Chapter 4
Climate Change Adaptation and Disaster Risk Management in the Caribbean

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ABSTRACT

Caribbean countries share unique features such as small size, geographical location, limited natural resources, low economic status aligned with ambitious developmental agendas, all of which influences their vulnerability to natural disasters. Agriculture and tourism are the main economic drivers for Caribbean states. Notably, both these sectors are highly prone to natural disasters. Other sectors including forestry, biodiversity, coastal resources and inland water resources are also susceptible to climatic hazards. The eroding natural resource base aligned to these sectors demands appropriate management. Risk assessment is integral in planning and preparing for natural hazards. Several methods have been used in the Caribbean with varying success. Two successful examples are the Land Degradation Assessment (LADA) conducted in Grenada and the Landslide Mapping in Trinidad. The LADA project geospatially quantified the extent of land degradation and presented data in support of natural resource management. The Caribbean Disaster Emergency Management Agency (CDEMA) was a milestone establishment for regional disaster management. Introduction and implementation of the Comprehensive Disaster Management (CDM) strategy transformed disaster management from simply response and recovery, to include preparedness, prevention and mitigation. This approach included the appointment of national focal points in all participating countries, a feature that aimed to build and improve communication channels. Whilst mostly positive, the present approach has also showcased limitations to long term sustainability. Most islands lack effective governance structures with a dedicated budget to disaster management and where available, activities are centrally operated. Improving social resilience through community engagement is seen as critical to the success of CDM. Social media has also been shown to add real value to networking and communication in disaster management.

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INTRODUCTION

The scientific credibility supporting global warming associated climate change has improved significantly in the last decade. Recent climatic anomalies, ranging from changes in rainfall distribution and intensity to increased frequency of climate induced natural disasters (floods, landslides and drought) have emphasized the urgency needed in mitigation. At present, many countries, developed and developing, are struggling to establish and implement adaptation and mitigation strategies to combat current and potential risks, unique to their national circumstance.

Small Island Developing States (SIDS) in the Caribbean possess unique characteristics, which increase their vulnerability and potential risks associated with climate change. Paramount of these is their dependence upon a limited natural resource base that can be severely impacted by the economic activities on which they depend (LesFouris, 2008). Further, complications arise due to their small size, limited infrastructure, distance from large international markets, low level of human resource development, increasing urbanization and high vulnerability to natural disasters. Lindell and Prater (2003) defined a natural disaster as an extreme geological, meteorological, or hydrological event that exceeds the ability of a community to cope with that event. Geographically, the Caribbean is exposed not only to seasonal extreme weather, namely tropical cyclones and drought, but is also vulnerable to tectonic and volcanic disasters. Figure 1 shows a classification of natural disasters typical in the region. The magnitude and nature of specific hazards vary from country to country. Categorically, vulnerability varies with geology, seasonality, exposure of population, infrastructure and level of preparedness.

Pelling and Uitto (2001) compared disaster impacts and losses for several SIDS and noted that the Greater Antilles showed mid to low intensities of disasters. Hurricanes are the most frequent meteorologi-

Figure 1. Classification of natural disaster (Highlighted with rectangles are those groups of disasters, which can be influenced by climate change)
Source: (Sauerborn & Ebi, 2012)