the Situation?**

Climate change poses significant threats to coastal tourism infrastructure, causing floods, dune and beach erosion, wetlands destruction, biodiversity loss and more intense storm surges. Not taking climate-appropriate development requirements into account may end up being very costly. CARIBSAVE has estimated the total capital cost of rebuilding coastal resorts in the Caribbean in the wake of a potential 1-2 metre rise in sea level to be between US \$490 and US \$1100 million in 2050 and increase to between US \$1.3 and US \$3.7 billion in 2080.”<sup>1</sup>

### **Negative Tourism Impacts:**

Poorly planned coastal tourism development further compounds these problems. The rapid growth of mass-market ‘sun-sand-and sea’ tourism has led to unsustainable development practices across the world, and the Caribbean is no exception. Ineffective coastal regulations, land use planning, and poor construction have contributed to biodiversity loss, beach erosion, dredging, destruction of wetlands, mangroves, sea grasses, and corals, as well as displacement of coastal communities and local livelihoods. All of these factors lower tourism’s resilience to climate change. In addition, after hurricanes and flooding, coastal infrastructure, including resorts and vacation homes, are typically rebuilt in the same way as prior to the disaster, leaving coastlines once again vulnerable to harm.

### **Tourism Solutions:**

The tourism industry can, however, mitigate some of the impacts of climate change by making smart design, construction, and operations decisions. There are many ways that coastal tourism and other types of development can utilize sustainability principles to work in harmony with the natural environment and prepare to withstand climate change impacts. For new buildings and resorts, for instance, “evidence-based zoning policy” based on the physical realities of the landscape, should be established and enforced. This includes mandatory coastal set-backs and no-build zones, budgetary allocations for monitoring and enforcement, and incentives for voluntary good practice beyond compliance. Sea walls, beach replenishment, and raised building are options for further mitigating climate change impacts.<sup>2</sup>

New developments should be built to withstand intense weather events, and existing resorts can be retrofitted for better preparation and protection. The International Code Council (ICC) & Green Building Council share guidelines on techniques, including impact-resistant windows, hurricane shutters, reinforced doors, roof straps that connect to the foundation or internal building structure, gable-roof bracing, and secondary water barriers in roofs.<sup>3</sup>

Additional construction practices to reduce climate change impacts include maintaining architectural integrity with natural surroundings, utilizing sustainable construction methods, using local materials and artisans, and integrating sustainable approaches to energy, chemical use, waste, and water management.

Examples from Grenada and elsewhere of smart design, construction, and operations that seeks to address the realities of climate change include:

- **Building Back Better:** Grenada made significant efforts to “build back better” following Hurricane Ivan, which destroyed or damaged 90% of the country’s buildings.<sup>4</sup> This is a critical component to climate change resilience. **Spice Island Beach Resort**, for instance, was the first hotel in Grenada to achieve Green Globe Certification. However, the certification expired while the hotel was closed after being ravaged by Hurricane Ivan. During the US\$12 million rebuild that was needed, the hotel made an effort to work toward Green Globe Certification again, surpassing what they had achieved before. Efforts included: use of solar rooftop heaters for all hot water needs; utilizing water from the season through an on-property desalinization plant; purification of swimming pools through a chemical-free auto pilot system that uses salt instead of chlorine; composting and maintenance of herb and vegetable gardens; incorporation of native plants into the landscape and replanting of trees; and various water, energy, and waste sustainability practices.<sup>5</sup>
- **Green Building Design:** In Grenada, a leading example of a building designed to address climate change is that of the **Beacon Insurance Company**, built by Quinn Company Design & Construction. The building has an insulated wall system that improves energy efficiency ten times over traditional block construction in Grenada. A waterproof radiant barrier on the roof has allowed usage of a smaller cooling system, which reduces operating costs. Sustainable building supplies were used, including a lightweight steel framing made of 67% recycled materials, with a 150mph wind load and impact capacity. The building receives 50% of power from a GrenSol solar power system. Though initial capital costs may be more to construct a building of this nature, operating costs are significantly lower. Though not a tourism business, lessons learned can be applied to the tourism industry.<sup>6</sup>
- **Land Use & Siting:** The 650 hectares Mayakoba vacation complex along Mexico’s Riviera Maya coastline is a leading example of good land use planning, which integrates three world-class resorts, residential areas, and a golf course. It has become a model for sustainable coastal tourism development. Its management master plan is based on the preservation and maintenance of the coastal ecosystems, including reefs, sea grasslands, dunes, mangrove swamps, and jungle. The entire resort complex is set back 500 meters from the coastline and includes 20 hectares of channels and lagoons. These provide the main transport routes within the complex with visitors, staff, and supplies moving mainly in small boats. An 11 hectare system of wetlands has also been incorporated into the golf course landscape.<sup>7</sup>
- **Design & Construction:** Situated off the coast of Nicaragua, **Jicaro Island Ecolodge** is built entirely from timber reclaimed from trees blown down by Hurricane Felix. Great care was taken to “maintain the existing character of the island and the lush vegetation. When building, they did not remove any of the large trees or boulders and so the land dictated the form of the resort.”<sup>8</sup> Furniture has also been made by tropical hardwoods left over from the hurricane, and all is FSC/Rainforest Alliance certified. A focus is made to reduce waste, and the building is designed to promote energy and water efficiency.

- Green Certification, Operations, and Staff Training:** Tourism certification programmes that measure social, economic and environmental impacts are increasingly incorporating criteria to mitigate climate change impacts. In the Caribbean, Sandals Resorts International has more platinum certified properties than any other hotel group under Earthcheck, one of the leading international certification programs. Staff training is essential to effectively implementing certification programmes. Months before Sandals LaSource Grenada opened in 2014, staff was being trained to use the company's environmental management programme, Sandals Earthguard, which is based on Earthcheck. As Sandals CEO Adam Stewart explained, "During the initial planning stages of Sandals LaSource, we were able to take a close look at the ways we could make a difference in order to minimise our 'footprint' here and ensure that Grenada stays as beautiful as we found it."<sup>9</sup>

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<sup>1</sup> CARIBSAVE, "Modelling the Transformational Impacts and Costs of Sea Level Rise in the Caribbean," 2010,

<http://caribbean.intasave.org/documents/Publications/Reports/Climate-Change-Science-Policy-and-Practice/Quantification-of-Losses-and-Damages-Resulting-from-the-Impacts-of-Climate-Change/Transformational-Impacts-Key-Points-For-Policy-Makers.pdf>

<sup>2</sup> USAID, "Adapting to Coastal Climate Change: A Guidebook for Development Planners," May 2009,

<http://www.crc.uri.edu/download/CoastalAdaptationGuide.pdf>

<sup>3</sup> Hurricanes: Science and Society, "Current and Emerging Technologies of Hurricane Protection,"

<http://www.hurricanesociety.org/society/risk/currentandemergingtech/>

<sup>4</sup> The World Bank Latin America and the Caribbean Hazard Risk Management Unit, "Grenada: A Nation Rebuilding," 2005,

[http://siteresources.worldbank.org/INT/LACREGTOPHAZMAN/Resources/grenada\\_rebuilding.pdf](http://siteresources.worldbank.org/INT/LACREGTOPHAZMAN/Resources/grenada_rebuilding.pdf)

<sup>5</sup> Green Globe, "Spice Island Beach Resort, Grenada, Awarded Coveted Green Globe Re-Certification," May 9, 2012,

<http://greenglobe.com/latest-news/spice-island-beach-resort-grenada-awarded-coveted-green-globe-re-certification/>

<sup>6</sup> Quinn Company Limited, <http://www.quinnco.com/projects.php?cat=6&id=41> & Press Release from Quinn Company, "Sustainable Green Building Design Practices in Grenada," May 20, 2010.

<sup>7</sup> OHL Development. "Mayakoba Ecotourism Complex Case Study," 2008, Provided by Fundacion Entorno, BCSD Spain, a World Business Council for Sustainable Development (WBCSD) Regional Network Partner.

<sup>8</sup> Jicaro Island Ecolodge, "Reclaimed Wood and Minimal Disturbance Preserve the Character of the Island,"

<http://www.jicarolodge.com/sustainability/building-jicaro/>

<sup>9</sup> Now Grenada, "Bringing 'Green' Tourism to Sandals LaSource, November 6, 2013, <http://nowgrenada.com/2013/11/bringing-green-tourism-sandals-lasource/>