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Evaluating the Business Case for Investment in the Resilience of the Tourism Sector of Small Island Developing States

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Disaster Risk Reduction (GAR) 2013

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Executive Summary

Background

Over the last decade, a number of disasters severely affected tourist destinations. At the same time, tourism is continuing to grow globally with over 1 billion international arrivals in 2011. Considering that a significant proportion of tourism occurs in potentially hazardous coastal zones, the need to manage hazards, reduce vulnerability and disaster risk in tourism becomes evident. This is particularly relevant for Small Island Developing States (SIDS) that are known to be both exposed to hazards and vulnerable to the disasters that these hazards trigger.

The management of disasters has shifted from a reactive, top-down approach to a more inclusive approach that seeks to proactively reduce the risk of disasters occurring and to minimise the negative consequences for human lives and economic activities. The new paradigm of disaster risk reduction (DRR), as articulated in the Hyogo Framework for Action, explicitly identifies the need to include the private sector in disaster management activities. Hence, considering tourism's significant contribution to many island economies, private sector stakeholders can – and maybe have to – play an active role in DRR at SIDS destinations. Establishing the business merits associated with investment in disaster resilient measures would be necessary to support increased private sector investment in DRR.

Study Objective, Conceptual Framework and Method

The objective of this study therefore is to evaluate the business case for investment in the resilience of the tourism sector in SIDS. The business case is necessarily a financial one which explains why a particular course of action would be useful, advantageous or profitable to an organisation. To make a business case, decision-makers will likely assess the risks and the need to implement specific measures to address these risks. These measures will have costs and benefits attached to them, and the decision-making outcome is likely to differ if a purely financial assessment is made compared with one that considers broader sustainability outcomes.

Thus, as a precursor to exploring the business case for tourism's investment in DRR, an analysis of the causal factors of the disaster risks that SIDS tourism faces is undertaken. The dominant hazards, as well as, underlying socio-economic trends in island destinations are therefore examined, alongside the vulnerabilities of different elements of the tourism system. Barriers or facilitators for addressing disaster risks are summarised, and commonly implemented DRR measures are discussed. The underlying conceptual framework postulates that greater investment in DRR measures across the whole spectrum of Prevention, Preparedness, Response and Recovery (PPRR) will increase resilience and reduce disaster risk.

This study uses a multi-method approach. More specifically, there are four parts with both qualitative and quantitative components within the overall research design that integrates an analysis of both supply- and demand-side tourism interactions. Following an extensive literature review, empirical data were collected from seven islands (Antigua and Barbuda, Jamaica, Trinidad and Tobago, Fiji, Samoa, Tonga and the Maldives) in the three world regions where SIDS are found, namely: 1) the Caribbean, 2) the South Pacific, and 3) the African, Indian Ocean, Mediterranean and South China Seas (AIMS). These data are used to populate the conceptual framework and evaluate the business case for resilience and increased DRR investment by tourism stakeholders.

Key Findings from the Literature

Hazards

The literature provides clear evidence of the physical hazards that SIDS are exposed to, and the impacts these can cause. Extreme weather events such as hurricanes, cyclones as well as associated storm surge, tsunamis, and coastal erosion are the dominant hazards reported for island destinations around the world. Climate change (CC) is expected to exacerbate many of the existing hazards, such as extreme rainfall events that lead to flooding, or periods of drought that are associated with water shortages. In addition, sea level rise in the order of 1m by the end of the century (depending on reductions in polar ice) will put substantial pressure on coastal zones. Ongoing growth in coastal tourism and investment in hazardous coastal locations, alongside ownership models that increase local exposure, exacerbate physical hazards.

Vulnerability

Small Island Developing States are vulnerable to disaster impacts for a wide range of reasons. First, a lack of awareness and knowledge, coupled with a sometimes fatalistic worldview, results in limited engagement with DRR by tourism businesses. Since historic planning processes did not take disaster risk into account (and often still fail to do so) and policy frameworks are often inadequate (e.g. insufficient building standards) or poorly implemented (e.g. a lack of Environmental Impact Assessments), considerable capital investment by both the public and private sectors can be observed in hazardous coastal zones. Environmental degradation resulting from coastal development and gaps in environmental management systems increase vulnerability due to weakened ecosystems. The reduction in mangrove forests and stress on coral reefs, for example, from water pollution, are of particular concern, since these act as natural buffers against many coastal hazards.

The commercial rewards associated with offering a coastal tourism product also featured as a key driver of vulnerability with developers willing to take the calculated risk attendant to a hazard prone, sea front location.

The role of tourists is ambiguous. On the one hand, tourists are believed to avoid destinations that are perceived as risky or that just suffered a disaster. Concerns about negative tourist perceptions have prevented some operators from providing hazard information to tourists and discussing existing risks openly (e.g. coastal inundation in the Maldives). However, the literature also indicates that some tourists would be very interested in reducing their exposure to the adverse impacts of physical hazards and would prefer to receive relevant information on their destination. Other studies reported that decision-making factors, such as the price of a holiday, are more important than safety issues.

Measures

The DRR measures reported in the literature for both the public and the private sectors cut across all stages of PPRR, although the recovery phase is discussed least. Typical prevention and preparedness measures include strategic plans and other planning tools, training and drills, and early warning systems. Coastal protection through hard structures, despite its known undesirable effects of transferred erosion, is still one of the most popular measures to protect coastal assets. Relocation away from coastal zones is rarely discussed in the context of tourism; however alternatives to 'hard' engineering structures are explored to enhance coastal protection. The use of insurance as a risk transfer measure for better recovery varies amongst tourism businesses, with smaller businesses often being under-insured. The use of innovative risk transfer mechanisms, such as index insurance, is being discussed, but the development of such instruments is still in its infancy and is seen more in the agricultural context than tourism.

The Business Case for Resilience

There is evidence for the rationale that underpins the business case for resilience with research generally supporting the view that the better a business is prepared to cope strategically with disasters and the crises that follow, the better its chances for long-term survival and preservation of value. For example, one study estimates that as much as 40% of businesses struck by a disaster never re-open, and of those that do, 25% permanently close within two years. There is also evidence that shows that workers lack confidence that their employer is well prepared for a disaster or can recover quickly from one. Employees also may not feel safe in their workplace during a disaster. Studies also support the view that companies with best practices in managing their property risks, produced earnings that were less volatile than companies with less advanced physical risk management. In the specific context of coastal tourism, research has demonstrated the value of protecting assets such as the beach. Less tangible business value arguments related to destination and business image, as well as, reputation among tourists are also found in the literature.

Self-Regulation

The literature showed that while regulatory requirements have been the main means for encouraging the tourism industry to decrease their exposure and vulnerability over the years, self-regulation may be viewed as a solution to the regulatory capacity problems faced by developing states. Voluntary industry action through certification programmes that make a strong connection between disaster resistant standards and incentives and benefits could be a valuable mechanism in increasing private sector DRR investment. It is reasonable to believe that to support self-regulation of disaster risk over and above what is required by regulation, a business case for such action is needed.

Literature Gaps

The literature review revealed that technical reports that quantify and document the physical, social and economic impacts of disasters on tourism as a key sector in SIDS economies do exist. Cost-benefit analyses of DRR options are increasingly being developed by regional and international development organisations for use in the decision-making process of SIDS policy-makers. However, rarely do these reports go beyond the macro-level of analysis making the need to focus on the business level apparent. The literature lacks detailed quantitative assessments of the costs and benefits associated with specific DRR measures. In addition, there is very little in the tourism literature on the financial merits of DRR on tourism business performance. This is a major gap as such information would inform the decision-making of a business case for operators substantially. The present study is the first attempt to document a business case for investment in the resilience of the tourism sector of SIDS. As such, it offers 1) a greater understanding of the root causes of destination vulnerability and risk using a cross-regional, comparative case study approach; and 2) a qualitative evaluation of the business case for investment in the resilience of SIDS tourism.

Key Findings from the Field

The interview data (n = 80) from the case studies confirmed the findings from the literature review, but provided more detail and also highlighted the idiosyncrasies of the different destinations.

Hazards

The interviews provided evidence of disruption to the functioning of coastal tourism operations, as well as, the wider national infrastructure due to the effects of hazards. The main hazards identified in the Caribbean related to severe weather systems (including hurricanes), and coastal erosion and storm surge. The South Pacific case study discussions were dominated by tsunamis, severe weather systems (including cyclones) and storm surge, while the Maldives stakeholders typically referred to coastal erosion, tsunamis, flooding and inundation. It was evident that previous events played a great role in operators' interest and

commitment to DRR and informed their preparedness with many stakeholders discussing recent disaster experiences such as the 2009 tsunami that affected both Samoa and Tonga.

Vulnerability

While the case study regions differ in many ways (eg. type and scale of tourism development), there were common denominators in terms of vulnerability that stem from their similar characteristics as SIDS. The islands' ongoing dependence on coastal tourism and limited scope for diversified products away from the coastal zone are clearly drivers of vulnerability that apply to the majority of islands investigated in this study (perhaps only with the exception of Trinidad & Tobago). Stakeholders' perception of continuous demand by tourists for products that are as close to the beach as possible promotes further investment in these areas.

Coastal set-backs of past and present developments are often minimal (typically 30 m from the high water mark) and fail to account for CC and associated rises in sea level. Even if planning guidelines stipulate set-back distances, these are not necessarily adhered to due to deficient planning and development processes particularly in the areas of monitoring and enforcement which were evident in all case studies but to different degrees. Similarly, the lack of implementation of existing legislation was reported as an important driver of vulnerability in all regions. In addition, stakeholders recognised that coastal development and disturbance of the local ecosystems often undermine the natural ability of coastlines to cope with extreme events, resulting in the increased vulnerability of those living or operating along the coastline.

Another reason for tourism's vulnerability was the lack of private sector resources to effectively implement DRR. The data indicated that larger operators (e.g. international chain hotels) have invested more resources into DRR compared with smaller enterprises. They are also typically insured more comprehensively. However, it was also pointed out that the small businesses, for example, the local beach fale operators in Samoa, are more resilient and adaptable as they have invested less capital into fixed structures and they are able to rebuild quickly after a disaster. Thus, the evidence is somewhat ambiguous in terms of how business size and ownership structures influence vulnerability.

Barriers and Facilitators to Investment in DRR

A range of barriers and facilitators for DRR in tourism were identified. Predominantly, the costs associated with the implementation of DRR measures were seen as prohibitive in the context of limited financial resources and competing business concerns, especially when there is uncertainty around the occurrence of future events. There is also a focus on short business timeframes within which longer term disaster risks such as tsunamis or other environmental threats such as climate change are not considered. In some cases, operators lack two types of technical knowledge: 1) site specific, biophysical knowledge that would

enable appropriate responses to physical hazards, and 2) information on the costs and benefits to a business of introducing DRR measures. The market context does not create adequate supportive incentives, for example, when insurance premiums fail to take DRR improvements into account. Support through broader governance structures is often inadequate or have unintended negative effects. For example, public assistance after a disaster can have a perverse effect on the initiatives of private companies, especially when businesses that were least prepared receive the most assistance. At the broader systemic level of governance, government leadership in the form of adjustments to current regulatory instruments to address the increasingly adverse operating environment that will materialise as a result of CC, is largely still lacking.

Moreover, ongoing tourist demand for coastal products and the market's concurrent limited interest in businesses' DRR preparedness pose another disincentive for changing the current form of the coastal tourism product. This was evident from the results of a survey data of 367 international visitors to the island of Tobago which revealed that while fairly important in their own right, closeness to the beach seems to hold more importance with tourists than other features associated with a disaster resistant tourism product, as well as increasing investment in DRR. Attitudes are also a significant barrier in both the public and private sectors. In the public realm, this is usually reflected in a lack of political will to implement risk reducing measures while in the private sector, it is sometimes reflected in the fatalistic or reluctant attitude of operators. The systematic denial of the impacts of CC on Maldivian tourism is a good example of an attitude barrier.

The interviews revealed that several factors that facilitated investment in DRR including: 1) stakeholders' recent experience with disaster impact; 2) the influence of banks, insurance agencies, international tour operators, development and aid agencies which in their own ways exert a significant influence on private sector operators; 3) development funding that targets DRR and CC adaptation creates incentives for taking action; and 4) certification schemes and accommodation standards that require that businesses perform according to certain risk standards.

Measures

The field evidence confirms that measures employed by the public sector and private businesses cover the full range of the PPRR spectrum. There are for example, a number of developments that support investment into DRR. Several countries have received substantial investment from international organisations to improve the resilience of coastal systems and/or tourism. Initiatives to reward those operators who invest in risk management are emerging, for example by including natural risk factors into financing programmes, as well as, into national accommodation certification schemes. Also, expectations from international tour operators mean that local operators have to meet minimum standards, for example in relation to evacuation plans. The case study of Fiji revealed an innovative initiative between

the banking and insurance sectors who work with the Fiji Institute of Engineers to certify tourism structures.

Tourist operators have implemented PPRR measures to some extent. However, these measures are not always operationalised in a systematic and comprehensive manner, nor do they take changes in the environment (e.g. as a result of CC) into account. There was also strong evidence of organisational differences in disaster performance which were linked to issues with size, resources and associated capacity.

The data showed that hazards that are relevant on a day-to-day basis (e.g. coastal erosion), as well as, measures related to those types of disasters that have been experienced recently, dominate DRR portfolios. Often, DRR is still led by public sector agencies, for example, the Disaster Management Offices, although there is increasing evidence of public-private sector partnerships. These can take many forms and often involve a government agency, an international donor organisation and a tourism sector association, such as the national hotel associations.

The Business Case for Resilience

It was clear that a financially- grounded business case is not often used. This is perhaps a symptom of the fact that the business case is yet to be systematically built. There is for example, a fairly major economic and financial data deficit which makes it difficult to accurately measure the contribution of DRR investment to a tourism operation's core business and on a broader level, to a nation's sustainable development agenda. The case studies showed that public and private sector stakeholders are largely unable to articulate the benefits of DRR investment in quantitative terms. Without the relevant quantitative data, these benefits remain largely theoretical and efforts to encourage greater investment by private stakeholders, as well as, to create a supportive and enabling national environment for resilient tourism investment is likely to remain at sub-optimal levels. Where quantitative information does exist, the interview evidence suggested that it may not be widely or effectively communicated.

Implications for Self-Regulation

The desirability of self-regulation and greater investment in DRR by the private sector was positively acknowledged. Indeed, it was found that some businesses already self-regulate based on individual evaluations of a variety of tangible and less tangible benefits. The possibility of a DRR certification system also received favourable comment from a number of those interviewed. There is value in making the business case for investment in DRR as such information can substantially inform decision-making and encourage increased investment over and above what is regulated. Effectively communicating the business case (e.g. tailoring DRR information that targets private stakeholders using business language) is also critical.

Both public and private sector respondents were of the view that self-regulation through voluntary initiatives should supplement regulatory controls rather than replace them.

Recommendations

It is in this context that this study makes the following five (5) recommendations at the business level:

1. Assist businesses to assess the tangible and intangible costs and benefits of DRR applicable to their individual operating context;
2. Provide opportunities for operators to increase their technical knowledge and to widen their outlook through training and tours of successful DRR tourism sites;
3. Provide practical tools and templates such as signs to place in hotel rooms or informational materials to provide to guests that help operators to translate technical knowledge into their operational context;
4. Support research and outreach that promotes the business case for resilience to increase private sector awareness around the business merits associated with DRR; and
5. Invest in further research on a certification programme that explicitly incorporates measures of resilience.

Conclusions

This study has established that building resilience necessarily involves the public, as well as, the private sector. Both sectors have responsibilities in investing in resilience and both sectors have difficulties fulfilling them. Given this sub-optimal DRR investment and operating context, there are many possibilities to alter disaster risk or its consequences through increased investment in PPRR.

It was clear that some private sector stakeholders already self-regulate based on individual evaluations of a variety of tangible and less tangible benefits. However, to stimulate more widespread self-regulation of disaster risk over and above what is required by regulation, a business case for such action may be needed. There is a fairly major deficit of empirical quantitative data to support the business case. Where this information exists, it may not be widely or effectively communicated.

More research is needed to develop the economic and financial data that may possibly encourage greater private sector investment in DRR, as well as, create a supportive and enabling national economic context for resilient tourism investment. Moreover, while the desirability of self-regulation and greater investment in DRR by the private sector is acknowledged, it is generally accepted that private sector investment must be underpinned by appropriate regulation (e.g., building codes) that is consistently well-enforced.

The study concludes that a business case for private sector investment into DRR can be made. However, in practice, it rarely is made and/or communicated effectively. This situation of a wealth of theoretical benefits but limited practical uptake reminds of the much longer studied need to implement sustainable tourism. Perhaps, lessons learned from overcoming barriers towards sustainable tourism development can be used to also improve DRR activities amongst tourism operators.

Table of Contents

List of Figures

List of Tables

List of Boxes

List of Abbreviations and Acronyms

AIMS: Africa, Indian Ocean, Mediterranean and South China Seas
CC: Climate Change
CCA: Climate Change Adaptation
CCRIF: Caribbean Catastrophe Risk Insurance Facility
CDERA: Caribbean Disaster Emergency Response Agency
CDEMA: Caribbean Disaster Emergency Management Agency
CDM: Comprehensive Disaster Management
CHTA/CAST: Caribbean Hotel and Tourism Association/Caribbean Alliance for Sustainable Tourism
CROSQ: Caribbean Community Regional Organisation for Standards and Quality
CTO: Caribbean Tourism Organisation
DRR: Disaster Risk Reduction
EIA: Environmental Impact Assessment
ENSO: El Nino-Southern Oscillation
EU: European Union
GAR: Global Assessment Report
GEF: Global Environment Facility
GFC: Global Financial Crisis
GIS: Geographic Information System
GSTC: Global Sustainable Tourism Council
HFA: Hyogo Framework for Action
IADB: Inter-American Development Bank
IPCC: Intergovernmental Panel on Climate Change
LEED: Leadership in Energy and Environmental Design
NHIA: Natural Hazard Impact Assessment
PICS: Pacific Island Countries
PPRR: Prevention, Preparedness, Response, Recovery
SIDS: Small Island Developing State(s)
SOPAC: Pacific Islands Applied GeoScience Commission
SPREP: Secretariat of the Pacific Regional Environment Programme
SPTO: South Pacific Tourism Organisation
UNCTAD: United Nations Conference on Trade and Development
UNDP: United Nations Development Programme
UNEP: United Nations Environment Programme
UNESCO: United Nations Educational, Scientific and Cultural Organisation
UNISDR: United Nations International Strategy for Disaster Reduction
UNWTO: United Nations World Tourism Organisation
UWI: University of the West Indies
WTTC: World Travel and Tourism Council

Key Definitions

Hazard (physical) refers to hazardous phenomena such as floods, storms, droughts and earthquakes.

Major hazards are global or regionally important hazards such as earthquakes, tsunamis, flooding in large river basins and tropical cyclones.

Localised hazards are smaller scale hazards such as flash or surface water flooding, fires, storms and landslides, which tend to affect particular localities.

Exposure refers to the location of people or economic assets in hazard-prone areas.

Vulnerability refers to the susceptibility of people or economic assets to suffer damage and loss, due for example to unsafe housing and living conditions.

Resilience refers to the capacity of systems (such as a household, economy or community) top absorb or buffer losses, and recover.

Extensive risk describes the risk of low severity, high frequency disasters, mainly but not exclusively associated with highly localised hazards.

Intensive risk describes the risk of high severity, low frequency disasters, mainly associated with major hazards.

Emerging risk describes the risk of extremely low-probability disasters associated with new patterns of hazard and vulnerability.

Underlying risk drivers are development related processes such as badly planned and managed urban and regional development, environmental degradation and poverty, which shape risk patterns and trends.

Disaster risk is considered to be a function of hazard, exposure and vulnerability. It is normally expressed as the probability of loss of life or destroyed or damaged assets in a given period of time.

Disaster risk reduction (DRR) describes the policy objective of reducing risk.

Disaster risk management (DRM) describes the actions that aim to achieve this objective. These include prospective risk management, such as better planning, designed to avoid the construction of new risks; corrective risk management, designed to address pre-existing risks; compensatory risk management, such as insurance and risk transfer, designed to avoid disaster losses spilling over into poverty and other outcomes, and; disaster management measures such as preparedness and response.

Risk governance is used to describe how national or local governments, civil society and other actors organise DRM, for example through institutional arrangements, legislation and decentralisation, and mechanisms for participation and accountability.

(Source: after UNISDR 2009b and 2011)

1. INTRODUCTION

"Everyone comes here to lie on the beach…" (Maldives Red Cross representative)

1.1 Overview

Over the last decade, a number of disasters severely affected tourist destinations, including the 2004 Indian Ocean tsunami, Hurricanes Katrina (USA) and Wilma (2005), the Samoan tsunami (2009), the Australian floods (2010/2011), and the Nadi (Fiji) floods (2009/2012). Tourism is continuing to grow globally with over 1 billion international arrivals in 2011 (UNWTO, 2011). Considering that the majority of tourism occurs in potentially hazardous coastal zones, the need to investigate a business case for DRR in tourism becomes evident. This is particularly relevant for island destinations.

Disasters comprise a wide range of events, although Ferris and Petz's (2011) analysis of 2000 to 2009 disasters shows that most (92.2 %) are related to hydro-meteorological (i.e. climate) hazards. There is strong evidence (e.g. IPCC, 2007 and 2012) of an increase in both the observed frequency and intensity of climate-related hazards such as heavy rainfall that frequently results in floods; droughts; high sea levels, often exacerbated by storm surges; and possibly tropical cyclones. These increasing trends, which are consistent with those anticipated because of global warming, have important implications for disaster risks. Hydro-meteorological hazards are increasing, with more devastating impacts on communities than expected, especially in areas already exposed to climate variability, such as coastal areas.

The management of disasters has shifted from a reactive, top-down approach to a more inclusive approach that seeks to reduce proactively the risk of disasters occurring and to minimise the negative consequences for human lives and economic activities (Innocenti & Albrito, 2011). The new paradigm of DRR has been formalised in the international agreement known as the Hyogo Framework for Action (2005–2015) (HFA). Thirty-eight (38) Small Island Developing States (SIDS) have accepted the Hyogo Framework for Action. More specifically, the HFA pursues the Strategic Goals (UNISDR, 2005, p. 12) of a better integration of DRR into sustainable development, institutional strengthening, and greater emphasis on risk reduction approaches rather than just emergency response.

The HFA acknowledges the important role of Government agencies, but also explicitly identifies the need to include civil society and other organisations, for example trade unions, community groups, traditional leaders or religious institutions, in disaster management activities. Hence, actions by players that are not formally part of civil defence, such as tourism organisations, are no longer considered as disruptive, but are embraced as important additions to the risk management network (e.g. Becken & Hughey, 2011; McGee, 2011). The opportunity to capitalise on local or indigenous knowledge and to tap into existing social relationships has been identified as an effective approach to strengthen the resilience of communities in the face of disaster (Larsen et al., 2011).

SIDS are particularly exposed to a range of physical hazards, primarily in the form of hurricanes, cyclones, storm surges, volcanic eruptions, floods, droughts and earthquakes. Because of their small size and high dependence on primary industries (i.e. agriculture and fisheries) and tourism, overall vulnerability is high. Thus, disasters have a pervasive impact on the whole economy with limited opportunities for a swift recovery. The lack of insurance coverage in some SIDS is also an important constraint. In sum, Mechler (2009) noted that SIDS are less resilient and have more difficulty recovering after a disaster compared with larger and more diversified economies. What is more, the Caribbean, Pacific and African, Indian, Mediterranean and South China Seas (AIMS) regions have been identified as vulnerable hotspot regions in terms of extreme impacts of CC on tourism (Scott et al., 2008).

Tourism is a key sector in most SIDS. For example, in 2011 in the Caribbean, the world's most tourism-dependent region, travel and tourism was expected to post a contribution of 14.2% to the region's economy, represent 16.7% of total regional exports, generate 2.2 million jobs (1 in every 8 jobs) and account for 11.6% of total regional capital investment (WTTC, 2011). Tourism should be actively involved in DRR for a number of reasons. Tourists are potentially particularly vulnerable to disasters, because they are mobile, difficult to account for and not easy to reach with relevant information or warnings (Bird, Gisladottir & Dominey-Howes, 2010). Often, tourists travel in environments unfamiliar to them, their connectedness with local communities is likely to be weak, they may face language barriers, and their predisposition towards positive holiday experiences might obstruct their capacity to absorb information related to physical hazards or disasters (WTO, 1998).

Tourism is a major user of local infrastructure, for example airports, roads, and sewage systems. Disruptions to these services as a result of disasters can have negative repercussions for tourism, both short and long-term, including through an eroding destination image (e.g. Huan, Beaman & Shelby, 2004). Tourism businesses and associated investment are also potentially at risk from disasters. Tourism businesses represent a very broad spectrum of small, to medium or large enterprises, across very different sectors (e.g. hotels, bus operators, museums). In many places, tourism businesses consider themselves as inherent members of the local community (Cioccio & Michael, 2007). However, it is the small businesses that are also likely to be most vulnerable to disasters, as they lack the resources and know-how to prepare for impacts (Cioccio & Michael, 2007; Wang & Ritchie, 2012).

1.2 Making a Business Case

Many of these small businesses, downstream service sectors and residential clusters are attracted to vulnerable coastal areas by the opportunities to develop new tourism products associated with the popularity of 'sun, sea and sand' tourism. In this paper, we therefore evaluate the business case for investment in DRR for tourism in SIDS. The business case is necessarily an financial one. It explains why a particular course of action would be useful, advantageous or profitable to an organisation (Collin, 2006). The need for the business case in SIDS tourism is particularly acute in countries in which private investment in an industry of

national significance is quite high. The underlying spirit of the HFA also supports greater involvement of non-Government groups. In some cases, the private sector could even lead DRR efforts, especially in countries where legislation and enforcement have been weak in the past. Thus, voluntary strategies and self-regulation could be important tools.

As a precursor to evaluating the business case, a necessary starting point is an analysis of the causal factors of the disaster risks that SIDS tourism faces. We therefore report underlying socio-economic trends, as well as, dominant hazards in island destinations, in addition to the vulnerabilities of the different elements of the tourism system. Barriers or facilitators for addressing these risks will be discussed alongside typically implemented response measures. Responding to risk and increasing 'adaptive capacity' are critical for both DRR and climate change adaptation (CCA). The resilience of SIDS will increase as a result. Finally, we make recommendations for tourism policy, planning and practice.

1.3 Study Aim and Objectives

Thus, the aim of this study is to explore and evaluate the business case for investment into DRR in the tourism sector of SIDS. The specific objectives are as follows:

1. To report on existing and future hazards as well as development trends that reinforce these hazards in the tourism industry of SIDS;
2. To explore vulnerabilities of the tourism sector and key stakeholders;
3. To report on measures and examine the scope for an integrated approach for reduction and/or management of tourism disaster risk through: 1) public-sector approaches; 2) industry initiatives (including those related to demand management); and 3) public-private sector interactions and partnerships;
4. To evaluate the business case for investment in the resilience of the tourism sector of SIDS, building on existing risk reduction measures; and
5. To make recommendations for tourism policy, planning and practice.

In an attempt to satisfy the study's aim and objectives, we pose the following research questions:

1. What are the broad trends of tourism development in SIDS and do they increase or decrease the industry's exposure and vulnerability to disasters?
2. Have past disaster impacts increased awareness and interest in DRR and related investment decisions?
3. Has the wider political economy of tourism generated incentives for greater (or lesser) risk-taking at all levels?
4. Do present investment decisions in the tourism industry transfer risk from private investors to Governments and other parts of society?
5. Are there good practice examples that highlight public-private sector interactions and partnerships at the international, regional and national level that address DRR in tourism?

6. Is there evidence of industry self-regulation to incorporate DRR into decision making or Corporate Social Responsibility?
7. What combination of incentives and regulation could encourage more investment in risk reduction?

We explore these research questions in the three world regions where SIDS are found, namely: 1) the Caribbean, 2) the South Pacific, and 3) the Africa, Indian Ocean, Mediterranean and South China Seas (AIMS) regions. The geographic spread of these regions is quite large with too many island states within each region for an analysis of all of them. This is a limitation of the study. Due to budgetary and time constraints, only a sample of States were drawn from the theoretical population based on the three following criteria:

1. Level of dependency on tourism,
2. Existence of a dominant coastal tourism product, and
3. Level of vulnerability of coastal tourism plant and infrastructure to disaster impact, as well as, the effects of CC.

The specific island states chosen for our analysis are:

1. Antigua and Barbuda, Jamaica, and Trinidad and Tobago (Caribbean region);
2. Fiji, Samoa and Tonga (South Pacific region); and
3. The Maldives (AIMS region).

These territories represent a range of experience on each of the three criteria. For example, in the Caribbean region, Antigua and Barbuda is very highly dependent on tourism, Jamaica is highly dependent but less so and Trinidad and Tobago is the least dependent of the three states. They all have a coastal tourism product that dominates in comparison to the other forms of tourism that may exist within the islands' tourism portfolio and according to Scott, Simpson & Sim (2012), each have varying levels of vulnerability of coastal tourism plant and infrastructure. A similar situation exists in the South Pacific with Fiji, Samoa and Tonga. In the AIMS region, the Maldives is a Small Island Developing State that is highly dependent on tourism, has a dominant coastal tourism product and is the most vulnerable and most researched SIDS within that region.

In carrying out our analysis, we have structured the document as follows:

- Section 1 of the Background Paper provides an *Introduction* of the issues.
- Section 2 discusses the *Conceptual and Analytical Framework* as a basis for data collection and analysis.
- Section 3 discusses the *Methodology* including the methods used for data collection.
- Section 4 presents a *Review of the Literature*.
- Section 5 presents a summary of results from the case studies in the three SIDS regions.

- Section 6 provides an exploration and evaluation of the business case, including recommendations for tourism policy, planning and practice.

2. CONCEPTUAL AND ANALYTICAL FRAMEWORK

"...there are hotels that…nowadays… are practically in the sea" (Caribbean regional representative)

Our examination of the literature has revealed that while there are some relevant frameworks that may aid our analysis, there is no comprehensive analytical framework for the study of the research problem with which this Background Paper is concerned. Tourism is still working towards building a coherent and comprehensive body of knowledge in crisis and disaster management. Within the tourism literature, there are two conceptual streams of risk management work that we identified:

1. Crisis management frameworks (Evans & Elphick, 2005; UNEP & CAST, 2009); and
2. Tourism disaster management frameworks (Faulkner, 2001; Faulkner & Vikulov, 2001; Prideaux, 2004; Brent. Ritchie, 2004; Brent Ritchie, 2008; Xu & Grunewald, 2009).

The other relevant field – coastal planning and management – offers a risk management perspective in:

- Integrated Coastal Management (Cicin-Sain and Knecht 1998, Kay and Alder 2005).

None of these frameworks can sufficiently capture the business case for DRR, and it is therefore necessary to draw on frameworks and concepts from other areas. For our research purpose, we used Turner et al.'s (2003a) Vulnerability Framework as a basis. This framework is premised "on the notion that vulnerability resides in the condition and operation of the coupled human-environment system, including the response capacities and system feedbacks to the hazards encountered" (Turner, Matson, et al., 2003b, p. 8080). Thus, changes in both human and environmental conditions are important in understanding vulnerability and response measures. In addition to this underlying framework, we explicitly take into consideration the Prevention, Preparedness, Response, and Recovery (PPRR) Framework of the Disaster Management Cycle. The PPRR approach is in line with Faulkner's Tourism Disaster Management Framework (2001) and has therefore been 'tested' for the context of tourism (Table 2.1). Although the PPRR has been criticised for the implied clear delineation between the phases in a disaster (Crondstedt, 2002), we consider that it remains a useful heuristic device and framework for structuring this report.

Table 2.1: The International PPRR Framework of the Disaster Management Cycle in Line with Faulkner's Tourism Disaster Management Framework (2001).

(Source: Adapted from Becken & Hughey, 2013)

International PPRR Framework (UNISDR, 2009a)	Faulkner's Tourism Disaster Management Framework (2001)	Examples of public and private sector measures
Prevention/ Mitigation: the outright avoidance of adverse impacts of hazards and related disasters/the lessening or limitation of the adverse impacts of hazards and related disasters	**Pre-event phase**: When action can be taken to prevent or mitigate the effects of potential disasters	Hazard, vulnerability and risk assessments; land use regulations; building codes; engineering designs; hard coastal defence structures; improved environmental policies
Preparedness: the knowledge and capacities developed by Governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current hazard events or conditions	**Prodromal phase**: Due to an imminent disaster, early warning systems are activated and command centres are established	Establishment and testing of early warning systems; contingency planning; stockpiling of emergency equipment and supplies; establishing arrangements for coordination, evacuation and public information; training and field exercises; scenario analyses
Response: the provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the subsistence needs of the people affected	**Emergency phase**: Actions are necessary to protect people and property **Intermediate phase**: Short term needs of people/tourists have to be addressed and media communication is critical	Evacuation and rescue operations; activation of emergency shelters, provision of relief supplies; crisis communications; damage assessments
Recovery: the restoration and improvement where appropriate of facilities, livelihoods and living conditions of disaster-affected communities including efforts to reduce disaster risk factors	**Recovery phase**: Rebuilding of infrastructure, marketing of destination **Resolution phase**: Evaluation and feedback	Reconstruction plans, business continuity plans; disaster relief funds; grants; soft loans; risk transfer mechanisms

The framework developed for this study (Figure 2.1) builds on the above frameworks. It allows for an explicit consideration of changes in the human and natural environments as key contributors to hazards. We therefore examine physical hazards, tourism development, vulnerability and risk reduction trends within the larger political economy contexts within which they develop, exist and operate. The hazards and vulnerabilities shape tourism disaster risks that require different types of management measures. These measures are classified into the PPRR phases, whereby different barriers or facilitators may intervene in their implementation. Proactive management measures can lead to a reduction in hazard exposure and/or vulnerability, and therefore reduce risk. This is symbolised by the feedback loops (arrows pointing backwards). The different shaded boxes indicate that risk and responses occur in a space of several spatial, temporal and functional scales.

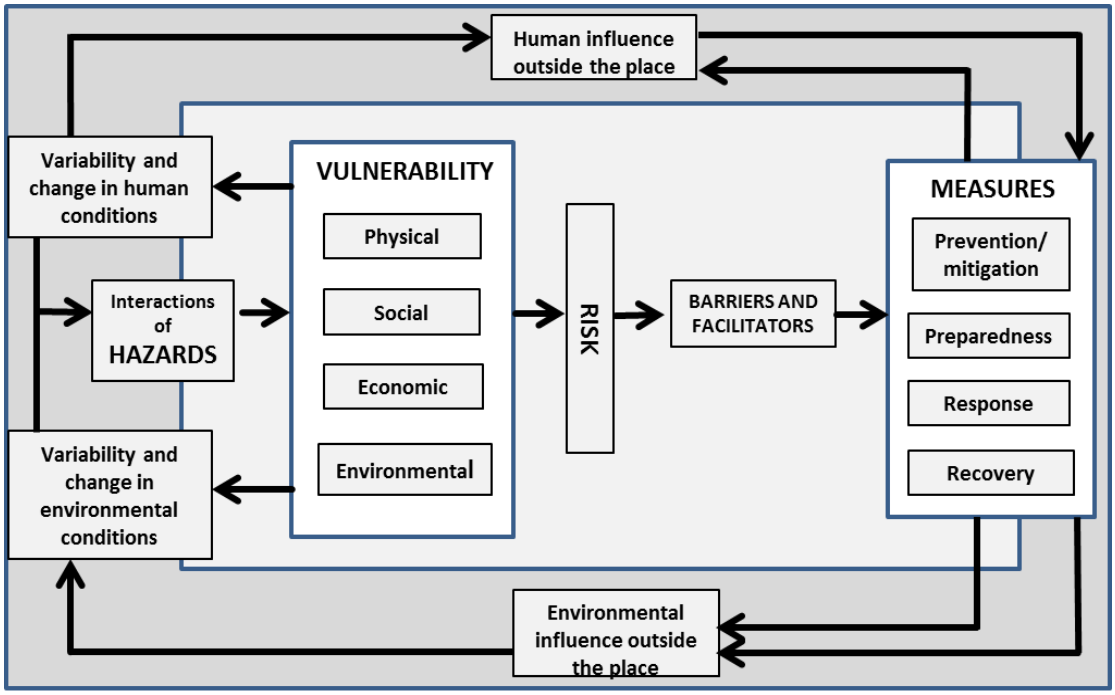

Figure 2.1: Framework Used in this Report

To make a business case, decision makers will likely assess the risks and the need to implement specific measures. These measures will have costs and benefits attached to them, and the decision making outcome is likely to differ if a purely financial assessment is made compared with one that considers broader sustainability outcomes. Also, the consideration of time scales (i.e. benefits in the future versus today) is likely to affect outcomes.

summarises the more complex Figure 2.1 to highlight those components that enter the business case evaluation.

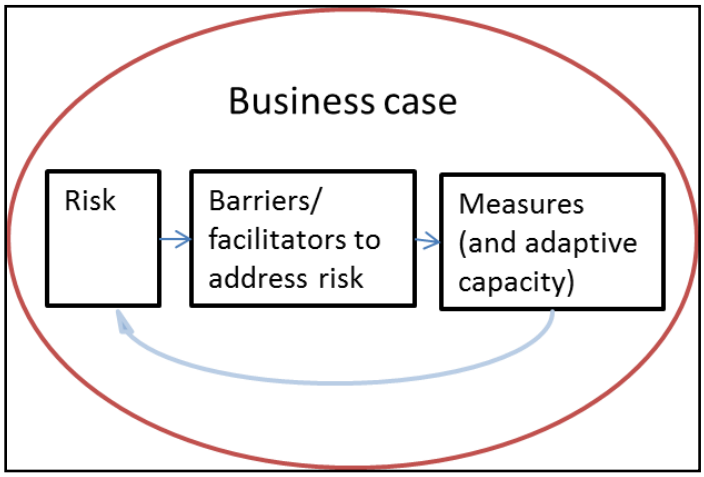

Figure 2.2: Conceptual Elements that Determine the Business Case for DRR in Tourism

3. METHOD

" …(they) say that you are in a tsunami zone, but not where to go if there is a warning siren…" (Tourist referring to tsunami zone signs on the beach front at Nuku'alofa, Tonga)

A multi-method approach has been used for this study because of the inherent multi-disciplinary nature of the research. Our approach involved the integration of perspectives from several fields including disaster management, tourism planning and development, physical planning and development, coastal planning and management, business management, economics and social psychology. More specifically, the study is made up of four parts with both qualitative and quantitative components within the overall research design that integrate an analysis of both supply- and demand-side tourism interactions (Figure 3.1).

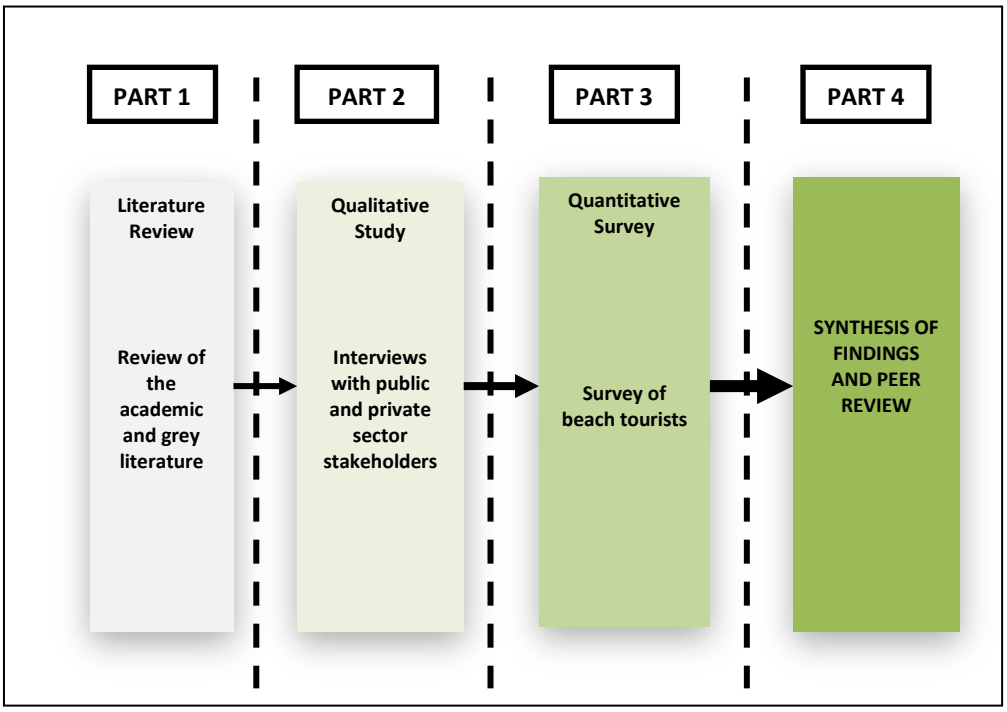

Figure 3.1: Schematic of the Tourism Background Paper Multi-Methods Approach

3.1 Literature Review

The literature review follows two parallel approaches. One is a snowballing principle, where literature already familiar to the researchers is used as a starting point to identify further relevant studies. We looked at the list of references of papers and reports to identify more literature related to our research. The second approach involves a systematic search for literature via online search engines, such as Science Direct and Google Scholar, as well as relevant websites, such as those of UNISDR, UNEP and PreventionWeb. A wide range of search terms were used, depending on the outlet.

3.2 Interviews with Public and Private Sector Stakeholders

In Part 2, interviews were conducted with a sample of eighty (80) public and private sector stakeholders at the regional and national levels distributed throughout the Caribbean, Pacific and AIMS regions as shown in Table 3.1.

Table 3.1: Overview of Interviews Undertaken for this Study

Region	Countries	Public sector	Private sector	Other organisation	Total
Caribbean	Antigua and Barbuda, Jamaica, Trinidad and Tobago	17	18	3	**38**
Pacific	Fiji, Samoa, Tonga	11	17	2	**30**
AIMS	The Maldives	5	4	3	**12**
TOTAL		**33**	**39**	**8**	**80**

These in-person and web-based interviews made use of a semi-structured interview schedule that included both general and more specific questions that captured practitioner experience with hazards and disasters in SIDS. We interviewed national and regional level stakeholders for their views on:

- The physical hazards that affect them most frequently;
- Past experience with damage and loss associated with these physical hazards;
- The measures taken to deal with hazards and the disasters that they can potentially trigger;
- The advantages and disadvantages of reducing their risk to physical hazards and disasters;
- The difficulties experienced in reducing their disaster risk;
- The possibility of using private sector self-regulation as a way to encourage businesses to make their investments less prone to physical hazards and disasters; and

- The nature of the business case for investment in the resilience of the tourism sector of Small Island Developing States.

Where allowed by interviewees, the interviews were audio recorded, notes were taken and thematic analysis was undertaken to identify key themes. Almost all interviewees agreed to be audio recorded. Direct quotes are used in the analysis to provide an impression of the 'original voice' and to underpin specific points. Respondents remain anonymous, but where useful and appropriate, organisations are identified.

Respondent views and opinions were analysed and grouped. While qualitative analysis aims to identify themes and explore these in depth across a range of different informants, an attempt to approximately quantify responses, where appropriate was made. To avoid misinterpretations of analyses as being quantitative, the sense of relative weight of a particular perspective is provided in verbal form. Thus, labels were assigned that reflect the approximate number of respondents that shared similar views. The following guidelines were used: "very few" relates to exceptional opinions in the order of less than three respondents; "few" indicates a small number of respondents but a more frequent than exceptional view; "some" indicates a relatively large number, but less than half. Finally, the word "majority" is used when clearly over half of the respondents held a particular view.

3.3 Tourist Survey

A questionnaire survey using convenience sampling obtained useable responses from 367 visitors to the Caribbean island of Tobago in a field survey conducted from January to March, 2012. The survey data were analysed using descriptive statistical techniques in SPSS 19. Among other things, the questionnaire asked visitors for their views on the importance of the following in their choice of accommodation on their current trip:

- Their hotel having disaster plans;
- Receiving guarantees of personal safety from disasters;
- Information about disaster events at their hotel; and
- The closeness of the beach to their hotel.

3.4 Synthesis and Peer Review

Part 4 of the research involves a triangulation and synthesis of the salient findings of the literature review, interviews and survey data. The methodology also comprises an iterative process of feedback from study participants, UNISDR, as well as, an external tourism expert not involved closely with the research process. Finally, the paper also underwent a technical review by peers associated with the development of other Background Papers for GAR 13. This process ensured that material presented in this Background Paper was open to critical assessment and additional input.

3.5 The Research Team at Lincoln University

The multi-disciplinary research team of Roché Mahon, Susanne Becken and Hamish Rennie have wide academic and professional experience in tourism planning and development, disaster risk reduction, climate change adaptation and coastal management in New Zealand, Australia, the Caribbean, and the South Pacific.

Roché Mahon is currently pursuing multi-disciplinary doctoral work that merges the themes of disaster risk reduction and climate change adaptation in the Caribbean coastal tourism context. Dr. Susanne Becken, Professor of Sustainable Tourism at Lincoln and Griffith Universities has worked extensively on CC and tourism. She has worked as a consultant in the South Pacific, Australia and New Zealand. Dr. Hamish Rennie worked for 12 years with New Zealand's central government and is now a Senior Lecturer at Lincoln University with expertise in environmental impact assessment, hazards, risk and planning. He was a peer reviewer for the Earthquake Commission and for the Minister of Conservation's 2004 review of the New Zealand Coastal Policy Statement which included reviewing its methodology and the final reports – including the volume on managing coastal hazards.

Lincoln University (LU) has a long standing history in tourism, holding New Zealand's longest running tourism education and research programme. LU and its associated teams of consultants and other academics is New Zealand's most successful research group within the Government's tourism research agenda, as funded by the national Foundation for Research Science and Technology. Lincoln University works with many New Zealand agencies including Tourism Industry Association New Zealand, Ministry of Tourism, Ministry of Transport, Energy Efficiency and Conservation Authority, Sport New Zealand and Department of Conservation, among others. Internationally, the University works with agencies such as the United Nations World Tourism Organisation, United Nations Environment Programme, United Nations Development Programme, World Wildlife Fund particularly in South-East Asia and the Pacific.

4. LITERATURE REVIEW

"Samoa Tourism Authority and Samoa Hotel Association are members of our national disaster committee and we work with them on a day to day basis to implement disaster risk management" (Disaster management official, Samoa)

In this Chapter, we give an overview of the tourism, hazards and disaster literature. The structure of the literature review follows the analytical framework presented in Chapter 3. Thus, we first present literature on hazards that have affected tourism over the years. As part of the 'hazardscape', we also examine the underlying trends in tourism development. Factors that contribute to the industry's vulnerability will be assessed, and this is followed by an analysis of hazard and disaster management measures in use by key stakeholders. We then discuss the scope for industry self-regulation in the realm of DRR and the business case

to support it. The chapter ends with a summary assessment of the literature, as well as, an identification of literature gaps.

4.1 Key Hazards and Underlying Trends in Tourism Development

4.1.1 Hazards and Disasters - Overview

To date, tourism research has been carried out on a range of physical hazards and disasters affecting tourism. These include:

- Hurricanes (Burby & Wagner, 1996; Drabek, 1996; Higgins, 2005);
- Earthquakes (Huan, Beaman, & Shelby, 2004; Huang & Min, 2002);
- Tsunamis (Birkland, Herabat, Little, & Wallace, 2006; Calgaro & Lloyd, 2008; Carlsen, 2006; de Sausmarez, 2005; Garcia et al., 2006; Johnston et al., 2007; United Nations Environment Programme, 2008) Wong 2009;
- Volcanic eruptions (Bird, Gisladottir, & Dominey-Howes, 2010; Cioccio & Michael, 2007);
- Coastal erosion (Schleupner, 2008); and
- Bushfires (Cioccio & Michael, 2007; P. Hystad & Keller, 2006; P. W. Hystad & Keller, 2008).

While many of these hazards and disasters are particularly relevant for SIDS, we note that the academic literature on the SIDS context is sparse and the special problems of SIDS tourism in relation to hazards and disasters are generally under-represented, although Cambers (2001) and Mahon (2007) document key hazards for the coastal zone. They point out that:

- Cyclones, hurricanes and tropical storms are strongest when they make landfall in the coastal zone. Since a hurricane derives its energy from warm water, one expects that the hurricane has the most energy at landfall. Wind force is also likely to be strongest on the coast;
- In the coastal zone, shear wind force acts on coastal waters producing storm surge;
- During a hurricane, coastal waters violently hitting coastal land causes coastal erosion and loss of beach and any coastal structures on the beach;
- The coastal zone is typically the most low-lying area in small islands. This area is prone to coastal flooding due to runoff from mountains and salt water intrusion due to storm surge;
- The impact of a tsunami is greatest in the coastal zone as this is the first zone of impact. Like hurricanes, a tsunami's energy dissipates as it moves further inland.

What follows is a summary of the 'hazardscape' for the three case study regions - the Caribbean, the South Pacific, and the AIMS regions.

4.1.2 Caribbean Region 'Hazardscape'

The geographic and climatic setting of Caribbean SIDS forms the basis of local conditions that contribute to the vulnerability of the built environment of these islands. For example, the Caribbean lies in a tropical zone where hurricanes may develop from June to December every year.

In addition, many of the Eastern Caribbean islands are volcanic in origin; the region is home to active and dormant volcanoes; and the majority of islands lie close to tectonic plate boundaries. Caribbean islands are therefore all to some extent exposed to a range of: 1) geological hazards, such as earthquakes, tsunamis, volcanoes and landslides; and 2) hydro-meteorological hazards, such as hurricanes, tropical storms, floods, and drought. The Caribbean region has repeatedly experienced a wide range of physical hazard driven catastrophes. Over the past century, there have been more than 150 disasters. Most (more than 130) were associated with hurricanes, tropical storms and flooding (OAS, 2005).

4.1.3 South Pacific Region 'Hazardscape'

Pacific island countries (PICs), 207 disasters were recorded since the 1950s. These affected about 3.5 million people in the region with an economic damage cost of over US$6.5 billion dollars (World Bank, 2006). The region is believed to have experienced disaster damage of about US$2.8 billion in the decade of the 1990s. The 2009 tsunami in Samoa highlighted the vulnerability to geophysical hazards. Infrastructure was destroyed, lives were lost (including those of tourists), and resorts were destroyed.

For example, cyclones and storms in the period between 1972-2004 in Fiji caused damage of about F$20 million per year (SOPAC, 2009). In Samoa, tropical cyclones in 1989 and 1990 led to damages that set back the nation's economic development by about 35 years (Baritto, 2008).

4.1.4 The Maldives 'Hazardscape'

The Maldives is often presented as one of the world's most vulnerable countries to CC with limited opportunities for adaptation (Barnett & Adger, 2003, Wong 2009). The 2004 Indian Ocean tsunami highlighted the extreme sensitivity of this island state. For example, the combined cost (direct and indirect) to tourist resorts and loss of Government revenue from the tourism sector as a result of the tsunami has been estimated to be in excess of US$300 million (Ministry of Planning and National Development, 2005, in Becken et al., 2011).

An important factor exacerbating the vulnerability of the Maldives is its low elevation with about 80% of the area being lower than one meter above sea level. Other key vulnerability drivers are the Maldives' fragile ecosystems, remoteness, geographical size and dispersion, lack of natural resources, small human resource base, a highly limited internal market and an extremely sensitive and competitive external market. The Maldivian economy is heavily

dependent on two core industries in terms of tax revenue, foreign exchange earnings, and other economic performance indicators, namely fisheries and tourism. Both industries are characterised by strong international competition and they are also vulnerable to a range of external and internal hazards.

The Intergovernmental Panel on Climate Change, in their Third Assessment Report (2007) dedicated a chapter to islands. Several hazards and trends are reported for AIMS islands. For example, Sheppard et al. (2005, in IPCC, 2007), reported that recent coral mortality in the Seychelles led to a reduction in overall reef surface with resulting losses of the protecting function of reefs and increased erosion. Further deterioration of the coral reefs are expected, further accelerating coastal problems. The Mediterranean islands are projected to experience the highest increase in temperatures. Water shortages are also known hazards for the islands in the Mediterranean.

4.1.5 Climate Change

There is also growing evidence that CC impacts include changes in the frequency, intensity and duration of extreme events (IPCC, 2012) (Table 4.1). Thus, while responses to CC may initially have been framed by a longer-term outlook, there is now at least as much emphasis on the present, as well as, the immediate future. Similarly, the disaster risk management community is moving rapidly from looking only at historic and current risk, to considering future risks. Responding to the future changes in extreme events will require integration of DRR initiatives with CCA programmes (Becken & Hay, 2012) .

Importantly for island destinations, recent estimates of future sea level rise indicate that by 2100, global sea-level is likely to rise by at least twice the IPCC projections, and if future emissions are unmitigated it may well exceed 1 metre; the upper limit has been estimated as approximately 2 metres sea-level rise by 2100 (Becken & Hay, 2012). Such rises have huge implications, especially since they would materialise through the occurrence of storm surges and other high sea phenomena, much earlier than the end of the century.

Table 4.1: Projected Changes in Exposure, Vulnerability, and Climate Extremes for SIDS (Source: Extracted and modified from Table SPM 1 in IPCC, 2012)

Example	Change: observed (Since 1950) and projected (To 2100)
Inundation related to extreme sea levels in tropical small island developing states	Observed: *Likely* increase in extreme coastal high water worldwide related to increases in mean sea level. Projected: *Very likely* that mean sea level rise will contribute to upward trends in extreme coastal high water levels. *High confidence* that locations currently experiencing coastal erosion and inundation will continue to do so due to increasing sea level, in the absence of changes in other contributing factors. *Likely* that the global frequency of tropical cyclones will either

	decrease or remain essentially unchanged. *Likely* increase in average tropical cyclone maximum wind speed, although increases may not occur in all ocean basins.
Increasing losses from hurricanes in the Caribbean	Observed: *Low confidence* in any observed long-term (i.e., 40 years or more) increases in tropical cyclone activity, after accounting for past changes in observing capabilities. Projected: *Likely* that the global frequency of tropical cyclones will either decrease or remain essentially unchanged. *Likely* increase in average tropical cyclone maximum wind speed, although increases may not occur in all ocean basins. Heavy rainfalls associated with tropical cyclones are *likely* to increase. Projected sea level rise is expected to further compound tropical cyclone surge impacts.

4.1.6 Trends in Tourism Development

Global tourism has grown substantially (Figure 4.1) over the last decades with the only exception being a temporary downturn in 2009 in response to the Global Financial Crisis (GFC). Growth has been particularly evident in the Middle East and Asia-Pacific with average growth rates of 9.6% and 6.3% per annum, respectively, between 2000 and 2010 (UNWTO, 2011). While growth rates in traditional destinations such as the Caribbean have been modest (average rate of 1.6% per annum), newer destinations such as Central America have grown faster (6.2% on average). In terms of overall importance, the Mediterranean is by far the largest destination with 170 million arrivals in 2010.

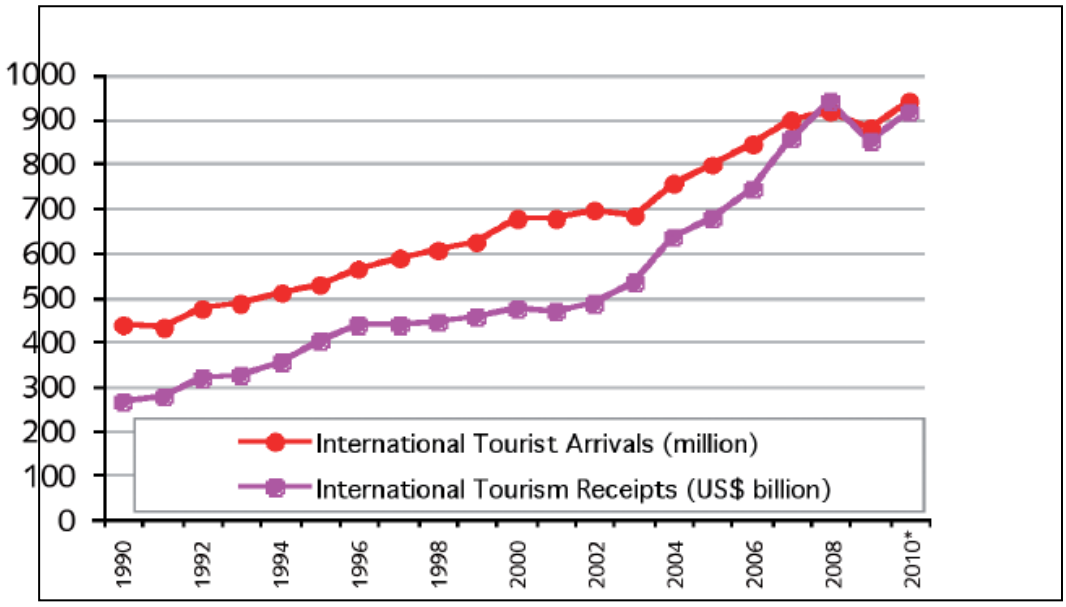

Figure 4.1: International Arrivals and Receipts

(Source: UNWTO, 2011)

A large proportion of international tourism in SIDS occurs in coastal areas. The coastal tourism model is therefore dominant relative to other types of models (e.g. the ecotourism model), in the portfolios of SIDS destinations. In the Caribbean for example, the World Bank (2000) notes that the typical tourism development is sited within 800 metres from the high water mark. Jackson (2002) reported that in the Commonwealth Caribbean, over 65% of the 77,438 rooms are in coastal areas and in Barbados over 90% of its 6,100 rooms was located on the coast.

4.1.7 Investment and Ownership Structure

The existing arrangements of tourism investment exacerbate hazards and resulting risks for local stakeholders. Multi-national hotel chains, for example, follow a number of investment models that ultimately seek to minimise their risks, but in the process of doing so, inadvertently or not so inadvertently, transfer these risks to the societies in which they operate. International chains typically own the hotel brands and in some cases, they are also responsible for the management of resorts in SIDS. For example, Mariott hotels are mostly owned by separate investors (80%) and not by Mariott itself (Honey & Krantz, 2007). Very rarely do they make equity investments or own the premises of the tourist resort. These are typically owned or provided by other investors or developers, or by local people. Land is also often owned or leased by local stakeholders, including indigenous groups (Honey & Krantz, 2007). These arrangements mean that the multi-national chain reduces its exposure to disasters and financial risks which are instead borne by local stakeholders. As Honey and Krantz note, the challenge of foreign interests and short-term horizons has wider implications for destination sustainability:

> *"The fact that foreign ownership increasingly dominates coastal regions, that ownership both frequently changes hands and involves multiple layers of investors and managers, and that vacation goers and home buyers are only on site for brief periods, makes for a highly unstable situation, with little commitment to the long term well-being of the region." Honey and Krantz (2007, p.113)*

Despite some disadvantages (e.g. risk exposure) and loss in profit, local investors often prefer to work with international hotel chains, because they benefit from established brands, have a competitive advantage in terms of marketing, technology training (compared with local establishments), and they have access to goods at lower cost. Thus, in developing countries the proportion of international hotels at the destination reaches 75% in the Middle East, 72% in Africa, 60% in Asia, and 47% in Latin America (Honey & Krantz, 2007). We were unable to find a figure specifically for SIDS.

4.2 Vulnerability of Tourism in SIDS

Vulnerability refers to the characteristics of a destination, community, business or person that make it susceptible to the damaging effects of a hazard (UNISDR, 2009b). Some aspects of vulnerability are structural whilst others are behavioural. Small islands are particularly vulnerable. In their Special Report "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" the IPCC (2012) summarised:

> *"Small island states in the Pacific, Indian, and Atlantic Oceans are particularly vulnerable to rising sea levels and impacts such as erosion, inundation, shoreline change, and saltwater intrusion into coastal aquifers. These impacts can result in ecosystem disruption, decreased agricultural productivity, changes in disease patterns, economic losses such as in tourism industries, and population displacement – all of which reinforce vulnerability to extreme weather events."*

The following dimensions were identified to contribute to vulnerability: a lack of awareness and knowledge; the decision-making process of investors; deficiencies in the development process; a lack of integration of DRR into wider planning; the demand for the coastal tourism product; and the specific vulnerability of tourists. These are now discussed in more detail.

4.2.1 Lack of Awareness and Knowledge

A key factor of current vulnerability relates to a lack of awareness or knowledge. Faulkner (2001) observed that although tourism destinations around the world are very likely to experience a disaster at some time in their history, few destinations have properly developed disaster management plans to help them to cope with and reduce the likelihood of such eventualities. The Indian Ocean tsunami of 2004, for example, severely tested national and international disaster management preparedness (Brewster, 2005) and "…demonstrated how the tourism industry, despite its technological advances and sophisticated building methods, turned out to be a very vulnerable sector located on the coast" (Garcia et al., 2006). The wider literature suggests that the tourism industry tends to be poorly prepared (Prideaux et al., 2003) and not overly concerned about disasters (Becken et al., 2011).

One underlying reason for low levels of industry preparedness relates to the levels of stakeholder risk perception. For example, the literature supports the view that perceptions of physical hazards, as well as, disaster risk are important precursors to disaster planning. It is often the case that higher risk perceptions lead to greater preparedness (Botzen, Aerts, & van den Bergh, 2009; Miceli, Sotgiu, & Settanni, 2008; Peacock, Brody, & Highfield, 2005). For example, Méheux and Parker's (2006) study of tourism supply-side stakeholders' perceptions of physical hazards in Vanuatu, revealed that the adoption of appropriate DRR measures is influenced by the perception of physical hazards held by tourism managers.

In their study on tourism businesses in a bush fire prone area in Australia, Cioccio and Michael (2007) noted an almost fatalistic or at best passive approach to disaster management. Similarly, in a study on the long term impacts of a major forest fire in Canada, only 28% of tourism businesses had implemented recovery initiatives 3 years after a major event (Hystad & Keller, 2008). Bird et al. (2010) found that stakeholders in a tourist destination within the hazard zone of the active volcano Katla, Iceland, knew little about emergency management procedures and early warning systems. In a review of best practice in hazard management in the Caribbean, Simpson and Gladin (2008) note that incentives may be required to promote good practice in DRR. Further, they found limited engagement from small business in disaster management.

4.2.2 Decision-making Process of Investors

The conservative attitude of developers can potentially contribute to the vulnerability of superstructure and therefore the amplification of risk. Developers prefer to invest in projects that have already proven to be successful elsewhere and that replicate existing designs, rather than explore new and potentially more resilient designs. Thus, new ideas are unlikely to be taken up (Honey & Krantz, 2007), especially since it is the developers in combination with investors who have most control over this process and not architects or local managers. Disaster risk may stem from the decisions made in the original design process when the majority of risk related decisions are made. This process may take place in a setting that is far removed from the site of development. It is in this sense that risk has already been built into a tourism development such as a coastal hotel long before that hotel is in place.

4.2.3 Deficiency in the Development Process

Hall & Page (2006) notes that since planning for tourism occurs in the broadest sense in a number of forms, structures, scales and times, in many ways, tourism planning is an "amalgam of economic, social and environmental considerations" which all influence tourism development (Heeley, 1981 in Hall & Page, 2006: p. 321). Tourism development does not necessarily reduce vulnerability to physical hazards, but can actually exacerbate it (Benson, Twigg & Rossetto, 2007).

Honey & Krantz (2012) note that in the 1960s and early 1970s when the Governments of many developing countries, including SIDS, first set out to develop international tourism as an important sector of the economy, the tools for ensuring sustainable tourism development did not yet exist. For example, much of the older tourism stock in Caribbean SIDS was constructed at a time when development planning functions were embryonic, not well coordinated and emphasis on land use controls were minimal. Nor has it been the policy of SIDS Governments to offer explicit incentives for the implementation of DRR measures (Mahon, 2007a).

As indicated earlier, overall tourism growth and increasing competition amongst destinations has resulted in a trend of more tourism development in potentially hazardous areas, for example cyclone-prone coastlines. Often, the resulting coastal development and urbanisation have largely been uncontrolled while policies to address coastal developments have been inadequate or insufficiently implemented (Lewsey et al., 2004). Major infrastructure projects, for example the construction of coastal roads, meant that development moved further and further into ecologically sensitive and biophysically vulnerable areas, thus increasing the overall vulnerability of tourism.

The World Bank (1994) estimates that, over a period of 30 years, about 50-80% of the wetlands have been eliminated in the Caribbean. Physical alterations to the natural environment are generally thought to increase susceptibility to physical hazards (UNEP, 1999) however, clearing the coastline of its natural vegetation to facilitate the development of large tourism structures was standard practice in many SIDS. The collapse of ecological functions is a serious issue with very real consequences. In the realm of coastal hazards and mitigating the impacts of the same, natural buffers represent the first and perhaps best line of defence for built development on the coast. Because structures can only partially be protected by risk mitigation measures, the overall risk remains very high (Lewsey et al., 2004).

4.2.4 Difficulties of Mainstreaming DRR into Tourism Development

SIDS Governments often see tourism as an easy development tool for the generation of both employment and foreign exchange earnings. Progress in integrating DRR into tourism planning and development has been significantly constrained by certain features of the national system of governance, particularly coordination of the mainstreaming of the DRR agenda into tourism development.

One such feature is that tourism development often is situated in a Ministry with limited influence and resources. The complexity of tourism is increased by the fact that it operates at different scales and involves different types of organisations, associations and businesses. The high levels of vertical and horizontal integration, as well as importance of both public and private sectors require a multi-stakeholder approach to resilience at different levels. The industry involves a large number of players and tourists are also key stakeholders that must not be overlooked in the context of disaster resilience (

Table 4.2).

Table 4.2: Examples of Players in Global Tourism and DRR

International organisations	Tourism associations	Businesses
Global	Global	Global/regional
Tourism	World Travel and Tourism Council (WTTC)	Hotel chains
United Nations World Tourism Organisations (UNWTO)	International Air Transport Association (IATA)	Airlines
International Civil Aviation Organisation (ICAO)	International Association of Conference Centers (IACC)	Tour operators
The International Ecotourism Society (TIES)	International Council of Cruise Lines (ICCL)	Cruise liners
Disaster	Convention Industry Council (CIC)	
United Nations International Strategy for Disaster Reduction (UNISDR)	Airport Council International (ACI)	
Red Cross	International Hotel and Restaurant Association (IH&RA)	
Others	World Travel Agents Associations Alliance (WTAAA)	
United Nations Environment Programme (UNEP)		
United Nations Development Programme UNDP		
World Wildlife Fund (WWF)		
World Meteorological Organisation (WMO)		
Development Agencies		
Regional	Regional	Individual
Caribbean Disaster Emergency Management Agency (CDEMA)	Pacific AsiaTravel Association (PATA)	Accommodation
Alliance of Small Island States (AOSIS)	South Pacific Tourism Organisation (SPTO)	Transportation
South Pacific Regional Environment Programme (SPREP)	Caribbean Tourism Organisation (CTO)	Travel agents
SOPAC Applied Geoscience and Technology Division	Caribbean Hotel Association (CHA)	Hospitality
	Caribbean Alliance for Sustainable Tourism (CAST)	Retail
	South-East Asian Tourism Organization (SEATO)	Tour guides
		Land owners
		Tourists

Like tourism planning and development, disaster management is pervasive as it occurs in various forms through a number of structures at different scales. DRR is still struggling to find its place in the national development agenda (Collymore, 2011; Tompkins, 2005). The responsibility for disaster management in SIDS may be dispersed among many Government agencies or might be coordinated from an often under-resourced Disaster Management Office. Moreover, in Small Island Developing States, the lack of coordination and fragmentation of public sector functions for a sector such as tourism, as well as, a cross sectoral activity such as DRR that both require coordination and integration, is a potential impediment to the delivery of operational best practice.

4.2.5 Commercial Rewards associated with a Coastal Tourism Product

The literature did not reveal a figure of how much investment is directed towards tourism in SIDS, and how much of it is targeted at coastal areas. However, there are studies that

suggest that substantial premiums appear to be associated with proximity to coastal water (Bin & Kruse, 2006). For example, Kunreuther et al., (2009) note that there is some evidence especially in developed countries that the value of living near the coast pays back the cost of the structure in a few years due to increases in housing values. Therefore, for this and other reasons, some individuals or communities choose to accept the risk (Farrow & Viscusi, 2011).

In the developing country context of coastal tourism, the results of Mahon (2007) substantiated the view that for the typical tourism developer on Grenada's main tourism belt of Grand Anse, the choice to locate valuable plant and property in the vulnerable coastal zone is a calculated risk. In general, coastal developers were wary about development that was sited landward of the coastal road. The example of two sister hotels made this clear. One hotel was situated landward of the coastal road; and had half the number of rooms as its sister hotel which was located on the coast. Yet, the landward hotel had an occupancy rate that was four to five times lower and it was likely to turn over seven times less in the amount of business when compared to its coastal sister hotel. Developers therefore prefer to take advantage of the favourable economic returns attendant to a hazard-prone, seafront location.

4.2.6 Tourist Vulnerability

Tourists are potentially particularly vulnerable to disasters, because they are mobile, difficult to account for and not easy to reach with relevant information or warnings (Bird, Gisladottir & Dominey-Howes, 2010). Research indicates that tourists avoid risk and choose not to travel to areas that are perceived as risky or unsafe. For example, the influence of hurricane risk on tourist destination choice is well known in the Caribbean. The region continues to face the recurrent challenge of selling itself during the summer months which coincide (at least in part) with the Atlantic Hurricane season (Miller, Date unknown). In a survey of 300 tourists to the Caribbean island of Anguilla in March/April 2008, Forster, et Al. (2012) confirmed that 80% of tourists were aware of the hurricane season, and 40% considered it actively in the timing of their visit (**Error! Not a valid bookmark self-reference.**).

Box 4.1: Case Study - The Influence of Hurricane Risk on Tourist Destination Choice

Context:

Tourism generates over 70% of GDP in the Caribbean island of Anguilla. However, the coastal tourism product is highly vulnerable to hurricanes. In addition, indirect impacts of negative perceptions and risk avoidance by tourists play an important role.

Key Players:

Tourists, marketing agencies, tour operators

Findings:

Based on a survey of 300 tourists to Anguilla in March/April 2008, it was found that 80% were aware of the hurricane season, and 40% considered it actively in the timing of their visit. The choice to visit in March or April was driven by 1) a favourable climate at the destination, 2) an unfavourable climate at home, and 3) the low hurricane risk during this period.

Importantly, choice modelling revealed that a reduction in price overrides tourists' perception of risk associated with hurricanes. In other words, sufficiently cheap offers would motivate some tourists to travel during times that are more prone to hurricanes.

Risk perception varied amongst different types of tourists. Older visitors, Americans, and those interested in beach activities were more averse to hurricane risk than other types of tourists. The loss of beach days and limited outdoor activities was the main concern associated with hurricanes. The risk of not being able to fly home because of a hurricane was relatively less important.

This study implies that an increase in hurricane activity would result in decreased tourism demand, or at least in the ability to attract high yielding tourists from the established markets (e.g. retired Americans).

More information:

Forster, J., Schuhmann, P.W., Lake I.R., Watkinson, A.R. and Gill, J.A. (2012)

Visitors avoid destinations that just suffered a disaster. In the case of the Taiwan earthquake in 1999, it took well over a year until international tourist arrivals had recovered to previous levels (Huang & Min, 2002). Visitor numbers decreased for about 6 months to a year before beginning to recover after the 2009 tsunami in Samoa. Interestingly, there is an asymmetry whereby destinations that are perceived as unsafe benefit from initiatives to address this perception, whereas places that are already perceived as relatively safe do not increase arrivals by specifically promoting this safety aspect (Sirakaya et al., 1997). Thus, in some sense, while destinations are either punished for being perceived as unsafe and/or benefit from efforts to change tourist perception, there is no reward for being perceived as safe.

Concerns about negative tourist perceptions have led in some instances to an inappropriate response from some industry stakeholders. Stakeholders in the Maldives, for example, feared that providing disaster related information to tourists would undermine their tourism industry (Becken et al., 2011) while tourism businesses in Thailand were reluctant to engage with crisis management as this might create a perception of 'unsafety' amongst tourists (Rittichainuwat, 2012). In the developed world context, tourists were found to be insufficiently informed about tsunami warning systems in the State of Washington (Johnston et al., 2007).

However, some tourists are interested in reducing their exposure to the adverse impacts of physical hazards. Research on volcanic eruptions in Iceland showed that tourists had little hazard knowledge, but were open to receiving more information on the volcano and on a potential glacial outburst flood (Bird et al., 2010). In another study on tourists' experience with the 2004 Indian Ocean tsunami, tourists were mostly concerned with the lack of previous information that a tsunami could occur; as well as, poor communication on what to do in the wake of the disaster with some interviewees looking to their resort's staff for assistance (Kelman, Spence, Palmer, Petal, & Saito, 2008).

Moreover, related research on tourists in Thailand highlighted that tourists are particularly interested in safety measures after the occurrence of a disaster, even if it is elsewhere in the world. The Japan tsunami in March 2011, for example, significantly raised tourists' rating of safety measures, such as tsunami warning systems on the beaches in Thailand (Rittichainuwat, 2012).

4.3 Risk Factors

At its core, the coastal tourism model of business within the SIDS context represents an example of intensive risk in which "a large concentration of people and economic activities are exposed to intense hazard events that can lead to potentially catastrophic disaster impacts involving high mortality and asset loss" (UNISDR, 2009a,). This type of risk exists because:

1. There is a high concentration of multi-million dollar tourism superstructure and supporting infrastructure along the coast;

2. Tourism is typically seasonal in nature. In SIDS, this translates into a situation in which tourists tend to be spatially concentrated on the narrow coastal zone in the peak season (UNEP, 1999);
3. The location of most important tourism developments visited by international tourists is in the coastal zone - an area of high exposure to multiple hazard impact with a high potential for disaster (UNECLAC & World Bank, 2003);
4. The small size of SIDS and the narrow physical nature of the coastal zone means that tourists may not have many options for evacuation upon receipt of warning of impending disaster;
5. The high occupancy of hotels creates the need for robust physical structures in the event of earthquakes, or hurricanes where occupants take refuge within the structure; and
6. Tourism businesses need to cater for *both* employee and visitor safety (Johnston *et al.* 2007).

Clearly, tourism is at risk from disasters and will benefit from a systematic and strategic approach to disaster management (Ritchie, 2008). Beyond the management of disasters, we also recognise the need to reduce the causes of disaster risk. The literature documents a range of measures implemented by individual stakeholders to manage and reduce disaster risk. Typically, these studies reflect a blend of descriptive and prescriptive approaches, that is, (1) a 'lessons learnt' approach with a focus on describing behavioural responses, and (2) prescribing ways to improve business and industry performance in each of the phases along the PPRR. A selection of studies that showcase public, private and public-private measures is now discussed.

4.4 Public Sector Measures: Key Trends and Issues

Conventional DRR is characterized by the compliance of firms with direct regulatory pressure from the state. Regulation in SIDS can take the form of development and land use planning, as well as, development control (the grant or refusal of permission for physical development projects according to prescriptions set out in land use plans). Incentives (market based instruments) which can be positive (e.g. greater flexibility in achieving a DRR objective) or negative (e.g. the threat of fines) are also important. Both stimulate and motivate performance by integrating DRR concerns more closely with business goals and operational imperatives. The range of public sector tools is summarised in Table 4.3 below and examples are presented in Box 4.2 and **Error! Not a valid bookmark self-reference.**.

Table 4.3: The Range of Public Sector Tools Used in the Tourism Development Process in Caribbean SIDS

(Source: Mahon, 2007b)

Tool	Example
Legislation	Town and Country Planning legislation, Tourism/Hotel Incentive Acts, Hotel Aid Acts/Ordinances
Policy	National Hazard Mitigation Policy
Plans	National Physical Development Plan (broad national level plan that encompasses all development in all national sectors), National Tourism Master Plan (sector specific plan)
Development Planning Standards	Site planning, building and engineering standards which are applied to development proposals
Assessment Tools	Environmental Impact Analysis (EIA), Natural (Physical) Hazard Impact Assessments (NHIA), hazard mapping using Geographic Information Systems (GIS), vulnerability assessments, risk assessments, site analysis/suitability reports, carrying capacity studies

Box 4.2: Case Study - Use of Command and Control and Market Based Instruments in Grenada

Context:

The approval of the tourism development proposal in Grenada reflects an intended balance between the use of command-and-control instruments (usually State initiated and regulatory in nature) and market-based (incentive) instruments. This arrangement has worked to the benefit of the industry, ensuring its environmental resiliency and sustainability.

Stakeholders:

Public sector actors: the Grenada Industrial Development Corporation (GIDC) and the Physical Planning Unit (PPU)
Private sector: Prospective tourism developers

Initiative:

A tourism developer wishing to undertake new development or an extension of existing facilities almost always seeks to do so in collaboration with the GIDC. This is because according to one official at the GIDC, with the introduction of concessions and incentive support as recommended by the GIDC, the reduction in the cost of development to tourism developers can be as much as forty percent (40%). However, since physical planning approval is a must for all new development, extensions to existing development, as well as, the change of use of any buildings or structures, all developers must first gain approval for development from the PPU in order to qualify for incentive support as recommended by the GIDC. This serves as a critical checkpoint in the tourism development process, prompting developers to undertake development projects within the established rational physical planning framework for development.

Source: Mahon, 2007b

Box 4.3: Case Study- Barbados Tourism Industry

Context:

The Small Island Developing State of Barbados in the Caribbean presents a case study of good practice. There are approximately 420 accommodation type businesses divided between hotels, villas and condominiums in Barbados and about 90% are located on the coastline (Daily Nation, 2006). As such, a very large proportion of that island's productive tourism plant and infrastructure are by virtue of their location exposed to the effects of coastal hazards.

Initiatives:

Several DRR measures that build the resilience of the sector to extreme events have been mainstreamed at the strategic and tactical levels and are itemised as follows:

- Draft Multi-Hazard Disaster Management Framework (national)
- Draft Tourism Sector Annex to the National Hurricane Plan
- Draft Tourism Sector Tropical Weather Systems Plan
- Establishment of a Tourism Emergency Management Committee (TEMC)
- Development of a basic disaster management course for TEMC individuals
- Development of a Tourism Emergency Operating Centre (TEOC)
- Establishment of a BDS 10 million (USD 5 million) Disaster Mitigation Fund. This catastrophe fund was set up to address natural disaster risk within the tourism industry. The fund is augmented by contributions from the Government and citizens. In 2007, Government's annual contributions were set at $2.5 million for five years while earnings from the workforce would be at a deduction rate of 0.1 percent of earnings up to the National Insurance maximum.
- Tourism properties are required to have adequate property and public liability insurance. This requirement has been made a condition of the annual license renewal process.

Source: Mahon (2007a)

More Information:

http://www.cdera.org/cunews/speeches/printer_1707.php

The coastal management and planning literature has focussed on assessing various ways of preventing disaster in line with these 12 guiding principles. For instance, the literature suggests that Governments have long recognised the vulnerability of coastal places to hazards and addressed these through mechanisms like Integrated Coastal Management, but recent disasters specifically in coastal areas have "complicated the problems and issues that existing ICM was supposed to solve" (Wong 2009, 405). A recurring issue is the difficulty in addressing situations where some members of a community for historical or political reasons are able to live in areas where they might not now be permitted to establish. Although it is now well established that setback lines, if designed to fit the context rather than be a fixed distance from the shoreline (Wong 2009), are a useful prospective tool for addressing vulnerability, they are difficult to apply retrospectively.

The traditional measure in already developed locations, and where managed retreat is not feasible (Kittinger and Ayers, 2010), has been to invest in shore armouring. Shore armouring is being challenged by ecosystem-based approaches that enhance the natural system's capacity to act as a bioshield, and innovative 'soft', engineering solutions (e.g., sand replenishment).

In February 2005, in the aftermath of the Indian Ocean Tsunami, UNEP convened a meeting in Cairo to discuss coastal zone rehabilitation and management in the tsunami affected region. At this meeting, 12 Guiding Principles - the Cairo Principles - were established (see Appendix D). In acknowledgement of the importance of tourism to the region, the 7th protocol seeks to "promote sustainable tourism that respects setback lines and carrying capacity, benefits local communities and applies adequate management practices". Implementation of the Cairo Principles, however, exemplify the unprecedented opportunities that arise during the recovery from a disaster – the chance to reposition infrastructure and relocate people and facilities to less vulnerable locations – and thereby enhance the resilience of those places to future potentially disastrous events.

But such opportunities are not always feasible (e.g., the Maldives are too small for effective buffer zones) and in some situations might not be taken up. Rather than allow natural processes to re-establish the coastal beach, some landowners moved fast to try to armour their beaches, resulting in both beach pollution and actually increased erosion and heightened scarps (Wong 2009, cf Kittinger & Ayers 2010). The costs involved in shore armouring or retreating from the shore (i.e., using setbacks and not allowing the replacement of structures that are in danger of being washed away) are very significant and even in the United States historical analysis shows that the insurance companies have not been able to cope with the demands placed on them by single disastrous storm events (Ofiara & Psuty 2001). The answer would appear to lie in the private sector investing in the protection of its assets.

Governments provide the national policy framework within which private development takes place. Many studies have found however that the policy environment of SIDS is often not fully functional at the operational level (Collymore, 2011; Mahon, 2007b; OAS, 2005).

Research on CC impacts in the Caribbean, for example, suggests that Governments should focus on a number of options that reduce exposure and vulnerability across a range of hazard trends. An important example in this context is building codes that should be revised to address poor current standards, including the improvement of construction techniques, engineering designs, and new specifications that specifically address CC. The siting of structures and their elevation (to address sea level rise) are further examples where Government policies are important (Lewsey et al., 2004).

4.5 Private Sector Measures

Investments made by the private sector can generate or amplify disaster risks, particularly when hazards are not adequately considered in the investment decision-making process. Yet, the tourism sector has an inherent interest in managing risks and minimising losses. In a study in Fiji, Becken (2005) interviewed supply-side stakeholders and found that many tourism operators already prepare for current climate-related events such as cyclones and therefore adapt to potential impacts resulting from future CC.

Research in Florida also found a reasonably high level of planning amongst tourism businesses and organisations, but noteworthy weaknesses (Pennington-Gray, Thapa, Kaplanidou, Cahyanto, & McLaughlin, 2011). The majority of businesses maintained a written crisis preparedness plan, which was also updated in regular intervals. Procedures for visitors, however, were often not addressed, for example in relation to evacuation. Most organizations had direct communication arrangements with local emergency management organisations rather than national agencies. Overall, resource allocation had a greater impact on whether an organization would engage in crisis planning and communication procedures than did previous crisis experience.

Explicit reporting of investment into DRR does not seem to be widespread. Bouvier and Konold (2011) reported that a website search of major hotel chains' websites (Hyatt, Hilton, Starwood and Accor) did not yield any information on investment into disaster management. In addition, according to that study, a number of other companies have provided funds for disaster relief, but information on initiatives to prepare their own hotels for future disasters were absent as well.

Insurance is an important measure to transfer risk and reduce overall losses in the case of a disaster. The contribution of the private insurance industry is therefore very important in the context of DRR. However, risk transfer approaches are often not available in developing countries, where insurance markets are limited and small businesses cannot afford premiums. Lewsey et al. (2004) note that the number of private insurance companies in the Caribbean is very large compared with the limited activity of underwriting risk that is actually being observed. Much of the risk is actually carried by reinsurers outside the Caribbean (Lewsey et al., 2004).

The potential role of insurance in mitigating damage by providing incentives to policyholders to undertake damage reducing measures has received greater attention over the years (Botzen et al., 2009). Kleindorfer & Kunreuther (2000) for instance showed that "if homeowners voluntarily adopted cost-effective mitigation measures and if insurers set premiums that reflected the reduction in losses from risk reduction measures to their insured structures, this would decrease disaster losses in hazard-prone areas and would lower the probability of insurer bankruptcy". However, only a few insurers incentivize investment into risk reduction and voluntary actions over and above what is required by regulation by business owners are rare. Thus, overall the standards of buildings, for example, are less than adequate for the hazards that tourism businesses face.

More recently, innovative approaches for risk transfer are being explored. One prominent example is index insurance. Index insurance addresses an important gap in the existing risk management portfolio. Index insurance can be applied across for a diverse range of risks, for example the loss of crops (or maybe tourism revenue) due to drought, or losses from hurricane damage. Schemes have been piloted at different levels: at the 'micro-level' (small businesses), at the 'meso-level' (e.g. banks), or at the 'macro-level' by Governments. Index insurance is linked to an index, such as rainfall or temperature, rather than actual loss. If the index is exceeded, the insurance company will pay out for the insured loss. This approach has lower transaction costs as lower pay-outs can be made quickly. Index insurance is new, and needs to be explained carefully to potential users. It relies on good quality data to determine useful thresholds and the amount of potential losses. The design of the insurance contract, and in particular the selection of an appropriate index, is therefore essential to minimise risk (Hellmuth et al., 2009).

The World Economic Forum (2008) makes a business case for DRR and proposes areas of opportunity for companies to become involved and reduce their risks (Table 4.4). Some of these have already been trialled by tourism stakeholders, while others are relatively new - for example the use of weather derivatives (as proposed for the ski industry (Bank and Wiesner, 2011).

Table 4.4: Business Opportunities for Reducing Potential Disaster Losses

(Source: Dalberg Development Advisors, in World Economic Forum, 2008)

POTENTIAL LOSSES	AREAS OF OPPORTUNITY			
	Monitoring hazards and communicating risk	**Socio-physical strengthening**	**Sharing financial risk**	**Disaster preparedness**
Natural and Environmental resources and buffer zones	• Forecasting • Loss modelling • Diffusion of information and links to communities	• Dams/seawalls • Environmental standards	• Weather derivatives	• Hazard management • GIS databases
Built Environment	• Automatic alarm systems • Warning systems • Reporting and public transparency for infrastructure • Risk assessment	• Land use planning • Building codes • Construction standards and oversight • Retrofitting	• Disaster insurance pools • Catastrophe bonds • Mandatory catastrophe insurance for business loans	• Contingency service plans
Business and Economic Continuity	• Business information kiosks	• Supply chain resilience • Disaster proof screening of investments/ loans	• Index-based insurance • Risk swaps • Micro-insurance	• Staff training • Market for redundancies • Diversification of communications technologies
Human and Social Capacity	• SMS warnings to mobile users • Inclusion of disaster management		• Reporting/public transparency for infrastructure risk assessment	• Early warning alarms and systems • Shut-down and evacuation plans • Emergency facilities • Digital platforms for disaster management

4.6 Public-private Partnerships

The literature suggests that it is beneficial for the public sector to partner with the private sector in the area of DRR. We found that generally international, regional and destination level tourism organisations have been more proactive than individual businesses in engaging in DRR or risk management more broadly (e.g. WTO, 1998, APEC, 2006, Tourism Queensland, 2007, 2009; Tourism Victoria, 2010; UNEP & CAST, 2009). Often, the initiatives of these organisations take the form of a public-private partnership.

A good example of a proactive public-private partnership approach to DRR that includes both preparedness and response measures comes from Britain. VisitBritain, the national tourism organisation, facilitates a Tourism Industry Emergency Response Group (TIER), which is comprised of key tourism industry organisations and Government. The key task of the group is to undertake scenario-based planning, and to manage the tourism industry's response in the case of actual crisis scenarios. Members of the group include the Association of British Travel Agents, UKinbound, the British Hospitality Association, Britain's national tourist boards, British Airways and the Association of Leading Visitor Attractions. Part of the arrangement is that further organisations will be invited to contribute depending on the particular crisis.

The tourist destination of Geelong Otway in Australia is implementing a 'Wildfire Tourism Engagement Project' targeted at tourism operators to reduce their vulnerability to forest fires. More specifically, the initiative supports tourism operators in the Surf Coast and Otway areas to be able to accommodate the risk of fire and be better prepared for fire-related crises that affect their business or customers. The initiative included the development of a number of resources, including workshop material, a 10 minute 'Holiday Wildfire Safety and You' DVD, and a Wildfire Information pack. Similar initiatives can be found elsewhere in the world.

In Malaysia, the public sector authorities in Penang encouraged product diversification after the 2004 Indian Ocean Tsunami. A focus was on the heritage and culture of the island, in addition to the existing segment of beach tourism. Stakeholders reported that the disaster was an opportunity to enhance the products available to tourists and reduce the dependence on beach tourism (Ghaderi, 2012).

A good example of public-private partnership in the SIDS context exists in the Caribbean's Regional Disaster Risk Management for Sustainable Tourism in the Caribbean Project (Box 4.4).

Box 4.4: Case Study - Regional Disaster Risk Management for Sustainable Tourism Project in the Caribbean

Key players:

The Caribbean Disaster Emergency Response Agency (CDERA) with the support of the Inter-American Development Bank (IADB) and in collaboration with the Caribbean Tourism Organization (CTO); CARICOM Regional Organization for Standards and Quality (CROSQ); and the University of the West Indies (UWI) implemented The Regional Disaster Risk Management for Sustainable Tourism in the Caribbean Project over the period January 2007 to June 2010.

Initiative:

The 42-month initiative was designed to contribute to the reduction of the vulnerability of the Caribbean tourism sector to physical hazards through the development of a Regional Public Good (RPG), namely, the Regional Disaster Risk Management (DRM) Framework for Tourism in the Caribbean. The initiative also encompassed the development of a Strategy and Plan of Action for Standards for Conducting Hazard Mapping, Vulnerability Assessment and Economic Valuation for Risk Assessment for the Tourism Sector in the Caribbean, as well as the institutional strengthening of the CTO, CDERA, and their stakeholders in DRM for sustainable tourism.

Under the DRM Framework, a Regional DRM Strategy and Plan of Action for the Tourism Sector was developed through the collective action of regional, as well as, national stakeholders in both the tourism and disaster management sectors. Specifically, the Strategy addresses the elements of: mitigation, preparedness, response and recovery which include rehabilitation, and reconstruction. The Strategy and Plan of Action also supports the provisions of the Comprehensive Disaster Management (CDM) Framework, as well as, the Caribbean Regional Sustainable Tourism Policy, which has been prepared by the CTO.

More information:

http://www.cdema.org/index.php?option=com_content&view=article&id=129:the-regional-disaster-risk-management-for-sustainable-tourism-in-the-caribbean-project&catid=65:hazard-mitigation&Itemid=67

The opportunities for DRR partnerships go much further than traditional business-Government arrangements. Increasingly, tourists themselves become important investors in tourism, as they buy property in the form of holiday homes, time-shares or other investments.

The literature also made clear that the international tourism industry is not only supported by Government policies, infrastructure projects, and direct subsidies, but tourism is also a frequent recipient of investment made by aid and international development institutions. Almost all International Development Agencies (e.g. IADB, USAID, NZAID) invest directly or indirectly in tourism development. Research for the year 2005 found that about US$10 billion were provided by 12 international donor agencies to fund 370 individual tourism-

related projects (Honey & Krantz, 2007). Lewsey et al. (2004) found that the investment from the USA and Europe into the Caribbean, both in terms of tourism ventures and aid-financed projects, for example airports is substantial. In addition, ecotourism (or similar forms of alternative tourism, such as pro-poor tourism) is often backed by conservation organizations and other NGOs. Thus, a number of international or regional organisations directly or indirectly address tourism. Some of these agencies have managed to explicitly incorporate DRR into their investments (Box 4.5).

Box 4.5: Case Study - Guiding Private Sector Tourism Stakeholders to Assess Hazard Risk - the Inter-American Development Bank's Tourism Sustainability Scorecard

Initiative:

Released in 2009, the Inter-American Development Bank's Tourism Sustainability Scorecard is based on the internationally accepted Global Sustainable Tourism Criteria (GSTC). The Scorecard details 52 criteria and their corresponding indicators grouped into six areas:

1. effective sustainable management practices;
2. socio-economic issues;
3. cultural heritage issues;
4. environmental issues;
5. impacts on the tourism destination; and
6. real estate activities associated with the tourism project.

The IADB's Tourism Sustainability Scorecard is applied to private sector projects that request IDB financing in the Latin America and Caribbean region. It allows the Bank to assess the sustainability of these projects. Of particular interest is the fact that projects are weighed against indicators that explicitly take into consideration hazard risk. For example, one assessment criterion requires the project to have:

"…a sustainability management system for the design, construction and operational phases that will take into account prevention and management of natural risk factors such as rising sea level, floods, hurricanes, earthquakes, fire, erosion, land subsidence or sinkholes, and aquifer salinization".

The Tourism Sustainability Scorecard is an accessible online tool that has been specifically designed for the private sector. It provides a guide for developers enabling them to formulate more sustainable projects from the outset. In assessing requests, the Bank gives priority to projects that demonstrate potentially positive impacts.

More information:
http://www.iadb.org/tourismscorecard/

International organizations have also been active in developing tools and best practice toolkits that guide the industry. Two examples of these include:

- The UNEP (2008) publication entitled *Disaster Risk Reduction: A toolkit for tourism destinations which provides* practical examples from coastal settlements in Asia with

particular emphasis on case studies from India and Thailand (Phi Phi and Patong); and

- The UNISDR (2008) publication entitled Private *Sector Activities in Disaster Risk Reduction: Good Practices and Lessons Learned* which provides the example of how Indonesia's Tourism Industry is getting 'tsunami ready'.

Most recently, the UNWTO initiated a major project for 2011 to develop a programme that helps tourism to integrate better with emergency management. The project acknowledges that, while there are considerable informal linkages between the tourism industry and emergency management networks, there are limited formal arrangements or relationships that connect the tourism sector with the disaster management community.

Box 4.6 below showcases an example from Indonesia an extensive public-private partnerships that evolved in the wake of the 2004 Indian Ocean tsunami event. Although, the momentum for that initiative was stimulated in reaction to disaster, it does remind us of what is possible for public and private sector stakeholders should they agree to work together towards the goal of resilience.

Box 4.6: Case Study - Tsunami Ready Toolbox

Context: The 2004 Indian Ocean earthquake occurred on Sunday, 26 December 2004, with an epicentre off the west coast of Sumatra, Indonesia. A series of devastating tsunamis killed over 230,000 people in fourteen countries. A large number of international tourists lost their lives and important tourist destinations, such as Thailand, suffered major destruction. To prepare for future tsunamis in Indonesia, a 'Tsunami ready toolbox' was developed specifically targeting at the hotel industry.

Key players: **The** Indonesian Ministry of Culture and Tourism (BUDPAR) and the Bali Hotels Association (BHA) with 90 star rated member hotels. BHA has provided input, expertise and staff time in order to produce the toolkit. The organization acts as a pilot for BUDPAR to promote the programme nation-wide.

Initiative: A public-private sector partnership between BUDPAR and BHA developed the 'Tsunami Ready Toolkit', which aims to assist hotels to prepare for tsunamis. The toolkit provides fact sheets and background information papers, Standard Operating Procedures and best practice examples. It also provides information on beach evacuation, planning of evacuation routes, location of evacuation spots, best practice examples, and natural warning signs. The creation of a common standard for evacuation route signs to be used within private hotel grounds was critical. The signs resemble the official Indonesian tsunami evacuation signs in order to avoid confusion when crossing from public into private hotel space. The signs are already used by BHA member hotels.

In Tanjung Benoa, BHA hotels also agreed to make their premises available to the local community at risk who otherwise have only a very limited chance of survival due to a lack of suitable evacuation centres. The experience collected in Tanjung Benoa will be incorporated into additional fact sheets for the toolkit. BHA is also offering to assist the public with educational events and the provision of evacuation route signs in public spaces. This contribution enhances the wider safety of the community and assists BUDPAR to enhance Indonesia's image as a safe tourism destination.

More information: The toolkit is available free of charge and can be downloaded from several websites including BHA, UNESCO's Jakarta Tsunami Information Centre, PreventionWeb and Pacific Disaster Net.

Website: http://www.preventionweb.net/english/professional/publications/v.php?id=4043

4.7 Self-regulation and the Business Case for DRR

Regulatory requirements have been the main means for encouraging the tourism industry to decrease their exposure and vulnerability over the years. Unlike its command and control counterpart, voluntary initiatives are typically aimed at promoting beyond-compliance performance from the private sector. Initiated by industry, it usually takes the form of a consensus-developed, third party-verified, voluntary rating system which promotes environmentally friendly behaviour. In the developing country context, self-regulation may be viewed as a solution to the regulatory capacity problems faced by developing states. It could therefore be a valuable mechanism in increasing investment in the resilience of the tourism sector in SIDS.

A growing literature on the relative merits of voluntary versus mandatory approaches has revealed the potential of voluntary industry action (Blanco, Rey-Maquieira, & Lozano, 2009). There has been an increase in the use of voluntary approaches to deal with a range of industry problems, most notably in the realm of environmental management. For instance, according to Honey & Krantz (2007), many hotels throughout the world have been certified by one or several of the about 130 voluntary programmes such as:

- Global Sustainable Tourism Criteria (GSTC);
- Green Globe 21;
- Leadership in Energy and Environmental Design (LEED);
- EarthCheck;
- Ecotourism Australia; and
- Responsible Tourism Qualmark

With respect to SIDS, UNCTAD (2004) reported that although the situation differs significantly across islands, resorts in several Caribbean islands (Antigua and Barbuda, the Bahamas, Barbados, Dominica, Jamaica, and St. Lucia) have been Green Globe 21 certified. A number of hotels in the AIMS region (particularly the Maldives and Mauritius) had also obtained certification. In the South Pacific, the Government of Fiji formally endorsed the Green Globe 21 programme, and the national Fiji Hotels Association registered many of its members. Some Fijian tourism operators have since gained certification.

Raisch & Statler (2008) have observed that, the absence of a certification programme that makes a strong connection between what to do (preparedness standards) and why to do it (incentives and benefits) has been one of the long-standing barriers in securing greater acknowledgement and rewards for business preparedness. They propose that a certification programme could make the connection by providing a measurement of preparedness that could be recognized and potentially rewarded by the community of stakeholders that are important to a business' operations namely supply chain managers, rating agencies, insurance companies, and the legal liability community, among others. These researchers further reason that a voluntary private sector preparedness certification programme, that is

administered outside of Government, “could potentially provide an opportunity to develop an effective and efficient methodology to 1) confirm business preparedness on an operational basis, and 2) facilitate bottom-line benefits and incentives to the business community” (Raisch & Statler, 2008).

It is reasonable to believe that to support self-regulation of disaster risk over and above what is required by regulation, a business case for such action is needed. Establishing the business merits associated with sustainable planning and management is not a new exercise. Salzmann, Ionescu-Somers, & Steger (2005) note that as early as the 1960s, pragmatic arguments were presented by Davis (1960) and other authors about the benefits of Corporate Social Responsibility (CSR). Thereafter, in the early 1990s, the business case for sustainability (BCS) received greater attention (Arnold et al., 1995; Dechant et al., 1994; Schmidheiny, 1992). However, we found only one example of work (Warhurst, 2006) that explicitly took into consideration DRR in the context of business sustainability or corporate social responsibility.

CSR is “a business approach in which companies voluntarily contribute to improving society and enhancing the environment, but it is also a defined process that assists in the management of relationships with stakeholders” (Albareda, Lozano, & Ysa, 2007). Warhurst (2006) believed that CSR provides the appropriate medium through which it is possible to establish networks of disaster prevention partnerships with the aim of reducing disaster risk in developing countries. However, as Detomasi (2008) notes, though CSR is on the agenda of most major corporations, “executives still largely support the view that corporations should maximize the returns to their investors” (Detomasi, 2008). It is no surprise then that Warhurst believed that the “CSR case for disaster prevention is currently held back by a lack of empirical evidence” and called for “assessment of: 1) the impacts of disasters on business, 2) the contribution business involvement can make to disaster prevention, and 3) the costs and benefits of that involvement”.

The rationale that underpins the business case for resilience is simple. Miles (2006) shows that the better a business is prepared to cope strategically with disasters and the crises that follow, the better its chances for long-term survival and preservation of value. For example, according to the Federal Emergency Management Agency (FEMA), 40% of businesses struck by a disaster never re-open, and of those that do, 25% permanently close within two years ("Disaster planning means business," 2011). The findings of a survey of 1,300 workers in the United States undertaken by FM Global found that 75% feel that their employer is not well prepared for a disaster; 72% would not feel safe in their workplace during a disaster and 71% of them are not fully confident that their employer can recover quickly from a disaster. Yet another FM Global study of FORTUNE 1000-size companies found that companies with best practices in managing their property risks, produced earnings that were 40% less volatile than companies with less advanced physical risk management (FMGlobal, 2010).

Studies that confirm the benefits of investment in mitigation at a macro-economic level offer only generalised estimates of tangible benefits. For example, World Bank (2002) in

Organisation of American States (2005) estimated that for every dollar spent on risk mitigation, two dollars are saved in expenditure on post-disaster recovery. More recently, the UNDP estimated that every dollar spent reducing vulnerability to disasters saves on average seven dollars in economic loss in the future (UNDP, 2012c). A study on the overall benefit-cost ratio for FEMA mitigation grants is about 4:1, though the ratio varies from 1:5 for earthquake mitigation to 5:1 for flood mitigation (Whitehead & Rose, 2009). A review of four failed infrastructure case studies in the Caribbean revealed that the cost of rebuilding these structures after the disaster was more than double the mitigation cost. In at least one case, the reconstruction costs came to 20 times the mitigation cost (Organisation of American States, 2005).

In the specific context of coastal tourism, it is worth noting that the assets at risk for the industry include tourists – a good experience will enhance the probability that they will return and/or communicate the attractiveness of the location to potential tourists. A negative experience might not only result in the loss of lives of paying customers and the direct costs associated with that, but also the loss of reputation.

In some cases, the benefit of DRR appears to be relatively immediate. A good example is the use of beach rating systems. Research has demonstrated the value to tourists of beaches and the potential to lose tourists if the beaches are washed away (Wong, 2010). In one study, a beach in Barcelona lost 200,000 users to neighbouring beaches when its quality significantly deteriorated (Guillén et al., 2008). For hotels therefore, the potential loss of revenue through failure to take measures to protect a beach as a tourist asset appears to be significant.

Despite the intrinsic logic of a business case for DRR, there have been low levels of adoption of DRR in the private sectors (Kleindorfer & Kunreuther, 2000; Kunreuther & Pauly, 2006; Raisch, Statler, & Burgi, 2007). This is possible because most risk reduction activities bear an initial cost (Rose et al., 2007) that competes with other business demands. According to Raisch, Statler and Burgi (2007), another reason why businesses may not adequately invest is because managers do not see a sufficient return on investment based solely on the potential that a disaster might occur. The focus on short term business horizons increases vulnerability. Developers of resorts, for example, typically work with investment horizons of about 25 years; however, a return on investment is often reached after 5-10 years, reducing concern of long term issues even further. Hence, tourism operators – especially those from outside the destination – are governed by very short time frames within which longer term disaster risks such as tsunamis or other environmental threats such as CC are not considered (Becken, Hay & Espiner, 2011).

Technical reports have been produced that quantify and document the physical, social and economic impacts of disasters on SIDS societies (UNECLAC, 2005; OECS, 2004, 2005). Some of these reports analyse impact at the level of productive sectors such as tourism. For example, an attempt at quantifying the cost to tourism of the 2009 Fiji floods was made by Holland (2009) (See Box 4.7).

Box 4.7: Impact of Fiji Floods on High End Tourism - The Case of Denarau Island, Fiji

Denarau Island is a reclaimed area of land located 3 kilometres to the west of Nadi town. The island hosts international hotel resorts, as well as, shopping complexes, tourist activities and housing developments. Denarau Island was not flooded by river rise during the January 2009 Fiji floods, but some businesses were affected by high tides, leading to salt water flooding of premises and associated problems (e.g. blocked pipes). The island was also cut off as a result of flooded roads.

Bernard and Cook (2012) estimated the financial loss to be in the range of USD 332,500. Further, according to Holland (2009):

- All hotels experienced cancellations of tourist visits. Some hotels even advised their clients to reconsider their booking in light of the floods. One set of four hotels are estimated to have lost a combined value of F$3 million from just the cancellation of two international conferences.
- Most hotels lost furniture, fittings and/or appliances (ovens, computers, televisions, refrigerators, damaged carpets) due to coastal flooding. One experienced damage to railings and concrete steps as well.
- Some hotels had to make extra salary payments to staff to cover the clean-up and overtime.
- Several hotels experienced disruption to business because tourists and/or staff were unable to reach the premises along flooded roads.
- Some hotels continued to lose earnings following the floods because they ran discounted accommodation rates to re-attract overseas and local tourists.

Source: Holland (2009); Bernard & Cook (2012)

Cost benefit analyses of DRR options are also increasingly being developed by regional and international development organisations for use in the decision-making process of SIDS policy-makers (Cook, 2011; Holland, 2008; Organisation of American States, 2005; Pacific Islands Applied Geoscience Commission (SOPAC), 2009; Venton, Venton, & Shaig, 2009). However, rarely do these reports go beyond the macro level of analysis. The need to focus on the business level is apparent.

4.8 Literature Summary Assessment

The range of multi-disciplinary literature provides evidence for the existence of hazards and tourism's vulnerability, creating substantial risk in SIDS. However, there is a lack of empirical foundations for a detailed business case. Thus far, much of the available literature examining the business case for DRR investment in tourism is dominated by the qualitative case study approach. These studies are useful to provide context and explore the particular impacts of disasters and how tourism responded to them. However, no explicit financially based business case for investment is presented. Quantitative research examining the business case for investment in the resilience of tourism development is generally underdeveloped. In

particular, the analysis of evidence of the financial merits of DRR is limited. We have identified gaps in the following areas:

- The need to measure the value added physical resilience of a range of hazard mitigation measures relevant for coastal infrastructure;
- The need to model the causal relationship between these specific DRR measures and risk reduction;
- The need to quantify the return on investment associated with DRR;
- The need to demonstrate the cost-effectiveness of investing in DRR versus the cost of recovery or risk transfer.

The evaluation of specific DRR measures may be difficult. Nevertheless, it would be helpful for both policy making and private investment decisions to have some aspects of quantification available. Some of this body of knowledge has been developed in Western countries, particularly the United States, but such hazard mitigation calculations are still largely absent at the decision-making level of the business in the context of SIDS.

Causal modelling would also benefit from a greater understanding of the root causes of destination and business vulnerability. Calgaro and Lloyd (2008) noted that there is a need to examine the socio-political and environmental conditions that contributed to destination vulnerability as a basis for examining interventions for building future resilience. This would also include the need to study the impact of public policy (or its absence) on private behaviour (Dehring, 2006; Farrow & Viscusi, 2011; Kousky et al., 2006; Viscusi, 2006). Specifically, there is a need for studies that present a cost benefit analysis of the impact of Government intervention on the DRR investment of the SIDS tourism sector.

Finally, there is a gap in terms of understanding better the risk perceptions of tourists and their demand for disaster resistant products. Relevant stakeholders for such research would include: i) tourists, ii) insurance companies, iii) banks and other lending agencies, iv) retail companies in the tourism supply side chain, and v) tour operators. A key question would be whether consumers are willing to pay for a safer, disaster resistant product. Such research could build on existing work on tourists' willingness to pay for sustainable tourism products.

5. SUMMARY OF CASE STUDIES

"… we did not have a Plan B. We left Australia with no assets. We are thrown in investors...this is where we want to be and we did not want to give up." (Coastal operator in Samoa commenting on reconstruction after the tsunami)

5.1 Overview

The SIDS examined in this study are located in three regions in the world namely: 1) the Caribbean, 2) the Pacific, and the 3) Africa, Indian Ocean, Mediterranean and South China Seas (AIMS). In this Chapter, we present a summary of:

1. Eighty (80) interviews conducted with public and private sector stakeholders at the regional and national levels in Antigua and Barbuda, Jamaica, Trinidad and Tobago, Fiji, Samoa, Tonga and the Maldives.;
2. A survey conducted with a sample of 367 tourists to the Caribbean island of Tobago.

There is great heterogenity among, as well as, within every island region with respect to differences in political orientation, economic development, population size and land size. However what is common in most SIDS in the case study regions, is the fact that international tourism is usually a major pillar of the islands' economic development strategy contributing to GDP, total exports total employment and investment (Table 5.1).

Table 5.1: Tourism in Selected Caribbean, Pacific and AIMS SIDS (Source: WTTC, 2012 a,b,c,d,e,f)

Region/ Country	World Ranking 2011 (out of 181 countries)	Total Contribution to GDP (%)	Exports (%)	Employment (%)	Investment (%)
Caribbean:					
Antigua and Barbuda	2	74.9	78.6	69.8	26.2
Jamaica	24	25.6	46.3	24.0	10.4
Trinidad and Tobago	116	7.0	3.4	9.3	10.2
Pacific:					
Fiji	13	35.4	44.6	31.9	21.6
Tonga	58	13.2	49.1	12.2	8.9
AIMS:					
Maldives	3	70.6	65.6	50.9	32.3

Tourism is differentially important to these islands (see Table 7). In the cases of Antigua and Barbuda and the Maldives, entire national economies are built on international tourism. While each island state's tourism industry is arguably at a different level of development, substantial capital, both government and private, is invested in the assets of the built tourism environment. The structure of the tourism industry investment likewise varies according to the level of tourism development. Private investment can be foreign direct investment (FDI) and/or that of local elites, local communities or a mix. There are hotels owned in whole or in part by Governments. There are also 'blended investments' where there is both private and public sector investment. Projects funded by donors and/or international development agencies such as the IADB and World Bank may also exist (Table 5.2).

Table 5.2: Tourism Investment Models

(Source: Government of Antigua and Barbuda, 2004; Government of Jamaica, 2009; Government of Trinidad and Tobago, 2010; Harrison & Prasad, forthcoming; Ministry of Tourism Arts & Culture Republic of Maldives, 2012)

Region/Country	Investment Model Description
Caribbean:	
Antigua and Barbuda	There are a range of properties from international resorts to locally owned boutique hotels totalling over 3305 rooms in 66 properties. The Sandals Group (regional Jamaican brand) is the only major international chain operating on the island. One hundred per cent foreign ownership is permitted by the Government and encouraged as an investment incentive. The Jolly Beach Resort is the largest property and is owned and operated by national interests.
Jamaica	The accommodation subsector is largely Jamaican owned with the emergence of globally competitive Jamaican-owned all-inclusive hotel chains such as Sandals, SuperClubs and Couples. A notable trend in recent years is the construction of large hotels by Spanish hotel chains. Foreign direct investment represents 19.1% of total foreign investment inflows over the period 2003-2007. There is some Government investment. For example, the Government has committed to building a convention centre in Montego Bay.
Trinidad and Tobago	The accommodation sector in Trinidad and Tobago is characterized by small and medium-sized establishments, the majority of which are locally owned. The tourism accommodation stock in Trinidad has a number of internationally recognized brands including the Trinidad Hilton and Conference Centre, the Hyatt Regency Trinidad, Crowne Plaza, Courtyard by Marriott and Holiday Inn Express.
Pacific:	
Fiji	International chains are dominant at the upper levels of accommodation and represent 30% of all rooms in Fiji and 54% of all rooms in the Premium and High categories of accommodation. There are several indigenous Fijian owned large island resorts.
Samoa	More than 60% of rooms at the upper end of the market are owned and operated by locals. Only 7 of 45 units are under foreign control.
Tonga	Primarily small scale and locally owned accommodation.
AIMS:	
The Maldives	Mostly foreign owned hotels. Raising investment capital locally remains a great challenge; In 2006, the government created the Maldives Tourism Development Corporation (MTDC), which is a Government-led initiative, designed to provide an avenue for more Maldivians to invest in tourism. The government holds 47% shares of MTDC as at the end of 2010; there is only one government operated tourist hotel, as well as, a government guesthouse. MTDC has leased and developed one island with at least 7 additional islands slotted to be developed as resorts in the future. In order to increase development opportunities, government created joint ventures with interested developers to develop tourist establishments.

Coastal tourism is highly interconnected with other sectors of the economy and impacts on any sector are likely to have repercussions for tourism, and vice versa. The particular hazards identified for the different regions are discussed in the following.

5.2 Hazards

Islands in all three regions have experienced recent disasters (Table 5.3), with significant damages incurred by the national economies and the islands' respective tourism industries.

Table 5.3: Damage and Loss Due to Disaster in SIDS Tourism (Source: Holland, 2009; Bernard & Cook, 2012; OAS, 1990)

Country	Event	Damage and loss
Jamaica	Hurricane Gilbert (1988)	Damage to property and equipment amounted to US$85 million; Indirect damage was much greater; Foreign exchange losses from September-December 1988 was US$90 million
Antigua and Barbuda	Hurricane Luis (1995)	Estimated damage in excess of US$270 million equivalent to 71% of the island's GDP and 83% of the GDP from tourism
	Hurricane Georges (1998)	6 hotels closed in Antigua; 2 hotels with extensive damage in Barbuda
Trinidad and Tobago	Hurricane Ivan (2004)	Some disruption to telephone and electricity supply; loss of roofing to houses; one local death
Fiji	Nadi Floods (2009) (2012)	2009 floods: Financial loss estimated at US$332,500; businesses affected by salt water flooding of premises and associated problems (e.g. blocked pipes); Denarau island was cut off as a result of flooded roads; one set of four hotels are estimated to have lost a combined value of US$1.7 million from just the cancellation of two international conferences
Samoa	Tsunami (2009)	Twenty villages on Upolu south side were reportedly destroyed, and about 80 people lost their lives, including a small number of tourists. Several tourist resorts were destroyed by waves up to 8m high.
Tonga	Tsunami (2009)	Nine lives lost in Niuatoputapu and 90% of residences destroyed in two districts
	Tropical cyclone Rene (2010)	Two resorts suffered serious structural damage and were closed for some weeks. Damage to these two resorts alone was estimated at us $ 75, 000.
Maldives	Tsunami (2004)	Substantial damage and flooding of several islands. 3 fatalities and a number of foreign tourists seriously injured. 21 of the country's 87 resorts sustained considerable damage and were closed. Airport closed for 24 hours

The interviews provided evidence of disruptions to the functioning of coastal tourism operations, as well as, the wider national infrastructure due to hazards. Although the range of experiences and accounts of loss and/or damage differ according to the interviews, loss

and/or damage at the level of individual properties, as well as, at the island destination level were mainly as a result of severe weather systems and coastal erosion in the Caribbean; a tsunami, severe weather systems and storm surge in the Pacific; and a tsunami, coastal erosion, flooding and inundation; and water shortages in the Maldives. The hazards most frequently mentioned, as well as, the full range of hazards reported by respondents have been documented in Table 5.4 below.

Table 5.4: The Range of Biological, Environmental and Physical Hazards Reported by Interviewees

Countries studied	Hazards most frequently reported	Range of hazards
Caribbean: Jamaica/ Antigua and Barbuda/ Trinidad and Tobago	Severe storms (including hurricanes); Coastal erosion	Severe weather systems including tropical storms and hurricanes; Coastal erosion; Storm surge; Coastal flooding; Drought; Earthquakes; Landslips; Tsunamis; Sea level rise; Unusual precipitation patterns and heavy rains; Rogue waves; Tidal rise (within the tidal range); Winter swells; High near shore temperatures; Coral bleaching; Harmful algal blooms; Dirt and other by-products that travel from inland storm drainage out to the coast; Land based sources of marine pollution; Mangrove swamps that breed vectors; Jellyfish; and Groynes
Pacific: Fiji/Samoa/ Tonga	Cyclones; Storm surge	Cyclones and severe weather systems; Coastal erosion; Storm surge flooding; Drought; Earthquakes; Landslips; Tsunamis; Sea level rise; and Rats
AIMS: Maldives	Tsunami; Coastal erosion; Flooding and inundation; Water shortages	Flooding; High air temperatures; Coral bleaching; Loss of beach; Flooding or tsunami; Severe weather; Drought; Coastal erosion; Loss of biodiversity; Climate variability and coral bleaching; and Disease (dengue fever)

5.3 Vulnerability

It was clear from the interviews that the outcomes of hazards are differential, depending on a number of factors. Drivers of vulnerability at the national and business levels are discussed in more detail in Appendices A to C, but a summary for every region is presented in Table 5.5 below.

Table 5.5: The Biophysical and Socio-economic Variables that Drive Vulnerability at the National and Business Levels in SIDS

Countries studied	Drivers of vulnerability reported by interviewees
Caribbean: Jamaica/ Antigua and Barbuda/ Trinidad and Tobago	• Slow, disjointed mainstreaming of the DRR agenda • Historically deficient development planning • Loss and degradation of coastal ecosystems • Limited range of tourism development options • Disproportionate dependence on tourism relative to other industries in some islands • High tourist demand for a coastal product • Comparatively lower tourist demand for a disaster resistant product • Lack of a multi-hazard approach and limited use of risk assessment
Pacific: Fiji/Samoa/ Tonga	• High dependence on tourism • High tourist demand for a coastal product • Weak enforcement of regulatory standards, including DRR legislation • Largely single hazard (cyclone) approach to DRR • Construction standards that favour aesthetics over resilience • Use of offshore insurers and financiers to circumvent the structural upgrading requirement for cyclone certification • Lack of resources to address DRR • Disaster response issues related to the nature of the tourism business (e.g.. the need for early warning to facilitate timely evacuation from remote areas) • Incomplete warning systems and no official evacuation centres • Low subscription to insurance and loss of confidence in the payout system • High staff turnover • Choice of modern construction materials that contribute to injury and death in disaster • Poor quality of coastal infrastructure (e.g. seawalls) • Low tourist numbers (attributed to the Global Financial Crisis) means money is not available to spend on DRR • Topographic factors (e.g.. the low-lying, flat nature of Tongatapu makes it much more vulnerable to tsunami than the varied topography of Vava'u) • Removal of coastal vegetation for development • Human activities that disrupt or alter natural sediment circulation • Lack of knowledge of the processes and of environmental management systems or shoreline engineering designs that best fit the environmental setting to reduce coastal erosion • Adoption of techniques that exacerbate erosion in some instances • Lack of operator formal training and technical knowledge of standard response procedures • Gap in operator communication of disaster procedures to tourists • Fatalistic attitude towards disaster response • Weak relationship between industry and Government

AIMS: The Maldives	• Limited institutional capacity • Limited financial resources to address DRR • Geographic factors (e.g.. small, low-lying, scattered islands) • Gaps in regulation (e.g.. no standards for coastal setback; no proper waste management; no building codes; no evacuation plans) • Lack of political will on and coordination of DRR and environmental agenda • A possibly systematic denial of CC and disaster risks for tourism • Confused understanding of disaster and CC risk • Limited integration of CC risk assessment information in development planning • Limited collaboration between the public sector and industry on DRR • Lack of tourist understanding of coastal dynamics • Environmentally degrading behaviours (e.g.. garbage disposal) • High level of fatalism regarding disaster risk

From the above list, the following vulnerability drivers particularly stood out as significant:

1. Islands' high dependence on coastal tourism;
2. High tourist demand for a coastal product;
3. Deficient planning and coastal development, and lack of implementation of legislation;
4. Loss and degradation of coastal ecosystems; and
5. Lack of private sector resources to effectively implement DRR.

5.3.1 Islands' High Dependence on Coastal Tourism

Public and private sector stakeholders in the interviews across all case study regions concur that tourism is very important to the island states, as well as, to the regions. Referring to its fast rate of growth, one stakeholder in Fiji described the tourism industry as a sun rise industry: "…It is a big employer… it brings in foreign resources…. It probably publicises the country (Fiji) more than any other industry…"

Due to their small size, many SIDS have high dependence on a limited natural resource base. For some stakeholders, the dominant model of tourism has been developed on the country's outstanding natural coastal resources which form the basis of perhaps their only competitive advantage in the tourism market. A tourism official in Antigua and Barbuda commented, "it would be very, very difficult to move from the beach…because of the sheer size of the island and the natural resources that exist…. tourism basically exploits what's there". The same is true for Maldivian atolls. Several interviewees pointed out that the way tourism in the Maldives positions itself and is marketed relies on the beach (often private beaches that can be accessed straight from tourists' rooms).

However, the coastal zone is an area of high exposure to multiple hazards. Siting tourism plant and infrastructure close to the high water mark inevitably aggravates hoteliers' vulnerability to a range of coastal hazards. In such a situation, where major economic tourism development continues to be placed in the coastal zone, SIDS destinations that invest in such a model continue to open themselves up to the environmental, physical, and socio-economic consequences of coastal disasters and global CC.

5.3.2 High Tourist Demand for a Coastal Product

Despite the difficulties encountered in the past and the increased risks apparent specifically due to CC in the future, high international tourist demand for a sun, sea and sand tourism product prevails. High tourist demand for a coastal experience is reflected by the standard tourism product of bures1 by the beach, as well as, hotels within 30 m of the high water mark in Fiji. Similarly, a popular product in Samoa is the beach fale2 located directly on the beach. Tourists do not appear to be actively demanding that a hotel operate a prescribed distance from the sea. The opposite seems to be the case, at least in the minds of some industry stakeholders: "This industry was born on people being able to sleep and roll out their bed and go and lie on beach chairs and enjoy themselves".

We surveyed 367 international visitors to the island of Tobago for their views on the importance of four factors in their choice of accommodation on their current trip. Three of these factors were associated with a disaster resistant tourism product while the fourth factor dealt with the proximity of the hotel to the beach. The results revealed that whereas 82.2% of tourists think that it is moderately to extremely important that their hotel is close to the beach, there was a comparatively lower level of desire for a disaster resistant tourism product. For example, 43.4% of the sample thought that it is moderately to extremely important that their hotels have disaster plans; 43.1% of tourists surveyed think it is moderately to extremely important to receive guarantees of personal safety from disasters while 39.2% of tourists think it is moderately to extremely important to receive information about disaster events at their hotel. Thus, there is a challenge of finding a balance between operating at a distance away from the high water mark and being as close as possible to the shore for the economic rewards that hoteliers receive in return.

5.3.3 Deficient Planning and Coastal Development, and Lack of Implementation of Legislation

Several stakeholders in the public and private sectors acknowledged that in the past, tourism developed in an ad hoc manner at a time when physical planning was not yet well conceived and the enforcement of building regulations and environmental standards were weak. One Caribbean public sector stakeholder noted that some of the hotels currently operating today were built back in the 60s and 70s and operate extremely close to the high water mark. Many coastal tourism belts throughout the Caribbean have historically developed seaward of the coastal road. This is evident in Barbados and many other Caribbean islands where "One of the problems is that the way that coastal tourism has evolved … has left no buffer area available…to deal with some of these vulnerabilities and the risks associated with these

[1] '**Bure'** is a **Fijian** word and usually refers to a wood-and-straw hut, sometimes similar to a cabin.

[2] Fale is a Samoan word for beach hut.

hazards". In Samoa too, the coastal road typically has the communities and the church on its inland side and the tourist operators on the sea-ward side. Older tourism developments constructed in the low-lying coastal zone at a time when there was little recognition of the impact of sea level rise means that many properties are at risk of future inundation due to sea level rise.

It was evident that Caribbean SIDS have allowed coastal development too close to the sea with little room for retreat from the impacts of coastal hazards and sea level rise due to global CC. There is similar evidence in the Maldives of specific gaps in regulation in relation to standards for setbacks from the beach into the island (e.g. where to build an overwater bungalow). Existing legislations, such as that related to the proportion of land area of an island that can be built on (namely 20% of the surface) is an example of a longstanding policy (since 1989) which the industry operators do not fully comply with. This is one of the root causes of the vulnerability of SIDS tourism.

The interviews revealed that lack of adequate policy, or more typically, implementation of existing policy is still a key challenge for creating more resilient destinations. This became particularly apparent in the Maldives case study where both implementation issues and frequent changes of policies led to poor compliance with minimum standards. The large size of many SIDS nations (spread out in the ocean) coupled with small government agencies that often employ only a limited number of staff exacerbates this problem and makes controls very difficult and costly to implement.

5.3.4 Loss and Degradation of Coastal Ecosystems

Due to the heavy reliance on the natural environment, any deterioration in ecosystem integrity threatens coastal tourism's sustainability. It is understandable therefore that both public and private sector stakeholders are concerned about the connection between environmental degradation, and disaster risk. The loss of coastal ecosystems to facilitate the construction of coastal tourism plant and infrastructure has often resulted in a number of problems. One hotelier in Antigua and Barbuda noted that the coastal area in which her hotel operates faced constant flooding, as well as, significant beach erosion due to the clearing of the mangrove swamps to make way for the construction of the country's premier harbour complex and marina.

In Tonga as well as in the Maldives, several respondents also mentioned coastal erosion, often associated with damage to vegetation due to human activities that made areas vulnerable to flooding (with associated further loss of vegetation), especially during storms. Based on previous undesirable experience, a shift has now occurred in terms of leaving some of the original vegetation intact in the Maldives. One resort owner reported that in the past trees were cut down to make place for the resort, but now big trees are kept and the resort structures are built around them. Environmental management in a broader sense maintains the integrity of the ecosystem with positive effects on resilience.

5.3.5 Lack of Private Sector Resources to Effectively Implement DRR

A lack of financial resources has been put forward as a key reason why businesses cannot invest in DRR. In Samoa, for example, it was reported that the additional cost in preparing for disasters and adapting to CC is often not budgeted for, or financial resources are simply not available (see also barriers section further below). In addition to the prohibiting factors of cost, the lack of specific knowledge and staff resources was mentioned. In particular, the high turnover of staff at resorts was noted as a problem in improving disaster preparedness. Generally, it was believed that the larger businesses were in a better position to invest in DRR. This includes investment in mechanisms of risk transfer such as insurance.

The field evidence confirms that at the level of the individual hotel, the degree of vulnerability of large, multi-national hotels differs from smaller, locally owned hotels. Organisational differences in disaster performance have been linked to issues with size, resources and associated capacity. For instance, when evaluating the response to the 2012 floods in Fiji, a public sector representative believed that, “Most of the large organisations were very well prepared…”. However, it was also pointed out that the small businesses, for example the beach fale operators in Samoa, are more resilient and adaptable as they have invested less capital into fixed structures and they are able to rebuild quickly after a disaster. Notwithstanding this, the general manager of a large Caribbean resort made it clear that even in terms of day to day operations, “...the small hotels are under a lot of pressure…” Thus, our main finding here is that while bigger, foreign-owned organisations have the necessary resources and seem to be able to afford to employ a team of multi-skilled professionals seeking their DRR interests, smaller organisations do not have the same level of resources and may be in need of technical assistance.

5.4 Risk, Barriers and Facilitators

5.4.1 Types of Risk

Not every hazard results in a disaster. The risk a hazard poses depends, among other things, on the level of people’s vulnerability and capacity to prevent/mitigate, prepare, respond and recover. Risks can be usefully differentiated based on their frequency and severity as extensive or intensive risk (Figure 5.1).

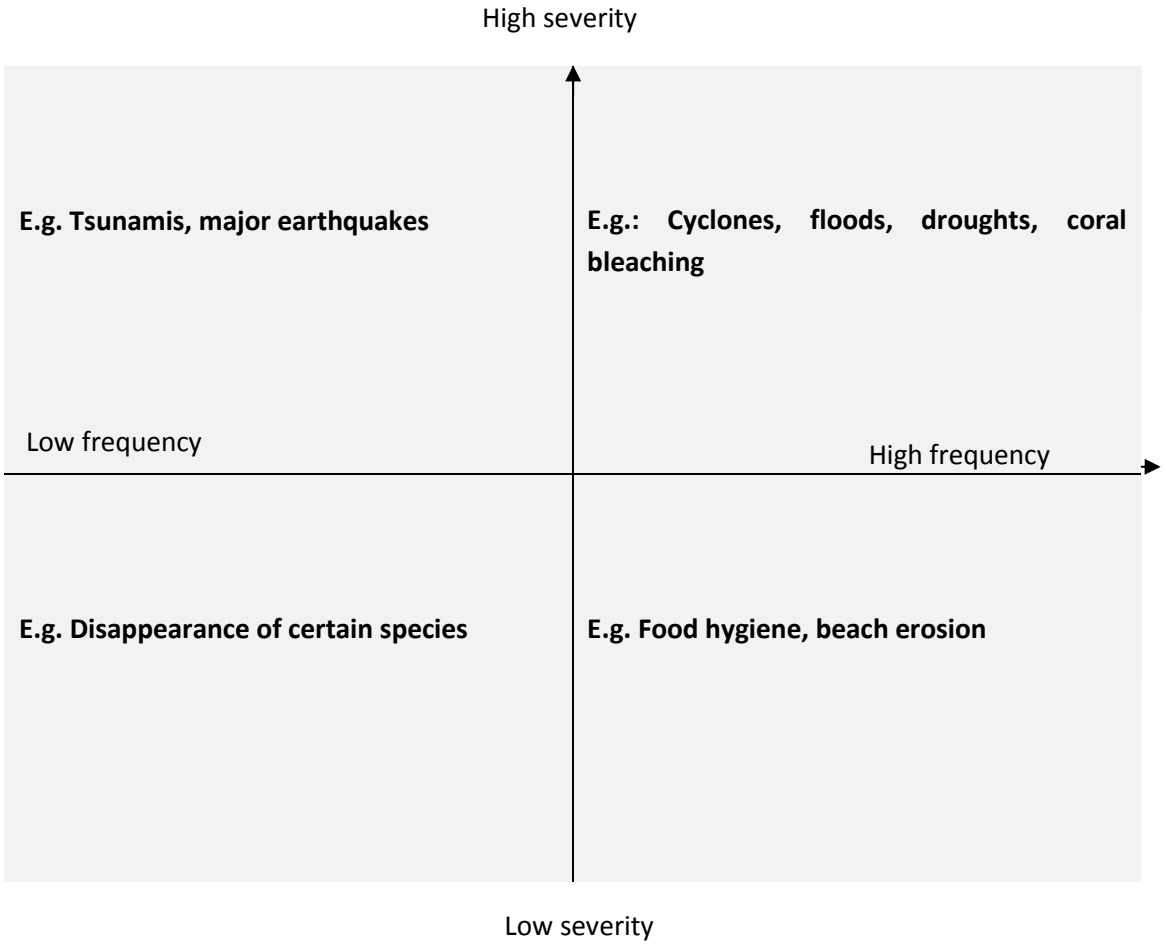

Figure 5.1: Examples of Different Risks Facing Tourism Based on their Frequency and Severity

Extensive risk refers to "the risk of low-severity, high-frequency disasters, mainly but not exclusively associated with highly localised hazards" (UNISDR, 2011). Risks with high frequencies but low impacts (the lower quadrant on the right) fall into the every-day management domain of tourism. These include aspects of health and safety, and asset management. A prominent issue discussed by most interviewees was beach erosion. Here, substantial resources are dedicated to managing the risk (e.g. in the Maldives). However, it is not always clear if the measures are effective and whether hazards are not indeed exacerbated. Some beach erosion investments, such as sea walls, are found to increase erosion elsewhere. Thus, lack of specific, technical knowledge may lead to ineffective investment.

Intensive risk is used to describe "the risk of high-severity, low-frequency disasters, mainly associated with major hazards" (UNISDR, 2011). Risks with low frequencies and high impacts (top left quadrant) are typically addressed by tourism stakeholders to the best of their abilities or resources. Storm events, for example, occur frequently enough (e.g. on a seasonal basis) for operators to understand them and prepare for their consequences. Properties are tidied up before the cyclone season, loose items are tied down and window shutters are prepared. Staff are also trained for storm events. Occasionally, extreme storms

may exceed the level of preparedness and cause excessive damage and the question arises to what extent investment could be made to reduce the impact of such 'outlier' events.

The extreme storms (e.g. one in hundred) fall into the category of low frequency and high impact events (left top quadrant), just like tsunamis or strong earthquakes. Here, preparedness needs to go considerably beyond business-as-usual and involves the expertise of emergency management agencies. For example, the strengthening of buildings, the preparation of evacuation plans and contingencies for food and water are essential measures. The extent to which these are implemented, based on the interviews in our case studies, depends on the level of experience stakeholders have with these disasters. In Samoa and Tonga, for example, the recent 2009 tsunami increased the levels of awareness and preparedness substantially. In the Maldives, the memories of the 2004 tsunami are reasonably fresh, but implementation of DRR measures for future events appeared to be more ambiguous. In the Caribbean, tsunamis are either hardly in the consciousness of stakeholders or where awareness does exist, stakeholders hold a fatalistic versus deterministic view. One manager of a large hotel for example felt confident about dealing with a range of other hazards but when it came to tsunamis, he felt that there was nothing he could do to prepare for it.

5.4.2 Barriers and Facilitators

The case evidence reveals that a number of important factors continue to undermine increased private sector investment in DRR. These are now summarised:

- The costs associated with DRR are usually prohibitive when considered in the context of limited financial resources and other competing business concerns. A public official in Jamaica identified the following costs at the government, sectoral and business levels: the cost of retro-fitting; of training staff; of hiring additional staff and/or expertise; of conducting vulnerability studies and the cost of installation of mitigation measures to address any possible fallout from the identified physical hazard. For example, with regard to the cost of mitigation, according to one Jamaican hotelier, the cost of beach replenishment is very high. To implement this DRR measure, there are costs associated with licensing, the importation of sand from another island, as well as, expert labour to do the replenishment job. He also mentioned the cost of potential disruption if the hotel were to be closed while replenishing the beach.
- The return on investment in DRR measures remains unknown to many stakeholders. One hotelier, for example, talked about the fact that there is no fixed term on the return on investment (ROI) in disaster mitigation.
- Industry concerns about the short-term economic implications of investing in DRR measures, specifically, short-term cost versus long-term payback presents a major barrier to action. Developers of resorts, for example, typically work with investment horizons of about 25 years; however, a return on investment is often reached after 5-10 years, reducing concern of long term issues even further. Hence, tourism

operators – especially those from outside the destination – are governed by very short time frames within which longer term disaster risks such as tsunamis or other environmental threats such as CC are not considered (Becken, Hay & Espiner, 2011). At the same time, the long term benefit of DRR and proper design was believed to pay off by an Environmental Protection Agency respondent in the Maldives. One respondent pointed to an increased competitive advantage as a result of climate proofing infrastructure for tourists.

- The perception that DRR is not a business priority is also a barrier. As one Maldivian Government official pointed out "businesses are mostly for profit making sometimes they are not really willing to go investing in mitigating climate change or hazards…" This view was shared by several others.
- The market context does not create adequate supportive incentives for private sector stakeholders. For example, insurers currently do not incentivize investment into risk reduction via reduced premiums. In fact, operators in the South Pacific islands of Fiji, Samoa and Tonga have had disappointing experiences with insurance claims.
- On-going tourist demand for coastal products and limited interest in businesses' DRR preparedness pose another disincentive for changing the current products. Operators are 'rewarded' for investing in a beach model of tourism that is located dangerously close to the high water mark.
- At the operational level, some stakeholders (particularly the smaller, locally owned and managed hotels) have limited technical knowledge and staff resources to devote to DRR. In particular, the high turnover of staff at resorts was noted as a problem in improving disaster preparedness. In Tonga, one stakeholder acknowledged that there was always room for improvement, but the private sector lacked knowledge of steps that it could take, or it knew the steps, but lacked the specific technical knowledge to take those steps, other than through trial and error (e.g., in groyne design or beach restoration) or simply lacked the finances to do more.
- At the broader systemic level of governance, the absence of fundamental legislative and policy change to address the increasingly adverse operating environment that will materialise as a result of CC, is largely still lacking. Government leadership in the form of adjustments to current regulatory instruments is limited.
- Consistent with Harrington (2000), public regulation can have a perverse effect on the DRR behaviour of businesses. For example, in Samoa, Government recovery grants in effect rewarded operators that did not invest in insurance. The business case for securing insurance was therefore weakened by the fact that the small fale operators who did not have insurance were particularly supported after the tsunami. This raised questions about fairness and disadvantaging those "who do the right thing and pay their premium for years" (industry representative). While much needed, this highlights an important general point of balancing private sector initiatives (and responsibilities) with Government assistance in difficult times.
- Attitudes are also a significant barrier in both the public and private sectors. In the public realm, this is usually reflected in a lack of political will to implement risk

reducing measures while in the private sector, it is sometimes reflected in the fatalistic or alternatively reluctant attitude of operators. The systematic denial of the impacts of CC on Maldivian tourism is a good example of an attitude barrier.

A range of factors were identified that facilitated investment into DRR.

- Recent experiences with disasters have increased levels of awareness and willingness to engage with DRR. Representatives of government and industry bodies in Samoa, for example, noted that tourism operators are very interested in learning more about disaster preparedness since the 2009 tsunami.
- Some countries such as the Maldives have benefitted (or still are benefitting) from substantial investment into forward looking projects and programmes such as climate proofing of infrastructure for tourists by international organisations and aid agencies.
- Some countries are beginning to provide incentives to facilitate private sector innovation in risk reduction, for example, through certification schemes and accommodation standards.
- As the intermediaries between suppliers and the market, tour operators are also very influential. For example, any hotel in Caribbean SIDS that deals with international tour operators are obliged to have a hurricane manual and the interviews revealed, indeed, that plans, manuals and standard operating procedures for the hurricane hazard, as well as, the upgrading and updating of these are common.
- Opportunities for co-investments have been identified. Reducing operational costs of businesses, for example through subsidised installation of solar panels, could enable businesses to invest more into DRR measures, and at the same time reduce their reliance on power networks in a disaster. In the Maldives, stakeholders talked about mechanisms of co-financing for new technology or innovative solutions as an incentive to engage businesses who might otherwise be reluctant to invest.
- In Fiji, the banking and insurance sectors work together to apply pressure to protect their investment in tourism assets. As a result of the weak enforcement of regulatory standards, an alliance has been established between the Fiji Institute of Engineers and the Insurance Council of Fiji for a third party certification programme that has in turn been further institutionalised with links to financial institutions. Specifically, the Insurance Council of Fiji has vetted a panel of professional engineers that they deem to be capable to certify structures. If an owner of a building wishes to secure cyclone insurance for a building which is a mandatory condition of State annual hotel licensing, their first requirement is to engage an engineer who is on the panel of approved engineers; complete the certification process and then take the certificate to the insurance company that he or she would like to get the insurance from. Since a bank will not lend a developer funds without the required insurance, developers are forced to comply with building standards.

5.5 Risk Reduction Measures

The field evidence supports the view that stakeholders use a range of measures to reduce, manage and transfer their disaster risk. The measures will be discussed for the public sector and private sectors, as well as, for public-private sector partnerships. Further, the measures will be presented according to the PPRR framework. A detailed discussion of risk reduction measures can be found in Appendices A to C.

5.5.1 Public Sector Measures

All SIDS in the case study regions have implemented measures that aim at the reduction and management of disaster risks. These involve typically planning (e.g. integrated coastal management), building codes, and other standards (e.g. the need for an Environmental Impact Assessment). Some islands (e.g. Samoa) have developed strategic plans for tourism and CC which include disaster risks to some extent. Some countries have also secured funding for the implementation of their strategies. A number of countries have invested into hazard mapping and scenario exercises to identify or quantify risks. Geographic Information Systems are often used to visualise outputs. These are, however, generally not tourism specific, nor are they specifically communicated to the tourism sector. Disaster risk reduction also occurs in the form of environmental management programmes, for example mangrove reforestation or coral reef protection, which are designed to increase the integrity of coastal ecosystems.

The most frequently implemented preparedness measures are disaster drills, operator training, and communication of evacuation maps. Some countries have invested into warning systems; however, these are not fully implemented across all stakeholders in tourism. Preparedness, for example through a disaster plan, has been implemented through some accommodation standards. A recent tsunami warning in the Maldives served as a 'drill' and highlighted a range of deficiencies in businesses' evacuation procedures.

Public sector response measures relate to the investment into functioning Disaster Management Offices who connect with key organisations, such as the Red Cross, and volunteer networks, which are recruitable in the case of a disaster. Systems set up to undertake damage reports and implement immediate disaster response exist in all countries. The Samoa system has been reported to have functioned well in relation to the 2009 tsunami. Tourism Fiji has developed a crisis section to the organisation's website that is dormant during times of normalcy but is activated and loaded onto the website's front page during a crisis. Governments have also reportedly assisted businesses with the supply of materials, for example water tanks in response to a drought.

Typical disaster recovery measures include grants to those affected (e.g. small grants to businesses in Samoa), soft loans, partnerships with other countries and aid agencies and relief schemes, such as existent in the Caribbean. In the case of Samoa, the New Zealand Government has assisted with marketing in the aftermath of the tsunami. With the help of a

NZAid fund, the Tourism Tsunami Investment Project has assisted 46 businesses on their way to recovery.

5.5.2 Private Sector Measures

Private sector stakeholders already self-regulate in some ways. For example, many hotels in the Caribbean, Pacific and AIMS SIDS have obtained voluntary third party certification from the Green Globe 21 environmental certification programme. It would be expected that voluntary initiatives in the realm of DRR would be attractive to Governments, as well as, corporations. However, enthusiasm for a voluntary approach to DRR was not universal. Both public and private sector respondents were of the view that self-regulation through voluntary initiatives should supplement regulatory controls rather than replace them.

Disaster risk reduction for businesses relates in the first instance to the safety of their buildings. This means that businesses comply with building codes or go beyond the standards that are required. The empirical evidence from the Caribbean suggests that there are a few hotels that build to standards that are higher than what is required. For example, some hotels routinely use advanced non-structural components such as hurricane 2-ply glass and UPVC windows – components that help reduce the impact of high wind loads. In addition, one coastal hotel that is part of a regional chain of hotels reported that it is built to the Florida Building Code and can withstand a Category 5 hurricane.

Some countries do not have universal building codes and operators have to make their own decisions, for example in the Maldives. Often, international hotel chains provide standards instead. The consideration of physical hazards when making decisions about the location of structures is another important risk reduction measure. This is not typically the case, but a few examples indicated that some operators have thought about where to put buildings, jetties and other facilities. Most resorts have invested to some extent into beach protection, typically in the form of hard structures. However, other management options, such as pumping of sand, are becoming more popular. Some resorts have invested into research on hazard mapping and sediment movements (e.g. to minimise beach erosion) but this is an exception rather than the norm. To reduce flooding, drains are typically maintained, although for smaller operations (e.g. community-based tourism), this was considered to continue to be a problem.

Most tourism businesses have prepared for a disaster to some extent. Typical measures include a risk management plan (often not written but only verbal), staff training, evacuation maps, disaster drills, and the availability of satellite radios. Businesses typically prepare their grounds and buildings before the cyclone/hurricane season or event (e.g. trimming of trees, tidying away of deck chairs). Some hotels in the Maldives have life jackets available for their guests and staff. Not all operators have all of the above measures implemented and there is room for improvement, for example in the area of regular disaster exercises. New measures proposed by stakeholders in the Caribbean included conducting guest drills and briefings

with guests upon check-in, a procedure similar to what is done in the cruise ship industry. Although considered to be a bold and innovative measure in the Caribbean, such an approach is apparently already commonplace in Tonga.

Response measures include the monitoring of weather conditions to allow for a quick response, and the evacuation of guests if necessary. Other responses depend, naturally, on the magnitude of the disaster. They range from cleaning up to rebuilding. There are some partnerships within the industry especially in times of disaster response. Larger hotels for example, receive guests from smaller hotels in the case of an emergency. Communication with customers and overseas partners is essential but was not mentioned very frequently by businesses.

The key measure for recovery is the availability of insurance. In some cases, insurance is not available or difficult to access, and even those businesses who have insurance encounter challenges, such as delayed pay-outs. According to one expert in the South Pacific, tourism businesses in the Pacific Islands are underinsured compared with their Caribbean counterparts.

Businesses who have business continuity plans find it easier to recover. Tourism operators have reported on the need to re-establish themselves in the market place after a disaster, for example, through the use of online media (Trip Advisor and others). Often, the recovery and rebuild result in more resilient systems. To be able to deliver on the marketing promise of attractive beaches is even more important in the face of liability claims made by tourists. One Caribbean operator reported that tourists from the United Kingdom can claim reimbursement if they can prove false advertisement.

5.5.3 Public-private Sector Partnerships

A number of risk reduction and preparedness measures that involved a public-private partnership were identified. For example, an annual Multi-Hazard Symposium is held in Barbados as a result of a collaboration between the Hotel Association and Ministry of Tourism. Similarly, in Samoa, the accommodation standards are a partnership between the Samoa Hotel Association and the Government. The Samoa Accommodation Standards require evacuation plans and business plans that abide by the Planning and Urban Management Act. The evacuation plans need to be displayed visibly for tourists. Specific training workshops onsite at the tourist resorts are organised in partnership with the Samoa Disaster Management Office. Bringing expertise right to the hotels is believed to increase participation and uptake. The interviews also provided examples of joint investments, for example into coastal defence infrastructure to protect tourist beaches and resorts. This is currently being discussed in the island of Barbados.

Some Governments, often in partnership with international organisations (e.g. UNDP) provide support for climate proofing businesses (or making them more resilient beyond CC). The Maldives, for example provide seed grants as part of the Technical Assistance Project.

Partnerships have also been observed for the recovery phase. As reported by one Caribbean government representative, the tourism industry of Grenada made recommendations for Government adjustment of policies to deal more comprehensively with insurance in the wake of Hurricane Ivan.

5.6 The Business Case

A core objective of this study was to explore and evaluate the business case for investment in the resilience of the tourism sector of SIDS. When asked whether there was a business case for investment in DRR, responses offered by respondents were mainly qualitative in nature with a range of intrinsic logic arguments being presented. Few stakeholders however, mentioned any economic/financial figures or statistics related to the benefits, costs or return on investment (ROI) associated with DRR. A discussion of stakeholder views regarding the business case for DRR follows.

5.6.1 The Caribbean

One hotelier in Trinidad and Tobago is of the view that "there are not any disadvantages in preparing for physical hazards…". Other Caribbean stakeholders identified several benefits to investing in DRR measures as follows:

- Protection of the economy (little disruption)
- Continuance of the way of life of the residents
- Peace of mind of residents (the absence of chaos)
- Reduced cost to the State to restore after the event
- Minimization of the loss of natural and built assets
- Faster economic recovery
- Reduced damages and financial losses to businesses (eg. downtime due to closure, replacement costs)
- Mitigation of the potential for insurance costs to escalate dramatically
- Reduced risk of casualties and fatalities
- Improved public perception of safety

One Jamaican made clear that the possibility of incurring liability and reputational costs with clients and tour operators is already very real with liability claims routinely being made by tourists that are disappointed by the environmental amenity of the beach. One hotel manager in Jamaica explained that many tour operators especially in Europe will offer tourists a specified sum in compensation: "…if the client comes back and complains versus something that is advertised in your brochure... they could get back their money. Some of them by law in the United Kingdom can get up to 10 times the value of their trip…". There is no reason why this could not be extended to hotel liability in the case of injury or casualty as a result of hotels not exercising their duty of care to reasonably protect tourists from the impacts of physical hazards and disasters.

One regional tourism representative expressed concern about the possibility of potential investors being dissuaded from investing in the Caribbean due to the perception of high disaster risk based on disaster reports coming out of the region. That stakeholder also thought that it was only a matter of time before insurance premiums are likely to increase to prohibitive rates due to recurring disasters.

5.6.2 The South Pacific

One public sector official in Fiji saw investing in DRR as akin to paying insurance - it is a cost of doing business. A Tongan stakeholder shared a similar sentiment in noting that the private sector was already investing in DRR measures as part of its normal business.

Stakeholders are keen to have their facilities perceived as safe and believe that this is a vital angle of the business case. This is in the context of managing the destination image in the wake of the 2012 Fiji floods. This proved to be an immense challenge and confirmed to stakeholders that the reputational costs of disaster are a reality and can hurt the bottom line.

The financial benefits of preparedness results in much lower rebuild costs after the disaster. One hotelier noted that there is also a case to be made on the basis of the value of staff and tourist life. This hotelier has made a significant investment in a siren system at a property in Samoa. According to this stakeholder, although it is expensive, it is worth it because it will save a lot of lives.

One government official in Samoa noted that businesses already have so much invested that it makes sense to protect it, “otherwise they lose everything”.

There were some stakeholders who were able to articulate the case in basic quantitative terms. For example, one tourism executive in Fiji noted that not only has massive amounts been invested in hotels, the financial cost of having a bure offline for a week, a month, or even three months is much more than the cost of mitigation. In addition, this stakeholder also noted that there is a case to be made not just in the interest of individual businesses but also in the interest of the national economy. It’s in the national interest for example, to ensure that a multi-million dollar hotel (as much as 50 million dollars in the example given) that has benefitted from as much as a 28% tax incentive for seven years is not destroyed by disaster or carries forward losses because of it.

5.6.3 The Maldives

Stakeholders in the Maldives also thought that tourism operators have a lot to lose if they do not invest in DRR. Better private sector preparedness means that the burden on the public sector is lower after a disaster as they have to put together fewer relief programmes. A quick recovery and “bouncing back” is also desirable from a broader destination (and national economy) point of view. One expert mentioned higher customer satisfaction as a result of

better preparedness. Industry investment in a sense of self-regulation was also seen as beneficial as industry participants know their businesses better and proactive measures are therefore more effective than government imposed ones.

6. EVALUATING THE BUSINESS CASE – A SYNTHESIS EXPLORING THE BUSINESS RATIONALE FOR DRR INVESTMENT

"Yes - There is a case so long as the benefit exceeds the cost…" (Tourism official, Jamaica)

6.1 Evaluating the Business Case

The literature review and field interviews affirm that investing in the four phases (PPRR) of DRR will reduce risk and generate a medium to long-term return on investment, both in monetary and less tangible terms. Much of this argument and the quantitative analyses associated with it, however, is couched in terms of the losses and benefits to national or regional economies rather than to individual businesses. The national focus reflects government awareness of the significant role that tourism plays in earning export revenue for their country. This provides the basis for national investment in DRR measures for the public good (e.g., planning, regulations, early warning systems, sirens and other infrastructure, emergency response services and equipment). While the desirability of self-regulation and greater investment in DRR by the private sector is acknowledged, it is generally accepted that private sector investment must be underpinned by appropriate regulation (e.g., building codes) that is consistently well-enforced.

Private businesses and their representative organizations recognize and use the benefits to the national economy to support calls for public or aid investment in DRR at both national and individual business level. They also generally recognize the relevance of such issues and DRR measures for their own operational investment. Indeed, most businesses are investing in DRR to the extent that they consider appropriate to their business and they have the support of their shareholders to do so.

This investment tends to be in protecting against the effects of shorter return period hazards (e.g., hurricanes/cyclones), and to a lesser extent, in less frequent events that they or their business have directly experienced or witnessed (e.g., tsunami). Put another way, the anticipated risk of the event recurring and experience with coping dominate the private sector investment pattern. However, the sector is also very aware of the consequences of disasters, particularly the impact of loss of life to the reputation of a destination (country or business) and, in at least one destination (Jamaica), the liability for delivery of the holiday experience they have advertised. The role of tour and accommodation booking agents in assessing that risk, the level of vulnerability of a destination (place or business) and the level of its recovery from an event emerged as important.

The measures employed by private businesses cover the full range of the PPRR spectrum, although smaller businesses appear to have paid less attention to recovery than to the other dimensions. Of the seven barriers identified in Chapter 5, two particular barriers to taking

DRR measures stand out for the private sector: lack of funds and lack of knowledge of how best to address particular hazards or aspects of PPRR (e.g, recovery planning). Such constraints were especially apparent for smaller hotels and resorts.

A business case for investing in DRR measures therefore needs to consider both the nature of the potential disaster, especially the frequency of the occurrence of the hazard, and the scale of the business. There are opportunities for targeted public investment to facilitate the implementation of DRR measures, but in doing so the emphasis must be on the combination of cost reduction and revenue generation for the private sector (see Table 6.1) and consideration must also be given to issues of fairness.

Table 6.1: Cost and Revenue Cases for Enhancing Private Sector DRR investment

Cost Cutting Benefits
• Increased availability of both debt and equity funding for developers as international development, banking and insurance agencies make disaster resistant investments a priority • Reduced reconstruction costs • Reduced replacement costs • Reduced cleaning up costs • Reduced loss of life and potentially associated liabilities • Reduced beach replenishment costs • Increased productivity and income through reduction of business downtime due to hazard or disaster impact • Protection of the destination image • Operating cost savings
Potential for Increasing Revenue
• Business opportunity for the provision of new and existing ancillary DRR services • More competitive real estate holding for private sector owners (eg higher resale value) • Marketing and reputational benefits through the communication and leveraging of a 'safe' tourism product (eg. higher occupancy rates due to demand for a disaster resistant tourism product)

There are many direct and indirect costs associated with disaster that can hurt the bottom line (Table 6.2).

Table 6.2: Disasters and Potential Costs of Impact on SIDS Tourism

Disaster Impact relevant to Tourism Investment	**Potential Costs**
Time spent under warnings	• Revenue due to reduced business activity
Evacuation	• Transport to other hotels and public shelters
Sheltering	• Housing guests at other hotels
Structural damage to plant and infrastructure	• Clean-up • Loss of destroyed plant and infrastructure • Reconstruction • Dealing with insurance companies
Damage to beach, pool area and surrounding hotel landscape	• Landscaping (replacement plants, trees and labour) • Beach replenishment • Beach protection
Loss of coastal vegetation	• Reduced environmental services

Damage to reef systems	• Reduced environmental amenity
Beach sediment deposit from floods and landslides	• Reduced beach amenity • Guest complaints that potentially lead to liability
Damage and loss of inventory, furnishings and assets (furniture and equipment)	• Replacement
Damage to ancillary national transport hubs/network (airports, ports, roads) Damage to national supply chains Damage to national communication and utility network	• Revenue forgone during period of reduced business activity
Injuries	• Liability claims (tourists and employees) • Decreased employee productivity • Decreased reputational value
Fatalities	• Life insurance • Decreased reputational value
External community-wide impacts	• Decreased employee morale/productivity
Post-disaster discounting	• Operating losses (a combination of lower occupancies and lower room rates)
High employee turnover	• Increased recruitment and training • Decreased employee morale and productivity
Contraction in operations	• Decreased employment potential • Reduced revenue
Decrease in visitor loads	• Sunk operating • Revenue forgone due to cancellations • Revenue forgone due to discounted rack rates • Marketing and advertising
Increase in insurance premiums	• Decrease in revenue income
Investor abandonment	• Reduction in debt and equity funding

Many indirect costs are in terms of revenue foregone (e.g., through loss of reputation) and are difficult to estimate or differentiate, but that tourists tend to avoid the hurricane season is well-recognised and indicative of the costs of disaster avoidance. The avoidance of areas during and immediately after a disaster event falls into a similar category of indirect loss, unless revealed through cancellations (seeBox 4.7). Other indirect costs due to the loss of amenity (e.g, recreational values) or ecosystem services (e.g., shelter from trees) may only become apparent if attempts are made to restore the lost amenities and services.

Direct costs, such as the loss of equipment, plant and infrastructure are more readily identifiable and are able to be quantified. The cost of insurance may be relatively easy to quantify for individual businesses, but the costs of delayed or disputed pay-outs, or uncertainties about the stability of insurance premiums are not as transparent.

In contrast, virtually all private sector DRR measures are directly incurred (e.g., through the cost of a sea wall, insurance, or management and staff time). The benefits of investing in DRR are lower costs, but they remain costs (see Table 6.3).

Table 6.3: Cost of DRR

Cost Category	Examples
Research costs	• Physical Hazard Impact Assessment • Vulnerability Assessment • Risk Assessment • Resilience Analysis • Cost Benefit Analysis • Modelling of coastal dynamics
Material costs	• Material cost of structural and non-structural DRR measure(s) for new and retrofitted built environment • Material cost from the purchase of emergency supplies • Material cost of insurance
Labour cost	• Cost to hire additional staff and/or expertise • Consultant cost for installation of structural measure(s) • Employee training in use of structural and/or non-structural DRR measure(s) • Audit costs (in the case of certification)
Maintenance costs	• Maintenance of structural measure(s)
Technological costs	• Procurement of disaster management software (in the case of certification) • Licence costs (in the case of certification) • Software maintenance costs (in the case of certification)

This means that the capacity to bear these costs has a significant bearing on the overall uptake of DRR by the private sector. Smaller operations generally have much less capacity to invest in DRR than the larger ones. This raises issues of equity when governments then either provide targeted subsidies to smaller businesses or provide greater post-disaster services and support (financial or otherwise) to businesses that have not invested more heavily in their own DRR than have other larger businesses.

Looking at the field evidence, we note that:

1. Every case in this study suggests that Government is investing to some degree but the extent is variable. For example, in some countries building codes are fully enforced in law while in others the codes are in draft form.
2. Every business also invests in some form of hazard reduction that in turn contributes to DRR along one or more of the PPRR phases. Investment in preparedness is standard. However, it's the level of investment and the type of disaster prepared for that differs and is strongly tied to a business' direct experience coupled with financial capacity and knowledge.

Consequently, for many businesses, perhaps especially the smaller businesses, additional investment in DRR is only likely where it is able to:

1. Better direct and thus make more efficient use of current DRR expenditure (e.g., better designed sea-walls); or
2. Measurably stimulate an increase in revenue.

Quantification of such opportunities cannot be done at a generic level in a way that would be meaningful to real world business operators. From our fieldwork, it was clear that stakeholders are interested in the cost premium for DRR measures. Since there is a broad spectrum of measures, it would perhaps be difficult to generate a universal estimate that says it costs "X" to be disaster resistant, especially in a multi-hazard context of the coast. Every investment decision needs to consider potential benefits, in addition to implementation costs, and ultimately the investor must make a decision based on overall return on investment (ROI). Although there is some work done particularly in the Pacific, we do not get the sense that this type of analysis is widely pursued by public or private sector stakeholders to support decision-making in SIDS. Assistance to businesses in actually calculating the tangible and intangible benefits to them in their specific situation may form a sensible investment by donors and national governments. If individual businesses can generate their own business case, then they can potentially make an informed decision. Similarly, training opportunities or tours of successful DRR sites that enable individual business owners or operators to develop their knowledge of ways to better target their expenditure on effective DRR might also aid in businesses developing their own business cases for increased or more efficient investment in DRR.

The possibility of a DRR certification system received favourable comment from a number of those interviewed. One tourism executive suggested: "Yes - There is a case so long as the benefit exceeds the cost. Perhaps if business continuity planning is linked to improved operational efficiency and improved visitor perception of safety?…" (PUB_JA_2). However, there are no studies to date that quantify the link between DRR and tourism business performance. Still, we hypothesise that if consumer demand for disaster resistant tourism products increases, safe tourism accommodation will become even more desirable to the general market. As a result of this increased demand, disaster resistant hotels should have higher occupancy rates, shorter down times when disaster strikes and lower refurbishment costs.

6.2 Communicating the Business Case

Making the business case to encourage self-regulation involves not just quantifying the costs and benefits of DRR but also enhancing the capacity to communicate this case to key stakeholders in both the public and private sectors. For example, it was found that there is a disconnect in dialogue in three ways:

1. Key stakeholders in the mainstreaming of DRR were being overlooked. Specifically, it was highlighted that stakeholders within the Ministries of Finance of SIDS were traditionally not engaged in the DRR dialogue as much as they should be.

2. It was also noted that DRR professionals and the constituency that they try to serve often operate at different levels. In the case of private sector tourism stakeholders, one Caribbean regional academic noted, "…we operate at the level of research and training and they operate at the level of the 'day to day get the work done' level. Our interface with them is maybe around a policy table or maybe the people we train to go into their organisation. We would need an opportunity for dialogue and I don't know that we are currently having an opportunity for proper dialogue with them…"
3. Finally and perhaps very significantly, the need to tailor DRR information using business language in order for the message to be more palatable for private stakeholders was highlighted by a regional disaster management representative: "…..from working with the tourism sector we realise that we do speak a different language and that we really need to simplify as far as possible to make it practical. So it's something that we need to continue to work on to ensure that we simplify our language, that we speak in an understandable way and to look at it from the business perspective…that's where the tourism person is coming from. They really don't want to get tied up in terminology and so forth. They just want to see something that's practical and something that can work…".

The need for boundary organisations that bring together multiple stakeholders and facilitate collaboration between researchers, policy-makers and industry stakeholders have a role to play here.

6.3 Further Research

As noted in Chapter 4, quantitative research examining the business case for investment in the resilience of tourism development is generally underdeveloped. In particular, the analysis of evidence of the financial merits of DRR is limited. Research gaps were identified in the following areas:

- The need to quantitatively measure the value added physical resilience of the range of hazard mitigation measures that are relevant for coastal superstructure and infrastructure;
- The need to model the causal relationship between these specific DRR measures and risk reduction;
- The need to quantify the return on investment associated with the DRR measures; and
- The need to demonstrate the cost-effectiveness of investing in DRR versus the cost of recovery.

Causal modelling would also benefit from a greater understanding of the root causes of destination and business vulnerability. Calgaro and Lloyd (2008) noted that there is a need to examine the socio-political and environmental conditions that contributed to destination vulnerability as a basis for examining interventions for building future resilience. This would

also include the need to study the impact of public policy (or its absence) on private behaviour (Dehring, 2006; Farrow & Viscusi, 2011; Kousky et al., 2006; Viscusi, 2006). There is also a need for studies that analyse the effectiveness of the current policy environment in stimulating or inhibiting tourism business DRR behaviour, as well as, studies that present a cost benefit analysis of the impact of Government intervention on the DRR investment of the SIDS tourism sector.

The tourism sector seems to under-report the impact of hazards and disasters on business operations. Moreover, we found that information available through official channels such as Government ministries and tourism associations is ad hoc. The insurance industry may possibly have the most complete financial record of industry damage and loss reflected in insurance claims associated with the industry. Studies that quantify whether damage and loss is increasing or decreasing over time are necessary to have a complete picture of the trends associated with the industry's disaster risk.

Survey results of 367 tourists to the Caribbean island of Tobago showed that features associated with a disaster resistant tourism product are important to tourists. More research is needed to quantify the value of a disaster resistant product with consumers. Measuring tourist Willingness to Pay (WTP) for safety could go a long way in destination and operational decision-making. Positive results would demonstrate the business benefits of investing in disaster resilience. A choice modelling study can shed light on this issue.

Tourism operators already invest in environmentally friendly operations in an effort to attract the growing environmentally conscious travel market. As seen in the Caribbean case study, some operators are keen to pursue this market niche. Valid research areas in need of further study include an examination of whether the environmentally conscious traveller is the same or similar to the traveller that values a 'safe' tourism product. A better understanding of whether tourists make the connection between an environmentally responsible property and a disaster safe one would be instrumental in determining the linkages and parameters of DRR marketing. Furthermore, we do not know whether an environmentally conscious hotel is likely to also be a disaster resistant one.

6.4 Recommendations

This study makes five (5) recommendations at the business level as follows:

1. *Assist businesses to assess the tangible and intangible costs and benefits of DRR applicable to their individual operating context*

Tourism stakeholders are interested in the cost premium associated with the implementation of DRR measures. Assistance to businesses in assessing the tangible and intangible costs and benefits applicable to their individual operating context may form a sensible investment by donors and national governments. An advisory service (either run by industry or government) that would help particularly smaller tourism businesses to carry out a risk assessment and identify DRR actions that might either reduce business costs or add to

business revenues on a case by case basis could be set up in most SIDS relatively cheaply and might be the most effective approach to tailoring generic solutions to individual biophysical settings and business operating contexts.

2. *Provide opportunities for operators to increase their technical knowledge and widen their outlook*

Operators generally lack technical knowledge related to DRR in two ways: 1) effective measures given the specific bio-physical operating context; and 2) the cost and benefit of the identified measures. Training opportunities or tours of successful DRR tourism sites that enable individual business owners or operators to develop their knowledge of ways to better target their expenditure on effective DRR might also aid in businesses developing their own business cases for increased or more efficient investment in DRR.

3. *Provide practical tools and templates*

Helping operators to translate technical knowledge into their operational context by the provision of useful tools and templates such as signs to place in hotel rooms or informational materials to provide to guests is also recommended.

4. *Support research and outreach that promotes the business case for resilience to increase private sector awareness around the business merits associated with DRR*

Research and outreach initiatives that purposefully tailor existing and new DRR information to private sector needs are needed. The use of business language, as well as, the presentation of financial and business value arguments in relation to DRR could serve as a platform for communication between public and private sector stakeholders. The need for boundary organisations and associated forums that bring together multiple stakeholders and facilitate collaboration between researchers, public sector policy-makers and tourism industry stakeholders is evident and should be actively encouraged.

5. *Invest in further research on a certification programme that explicitly incorporates measures of resilience*

Further research should be conducted on the development of a certification programme that makes a strong connection between risk reduction standards and incentives and benefits that could be recognized and potentially rewarded by the community of stakeholders that are important to a tourism business' operations namely tourists, tour operators, financial and insurance companies, among others. This certification programme could take the form of a stand-alone initiative or alternatively, ways to incorporate a DRR component more explicitly into existing tourism certification programme can be explored.

6.5 Conclusions

This study has established that building resilience necessarily involves the public, as well as, the private sector. Both sectors have responsibilities in investing in resilience and both

sectors have difficulties fulfilling them. Given this sub-optimal DRR investment and operating context, there are many possibilities to alter disaster risk or its consequences through increased investment in PPRR.

It was clear that some private sector stakeholders already self-regulate based on individual evaluations of a variety of tangible and less tangible benefits. However, to stimulate more widespread self-regulation of disaster risk over and above what is required by regulation, a business case for such action may be needed. There is a fairly major deficit of empirical quantitative data to support the business case. Where this information exists, it may not be widely or effectively communicated.

More research is needed to develop the economic and financial data that may possibly encourage greater private sector investment in DRR, as well as, create a supportive and enabling national economic context for resilient tourism investment. Moreover, while the desirability of self-regulation and greater investment in DRR by the private sector is acknowledged, it is generally accepted that private sector investment must be underpinned by appropriate regulation (e.g., building codes) that is consistently well-enforced.

The study concludes that a business case for private sector investment into DRR can be made. However, in practice, it rarely is made and/or communicated effectively. This situation of a wealth of theoretical benefits but limited practical uptake reminds of the much longer studied need to implement sustainable tourism. Perhaps, lessons learned from overcoming barriers towards sustainable tourism development can be used to also improve DRR activities amongst tourism operators.

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Appendix A - The Caribbean Region

A.1 Introduction

Relative to its economic size, the Caribbean remains the most tourism dependent region in the world (UNEP & CAST 2008). According to the WTTC (2011), travel and tourism was expected to post a contribution of 14.2% to the Caribbean's economy, represent 16.7% of total regional exports, generate 2.2 million jobs (1 in every 8 jobs) and account for 11.6% of total regional capital investment in 2011. Seven (7) of the ten (10) most tourism dependent countries are found in this region. The Caribbean Hotel and Tourism Association (CHTA) estimates that the Caribbean hotel industry stock has grown to 2,285 hotels amounting to almost 250,000 rooms and generates 1.9 billion dollars in revenue per year (Caribbean Hotel and Tourism Association, 2012). International tourism is only expected to grow. WTTC forecasts Travel & Tourism's contribution to the Caribbean's GDP will be $70 billion by the year 2021 which represents 22.1 billion more than in 2011 (WTTC, 2011).

The Caribbean region has repeatedly experienced a wide range of physical hazard driven catastrophes. Over the past century, there have been more than 150 disasters. Most (more than 130) were associated with hurricanes, tropical storms and flooding (OAS, 2005).

The following analysis is based upon the responses of stakeholders on both sides of the tourism demand and supply equation. On the supply-side, we interviewed 38 national and regional level stakeholders in the public and private sectors. Stakeholders were involved in product investment, development, marketing, management of national and regional tourism assets, as well as, insurance. On the demand side, we surveyed 367 international visitors to the island of Tobago.

A.2 Hazards Discussed in the Interviews

A range of physical hazards - severe weather systems including tropical storms and hurricanes, coastal erosion, storm surge, coastal flooding, drought, earthquakes, landslips, tsunamis, and sea level rise - affect the three destinations variably. For example, tropical storms and hurricanes rarely affect Trinidad and Tobago although these are common to Antigua and Barbuda and Jamaica. Tourism sites and beaches cut off by landslips was only reported in Trinidad and Tobago; as was the occurrence of a mini tsunami in the early 2000s on a popular local beach. Antigua and Barbuda was unique in dealing with volcanic ash from the neighbouring island of Montserrat.

An assessment of all responses revealed that overall, severe storms (including hurricanes) and coastal erosion were thought to be the two hazards that were most likely to affect stakeholders. Every stakeholder identified a differential mix of physical hazards indicating that there is differential experience among these three island nations, as well as, among

properties on the same island. A range of environmental problems were identified as 'hazards' by participants.

- Unusual precipitation patterns and heavy rains;
- Rogue waves;
- Tidal rise;
- Winter swells;
- High near shore temperatures;
- Coral bleaching;
- Harmful algal blooms;
- Dirt and other by-products that travel from inland storm drainage out to the coast;
- Land based sources of marine pollution;
- Mangrove swamps that breed vectors;
- Jellyfish; and
- Groynes.

A.3 Vulnerability

A.3.1 Slow, Disjointed Mainstreaming of the DRR Agenda

One regional stakeholder who works in insurance noted that recognition of exposure to a range of physical hazards "… hasn't necessarily been engrained in terms of operationalising how we manage those risks…". Both the private and the public sectors in the Caribbean have responsibilities with regard to mainstreaming the DRR agenda and both have difficulties fulfilling them. As expressed by one hotel association executive in Jamaica, "what the industry does is not the total picture. It is most important that the country and the region… be doing some of those things…in sync with us…" Generally however, stakeholders felt that there was slow progress over time and now there is increased recognition of the need to address DRR which has come about because of experience with a range of disaster impact - "I would say definitely there is greater consciousness, greater understanding and acceptance that this is a problem that will affect us in the future and that we do need to do something about it…" said a private developer in Jamaica.

A.3.2 Historically Deficient Physical Planning System

Several stakeholders in the public and private sectors acknowledged that in the past, tourism developed in an ad hoc manner at a time when physical planning was not yet well conceived and the enforcement of building regulations and environmental standards were likewise not widespread. One public sector stakeholder in Antigua noted that some of the hotels currently operating today were built back in the 60s and 70s. At that time, "…they were observing a 50 foot setback from the high water mark…". As a result, as one regional stakeholder comments "there are hotels that…nowadays… are practically in the sea".

Stakeholders also feel that hazard and disaster impact has been exacerbated by badly conceived/designed development further inland. One hotel executive in Jamaica complained

about inland dirt and other by-products that gets deposited into the sea and impacts coral reefs and water quality. A public sector stakeholder in Antigua and Barbuda described a similar situation where poor inland drainage affected coastal development.

Poorly conceived development is reflected in the fact that many coastal tourism belts throughout the Caribbean have historically developed seaward of the coastal road leaving no buffer available to deal with the vulnerabilities and the risks associated with coastal hazards. Older tourism developments constructed in the low-lying coastal zone at a time when there was little recognition of the impact of sea level rise means that many properties are at risk of future inundation due to sea level rise. It was evident from the field that historically deficient planning systems in Caribbean SIDS have allowed coastal development too close to the sea with little to no room for retreat from the impacts of coastal hazards and sea level rise due to global climate change. This in essence is one of the root causes of the vulnerability of SIDS tourism.

A.3.3 Loss and Degradation of Coastal Ecosystems

Due to the heavy reliance on natural resources, any deterioration in environmental integrity threatens coastal tourism's sustainability. It is understandable therefore that both public and private sector stakeholders, are concerned about the connection between environmental degradation, and disaster impact. The loss of coastal ecosystems to facilitate the construction of coastal tourism plant and infrastructure has been common and its consequences typically problematic. One hotelier in Antigua and Barbuda noted that the coastal area in which her hotel operates faced constant flooding, as well as, significant beach erosion due to the clearing of the mangrove swamps to make way for the construction of the country's premier harbour complex and marina.

A.3.4 Limited Range of Tourism Development Options

Due to their small size, many Caribbean SIDS have high dependence on a limited natural resource base. For some stakeholders, the dominant model of tourism has been developed on the country's outstanding natural coastal resources which form the basis of perhaps their only competitive advantage in the tourism market. A tourism official in Antigua and Barbuda commented, "it would be very, very difficult to move from the beach…because of the sheer size of the island and the natural resources that exist…. tourism basically exploits what's there". Thus, on-going major economic tourism development placed in the coastal zone means that SIDS open themselves up to the environmental, physical, and socio-economic consequences of coastal disasters exacerbated by climate change.

A.3.5 High Tourist Demand for a Coastal Product

Despite the difficulties encountered in the past and the increased risks apparent in the future, high international tourist demand for a sun, sea and sand tourism product prevails. One hotelier in Antigua and Barbuda confirmed "people come here because of the atmosphere, the ocean…the beaches…". However, tourists do not appear to be actively demanding that a hotel operates a prescribed distance from the sea. The opposite seems to

be the case, at least in the minds of some industry stakeholders such as this hotelier in Antigua and Barbuda – "This industry was born on people being able to sleep and roll out their bed and go and lie on beach chairs and enjoy themselves". A dichotomy is therefore created between operating a reasonably safe distance away from the high water mark and operating as close as possible to it for the economic rewards that hoteliers receive in return.
We surveyed 367 international visitors to the island of Tobago for their views on the importance of the following in their choice of accommodation on their current trip:

- Their hotel having disaster plans;
- Receiving guarantees of personal safety from disasters;
- Information about disaster events at their hotel; and
- The closeness of the beach to their hotel

The results revealed that 82.2% of tourists think that it is moderately to extremely important that their hotel is close to the beach. This high percentage confirms the role that high tourist demand for a coastal product plays in the continued supply of rooms that are too close to the high water mark.

A.3.6 Comparatively Lower Tourist Demand for a Disaster Resistant Product

In the field, respondents confirmed that tourists do have choice that they routinely exercise in an effort to reduce their vulnerability to disaster risk. For example, public and private sector stakeholders alike are aware that, "Travellers are more discerning than ever…" and that "...safety is an important factor for all market segments…".

Tourists already exercise their preference for a safe, uninterrupted vacation experience by avoiding the Caribbean during the annual hurricane season – "There is a certain amount of tourists that do not travel now because of hurricane season..." (private hotelier in Antigua and Barbuda). If they do visit, "….visitors are looking for hotel properties that have disaster preparedness plans…" said one regional stakeholder based in Barbados. Another private hotelier in Jamaica explained that tourists "…gravitate to the ones [operators] who can afford it...more to the tour operators that offer hurricane insurance or the hotels that give you a guarantee if they are affected by a hurricane..." . In fact, there are hoteliers that are confident that "there are still lots of people coming because they know about the programmes we have in place and…that we actually so far are a pretty safe place...". Offering a disaster resistant tourism product can be a competitive advantage.

However, whereas 82.2% of tourists think that think it is moderately to extremely important that their hotel is close to the beach, there was a comparatively lower level of desire for a disaster resistant tourism product. For example, 43.4% of the sample thought that it is moderately to extremely important that their hotels have disaster plans; 43.1% of tourists surveyed think it is moderately to extremely important to receive guarantees of personal safety from disasters while 39.2% of tourists think it is moderately to extremely important to receive information about disaster events at their hotel.

The results are in line with hotelier perceptions that while fairly important in their own right, closeness to the beach seems to hold more importance with tourists than other features associated with a disaster resistant tourism product.

A.3.7 Perception that DRR Is Not A Business Priority and/or is Inconsistent with Business Objectives

For private sector stakeholders, DRR is not their core business and therefore may not necessarily be a priority. For example, on one hand, it was clear that some businesses place emphasis on reducing their exposure to risk more seriously than others – "I think that we are pretty much ready and we are very confident…" said one hotelier in Antigua and Barbuda. On the other hand, an adhoc response is typical of other stakeholders. One hotelier on the island of Tobago admitted, "…we take it for granted. I'm being honest...". As one respondent noted, "…For the financial controller and the CEO in a property my thing is to keep my rooms filled and if a disaster comes along then I deal with it... so … it is on my mind but it's not the first thing on my mind..".

In addition, a business' profit motivation is sometimes inconsistent with DRR objectives. One regional tourism academic explained that the short timeframes of business imperatives may work against taking the longer term view that the reduction of disaster risk necessitates. The classic example of hoteliers' disinclination to respect coastal setbacks illustrates this. Furthermore, as noted by one regional stakeholder unlike other industries, for tourism operators especially coastal hoteliers, the aesthetics and function implications of DRR measures matter -"...there are positive changes as well as there could be negative changes...I'm talking about aesthetically…because that is what they would focus on the aesthetics. They don't care about the science behind the whole thing". For already established tourism superstructure, retrofitting may have a negative impact not just on aesthetics but also on the core revenue generating functionality of the hotel. For example, retrofitting for coastal inundation would mean converting revenue generating ground floor rooms to less intensive, transitory functions. One public sector stakeholder in this study suggested parking. However, it remains to be seen whether this will be widely adopted by coastal hoteliers.

A.3.8 Lack of Resources to Devote to DRR

The field evidence confirms that at the level of the individual hotel, the degree of vulnerability of large, multi-national hotels differs from smaller, locally owned hotels. Several nuances in attitude, breadth of experience, the availability of resources (financial, human, technical) and therefore action exist. While bigger foreign owned organisations have the necessary resources and can afford to employ a team of multi-skilled professionals seeking their DRR interests, smaller organisations do not have the same level of resources and may be in need of technical assistance. The general manager of a large Caribbean resort for example made it clear that even in terms of day-to-day operations, "...the small hotels are under a lot of pressure…"

A.3.9 Lack of A Multi-Hazard Approach

One of the major gaps we identified was the narrow focus of hoteliers on the two most prominent physical hazards that affect them – severe weather systems and coastal erosion – with little evidence of serious consideration and action for the range of others hazards that have affected them less frequently but to which they are nevertheless exposed.

A.3.10 Disproportionate Dependence on Tourism Relative to Other Industries

For many supply-side stakeholders, tourism is a primary economic activity. According to one public sector representative in Antigua and Barbuda, "…tourism is the only economic activity that at this point in time and for the unforeseeable future will remain the engine of economic growth". The success of the industry underpins the ability of some Caribbean Governments to sustain other public portfolios such as generating employment for the local population. One public official on the island of Tobago acknowledged that for Tobago tourism is "the second largest employer. The first being government, the second tourism…so it's a very important part of the island dynamics". This underscores the need to understand the vulnerability of the tourism sector to disaster risks and how that translates to the vulnerability of SIDS Governments.

A.3.11 Limited Use of Risk Assessment

It was observed that all private developers surveyed are aware of the hazards that are likely to affect their coastal property although they are less knowledgeable about the frequency and/or probabilities associated with the occurrence of these hazards. Many however are basing their knowledge on 1) dealing with hazard impacts over the years or 2) technical assistance and expertise of private engineering and architectural firms.

A.3.12 Disconnect in Dialogue

Making the business case to encourage self-regulation involves communicating the costs and benefits of DRR. However, there are current gaps in communication and the flow of dialogue that revolve around 1) the lack of inclusion of key stakeholders in the DRR policy dialogue, 2) stakeholders operating at different levels, and 3) various stakeholders from different orientations 'speaking in different languages'. Our fieldwork revealed that efforts to advance the DRR agenda and build consensus over the years may have gone forward without the active and strategic engagement of stakeholders from the Ministries of Finance. An insurance manager that operates in the Caribbean noted that "there isn't that dialogue…taking place within the Ministries of Finance…. and it's a bit of a shame because the Ministries of Finance are key in terms of deciding what are the investments that Governments will make on an annual basis..."

The fact that stakeholders operate at different levels is another challenge that hinders the effective exchange of dialogue. A regional academic that does work with the sector noted, "…we operate at different levels. We operate at the level of research and training and they operate at the level of the 'day to day get the work done' level. Our interface with them is

maybe around a policy table or maybe the people we train to go into their organisation. We would need an opportunity for dialogue and I don't know that we are currently having an opportunity for proper dialogue with them…" A regional disaster management official also expressed concern that policymakers often speak a different language from the operators and therefore it was important to tailor DRR information using business language in order for the message to be more palatable for private stakeholders.

A.4 Measures

Public and private sector tourism stakeholders in the Caribbean have over time, implemented a range of measures that enable them to manage and in some cases even reduce their disaster risk. Generally, we found that depending on who you are, you use different tools to manage disaster risk. The aim here is to first give an overview of the measures that are most prevalently used by stakeholders. Following the overview, we then made an attempt to categorise the measures implemented in the four phase PPRR disaster cycle.

A.4.1 Public Sector Measures

Caribbean public sector stakeholders as the gatekeepers of development use legislation; policy (e.g. the Caribbean region's Sustainable Tourism Policy Framework and associated Guidelines); development planning and control measures, particularly setbacks and building codes (although imperfectly enforced), as well as, networks, coordination and stakeholder relations through strategic partnership arrangements and technical assistance projects to influence the physical development patterns of the tourism industry. The range of identified measures for the public sector were classified along the PPRR continuum as follows:

Prevention/Mitigation

It is common for the public sector to regulate private sector behaviour on the coast through development control measures or guidelines. Although the nature of the process differs according to territory, there are a suite of common guidelines against which the merits of a proposed coastal development is weighed including: the country's coastal setback, building height, plot coverage, environmental development standards, building code, drainage, sewage disposal and other development standards. On the island of Tobago for example, all coastal development must adhere to the standards set out in the Three Chains Act while authorities in Antigua and Barbuda introduced new legislation that increased the coastal setback distance from 50 to 100 feet from the high water mark. These are examples of the main regulatory instruments that we encountered in the field.

Coastal monitoring programmes that actively keep track of coastal processes exist. Under a project called "Coastal Zone Management" in Tobago, officials conduct beach profile monitoring along all the beaches. Barbados also monitors its coastline closely. However, the strength of coastal monitoring programmes are variable in different islands due to issues with capacity.

Governments also invest in DRR infrastructure. For example, artificial shoreline stabilization programmes supported by extensive numerical and sometimes physical modelling that benefit the tourism industry, as well as, locals are actively pursued by the coastal management agency in the island of Barbados. A dual purpose broadwalk/revetment that facilitates coastal leisure activity of tourists and locals, as well as, protection of the coast from recurrent erosion was installed on the South and West coasts of Barbados.

National disaster management agencies have undertaken risk assessments and GIS mapping that support decision-making.

Public sector agencies partner among themselves to develop and implement projects that will address coastal hazards. In Jamaica, the Ministry of Tourism has collaborated with the National Environment and Planning Agency through the Planning Institute of Jamaica on a proposal targeting the Adaptation Fund to support the implementation of measures for coastal erosion mitigation strategies.

Recognising the link between environmental degradation and vulnerability to coastal hazards, national agencies have developed a range of projects to try to address environmental problems.

According to one regional representative, the Caribbean's regional agencies in disaster management and tourism have partnered with international development agencies in implementing regional projects that develop tools for use by the industry. For example in 2007, the Regional Disaster Risk Management for Sustainable Tourism in the Caribbean Project was launched as a collaborative effort between The Inter-American Development Bank (IADB), the Caribbean Disaster Emergency Management Agency (CDEMA), the Caribbean Tourism Organisation (CTO), the CARICOM Regional Organization for Standards and Quality (CROSQ), and the University of the West Indies (UWI). Every agency brought its respective institutional mandate, expertise, and regional constituencies to the implementation of the project which was executed in the tourism industries of five beneficiary countries - the Bahamas, Barbados, the Dominican Republic, Jamaica and the Turks & Caicos Islands. Pilot projects were launched in these countries to facilitate the execution of national disaster management symposiums with the tourism sector. Outcomes of that project included: a regional disaster risk management strategy for sustainable tourism; the formulation of standards for vulnerability assessments and risk mapping applicable to the tourism sector; and institutional strengthening of the CDEMA, the CTO, and other stakeholders in disaster risk management for sustainable tourism. Further, the CTO has developed the Sustainable Tourism Policy Framework Guidelines which provides a basic level of guidance to countries. CDEMA and CTO also both individually host an annual conference that is viewed as an important forum to share information, particularly in the area of good practice. Both agencies make available resources and tools that have already been developed throughout the years to their Member Countries.

Preparedness

The public sectors in some territories have conducted drills with industry. An official from Antigua and Barbuda mentioned that one such drill was conducted in Antigua and Barbuda in 2011. Training, awareness building and advocacy through workshops and conferences is a common way of getting the industry to understand their risk and how they can manage it.

Response

Where early warning is possible, national disaster management agencies notify the population of an incoming event. Mention was made of hurricane watches and warnings being distributed to the local population.

Recovery

A regional representative mentioned that a Disaster Relief Fund has been established to help destinations in the wake of a disaster. In addition, the Caribbean Catastrophe Risk Insurance Facility (CCRIF) offers parametric insurance products for hurricanes, earthquakes and excess rainfall. These insurance mechanisms are being used by government stakeholders to support their recovery process.

A.4.2 Private Sector Measures

We found that private sector stakeholders particularly coastal hoteliers, have their choices pre-determined for them in as much as the public sector – the development authorities - set the limits of development. Compliance with the regulatory measures set out within the development framework is mandatory, although the level of enforcement and therefore compliance by the private sector is uneven. The range of identified measures for the private sector were classified along the PPRR as follows:

Prevention/Mitigation

Stakeholders do have choices in a number of aspects related to the development of the built tourism environment. For example, in terms of building design, they seek professional advice on the structural and non-structural components of their hotel and have installed measures such as shutters, hurricane straps, and hurricane two ply glass.

Some hotels have complied with the Building Code requirements of building to withstand a Category 3 hurricane: “Our building is already built very strongly. It’s built to withstand over a category 3 hurricane” (hotelier in Jamaica). Some have undertaken reinforcement work: “Presently we have undertaken to reinforce all our external footings by going deeper in the sand with steel and concrete” (hotelier in Trinidad and Tobago).

Hoteliers are very interested in protecting their beachfront. One hotelier in Antigua and Barbuda has looked at “…satellite pictures over the years and we have seen the changes” (hotelier in Antigua and Barbuda). We commonly found hotels that invested in hard defence structures such as boulders, groynes, backwalls/bracewalls, breakwalls/breakers, and seawalls to protect their beach and coastal properties. Storm drains were extensively used by properties in all islands to channel water from further inland into the sea.

Preparedness

Many hotels have an established safety programme stemming from prevention and preparation for the fire hazard which underpins the annual fire certification process in which hotels must secure a fire certificate in order to be eligible for the renewal of a hotel's operating license. It is not hard therefore to find hotels that have a fire marshal and staff that are trained in first aid and fire evacuation procedures.

Hoteliers engage in hazard management and disaster preparedness by having response plans, manuals and standard operating procedures. Any hotel that deals with international tour operators are obliged to have a hurricane manual and we found that plans, manuals and standard operating procedures for the hurricane hazard, as well as, the upgrading and updating of these are common.

Hotel chains that operate throughout the Caribbean are also likely to have common emergency procedures. At least one in Antigua and Barbuda works with the Red Cross in a partnership that enhances its disaster preparedness through training. Hotels replenish or augment their stock of dry goods and emergency supplies in time for the hurricane season that begins on June 1 annually. Other measures documented in the field include disaster planning, the formation of disaster teams, quarterly disaster team meetings, drills and exercises, generator checks, clearing of drains, trimming trees and vegetation, superstructure and infrastructure checks and general maintenance and repair.

Aside from individual hoteliers, regional industry organisations have also been doing their part. For example, the Caribbean Hotel and Tourism Association has developed a Hurricane Preparedness Manual that many hotels use. According to a regional tourism representative, the Manual is recognised to have some shortcomings – it needs an upgrade to widen its scope to integrate a multi-hazard approach that addresses all hazards. Other guides produced by industry include the publication entitled Disaster risk management for coastal tourism destinations responding to climate change –A practical guide for decision makers prepared by CHTA Caribbean Alliance for Sustainable Tourism (CAST). These manuals and publications are seen to go a long way in building awareness and encouraging preparation. Like other public and private sector representatives with an interest in the industry, the efforts of regional organisations are limited by access to funding.

Response

Private stakeholders value early warning. Where early warning is possible such as for example in the case of severe weather systems, hotels closely monitor the track of these events through media and other channels. They begin to implement procedures prescribed by hurricane manuals which usually documents steps that must be taken three to four days in advance of a storm until the storm has passed.

When a hurricane watch or warning is released, hotels "…try and secure our furniture on higher floors…" (hotelier in Antigua and Barbuda). Securing guests is also a critical task and this may include a range of actions from evacuation to the airport; to evacuation to a safer

location inland; and evacuation from beachfront rooms to safer rooms or other areas in the hotel. Hotels also install sandbags.

An interesting finding is that hotels partner amongst themselves to facilitate an efficient industry response. There are strategic partnership arrangements for evacuation between smaller properties located on the coast and larger ones. This is something that is actively encouraged by public sector representatives.

Recovery

One regional academic who conducted a small study with operators in the tourist hub of Speightstown, Barbados found that in terms of recovery, stakeholders have an adhoc approach of cleaning up as fast as possible and if the level of damage warrants, they apply for insurance claims.

We also found some hotels that have business continuity and contingency plans. Finally, tourism businesses also use a combination of government concessions, grants, soft loans and their own financial reserves to assist their recovery from disaster.

A.4.3 Public-Private Partnership Measures

Public-private sector cooperation mechanisms are pursued in normal times, as well as, in the aftermath of disaster. According to one regional tourism official, Hotel Associations in the region are very active in many destinations, bringing issues to the attention of the government in terms of what types of assistance the industry needs to prepare for disaster events. The Hotel Association in Barbados works together with the Ministry of Tourism in hosting an annual Multi-Hazard Symposium. Hurricanes, earthquakes and tsunamis have all been discussed. Furthermore, in the wake of Hurricane Ivan's disruption of tourism activity in the island of Grenada in September 2004, industry made recommendations for government adjustment of policies to deal more comprehensively with insurance.

Public-private partnerships related to the joint investment in the installation of expensive infrastructure is on the horizon in the Caribbean island of Barbados. A representative of the Barbados coastal management agency stated: "We're just getting into the public/private sector partnerships….There is one that is proposed right now in fact where the…there are five hotels on the West coast that have gotten together and they have been noting…taking note of the fact that their beach has been getting narrower and narrower as the years progress and so they approached Government stating that they would do some of the initial studies related to the shoreline stabilization programme and then Government would actually do the programme itself. That project is on-going right now and it should be completed within a couple of years".

A.4.4 Self-Regulation

We explored the issue of self-regulation with stakeholders. We found that there is evidence of self-regulation already in action in the Caribbean. For example, there are currently hotels that adhere to the voluntary environmental standards prescribed by global certification

programmes such Green Globe, LEED, and Blue Flag. Some hoteliers are proud of their environmentally friendly reputation: "…we take it very seriously. We are an environmentally friendly hotel in many ways. We hope to obtain Green Globe...by the end of this year...." (hotelier in Jamaica). The management team at that hotel has committed resources to support an external consultant to work with the hotel towards its certification goals. The hotelier explicitly made the connection between certification and environmental management - "… the whole focus of it being an environmental hotel is to protect your natural resources, your coastal and your beaches and so forth..." (hotelier in Jamaica).

Stakeholders' propensity to self-regulate in the area of environmental management is a positive sign. It may perhaps be the foundation on which to build a DRR focused voluntary programme that encourages industry stakeholders to reduce their risk over and above what is required by compliance with national regulation. In some sense, coastal operators are already doing this. Our field observations have led us to believe that there are many hotels (particularly larger, foreign owned establishments) that exceed the engineering standards outlined in the Building Codes of the territories within which they operate. For example, hotels routinely use advanced non-structural components such as hurricane 2-ply glass and UPVC windows – components that go a long way in reducing the impact of high wind loads but nonetheless are elements that Building Codes are nevertheless traditionally silent on (Gibbs, 2003). In addition, we encountered at least one coastal hotel that is part of a regional chain of hotels that according to the General Manager is built to the Florida Building Code and as a result can withstand a Category 5 hurricane.

For the moment however, examples of investment in measures that increase climate resilience seem to be few. We uncovered only one example of a property that was constructed taking into consideration the impact of future sea level rise. This property was newer and constructed in 2010.

We explored the issue of self-regulation further with stakeholders themselves. When asked about the possibility of using self-regulation such as industry-wide standards and codes of conduct as a way to encourage businesses to make their investments less prone to hazards and disasters, public sector stakeholders were unanimously cautious of the proposal. One regional representative noted - "While this would be ideal, history has shown that once people are given a choice, they will choose the easiest, cheapest option which may not be the best situation in the longer term. Self-regulation will have to be accompanied by government or other incentives and would need to be bolstered by a high level of public education to convince businesses that observing such standards or codes of conduct will be worth it".

Private sector stakeholder perception of the proposal of self-regulation of DRR on the other hand is mixed. Some are positive - "If this can be done, it will help a lot of businesses to prepare for physical hazards, and minimize the casualties and loses which are normally occurring" (hotelier in Trinidad and Tobago). Others are positive but noted the difficulties associated with the prospect. For example, one hotelier based in Antigua and Barbuda

welcomed the idea of having industry standards but rightly noted that small hotels may struggle to uphold the standard.

A.5 The Business Case

A.5.1 Costs

One hotelier in Trinidad and Tobago is of the view that "there are not any disadvantages in preparing for physical hazards…". However, for other stakeholders there is an issue with cost. A public official in Jamaica identified the following costs at the government, sectoral and business levels: the cost of retro-fitting; of training staff; of hiring additional staff and/or expertise; of conducting vulnerability studies and the cost of installation of mitigation measures to address any possible fallout from the identified physical hazard. For example, according to one Jamaican hotelier, the cost of beach replenishment is very high. To implement this DRR measure, there are costs associated with licensing, the importation of the sand from another island, as well as, expert labour to do the replenishment job. He also mentioned the cost of potential disruption if the hotel were to be closed while replenishing the beach.

In addition, lack of investment in DRR has its own costs. For example, one public official in Trinidad and Tobago acknowledged that there is usually a large "…price tag attached attached to the clean-up, as well as, any type of …mitigation measure that is put in place thereafter....". While the interviews yielded no mention of actual cases of hotel liability due to injury or casualty as a result of physical hazards or disasters, we did however note the fact that liability claims are routinely made by tourists that are disappointed by the environmental amenity of the beach. One hotel manager in Jamaica explained that many tour operators especially in Europe will offer tourists a specified sum in compensation: "…if the client comes back and complains versus something that is advertised in your brochure... they could get back their money. Some of them by law in the United Kingdom can get up to 10 times the value of their trip. So if they spent 1000 dollars and they come down and I didn't deliver the service and it's felt that the hotel has false advertisement as to what they offer, beach being one of them, and the tour operator was not notified that we no longer have a beach per say of that nature, they can then take 10,000 dollars and give it to that guest...is entitled to that by law in the United Kingdom. So these are factors that can hurt you and hurt your reputation and hurt you in the bottom line". For coastal hoteliers, the possibility of incurring liability and reputational costs with clients and tour operators is already very real. There is no reason why this could not be extended to hotel liability in the case of injury or casualty as a result of hotels not exercising their duty of care to reasonably protect tourists from the impacts of physical hazards and disasters.

One regional tourism representative expressed concern about the possibility of potential investors being dissuaded from investing in the Caribbean due to the perception of high disaster risk based on disaster reports coming out of the region. That stakeholder also thought that it was only a matter of time before insurance premiums are likely to increase to

prohibitive rates as insurance companies are increasingly called upon to help tourism operators to pick up the pieces after a disaster.

Finally, there are also very real financial and operational consequences for businesses that install ill-conceived DRR measures and for the Governments that approve them. A hotel executive with wide experience working throughout the region told the story of Grace Bay, Turks and Caicos Islands where multi-billion dollar tourism investment projects have been developed: "During some of those developments, they made some changes and they are creating like little miniature sandbanks....there was one development and that created a whole heap of problems for some reefs with the currents and all that sand being dumped...getting covered and so forth. We also had some people trying to put up some groynes to try and capture some beach which then.....funnily enough caused the currents to change which then started serious erosion almost in the direct centre of that beach..." According to this stakeholder, the Government was deemed liable "…so you know it cost the Government then. They had to bring down an agency…and ultimately try and repair because the person who lost the beach, had a multi-million dollar investment there and because of actions of other people which was approved by the Government, they lobbied hard against it...". Fixing the problem was costly for everyone involved: "…how they handled it is that you know, they got all these Government agencies to come down…Research found out where the sand had been deposited...They went back there and pumped it back out...tore down the other thing and so it's pretty good now but all of that cost millions of dollars in US...it actually cost the hotel alot of disgruntled guests. Did they win them back? It's hard to measure that. Did it cost them some stuff? Probably...you know but probably small in comparison to the repair bill that the Government had to foot...".

A.5.2 Benefits

A core objective of this study was to explore and evaluate the business case for investment in the resilience of the tourism sector of SIDS. Stakeholders were asked to identify the advantages of preparing for the physical hazards that affect them. Stakeholders identified several benefits to investing in DRR measures as follows:

- Protection of the economy (little disruption)
- Continuance of the way of life of the residents
- Peace of mind of residents (the absence of chaos)
- Reduced cost to the State to restore after the event
- Minimization of the loss of natural and built assets
- Faster economic recovery
- Reduced financial loss and potential for insurance costs to escalate dramatically
- Enhanced resilience of the tourism sector
- Reduced risk of casualties and fatalities
- Reduced risk of damages and losses to businesses, including replacement costs and downtime

- Improved public perception of safety
- Reduced loss of revenue due to closure of hotels, guest houses and other supporting infrastructure

We then asked stakeholders whether there was a business case for investment in DRR. Most stakeholders thought that there was one although one hotelier was not sure of how to respond to this question. Stakeholders were then asked to articulate exactly what the business case is. However, it is clear from their responses that some were not able to strongly articulate what this case may be. Where cases were offered, they were almost always qualitative in nature and few stakeholders mentioned any economic figures or statistics related to the benefits or costs.

Given the above, the fact that there have been systematic attempts to quantify disaster loss and damage at the national level is therefore encouraging. For example, for the last 10 years, as one tourism official in Jamaica explained "…the tourism sector has been included in the UNECLAC/Planning Institute of Jamaica Damage Assessment and socio-economic and environmental damage assessment….". It represents a starting point in quantifying the business case for DRR. However, there is a need to bring this type of assessment down to the level of tourism businesses.

Appendix B – The Pacific Region

B.1 Overview

The Pacific islands of Fiji, Samoa and Tonga are all dependent on tourism to varying degrees. According to the World Travel and Tourism Council, travel and tourism was expected to post a total contribution of 35.4% to Fiji's economy, represent 44.6 % of total visitor exports, generate 104,500 jobs (31.9% of total employment) and account for 21.6 % of total investment in 2011. In Tonga, travel and tourism was projected to post a total contribution of 13.2% to GDP, represent 49.1 % of total visitor exports, generate 12.2% of total employment and account for 8.9 % of total investment in the same year.

As a group, the Pacific island countries (PICS) are affected variably by a range of physical hazards including cyclones, coastal erosion, storm surge, coastal flooding, drought, earthquakes, landslips, tsunamis, and sea level rise. According to SOPAC, PICS have reported 207 disaster events, affecting almost 3.5 million people and costing in excess of US$6.5 billion since the 1950s (Pacific Islands Applied Geoscience Commission (SOPAC), 2009).

The Pacific Islands have recognised that better integration of CCA and DRR provides substantial synergies. However, integration at this point is hampered by a number of challenges, amongst others the different frameworks the two issues are based on and resulting institutional arrangements. SPREP, with its base in Apia, Samoa, generally has the mandate for CCA initiatives. As such, it leads the Pacific Islands Climate Change Roundtable (PICCR) and works closely with the Ministries of Environment in its member countries. The Secretariat for the Pacific Community (SPC) in Noumea, New Caledonia, now houses SOPAC and is largely response for dealing with physical hazards and DRR. Most of SOPAC staff are based in Suva, Fiji. SOPAC leads the Pacific Disaster Risk Management Partnership Network and liaises with Disaster Management Offices. In addition, the Suva-based "Development Partners for Climate Change (DPCC) is a network of aid agencies that seek to cooperate on climate change related projects. Tonga is a good example of a country that has integrated DRR and CCA into one strategy.

Regional challenges in the South Pacific include:

- Travelling around the Pacific is time consuming and expensive
- Access to projects and support often difficult
- Insufficiently resourced countries with lacking capacity to administer projects
- Lack of integration between DRR and CCA (as outlined above)

B.2 Fiji

B.2.1 Introduction

Tourism became a major economic activity in Fiji during the 1960s (Narayan, 2000). Since that time, there has been much growth in the industry and today Fiji is ranked as 13th on the list of economies in which travel and tourism contributes most to GDP (WTTC, 2012b).

Fiji is exposed to a range of geo-physical and hydro-meteorological hazards due to its location in the Pacific 'ring of fire', as well as, the tropical cyclone belt. Narayan (2000) estimates that since 1950, Fiji has experienced many hazard events, the majority of which were as a result of tropical cyclones followed by earthquakes, floods, droughts and tsunamis. The Fiji floods of 2009 and 2012 demonstrated the potential of physical hazards to negatively affect the tourism sector.

The following analysis is based on fieldwork carried out with thirteen (13) public and private sector stakeholders involved at different levels of the mainstreaming of DRR into the tourism development agenda in Fiji.

B.2.2 Hazards Discussed in the Interviews

An assessment of all responses revealed that for Fiji, cyclones and associated storm surge were thought to be the two hazards that were most likely to affect stakeholders. Fijian operators unanimously think that severe weather systems present the greatest threat to their business: "…when you talk Fiji, you talk hazards and engineering…normally 90% of the time, we're talking…cyclones…".

B.2.3 Vulnerability

High Dependence on Tourism

Public and private sector stakeholders concur that tourism is very important to individual island states, as well as, to the region. Referring to its fast rate of growth, one tourism stakeholder described the tourism industry as a 'sun rise' industry that is: "…a big employer… it brings in foreign resources….". Such a major industry is supported by large-scale investments. One hotel association executive disclosed that: " …. there are massive amounts invested in hotels. Any reasonable hotel with 100 bedrooms would probably cost you … minimum 50 to 80 million dollars Fijian…" .

High Tourist Demand for a Coastal Product

High tourist demand for a coastal experience is reflected by the standard tourism product of bures by the beach, as well as, hotels within 30m of the high water mark.

Weak Enforcement of Regulatory Standards

Stakeholders in Fiji noted that while regulatory standards are high with the nation subscribing to building code standards derived from New Zealand and Australia, the enforcement of these standards is not widespread. As a result, as noted by one risk evaluator with a long history in the region, building code standards are often not met: "…the Fiji building code, which dictates the standards of various structures. Yes, that code does require certain standards to be met…But I know of several resorts where those standards have not been met, they simply have not…". There are capacity problems associated with weak enforcement. According to this stakeholder, the engineer who takes care of the largest city council in the country (Suva) is himself not accredited at a professional standard, only holding graduate membership and not professional membership from the local professional society of engineers. The stakeholder is of the opinion that this is a reflection of a regulatory environment that is poor and has no 'teeth'.

Single Hazard Approach

The narrow focus on cyclones in Fiji is also a concern. A risk manager commented that although the resorts are very aware of cyclone risks, they are not so aware of tsunami risk. In fact, "…the perception of tsunami risk is very low…". Moreover, certification is only required for the cyclone hazard.

Construction Standards

Although there have not been major failures of structures, vulnerability of the built tourism environment in Fiji to physical damage arises out of material selection and design. For example, one engineer made the connections between the competing need for the built environment to be culturally Fijian in appearance, the use of particular materials such as timber shingles to achieve culturally and market driven aesthetical goals and the resulting sub-standard quality of the physical resilience of accommodation buildings: "Timber singles in my opinion while they look good… but you're just asking for trouble when the next cyclone comes along…".

Use of Offshore Insurers and Financiers

In Fiji, the use of offshore insurers and financiers to avoid large capital outlays demonstrates a situation in which it is the wider international economic context that is a source of large-scale structural vulnerability at the destination/national level. In talking about the high cost of retrofits that may be required as a result of the certification process, one engineer that works with the industry acknowledged that, "…very often what resorts do to actually work around it is they decide to turn their backs on the local insurance companies' requirements ….the offshore insurance companies tend not to require the local engineers to sign off that certain standards are actually met. So, they [hotels] would prefer to pay higher premiums each year so as to avoid the capital expenditures involved in upgrading to meet the local

insurance company standards…". Another stakeholder continues: "I understand that there are number of resorts in Fiji who have done that. They are currently insured offshore…" .

Lack of Resources to Address DRR

A lack of resources is thought by one tourism association executive to be a barrier to investment in DRR. This is reflected in the difference in capacity between large and small operators. For instance, when evaluating the response to the 2012 floods, a public sector representative believes that, "Most of the large organisations were very well prepared…". As a risk evaluator who works in the region explains, "Larger organisations can pay for the services of a risk manager that conducts a risk audit and gives individual advice. The majority of the smaller ones, they probably wouldn't be big enough for an insurance broking firm to afford to send me out there… they would not get the individual advice. They would have to go to the tourism association conventions to…be exposed to that type of advice". Although the smaller operators want to participate in training and the Association has been doing its part in providing that training, smaller operators still are not always able to benefit due to limited capacity – "… the symposiums we have… people would attend subject to cost and time. We often have a lot of our training. People want to attend but they just can't. They don't have enough staff or they have got other things …especially the smaller properties. Some of our smaller properties are the ones that maybe need more assistance…". This was reflected when the floods hit –"… last time, we lost quite alot of power. We lost telecommunications and these things. So you know, depending where you were staying….if you are in larger resorts with large generator and plenty of diesel, you know …they basically have the electricity flowing with limited services. Smaller places basically did not have any. So really, this, I think depends upon the size of organisation how seriously they have disaster preparation plan…".

Disaster Response Issues Related to the Nature of the Business

The industry also has unique response capacity issues that are directly related to the nature of the business. In talking about challenges related to the 2012 floods, a tourism executive noted that a challenge was the low level of staff to perform all the necessary duties associated with disaster response especially on the 'graveyard' shifts. Lack of threshold staff levels will have implications for staff and tourists in times of disaster.

B.2.4 Measures

Public Sector Measures

Prevention/Mitigation

The Department of Town and Country Planning, Fiji defines the coastal zone as "any area within 30 metres of the mean high water mark and seaward up to the fringing reef or a similar reasonable distance". Development in the coastal zone above the high water mark is subject to town planning requirements and a 30 m setback distance is applied. Development seaward of the high water mark requires a foreshore lease or wet lease subject to regulation

by the Department of Lands. All coastal development requires an Environmental Impact Assessment (Fiji Department of Town and Country Planning, 2012).

The Ministry of Works, Transport and Public Utilities applies the Fiji National Building Code. Several regulatory Acts also exist - the Architects Act, Engineers Act, and the Town Planning Act. There is also a proposed Building Act that would cover the entire building industry Fiji (Fiji Ministry of Information, 2012). A disaster management official confirmed that although Fiji is still working on its own building code, the standard currently used is adopted from New Zealand. Most of the buildings are built to a standard where they can withstand cyclones, as well as, earthquakes.

The national disaster management agency also works with the land information system, as well as, with land commissioners to identify suitable land areas that are not hazard prone for the further development of tourism.

In addition to regulations, the public sector has also used incentives to influence behaviour. An industry representative confirms that the Fijian government has been very supportive in offering 'massive incentives' allowing hoteliers the ability to import equipment duty free or at low rates. For the bigger properties, this can be a significant saving in the range of "a couple of million dollars".

Preparedness

The national disaster management agency representative said that the organisation works closely with hotels to ensure that they have multi-hazard disaster management and contingency plans. Evacuation planning is also done. The estimate given was that about 90 percent of hotels have plans.

Some resorts are also benefitting from an introductory disaster management course facilitated by SOPAC through the national disaster management agency. This was in response to an industry request for special training. Stakeholders participate in exercises where they asses their risks and disaster drills were conducted in 2010.

One regional tourism stakeholder spoke of the role of accurate weather charts and weather warning systems in the Pacific. The region now follows common hurricane alerts and pre-disaster warnings and alerts are disseminated through radio. Assistance from Australia and New Zealand to enhance existing warning systems with satellite technology and computer models that supply technical hazard information was also mentioned.

Response

Tourism Fiji has developed a crisis section to the organisation's website that is dormant during times of normalcy but is activated and loaded onto the website's front page during a crisis. The website gives real time information and status updates on the tourism industry's response to a crisis or disaster event and is key in managing crisis communications for the destination.

In the 2012 floods, a national tourism disaster coordination committee was established for the first time. According to one stakeholder, the experience was a positive one. Public and private industry stakeholders were able to work in partnership with all the utilities, militaries, para militaries, response units and police for the first time to coordinate disaster response. There was marked improvement in disaster response as a result.

Recovery

A senior disaster management representative reported that for the western division of Nadi, there was a separate water main for the tourist destination that serves only the resorts in normal times and has priority restoration rights in times of disaster. Hotels also receive special consideration and priority in terms of disaster recovery with regards to electricity restoration (they have dedicated power lines). The industry is viewed as relatively independent when compared to other sectors.

Private Sector Measures

Prevention/Mitigation

As a result of the weak enforcement of regulatory standards, an alliance has been established between the Fiji Institute of Engineers and the Insurance Council of Fiji for a third party certification programme that has in turn been further institutionalised with links to financial institutions. Specifically, the Insurance Council of Fiji has vetted a panel of engineers (full professional members of the Institute) that they deem to be capable to certify structures. If an owner of a building wishes to secure cyclone insurance for a building, their first requirement is to engage an engineer who is on the panel of approved engineers; complete the certification process and then take the certificate to the insurance company that he or she would like to get the insurance from. Insurance brokers and banks work together to apply pressure to protect their investment in tourism assets.

It should be noted that in Fiji, certification is only required for the cyclone hazard. Other hazards (earthquake, fire etc) are in fact handled through the regulatory completion certificate process awarded by the relevant approving authority such as the Suva City Council.

According to a national industry representative, hard defense structures such as sea walls, groynes, and off-shore break waters have been installed on the Coral coast. One dive operation has engaged in replanting mangroves. On-going environmental programmes are also run by the island's industry association.

There does not seem to be cyclone guarantees given by Fiji operators. Usual industry practice is instead to tell tourists to delay their vacation.

The industry is clearly learning from experience. We found an instance of at least one hotel development where the ground floor has been sacrificed to reduce its vulnerability to coastal inundation. The decision to transform came only after many unsuccessful attempts to use hard defence structures to protect the bures. This trend may become more common

in the future as more facilities deal with coastal inundation due to storm surge and/or sea level rise.

Another example of learning comes from the management team of a regional hotel chain that deliberately implemented a retreat strategy from the coast after having experienced impact from the 2009 Samoan tsunami. Ninety-five percent of the accommodation was rebuilt on higher ground instead of on the beach front.

Preparedness

Resorts in Fiji are scattered over a large geographic area with several resorts being located on remote out-islands. The special need of operators to evacuate with a long lead time has led the industry to formally pay for a forecast service that caters to their needs. The Hotel and Tourism Association for example, subscribes to a paid weather forecast service that details weather conditions for the next 72 hours. Severe weather, storm surge and tsunami alerts also come directly to industry managers and they in turn disseminate these alerts to their members.

One stakeholder noted that resorts are learning from experience and this is prompting them to invest more seriously in their preparedness. They are upgrading cyclone plans, communication plans, and response plans.

Response

Hoteliers also implement measures to protect themselves. One hotelier who has rooms and a popular restaurant that are quite close to the sea explained that when there is a warning of an incoming high tide or sea surge situation, the hotel now systematically closes the restaurant and moves all moveable equipment and furniture back to the main building in storage. The hotel has suffered previous damage in which at least one case, the replacement costs for furniture and equipment was approximately F$75,000. The hotelier stated that the insurance does not always cover the cost of loss due to operating a recurrently risky business model. They have also undertaken structural improvements to mitigate the impacts of inundation. For this hotelier, guests are as important as assets and measures are taken to ensure their safety. For example, guests are warned of extreme tide situations, asked not to go to the beach and there are security patrols on the beach to ensure that guests keep a safe distance away from the water.

Industry stakeholders work individually at the level of every property, as well as, together to respond in times of disaster. For example, the industry works together to usher guests to safe areas within the country or alternatively out of the country before and immediately after a disaster. In responding to the 2012 Fiji floods, one tourism executive noted, “We had our own individual responses and we try to work together. There was some coordination in movement of people...”.

Recovery

Stakeholders rebuild after disaster as best as they can and use private reserves or insurance to assist them in that process.

Public-Private Measures

One stakeholder noted the importance of other actors in the mainstreaming of DRR into the national agenda: "I think that is a national issue that the whole country is working together to make improvement in all directions to prevent or eliminate or to reduce a chance of disaster. This is because you can't do anything on your own. There must be joint efforts to make things happen...". Stakeholders think that both the private and public sectors play a role in contributing to DRR. The public sector plays its part by investing in national level protection and mitigation measures "…that will solve issues like flooding in Nadi.." and the private sector plays a role in protecting their own properties.

Concrete examples of the public and private sectors working together include: regional organisations such as the SPTO assisting Member Countries to prepare for disasters particularly through dialogue and collective action. An interesting point that was made by one regional stakeholder is that often private sector representatives are not the helpless ones and that the sector, in fact, has technical expertise on which the public sector relies: "the public sector also relies heavily on the goods and services provided by the private sector in many functions such as public information, the removal of debris, emergency medical care…" It is within this context that the contribution of the private sector in mitigation, preparedness, response and recovery activities has been underestimated.

B.2.5 Self-Regulation

We explored the issue of self-regulation further with Fiji stakeholders and noted a range of viewpoints. For example, one industry representative noted that engaging in best practice is a form of self-regulation. According to this stakeholder, although the industry does not have a code of practice yet being considered, industry stakeholders discuss and implement best practice constantly and there is an expectation of behaviour which is reflected for instance in the fact that hotels operate within national regulations. Considered like this, self-regulation is something that the industry is already doing.

When asked, one hotelier thought that at the moment, they were self-regulating more than being regulated by the Government. One reason for this was the fact that the hotel was located in a rural area and although the hotel did partner with the national authorities to prepare for physical hazards "…mostly … we have our own system… We look after ourselves since we are in the rural area…" Another reason given was the duty of care that this operator felt towards looking after the best interest of their business and guests. Other stakeholders thought that self-regulation is potentially difficult in a competitive business environment. Specifically, there is a concern about free-riders who would enjoy the benefits of the effort of others. At least one stakeholder thought that self-regulation may be difficult, if not impossible, in an industry with diverse capacities and business orientations: "In the tourism industry, I think the situation is very, very diverse. You will have very small resorts, you will have large resorts. You have those that would embrace this particular concept, and you would have those who would not. And, my guess would be that then you look at the

combination of all these particular variables, I would expect that self-regulation may not be overall accepted….self-regulation would not be successful because of the combinations of variations ….of the tourism industry…it's unlikely to work…"

Interestingly, both public and private sector stakeholder perceptions of the proposal of self-regulation of DRR in Fiji are generally negative. They either think that it is already being done and is a non-issue or that the prospect of self-regulation replacing conventional government regulation will not work.

One stakeholder offered an alternative approach in which implementing "basic procedures" for DRR would become a mandatory condition of the annual licence renewal process.

B.2.6 The Business Case

Stakeholder responses to our question regarding the nature of the business case for investment in DRR were mainly qualitative in nature with a range of arguments being presented. One public sector official saw investing in DRR as akin to paying insurance - it is a cost of doing business. Stakeholders are also keen to have their facilities perceived as safe and believe that this is a vital angle of the business case. This is in the context of managing the destination image in the wake of the 2012 Fiji floods. This proved to be an immense challenge and confirmed to stakeholders that the reputational costs of disaster are a reality and can hurt the bottom line. One hotelier noted that there is also a case to be made on the basis of the value of staff and tourist life. This hotelier has made a significant investment in a siren system at a property in Samoa. According to this stakeholder, although it is expensive, it is worth it because it will save a lot of lives.

There were some stakeholders that were able to articulate the case in basic quantitative terms. For example, not only has massive amounts been invested in hotels, the economic cost of having a bure offline for a week, a month, three months according to one stakeholder is much more than that of the cost of mitigation. Stakeholder responses made clear that there is a need to quantify the business case in an effort to strengthen it. Stakeholders made suggestions of the various angles from which the case can be quantified. One hotelier, for example, talked about the fact that there is no fixed term on the return on investment (ROI) in disaster mitigation. According to an engineer that works with the industry, showing hoteliers that they can actually save by investing in DRR, is the way to sell it to them. Another stakeholder thought that making the case that disaster resistant facilities can be used as a marketing tool to secure a niche market that connects operators to a downstream return would work. In addition, a tourism executive noted that there is a case to be made not just in the interest of individual businesses but also in the interest of the national economy. It's in the national interest for example, to ensure that a multi-million dollar hotel (as much as 50 million dollars in the example given) that has benefitted from as much as a 28% tax incentive for seven years is not destroyed by disaster or carries forward losses because of it.

B.3 Samoa

B.3.1 Introduction

Tourism in Samoa is an essential part of the national economy. It contributes about 30% to GDP and it constitutes an important source of income for local communities, especially through the concept of beach fales (hut). Fales are typically run by local villages and offer budget accommodation directly on the beach (UNDP, 2012a). There are about 120 tourist accommodation businesses, of which about 90 are organised under the umbrella of the Samoa Hotel Association. The Samoa Tourism Authority is the lead agency for tourism at the Government level.

Tourism's high vulnerability to disasters was evident in 2009 when a tsunami hit the southern coast of Upolu (the main island). The coastline is a popular tourist destination with 59 operators providing beach accommodation. Over 500 families were impacted by the tsunami. The tsunami resulted in an increased effort to address both risk reduction and CCA in Samoa. Climate change projections indicate that by 2050, sea level will increase by 36 cm. In addition, it is predicted that average annual rainfall will increase by 1.2%, extreme wind gusts by 7%, and temperature by 0.7 degrees Celsius (see UNDP, 2012a). While there is a high degree of uncertainty, it is likely that El Nino southern Oscillation (ENSO) related droughts will increase, as well as, the severity of major cyclones may increase. Both will result in higher damage costs and economic impacts.

A number of initiatives or projects that are relevant to DRR are already happening in Samoa:

- Samoa Tourism Development Plan (STDP) which fully identifies climate change as a risk;
- The Victoria University – AusAid project entitled "Pacific Tourism Climate Adaptation" (involves 10 Pacific Island Countries of which Samoa is one case study);
- The NZAid funded project entitled "Tsunami Early Recovery" and the Tsunami Tourism Industry Project (TTIP);
- The "Enhancing resilience of coastal communities of Samoa to climate change and disaster risk" Project, led by the Ministry of Natural Resources and Environment and supported by UNDP;
- The World Bank Pilot Programme on Climate Resilience (PPCR); and
- The EU programme on capacity building for Sustainable Tourism.

UNDP (2012a) identified several important barriers for Samoa that reduce its capacity to increase resilience and adapt to climate change:

- Institutional - the Samoa Tourism Authority, whilst aware of the risks for tourism, has limited capacity;
- Policy - The need to factor climate change into tourism planning has been articulated but specific policy recommendations are still lacking, for example in relation to the

Tourism Development Areas defined in the Samoa Tourism Development Plan (STDP);

- Financial - the additional cost in preparing for disasters and adapting to climate change is often not budgeted for, or financial resources are simply not available;
- Technological - there is still limited knowledge about locally tested measures that reduce risk, for example to beach erosion; and
- Informational: there is lack of tourism-tailored information, for example from the Samoa Meteorological Division.

The above hazards, vulnerabilities and barriers to implementation of measures were evident in the interviews.

B.3.2 Hazards Discussed in the Interviews

Due to the recent tsunami in 2009, the key hazards discussed in the interviews related to earthquakes and tsunamis. However, one interviewee also discussed climate change as a challenge, because climate change risks affect coastal communities and tourism. The expert argued that tourism depends on the functioning of all the other systems (e.g. infrastructure, telecommunication) and as such, is a microcosm of environmental factors and impacts on human systems. Table B.1 summarises the hazards and potential (or experienced) impacts that were discussed by interviewees.

Table B.1: Hazards and Associated Impacts Identified in the Samoan Stakeholder Interviews

Hazard	Impact
Tsunami	Loss of life. Substantial damage to affected properties and coastal areas. Challenge with insurance pay-outs and economic impact as a result of lost assets and reduced tourist demand.
Cyclones	Damage to infrastructure and tourist resorts.
Flooding	Damage to infrastructure and tourist resorts. Pollution of water due to run-off.
Drought	Water shortages and high costs for transporting water to resorts. Competition over water resources and difficulties to offer high-end products.

B.3.3 Vulnerability

Several factors contribute to the vulnerability of tourism to disasters in Samoa, although considerable effort seems to have been undertaken since the 2009 tsunami to reduce this vulnerability. However, despite plans to implement warning systems, for example, these still appear to be incomplete. Warning sirens have still not been put up in exposed beach areas of Southern Upolu. Also, the interviews indicated that a warning would not necessarily be received by every tourism operator, because there is no universal list of phone numbers or contact details. One operator noted that his reliance on the radio is problematic because most radio stations are in Samoan (which he does not speak); so unless a warning was transmitted in English, he would not understand it. It was also reported that there are no

official evacuation centres in Samoa, although the churches are believed to fulfil this function. The Disaster Management Office (DMO) attempts to communicate evacuation pathways and assembly areas.

As in many other SIDS, the lack of enforcement of legislation is a challenge. However, most interviewees noted that this situation has improved considerably since the tsunami. The DMO, in particular was repeatedly praised for their efforts in risk communication and disaster reduction. However, it was also noted that the DMO only employs three staff who are overburdened with work and have 'limited time' for tourism. The information on whether tourism operators are actually interested in DRR or not, was conflicting. Most interviewees stated that they definitely were because the 2009 tsunami was a "wake up call", but others indicated that they had to "convince" operators and turn out at workshops was low. Some operators might not "see the point" (Government expert) or are simply financially too stretched to consider any measures that do not immediately benefit the financial bottom line. For the same reason, many smaller operators (especially the beach fale operators) do not have insurance. High staff turnover was another problem for raising awareness and implementing DRR "you look for the person that attended the training and can't find them" said one industry stakeholder).

While a number of foreign aid projects dealt with the issue of resilience, they typically finance knowledge development or capacity building, but they rarely provide funds for the implementation. For example, access to grants that pay for building materials are very difficult to obtain. For this reason, much needed measures such as the improvement of drainage or the storage of water are not put in place. The beach fales are relatively easy to build and were identified as being quite resilient. However, in more recent times, the traditional coconut leave shutters have been replaced by plastic and the roofs are made of tin, which led to a number of injuries (as severe as amputations) when the tsunami wave destroyed fales and transported debris inland.

A key vulnerability lies in the fact that most tourist accommodation is positioned right on the beach. The coastal road in Samoa typically has the communities and the church on its inland side and the tourist operators on the sea-ward side. Examples were provided where the managers would have their house inland but operate the accommodation close to the shoreline. When discussing the possibility of moving accommodation inland as well, one industry stakeholder noted that "no one would really want to go there [inland]…". One expert suggested that Samoa was too reliant on beach tourism and that product diversification would reduce vulnerability. He provided examples of 'rainy day' activities such as weaving mats or taking traditional dancing classes. Tourists were not believed to consider safety aspects in their accommodation choice, but they did show interest in the 2009 Samoa tsunami. It was noted though that this was not because of fear or risk awareness, but more a general interest in a disaster.

Finally, to address some of the risks, protective sea walls are popular and there is considerable pressure to build sea walls, for example, not only from the communities but

also from tourist resorts. The Coastal Infrastructure Management Plans identified sea walls as least desirable options and recommended 'softer' structures, but the plans did not implement these recommendations. The northern coast of Samoa, for example, is "all mostly been cemented up" (NGO/organisation). Often, seawalls are not built to high standards as the quality is not controlled. Alternatives are currently being explored in a UNDP programme. For example, the option of bio-textile bags that are filled with sand and dug up as a protective layer underneath the beach could be an alternative.

B.3.4 Measures

The Samoa Tourism Authority released its Climate Change and Tourism Strategy in August 2012. To ensure wide uptake, it is also translated into Samoan. Risk reduction and resilience are key elements of the strategy and an AusAid financed project has begun to implement the strategy. Measures to address disaster risk – especially in relation to the 2009 tsunami – are summarised in Table B.2.

Table B.2: DRR Measures Implemented by the Public or Private Sector in Samoa

PPRR phase	Public sector measures	Private sector measures	Public-private sector measures
Pre-vention	Annual monitoring visits to businesses, e.g. for compliance with fire safety standards, health regulations etc.	Strengthening of building structures, renewed insurance policy , staff training, always prepared	Samoa Accommodation Standards require evacuation plans (and display them visibly) and business plans that abide by the Planning and Urban Management Act.
Pre-paredness	Disaster training; development of warning system; awareness programmes before the cyclone season	Escape plans and evacuation routes; information for guests at check-in; radio and satellite phones (mobile phones on 24/7)	Onsite (i.e. resort) training workshops to make it easier for operators to participate
Response	Surf lifesaving training; foster the Volunteer Emergency Response Team; provision of water tanks during the recent drought (filled with water from trucks) and usable for future water storage (also funded fittings)	Evacuate guests to safe ground; if necessary find different accommodation for them; move items to higher rooms	
Recovery from the tsunami	TTIP for grants (46 applications and assistance); government grant for fales	Marketing after disaster, low interest loans with help from New Zealand	Marketing support from NZAid

B.3.5 The Business Case

Clearly, Samoa is vulnerable to a number of geophysical and meteorological disasters. Several arguments were put forward that support a business case for DRR. These included the financial benefits of preparedness which results in much lower rebuild costs after the disaster. One government official noted that businesses have already so much invested that it makes sense to protect it, "otherwise they lose everything". Better private sector preparedness also means that the burden on the public sector is lower after a disaster as they have to put together fewer relief programmes. A quick recovery and "bouncing back" is also desirable from a broader destination (and national economy) point of view. Industry investment in a sense of self-regulation was also seen as beneficial as industry participants know their businesses better and proactive measures are therefore more effective than government imposed ones. One expert also mentioned higher customer satisfaction as a result of better preparedness.

The prohibiting factors of costs associated with DRR were mentioned, as well as, lack of specific knowledge and staff resources. In particular, the high turnover of staff at resorts was noted as a problem in improving disaster preparedness. Generally, it was believed that the larger businesses were in a better position to invest into DRR. This includes investment in mechanisms of risk transfer such as insurance. The business case for securing insurance was weakened by the fact that the small fale operators who did not have insurance were particularly supported after the tsunami. This raised questions about fairness and disadvantaging those "who do the right thing and paid their premium for years" (industry representative). While much needed, this highlights an important general point of balancing private sector initiatives (and responsibilities) with government assistance in difficult times.

B.4 Tonga

B.4.1 Introduction

The Kingdom of Tonga comprises groups of 172 small islands (36 inhabited) comprising a land area of 747 km2 spread over 720,000 km2 in the South Pacific (Jayavanth et al. 2009). They are mainly of coral origin, but with some volcanic, sitting on the Pacific "Ring of Fire". The main groups are: Tongatapu, Ha'apai, Vava'u, 'Eua and the Niuas. The population of 110,000 is less than the number of Tongalese who live overseas and the nation is dependent on the remittances they send home and on overseas aid. The remainder of the economy is based on agriculture and fishing. Tourism, however, also plays a significant role in the economy. Forty to fifty thousand international tourists visit Tonga every year and tourism receipts reached T$60 million in 2011 and, although it accounts for only 8% of Tonga's GDP3, tourism provides about 40% of Tonga's total export receipts and is one of Tonga's main

[3] Calculated on nominal GDP of T$706.7 million (2010/2011) and tourism receipts of T$60 million (as at January 2011) as reported in the Tonga Government's 2011-2012 Budget Statement (table 2, p;7 and p.26 respectively).

sources of foreign exchange earnings (Tonga Government Budgetary Statement 2011-2012, p.26). The World Tourism Organisation records Tonga's international tourism receipts as fluctuating between US$5.9million and US$19.5million during the 2000s, but generally above US$10million.

Tourism has been targeted as a potential growth area and it has attracted significant aid support4. Tonga is targeting high value tourism to the outer islands, but has also invested in a new wharf at Nuku'alofa (on Tongatapu) primarily for cruise ships. The islands have popular anchorage for yachts travelling Pacific routes and whale watching has become a major tourism attraction. The resorts, however, tend to be focussed on 'sun, sea and sand'.

The islands sit near a major subduction zone (the Tonga Trench) which is the origin of significant seismic activity and the September 2009 tsunami generated by at least one, possibly two, magnitude 8 earthquakes (Beavan et al. 2010, Lay et al. 2010, Satake 2010). The maximum flow height of the three tsunami waves that struck the Niua Islands immediately afterward was 16.9m and penetrated 1km inland (The World Bank n.d.) destroying houses and infrastructure, and killing nine people. Subsequently land-swaps were arranged to enable those who wished, to be relocated in new houses built further inland (10m at least above sea level), but many refused and still remain in coastal locations (Connell 2012). Although this is the most significant disaster in recent times, few actually left the Niuas. This contrasts with the situation following volcanic eruptions on Niuafo'ou in 1946 which triggered significant out-migration and associated social problems when 1300 Niuafo'ouans moved to Nuku'alofa for resettlement, many subsequently to 'Eua (Rogers 1981).

Tropical cyclones, storm surge and flooding, tornados, earthquakes, tsunamis, volcanic eruptions, and drought have all been identified as significant hazards (Jayanvanth et al 2009). Tropical cyclones are the most frequent of the significant hazards, with 1982's Isaac causing 6 deaths and T$18.1million damage (Jayavanth et al., 1989). More recently (February 2010), TC Rene caused over T$20million in damage and lost agricultural production and T$100,000 damage to the Oholei Resort and T$30,000 to the Kolo Tonga, as well as, the loss of several weeks revenue.

The Kingdom remains a constitutional monarchy although its first democratic elections were held in 2010. Governance of the Kingdom of Tonga has also faced some significant political turmoil with riots, looting and burning of Nuku'alofa in 2006, but seemingly little damage to the tourism trade (Manning 2012). The destruction wrought by riots and the tsunami has led to considerable international aid and loans to the construction sector especially from China, Japan, Australia, the World Bank and the Asian Development Bank. One of the Government's eight 2011/2012 budgetary objectives is: "Cultural awareness, environmental

[4] For example, the New Zealand Government's NZAid programme has committed NZ$4.5million to a three year Tonga Tourism Support Programme.

sustainability, disaster risk management and CCA, [are] integrated into all planning and implementation of programmes, by establishing and adhering to appropriate procedures and consultation mechanisms".

The Environmental Impact Assessment Act 2003 requires environmental impact statements for any major project. Major projects defined in the Act's schedule include:

> "…tourism or recreational resorts, buildings or facilities, involving a total building floor area of greater than 1,000 square metres or a potential total overnight accommodation level (visitors and staff combined) in excess of 20 persons".

In determining an assessment, the Minister for the Environment must consider whether the project will "result in the occurrence, or increase the chances of occurrence, of physical hazards such as soil erosion, flooding, tidal inundation, or hazardous substances". Such a process should reduce the vulnerability of new resorts that exceed the definitional thresholds.

The Emergency Management Act 2007 established a National Emergency Management Office and regional and district emergency committees, and set in place a system of emergency management planning. 'Emergency management' is defined in the Act as "managing the potential adverse effects of an event, including mitigating community risk, preparing for and responding to threatening events and recovering from an emergency". An event is:

> (a) a cyclone, earthquake, storm, storm surge, tornado, tsunami, volcanic eruption or other natural happening;
> (b) an explosion or fire, a chemical, fuel or oil spill, or a gas leak;
> (c) an infestation, plague or epidemic;
> (d) a failure of an essential service or infrastructure;
> (e) a terrorist attack against the Kingdom; or
> (f) any other event similar to an event referred to in paragraphs (a) to (e).

However, it is notable that National Disaster Management Plans have been in place since 1987, pre-dating the Act, and Jayavanth et al. 2009 (p.39) conclude that there is high-level political commitment to DRR, but that the challenge remains "to mainstream DRR into the operational plans of all sectors".

In summary, the Government has mechanisms in place for addressing disaster at all phases and has high level commitment, but the country lies in a very seismically active area and a high risk area for tropical cyclones. Tourism is a key, vulnerable export earner.

B.4.2 Field Data Sources

The analysis presented below draws on 8 face-to-face interviews, using a semi-structured questionnaire, conducted in three days in August 2012 on Tongatapu and Vava'u Islands. These are complemented by one emailed response to the interview schedule. A site visit to

Pangaimotu Island and two resorts on Vava'u were also undertaken at the suggestion of interviewees and informants. Although most interviewees were not concerned about being anonymous, Tonga is a relatively small country and to ensure the anonymity of those who did not wish to be identifiable, no further descriptions of interviewees are provided.

All but one of the face-to-face interviewees consented to their interviews being audio-recorded. In two private sector interviews, two people were present and contributed, but these were treated as enterprise interviews (i.e, the two people were from the same business and so were treated as if just one person was answering). The emailed response is treated as an interview. The one tourism industry representative is also a resort owner and the interview drew on their personal experience in both roles. Tourism business interviewees had varying times as resort/business owners/managers, but almost all private sector interviewees had at least 5 years experience in tourism in Tonga. Some interviews were with operations managers, others with the CEO/owner.

The public sector had undergone a major restructuring shortly before the interviews and the two public sector interviewees differed significantly in their experience with tourism. The interviewees and emailed response included:

- 2 government officials; and
- 7 tourism industry representatives/ managers/owners.

B.4.3 Hazards Discussed in the Interviews

The interviewees identified a range of physical hazards. Because of the 2009 Samoa tsunami and its devastating impacts on Niuatoputapu, most respondents mentioned tsunamis as an important hazard, but not necessarily in their top two (most also mentioned earthquakes). The greatest concerns related to cyclones/severe storms and the related damage to facilities caused by high wind, waves and storm surge flooding. Drought was also a concern in relation to Vava'u, but not Tongatapu. Several respondents also mentioned coastal erosion, often associated with damage to vegetation due to human activities that made areas vulnerable to flooding (with associated further loss of vegetation), especially during storms. The risk of volcanic eruption was not mentioned.

The examples of Pangaimotu Island Resort and Oholei Resort were often given by interviewees. The former is on a small culturally and historically significant island accessed by a 10 minute ferry ride from Tongatapu's capital Nuku'alofa. Coastal erosion is a significant concern and the loss of vegetation is attributed to local fishers cutting small tracks into the vegetation and lighting fires (damaging tree root systems) while waiting for the tides to change for their fishing traps. The combination of storm erosion and flooding intruding from the opposite shore gives the appearance of a dagger aimed at the resort in aerial views. Nearshore sand dredging for building material for Tongatapu was also raised. Elsewhere, the building of groynes was considered to have caused erosion to others. Oholei on Tongatapu had to be rebuilt after being destroyed by a hurricane.

Although climate change, was specifically mentioned occasionally as a disaster-exacerbating factor, it was not seen as a major driver for risk reduction. It was, however, cited as a reason for more funding from developed nations for DRR in Tonga, and some considered changing weather patterns were already apparent (Table B.3.

Table B.3: Hazards and Associated Impacts Identified in the Tonga Stakeholder Interviews

Hazard	Impact
Flooding	Damage to vehicles and buildings
Loss of beach or shoreline	Threat to built assets and popularity of resort
Tsunami	Loss of life. Impact on built assets, which is typically located on the coast
Severe weather	Tourists avoid hurricane season, loss of physical assets and loss of or disruption to critical infrastructure (e.g., roads)
Drought	Water shortages and fire risk
Rats	A former plague of rats as a consequence of the removal of a public rubbish dump on a shoreline some miles distance was had caused considerable damage to accommodation, reputation and almost destroyed the business of one resort

Cyclones (and associated erosion and flooding), tsunamis and earthquakes were accepted as inevitable by all interviewees, although with much different frequency and predictability, and drought (with associated fire risks) was also a given in Vava'u. Other hazards were given less consideration except where they had been experienced. However, the perception of their level of vulnerability differed significantly.

B.4.4 Vulnerability

The low-lying, flat nature of Tongatapu was frequently raised by interviewees as making it much more vulnerable to tsunamis than the hilly, varied topography of Vava'u. Indeed, provided they received warning, those in Vava'u were relatively unconcerned about the risk posed by tsunami as it was relatively easy to reach high ground. Those on smaller low-lying islands, while seemingly more vulnerable, had plans and the capacity to go to sea to ride out a tsunami, but were more vulnerable to cyclones and erosion. The removal of trees from the shoreline for roading, as well as, the aforementioned causes of loss of vegetation, were also noted as increasing vulnerability to cyclone damage.

Locating too close to the shoreline was seen as a major factor in increasing vulnerability as were human activities that disrupted or altered natural sediment circulation. But the necessity, indeed the identity of a south seas resort, with beaches and immediate access to the beach and a jetty were seen as necessary for the tourism industry.

Four social phenomena were also identified as important in increasing vulnerability due to their impact on tourism finance. The first was the lack of tourists, attributed to the Global Financial Crisis (GFC), which meant that the money simply was not available to spend more on DRR. The second was the impact of the internet and the speed with which bad news

could travel on it and the difficulty of correcting or re-establishing good reputations after a bad internet blog or comment – "once a business gets a reputation it is hard to recover". Third, were the political riots of 2006, ongoing political instability and associated image of Tonga and the disruptions to the public service. The fourth was the successful campaign to sell Tonga as a whale watching destination that meant that its year-round image as a 'south seas getaway' and associated family, relaxation and cultural tourism had suffered – "we only have one season now".

A repeated theme from all sectors was a lack of knowledge. This took two forms: 1) biophysical and 2) disaster planning. Those affected by coastal erosion commented on their lack of knowledge of the processes and of environmental management systems or shoreline engineering designs that might best fit their settings to reduce coastal erosion – they were essentially adopting trial and error techniques that might well exacerbate erosion in some instances. The second major area of lack of knowledge was in disaster planning and standard information that operators could make available to staff. All had systems in place to address a significant event (eg. cyclones and tsunami) if they had warning and did do staff training but this was based on their personal experience and 'common-sense' rather than any substantive training or knowledge.

Although evacuation plans existed at a national level and in tourist businesses, these are not always communicated to tourists except once a warning of an event had been received. As one tourist commented (in a chance encounter with the researcher), the tsunami zone signs on the beach front at Nuku'alofa, "say that you are in a tsunami zone, but not where to go if there is a warning siren". However, several operators commented on the change in awareness since the Samoan tsunami and the loss of life on Niuatoputapu. The first reaction now is to head inland – they no longer went down to the sea to watch the tsunami come as had occurred previously.

Experience had also left opposition to insuring against disaster. There was considerable doubt as to whether loss of business insurance was available in Tonga. Some of those on the shoreline could not get any form of insurance. Others took the view that if they insured, it would cost a tremendous amount and they would then have to spend money on lawyers fees to get the pay out and this would be unlikely to occur in a timely manner, so they were better off to bear the risks themselves. One pointed to a building insurance claim where the insurer refused to pay out on cyclonic wind damage to gutters as these were "not part of the building but attachments to it".

There was considerable fatalism mixed with self-belief present among operators. One commented that they would do certain things (send staff home and batten down the windows) and then just "trust in God". The safety of the clients was repeatedly stated as the number one goal for all the operators, then staff safety. Plant and other facilities were less important. The physical assets might be damaged, but the impact of the loss of life was more important and the damage to reputation caused by it would be harder to repair than buildings. If a disaster happened they would just rebuild because they had to – with

whatever there was left afterwards. With the exception of one government official and one private sector interviewee, who were new to their roles, all those interviewed had seriously considered and were aware of the potential for disasters and the impacts on their business or responsibilities. They had performed vulnerability assessments, but not in a comprehensive, technical or professional sense and not written down.

There was an apparent tension between the government and the private sector during the research. Many private sector interviewees commented negatively on the past performance of government officials and indicated they did not want things going through the government if at all possible as that had always resulted in considerable delays in new ideas getting off the ground and approved. The loss of the TV series "Survivor" that had been anticipated to be filmed in Tonga was attributed as being due to Government bureaucracy and interference. At the same time, they indicated that it appeared that the government was more open now to discussions. This was also apparent among officials interviewed. The private sector commented positively on the performance and ability of the government bodies (e.g., the army) to clear roads and get things running after disruption. The road building and strengthening work funded by overseas governments, such as the China, were commented on very favourably.

The lack of a strong positive relationship between the tourism industry and government may increase the vulnerability to disaster, especially in achieving a coordinated response to rebuilding the tourism industry and Tonga's attractiveness after an event. However, the overall impression gained was of a wary but tentative rebuilding of relationships between the industry and the government.

B.4.5 Measures

Investing in DRR was approved by all parties, and none of the interviewees could think of any stakeholder or group who would not be, in principle, supportive. Owners and shareholders had supported measures proposed by managers, seeing these as necessary for the businesses. A range of risk reduction measures implemented or planned by the public sector, the private sector, or a partnership of both were discussed. These will be structured into the prevention, preparedness, response and recovery phases of DM.

Prevention

All resort operators had taken measures to strengthen their facilities through retrofitting in some manner to reduce potential damage (e.g., structural beams and their attachment to the ground, methods of attaching roofs to a fale, or building sea walls) and some new facilities were designed with specially fitted hurricane protection shutters for the windows. Some were experimenting with revegetation or small groynes to prevent coastal erosion and one was actively gathering sand to build an artificial beach to replace one lost by erosion. Some on Tongatapu were separated from the sea by significant rip-rap and concrete sea walls, grass or paved esplanades and a road – they were in fact 25m or more from the actual shoreline.

Although sea walls, revegetation, and facility strengthening were the primary prevention measures used to reduce the risk of disaster, there were additional measures at some resorts. For instance, one resort was building a new access road directly behind it to enable speedier evacuation and the quick movement of cars away from the shoreline. The existing good road access to the resort had 150m at shoreline level, and past experience had led the resort to conclude that this exposed guests and vehicles to significant risk from storm surge, hence the new road. The development of a swimming pool to provide water to address fires was also underway at a resort – although the primary purpose was to try to attract families. They noted that mothers were more generally becoming averse to allowing their children to swim in the sea due to perceived risks (not specific to Tonga), hence the need to develop a clearly safe swimming area (visible on the brochures) in order to attract them. The swimming pool was being built on the beach and had also enabled a significantly strengthened, dug in sea wall to be put in place to protect it and the resort.

There are setback rules in plans and strict building codes and it was generally felt that there was good compliance with both plans and codes. They also pointed to existing building codes, noting that these were effective regulations, and if DRR components are included in regulation, then they would have to comply.

However, the only real argument they could see for industry to voluntarily invest further in DRR was through incorporating DRR measures into star-rating systems for hotels. Most operators and officials suggested or were very receptive to the idea that measures for DRR be included in some form of star-rating system for resorts and other tourism operators. A few expressed concerns that the new Tonga star system (apparently modelled on New Zealand's Qualmark system) had lowered the standards of the stars to suit the Tongan context (i.e., a 5 star Tonga facility might be a 3 star in other countries) and that the rating system had to be an internationally accepted system. The star certification system would provide an incentive for operators to comply, although there were different markets and it might not have the desired effect on those targeting lower budget travellers.

The partnership established between the National Disaster Management Office and the two cell phone operators in Tonga had led to the establishment of a system to send an 'impending event' warning text to all-subscribers. One resort manager commented specifically on the value of this as it had meant the possibility of receiving a warning at 0500hrs of an impending cyclone that had established itself overnight, in the period since the last weather forecasts before they had gone to bed. The cyclone had developed very close to Vava'u and the text warning enabled them to batten down and warn guests in time. Had it not been for the text, they would have been caught completely unaware.

Almost all interviewees commented positively on the tsunami warning systems being put in place regionally, although noting that these would not assist much in the event of a tsunami generated close to Tonga, which they considered highly probable, but unpredictable.

One operator also pointed to the amount of unutilised roof space available for solar energy production on resorts. They argued that if government or specifically aid money was provided to resorts to enable them to install solar energy, it would reduce their operational costs, freeing up money for DRR measures and reduce their reliance on power networks in a disaster. It would also help reduce greenhouse gas emissions. They felt that this was a clear message that should be taken to donor organisations and the Global Environment Facility (GEF).

Government plans for the tourism sector were being prepared during the field visit and it was noted that the questions raised by the research would prompt consideration of things not previously thought of – for instance a strategy to help market Tonga after a disaster and the possibility of including DRR measures in existing quality assurance systems. These would be discussed with the tourism industry as part of the rebuilding of relationships and development of the tourism master plan.

Preparedness

Planning for evacuation and staff training was undertaken by all those interviewed. Although none had written instructions or manuals, there were clear lines of responsibility. Most provided advice to guests on arrival of what actions were to be taken should there be an emergency. Equipment (e.g., shutters) were numbered and ready to be put in place and evacuation routes had been identified (although not signposted and no maps provided for guests).

Response

Depending on the event and the time available for action, guests would be evacuated to safety, followed by staff. On small low-lying islands guests, would be given the option of returning to the mainland if time permitted. Generally, everything would be stored, battened or tied down and vehicles moved to higher ground. Floating pontoons and boats would be moored offshore.

Recovery

There were few clear recovery plans and no one interviewed had a business plan for recovery. Most noted that they were too small to do that sort of planning and that basically they would assess the situation after an event and simply make do. One contrasted their situation with that of a major bank in Tonga which had business plans that included being in operation within a couple of days of an event by having alternative places they could set up and operate from. Another contrasted the small scale of Tongan resorts with those of Fiji where he understood that their frustration with insurance companies had led them to establish their own insurance fund.

One operator expressed concern that certain key Government funds for businesses were only available to businesses that had been operating for 5 years and that this would hinder

the recovery of new businesses and stifled the development of new ideas that might aid preparedness planning and associated measures.

Interestingly, resort owners were using traditional vegetation for the roofs of the fales over water, but tying them on more securely. The idea was that if they were destroyed by an event they would be relatively easy to replace, but that the method of tying them on would make it more difficult for them to be destroyed.

B.4.6 The Business Case

The responses to questions regarding a business case for investing in DRR were fairly uniform. There is a business case for the private sector, government and donors to invest in DRR for tourism. However, the private sector was already investing in this as part of its normal business and, as one stakeholder said, if there was a business case for doing more, then they would be doing it. There was always room for improvement, but the private sector lacked knowledge of steps that it could take, or it knew the steps, but lacked the specific technical knowledge to take those steps, other than through trial and error (e.g., in groyne design or beach restoration) or simply lacked the finances to do more.

Two areas stood out in the feedback as having potential for encouraging further investment in DRR by the private sector. First, training for managers/owners coupled with the provision of useful tools (e.g., relevant templates of signs to put in hotel rooms or materials to provide to guests) and the opportunity to see what other operators in other countries were doing in terms of DRR. Essentially, this would involve government funded training courses that met the costs of participants to travel and participate. Second, a certification programme that used international standards. This last recommendation was seen as the most likely to provide the incentives for investment, but without the knowledge as to what to invest in, it might have perverse results.

One other avenue raised was the potential to develop a relationship with a university that could provide necessary technical advice and expertise, and even research some of the key issues and problems (e.g., coastal sediment movement).

Appendix C – The AIMS Region

C.1 The Maldives

C.1.1 Introduction

The Maldives economy is highly dependent on tourism. The direct contribution of tourism to GDP is 36%, and tourism makes up over 70% of foreign exchange earnings. In 2007, the tourism sector employed over 27,000, out of which 11,000 were expatriate employees. Currently, there are 104 resorts, 145 tourist vessels, 60 guest houses, ten hotels, two yacht marinas, and two strata resort villas in operation with a total bed capacity of 27,000 (MTAC, 2012b). An additional 67 resort islands with a bed capacity of 12,000 are being developed (MTAC, 2012a).

The scattered nature of the islands and tourist resorts makes risk management and CCA very costly. The main risks to the tourism sector are related to coastal flooding, erosion, and inundation. Ninety percent of all tourism infrastructure and 99% of resorts are within 100 metres of the coast (Sovacool, 2011). Rising sea levels exacerbate existing problems of beach erosion and saltwater intrusion into aquifers. A UNDP (2007) study assessed the hazards and vulnerabilities of the Maldives and identified the main hazards to be tsunamis, wind storms, heavy rainfall, storm surges, droughts, earthquakes and sea-level rise.

There are a number of initiatives in the Maldives that address risk reduction or CCA, including a Least Developed Country Fund project on “Integrating Climate Change Risks into Resilient Island Planning in the Maldives”. Most prominently for tourism, a UNDP project entitled “Increasing Climate Change Resilience of the Maldives through Adaptation in the Tourism Sector” (TAP) aims to increase adaptive capacity and effectively manage climate risks. An inception workshop with the tourism sector was held in March 2012. The project document of the UNDP TAP identifies a number of underlying causes of vulnerability (UNDP, 2012b). These include:

- Climate change risk and adaptation measures are not systematically integrated into tourism sector policies (e.g. legislation, licenses and guidelines);
- Weak inter-sectoral coordination and a lack of capacity in the Ministry of Tourism, Arts and Culture;
- Limited financial budget to address risk reduction and climate resilience;
- A lack of building codes which assist protection of over- and under-water structures in tourist resorts;
- An inadequate risk assessment through the Environmental Impact Assessment guidelines;
- Continuing pollution of coral reefs caused by tourism operations (e.g. as a result of insufficient waste and wastewater management);

- A highly self-regulated approach to environmental management by tourism operators; and
- Unnecessary exposure due to building in high risk areas.

In addition, it is reported that tourism developers lack the technical know-how to address climate risks, and they may lack incentives for strategic approaches to longer term sustainable investment. However, a business case can be made that risk reduction and CCA result in: i) avoided material losses from climate-related hazards; ii) savings in irrigation water through rainwater harvesting systems; iii) enhanced biodiversity and tourist attractions as a result of pollution control; iv) financial savings from reduced transport costs associated with shipping waste; and v) savings from transferring risks to insurance providers (UNDP, 2012b).

The analysis presented below draws on 12 face-to-face interviews conducted in April 2012. For reasons of anonymity, no further descriptions of interviewees are provided. Interviews were transcribed and coded for further analysis. The interviewees included:

- 5 government officials;
- 4 tourism industry representatives/ managers; and
- 3 representatives from national or international organisations.

C.1.2 Hazards Discussed in the Interviews

The interviewees identified a range of physical hazards. Because of the 2004 Indian Ocean tsunami and its devastating impacts on the Maldives, most respondents mentioned tsunamis as an important hazard (a few also mentioned earthquakes). When discussing hazards related to climate change, the greatest concerns related to coastal erosion, flooding and inundation, and water shortages. Several respondents also mentioned other issues such as extreme weather, high temperatures, coral bleaching and the outbreak of diseases such as dengue fever (Table C.1)

The interviews produced ambiguous results with respects to sea level rise. In a way, interviewees downplayed the importance of sea level rise and provided a range of explanations (e.g. a relatively lesser rise in equatorial areas) why the risk is not severe. One government representative, for example, stated that a Norwegian engineer told him that “if there is a sea-level rise the impact on the Maldives will be very small”. In the same interview at a later stage, the same representative contradicted this statement by saying that sea level rise would be their number one issue. Sea level rise, high tides, sea swells, storm surges, inundation and coastal erosion are closely related. The particular hazard of coastal erosion is perceived differently by different stakeholders. While one interviewee believed that inundation is now reaching much further inland than previously, other informants discussed the dynamics of sand deposits and erosion as a natural process. One government interviewee acknowledged that most islanders have built their homes near the beaches, increasing the risk from inundation and higher damage costs. Several man-made causes of

erosion were discussed, for example the extensive use of speed boats creating irregular waves or the construction of hard structures (e.g. sea walls).

hanging weather patterns were another risk factor linked to climate change. Several interviewees noted that seasons have changed and weather has become less predictable. Of particular concern was the irregularity of rainfall and long periods of drought, which lead to water shortages. The magnitude of extreme events is also believed to have changed dramatically, with some respondents being quite concerned about storms, while others feeling relatively safe because of the geographic position of the Maldives. The UNDP (2007) detailed risk assessment of ten islands notes that there have only been a few cyclonic strength depressions which have tracked through the Maldives, all of which occurred in the northern and central regions.

Table C.1: Hazards and Associated Impacts Identified in the Maldives Stakeholder Interviews

Hazard	Impact
Flooding	Damage to houses and content.
High temperatures	Affect physical comfort of tourists, especially in those inhabited islands where there is limited vegetation and shade.
Coral bleaching	Resulted in a number of tourist complaints and dissatisfaction (e.g. 1998).
Loss of beach	Impact on business. One example was provided where the loss of beach reduced the popularity of a restaurant and event site.
Flooding or tsunami	Impact on critical infrastructure, which is typically located on the coast.
Severe weather	Domestic air and sea transport has been disrupted in more recent times.
Drought	Water shortages and higher costs for desalination.

Several interviewees pointed out that the way tourism in the Maldives positions itself and is marketed relies on the beach (often private beaches that can be accessed straight from tourists' rooms), favourable weather, and intact marine ecosystems. The development of this type of tourism product and the positioning right at the beach has to be seen as an adverse trend in the hazard landscape. One resort manager pointed out that beaches are very dynamic and changeable and that it is only because "we define an area as the beach, it's the building, it's the jetty, and it's the guest services area", that they are unable to accept the natural processes going on in the environment. Because of the static nature of tourism infrastructure, beaches have to be maintained continuously and kept available for the tourist in the same location. Vulnerabilities associated with the tourism produce and the physical hazards identified above are discussed in more detail in the following.

C.1.3 Vulnerability

The existence of physical hazards in combination with specific socio-economic trends (e.g. coastal development) results in risks and impacts following certain events. The impact depends to some degree on the vulnerability of the affected groups. Vulnerability has many drivers. Often, interviewees made a distinction between how climate change impacts the local residents and the tourism industry. There was a general belief that tourism operators are better prepared to deal with disasters or constraints (e.g. water) compared with local people, because they have the resources and know-how to cope with them. Thus, the interviews indicated underlying inequalities and differential capacities to deal with hazards.

Lack of Regulation or Enforcement

Vulnerability to disasters in the Maldives is high because of a lack of regulation and enforcement of existing regulations. This was commented on by most interviewees, although government representatives appeared typically more positive in their assessment compared with those working in the industry or for other organisations. One official summarised "in the government we are very fond of attending conferences; but we don't accept or apply the recommendations. We are signatories to many, but we don't act on these policies". The same official provided a specific example of a 1993 UNDP project which recommended specifications (e.g. vegetation buffer zones) to protect people against tidal waves, but "even after that all the hospital, health centres, power houses were built within this critical zone, no one cares about the recommendations". Specific gaps in regulation were pointed out:

- No standards for setback from the beach into the island (e.g. where to build an overwater bungalow);
- No proper waste management;
- No building codes;
- No evacuation plans.

The last point is particularly concerning, and several interviewees stated that preparedness is low and people would not know what to do in the case of a disaster. One interviewee elaborated "…if you look at the Disaster Management Bill, it hasn't been endorsed, it has been in draft form since 2006. Can you believe since 2006? It has not passed the Parliament yet, it hasn't gone to the Parliament yet. Whenever a new boss comes into MDMC [Maldives Disaster Management Centre], he wants to revise it, add new stuff". Further, existing legislations, such as that related to the areas that can be built on an island (20% of the surface) was used as an example of a longstanding policy (since 1989) which the industry operators do not fully comply with.

While some policies are believed to be more difficult to enforce (e.g. anything that involves financial burdens, such as a waste fee or environmental tax), others are more likely to find broad support, for example in relation to waste management. One government official

noted that regulations need to be enforced right from the start, as retrofitting of building or infrastructure is very difficult.

Politics

The role of politics in risk reduction and CCA in the Maldives is multi-faceted and at the core of its vulnerability. At the highest level, policies and priorities were believed to change constantly, and projects are not completed or implemented as a result. Furthermore, policy making appears to happen in distinct silos, missing important opportunities for collaboration and efficiency. One government interviewee noted that "the normal practice here in the Maldives is for each [Minister] to mark their own territories. To get inside the other's territory becomes a challenge".

There are also political sensitivities between communities and tourism operators. One stakeholder recalled that there were several instances where community members demonstrated on the beaches of resorts to express their dissatisfaction with tourism. Opportunities for partnerships have been recognised but not always seized. For example, a UNDP pilot project on farming rock melon and papaya in Alif Alif Atoll was set up to provide local income. However, after a while, the resorts started growing their own rather than buying from the local islands. Some respondents provided examples of tourism operators who supported local communities and worked together on specific projects. The perceived power of tourist resort owners and operators was referred to several times. One stakeholder pointed out "I don't think anyone will stand against a resort operator. For example, no issues related to resort operations have ever gone to the Parliament". The great influence of private sector operators over processes and politics was also alluded to in relation to the Environmental Impact Assessment, which is paid for by the developer and therefore unlikely to produce negative results.

A possibly systematic denial of the climate change and disaster risks for tourism in the Maldives can be interpreted as part of the politics to attract international tourism. While this is implicit in some interviews ("What I am saying is that the Maldives is not affected by climate change as some are talking about"), one interviewee provided a concrete example:

> *"We started this tourism related [climate change adaptation] project (….) but the industry operators did not want to implement the project at all. In one of the meetings they said that they did not want to relate in any form tourism to climate change. They said that it could create fear among visitors..."*

It was further pointed out that discussion about climate change negative impact foreign investment in tourism. Investor confidence has significantly decreased. "They don't want to invest 40 million or 60 million to build a resort to see it washed away". It was also commented that the negative media was causing more damage to the tourism industry than the actual climate change.

Understanding

A number of issues related to knowledge and understanding and their relevance for vulnerability. First of all, there is still a degree of confusion related to disasters and climate change. For example, tsunamis are sometimes referred to as climate risks. Further, the differences between climate variability and change are also not fully understood. Environmental risks are often not understood, meaning that issues such as erosion control or waste management are low on people's priority list, compared with other physical infrastructure developments, such as harbours, hospitals or schools. Examples of lack of understanding are presented in Table C.2.

Table C.2: Examples of Interpretations of Environmental Risks Evident in the Interviews

Environmental Risk	Interpretations
Coastal erosion	Man-made, versus natural cycles, versus climate change (see earlier section), for example: "E*rosion is there, but we don't really consider it a physical hazard because it is a seasonal thing, it happens. Erosion happens in one season, then the beach gets replenished in the next season*".
Loss of biodiversity	*"Here in the Maldives there is very limited knowledge of mangroves as carbon sinks which absorbs a high level of carbons. For some, even if they did have the knowledge why should they protect it, they do not see an economic value in protecting these areas. In most islands where they have mangrove or marshlands they are garbage dumping sites".*
Climate variability and coral bleaching	*"A few years back they were saying the coral bleaching was because of the climate change, but after about five years, the coral has started growing, so I think is alright".*
Disease (dengue fever)	Denial of risk resulting in greater outbreaks than necessary: *"Since 2007 the outbreaks have become epidemics on a yearly basis. For a country like the Maldives, even ten people dying from these fevers are high"*

In terms of disaster and emergency management, several non-government interviewees warned that people (and tourists) are not prepared and would be unsure how to respond in the case of a warning. One government representative believed the opposite commenting that the 2004 tsunami was well managed and people are well briefed and emergencies are adequately managed. Overall, the interviews did not give an impression of wide-spread understanding of DRR in the Maldives.

Better information, for example downscaled climate change models that have been completed for four parts of the Maldives, were seen as essential to improve preparedness for future disasters. Detailed information is only useful, however, if it is included in the planning process. At present, much of the tourist infrastructure has been put in place with limited or no planning. Often, local knowledge would be beneficial, for example in relation to ocean currents or sand movements. This is often not taken into account as consultants who undertake EIAs "think that the islanders are laymen and they will not know what is going

on". To be useful, information also needs to trickle down to those involved in the industry. When asked about initiatives that tourism policy makers are currently undertaking to help the tourism sector, one resort manager answered: "To be honest, I have no idea on this question".

One of the tourist resort managers also pointed to the lack of understanding amongst tourists. The operator explained that the two seasons, Hulhagu [Southwest monsoon] and Iruvai [Northwest monsoon], are associated with sand moving from one side of the island to the other, and back in the next season. Tourists, however, only see the sand in one position and are concerned about perceived erosion in the areas where sand is lacking. One responded explained that "Sometimes they take photos, go back, complain, the island is not kept well, they are not taking good care of the island".

Cultural Factors

Several cultural factors exacerbate vulnerability. One relates to habits and accepted behaviour (norms) that make the implementation of measures to change behaviour challenging. Changing behaviour was believed to be particularly difficult when economic costs are involved. One informant noted "All their lives they have just been throwing garbage on one side of the island, does not involve a cost. When we say that they have to pay a monthly fee of say MRf 10 they do not want to do that to have their garbage collected and disposed properly".

The second cultural vulnerability factor relates to people's religious beliefs and high levels of fatalism when it comes to future disasters. The widely held belief that "it's God's will, anything can happen and there is nothing you can do about it" was referred to by most stakeholders. However, some take it one step further, and while accepting that God/Allah is responsible for changes in nature, they recognise a need for human action to reduce risks. One government interviewee noted "Allah, he is the ultimate decision maker, nobody questions that, but I think he equally has alarmed that there may be these factors that may influence or may create disasters, climate impact".

Geographic Factors

The geography of the Maldives is at the core of its vulnerability. Not only is the average elevation of the islands only about 2 meters, but the islands are spread out over an Exclusive Economic Zone of 859,000 square kilometres, stretching 820 kilometres from north to south, 130 kilometres from east to west at its widest point out of which only 298 square kilometres is land. Most islands are very small and have limited flexibility in accommodating resorts and/or communities. This has been named as one explanation why such a large proportion of critical infrastructure is located right on the coast. The small size of the country also results in limited capacity, small institutions and insufficient financial resources, for example to undertake efficient monitoring. These challenges were explicitly mentioned by the interviewee from the Environmental Protection Agency, in relation to monitoring resort developments and operations.

In addition, every island has different vulnerabilities. For example, islands on the Eastern side have more risks of being impacted by a tsunami, as in the 2004 Indian Ocean tsunami. Those islands on the Northern side were perceived to be more prone to storminess and high rainfall. Issues such as water availability also vary substantially for different islands, depending on their latitude and size.

C.1.4 Measures

Investing in DRR was approved by all parties, and none of the interviewees could think of any stakeholder or group who would not be, in principle, supportive. Some put forward specific advantages associated with proactive risk reduction. The Ministry of Tourism, Arts and Culture, for example, noted that tourist resorts' efforts, for example in the area of biodiversity protection and environmental management, will reduce their burden in managing natural assets. Initiatives in the tourism sector also act as a catalyst and awareness riser for measures implemented by locals.

A range of risk reduction and CCA measures implemented or planned by the public sector, the private sector, or a partnership of both were discussed. These will be structured into the prevention, preparedness, response and recovery.

Public Sector Measures

In terms of disaster prevention, one respondent reported that after the 2004 Indian Ocean tsunami the rebuilding involved relocating critical infrastructure to the centre of islands, where possible. In addition, some islands have set up multipurpose buildings as recovery centres. However, it was mentioned that the centres are insufficient to accommodate the whole island population.

Several government officials discussed policies they were planning to develop or implement, although some of the statements were vague and lacked clear targets or timelines. Tourism operators were not fully aware of policies and legislation, although the need for an EIA relating to resort development was widely known. The EIA requires operators to highlight potential hazards they might face and asks to identify mechanisms that they would take to minimise these. Further, tourist resorts are now required to provide a disaster management plan. Generally, resorts comply but sometimes they need to be prompted through the annual inspection and they are not always seen as cooperative:

> *"Every year we do an inspection in all the resorts as well as all the guesthouses on the islands, including Malé of course. Mostly for the resorts, when we do the inspection, we really urge them to submit their disaster management plan. We go through it to see if they have covered everything, every damage or every effect that can be faced by the resort. Like I said we inspect every year and if they haven't prepared it, we ask them to prepare it, we make them do it so that they are ready for whatever may come."*

Having adequate and efficient disaster management plans was seen as important, especially in the light of a quick recovery. A government interviewee pointed out that a quicker recovery by the tourist resorts is beneficial for the whole country due to the Maldives' dependence on tourism.

Private Sector Measures

Initiatives by the private sector and self-regulation were seen as critical for several reasons:

- The idiosyncrasy of every island: every resort operator needs to understand their local conditions, monitor issues, and put tailored measures in place.
- Business case: tourism operators have a lot to lose if they do not invest in DRR.
- Limited resources of the public sector: lack of monitoring, implementation and assistance.

However, several barriers for self-regulation and voluntary initiatives were put forward. The main one related to costs and the long return periods on the investment of environmental measures. One government official said "businesses are mostly for profit making sometimes they are not really willing to go investing in mitigating climate change or hazards". This view was shared by several others. At the same time, the long term benefit of DRR and proper design was believed to pay off by the Environmental Protection Agency respondent. One respondent pointed to an increased competitive advantage as a result of climate proofing infrastructure for tourists. Too much information, however, was seen as undermining the image of safety. One resort manager said "For example, if we make emergency evacuation plans and put a lot of posters in the guest's room. When they come for the first time, they say 'what is going on – are we safe in this place'?"

Prevention

Tourist resorts spend substantial resources on maintaining their beaches and protect their coastline. Many resorts built sea walls or have groynes, although the focus is now on sand pumping, as groynes were found to cause more erosion elsewhere. It has been estimated that about 80% of the resorts have a dredger to replenish the beach, which is usually switched on every evening. Even the sand pumping (at a huge cost) may not work in all places. Several resorts have switched to over-water bungalows as these are easier (and cheaper) to maintain than beach in front of land-based accommodation. In one case, the beach erosion was so severe that the resort built a sundeck with a sunset bar instead of relying on the beach.

A shift has also occurred in terms of leaving some of the original vegetation intact. One resort owner reported that in the past trees were cut down to make place for the resort, but now big trees are kept and the resort structures are built around them. Environmental management in a broader sense maintains the integrity of the ecosystem with positive effects on resilience. A number of resorts were named that showed leadership in environmental protection. One example which emerged in the interviews is Soneva, which

invested into a deep ocean air conditioning system. Intact coral reefs were seen as important tourist attractions and therefore essential to the tourism product.

To reduce the risk of drought, several resorts have invested in rainwater harvesting systems. This is seen as economically sensible since rainwater harvesting would save a lot of money during dry periods.

Preparedness and Response

As mentioned earlier, every tourist resort has to develop a disaster management plan. These plans contain preparedness and response measures, for example a list with essential contacts (phone numbers) and tasks for specific staff who function on the disaster committee. Evacuation routes are explained and procedures described. Resorts also have designated assembly points for fire or tsunami emergencies. Some resorts have life jackets for their staff and guests, located in every room. Others only provide the life jacket in the case of an emergency to avoid a feeling of 'unsafety' under normal conditions. One resort owner stated that they cannot prevent a tsunami, but "but we can prepare our teams and be ready for such situations so that they can react or act on the situation and everybody is safe and it doesn't affect the business".

Having adequate systems in place to respond in the case of a disaster was seen as important on several levels. First it facilitates a swift recovery (see below), second it is imperative to save lives and keep staff and guests safe, and it is about 'doing the right thing' in a normative way. The recent tsunami warning (11th April 2012) highlighted to some resort operators that their plans are not adequate and require further refinement.

Recovery

Risk transfer was mentioned as an important mechanism to enhance recovery. UNDP is currently looking into various forms of risk transfer and assess what is feasible for the Maldives. One respondent explained:

> *"In the case of risk index insurance, initially, when you buy the premium, you set a certain index. For instance, what's more relevant to the Maldives is sea surface temperature, if sea surface temperature increases to a certain amount the corals bleach or the corals die. Which would result in less revenue for tourism, nobody wants to come and look at white corals. So they buy this instrument from an institution, say when the surface temperature rises to say 33 degrees we get a pay out".*

Public-private Partnerships and Other Organisations

The respondents from government entities and other non-government organisations both mentioned capacity building (e.g. through workshops) and awareness raising (e.g. by the Maldivian Red Crescent) as important initiatives to engage the private sector and the local communities. One project was the continuity of an interactive tool, the Buru Calendar, to monitor seasonal variations in the climate. As the funding ceased and the project was

discontinued, but the calendar was still perceived to be a useful instrument that could be (re)incorporated into future projects. Specific projects to produce information relevant for investment were also mentioned, for example the use of cost-benefit analysis.

Mechanisms of co-financing for new technology or innovative solutions were talked about as an incentive to engage businesses who might otherwise be reluctant to invest. UNDP, for example, provides seed grants for climate proofing businesses as part of the TAP. Greater partnership with the Disaster Management Centre to improve learning and communication was seen as useful by one operator. Several respondents brought up the role of incentives and collective action to facilitate better risk reduction. One resort operator suggested that joint investment into systems or machinery might produce substantial co-benefits.

Partnerships between tourism businesses and the Government are important. One example is the 'swapping of islands'. Recently, there have been a number of cases where developers of new tourist resorts found that the island they had leased was too hazardous or (no longer) suitable for their plans. A government interviewee reported that there are three on-going cases where the developers have requested to swap island because of environmental changes.

Appendix D - The Cairo "Guiding Principles for Post-Tsunami Rehabilitation and Reconstruction"

(from UNEP/GPA n.d.)

1. (Overarching principle) Reduce the vulnerability of coastal communities to physical hazards by establishing a regional early warning system; and applying construction setbacks, greenbelts and other no-build areas in each nation, founded on a science-based mapped "reference line".

Using concepts of integrated coastal management, including public engagement in local decision-making, employ a rapid assessment zoning and planning process to:

2. Promote early resettlement with provision for safe housing; debris clearance; potable water, sanitation and drainage services; and access to sustainable livelihood options.

3. Enhance the ability of the natural system to act as a bio-shield to protect people and their livelihoods by conserving, managing and restoring wetlands, mangroves, spawning areas, seagrass beds and coral reefs; and by seeking alternative sustainable sources of building materials, with the aim of keeping coastal sand, coral, mangroves and rock in place.

4. Promote design that is cost-effective, appropriate and consistent with best practice and placement of infrastructure away from hazard and resource areas, favouring innovative and soft engineering solutions to coastal erosion

5. Respect traditional public access and uses of the shoreline, and protect religious and cultural sites control.

6. Adopt ecosystem based management measures; promote sustainable fisheries management in over-fished areas, and encourage low impact aquaculture.

7. Promote sustainable tourism that respects setback lines and carrying capacity, benefits local communities and applies adequate management practices.

How things are done is as important, sometimes more important, than what is done. Local knowledge and insights are critically important to successful planning and decision-making, and local citizens must be engaged in the rehabilitation and reconstruction process at every stage. It is essential that the application of the construction setback line and the boundaries of bio-shields are defined in consultation with the local communities.

8. Secure commitments from governments and international organizations to abide by these Principles and build on and strengthen existing institutional arrangements where possible.

9. Ensure public participation through capacity building and the effective utilization of all means of communication to achieve outcomes that meet the needs and realities of each situation.

10. Make full use of tools such as strategic environmental assessment, spatial planning and environmental impact assessment, to identify trade-offs and options for a sustainable future.

11. Develop mechanisms and tools to monitor and periodically communicate the outcomes of the reconstruction through indicators that reflect socio-economic change and ecosystem health.

12. Widely disseminate good practices and lessons learned as they emerge.

Appendix E – Summary of Results of a Survey of Tourist Perception of Three DRR Measures in Coastal Tourism

E.1 Introduction

We surveyed 367 international visitors to the Caribbean island of Tobago for their views on the importance of the following items in their choice of accommodation on their current trip:

- Their hotel having disaster plans;
- Receiving guarantees of personal safety from disasters;
- Information about disaster events at their hotel; and
- The closeness of the beach to their hotel

E.2 Sample Profile

E.2.1 Sex

Of those that responded to this question, 55% were female while 44% were male.

Those who did not respond to this question accounted for 1.4% of the sample. Figure E.1 below illustrates:

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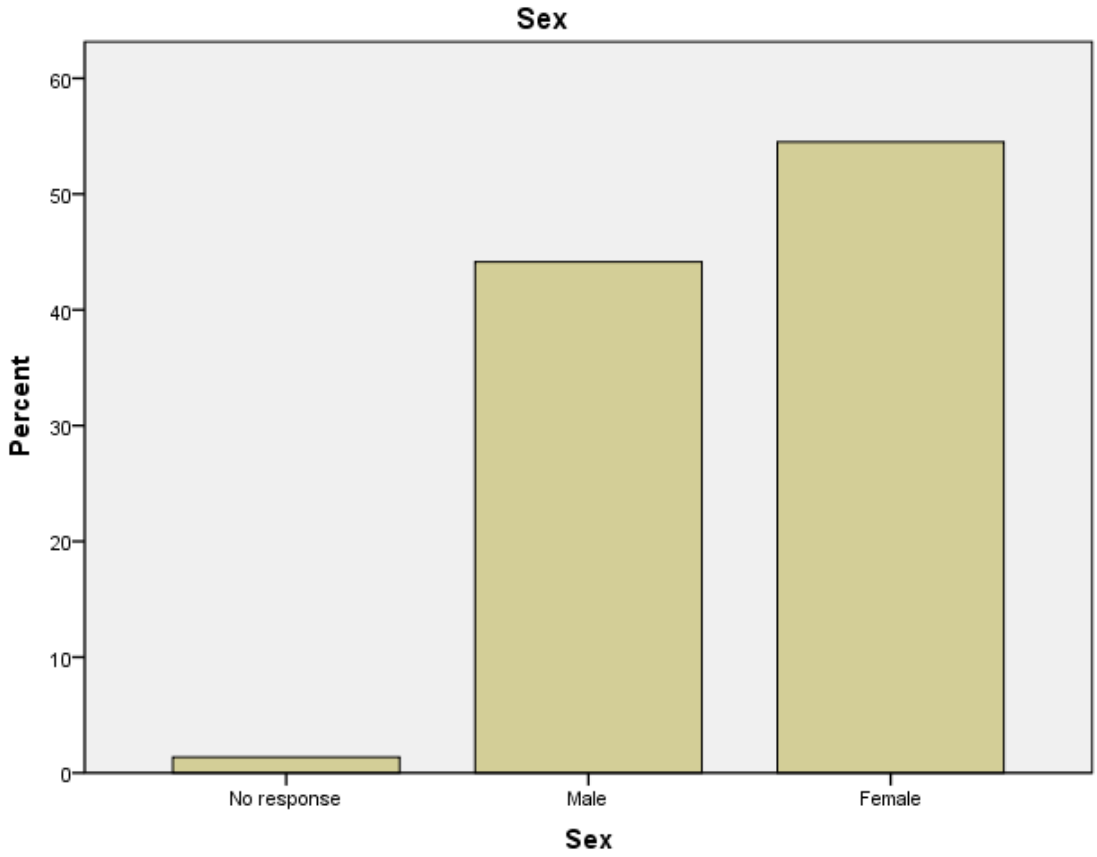

Figure E.1: Sex of Respondents

E.2.2 Age

Of those that responded to this question:

- 7.9% identified themselves as being 18-25;
- 31.3% identified themselves as being 26-40;
- 27.2% identified themselves as being 41-55;
- 27.5% identified themselves as being 56-70; and
- 4.4% identified themselves as being over 70 years of age.

Those who did not respond accounted for 1.6% of the sample. The bar chart below illustrates (Figure E.2).

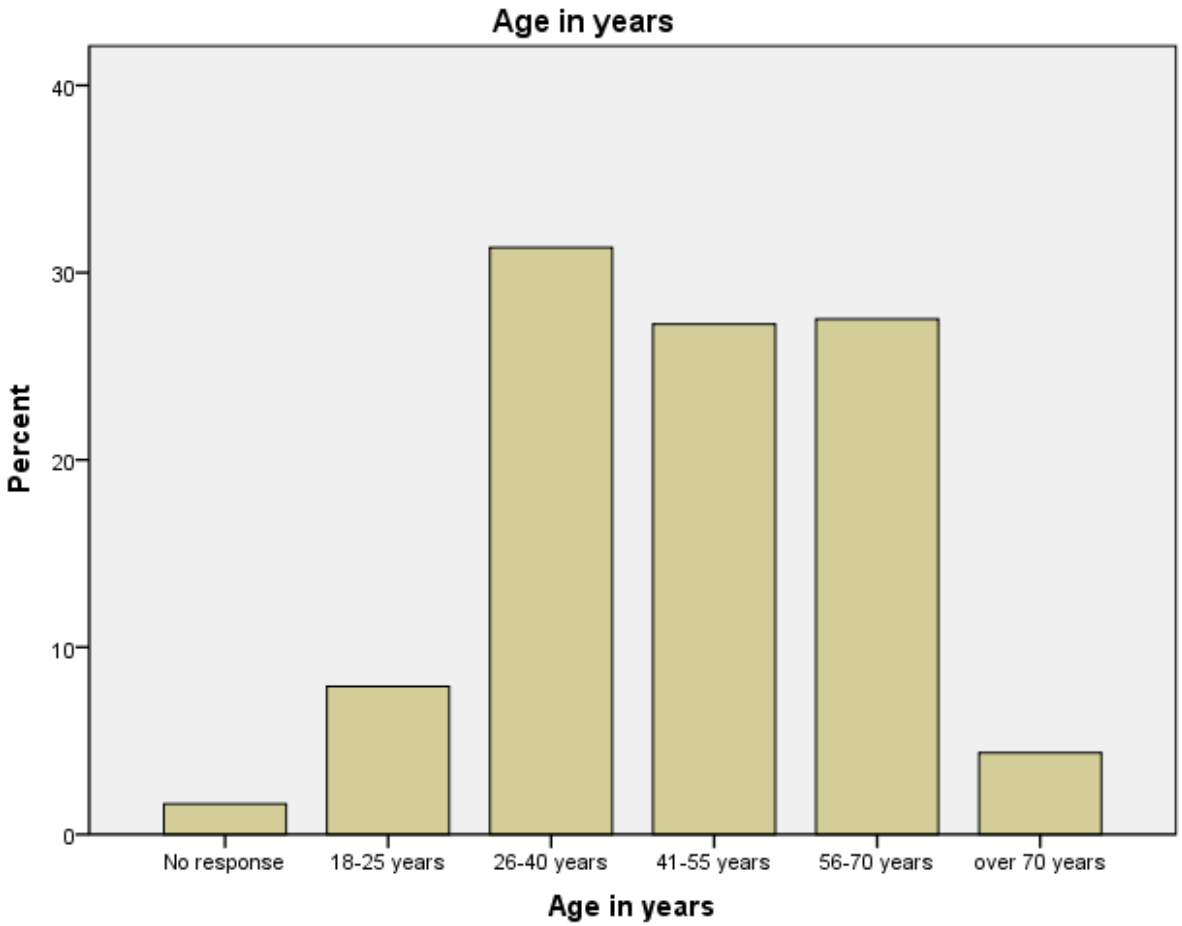

Figure E.2: Age of Respondents

E.2.3 Country of Origin

Respondents originated from nineteen countries. The majority of people that responded to this question, identified as living in the United Kingdom (56.9%), the USA (13.1%), Canada (6.8%), Germany (6.8%), and Sweden (6.0%). There were fourteen other countries represented in the sample.

Those who did not respond accounted for 1.1% of the sample. The bar chart below illustrates (Figure E.3).

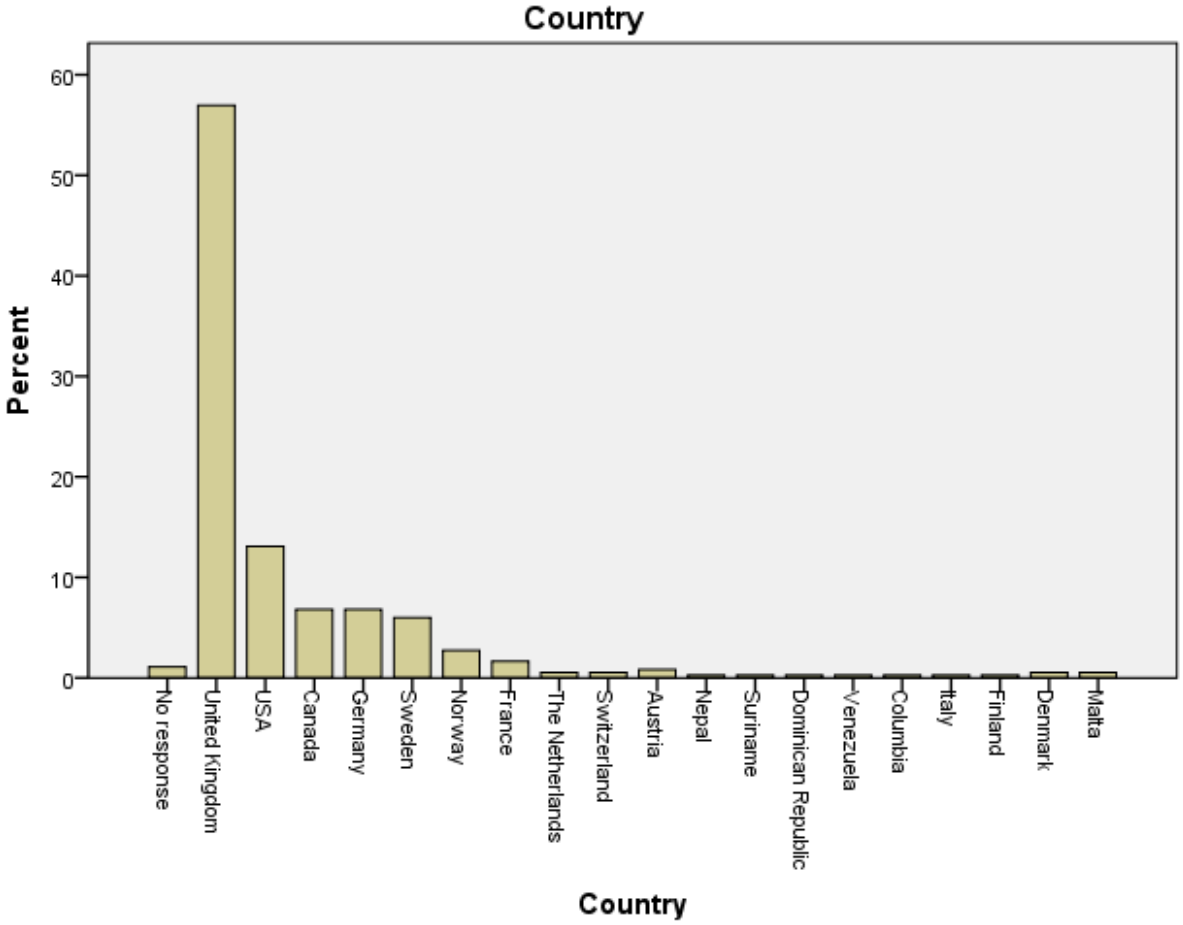

Figure E.3: Country of Origin of Respondents

E.3 Results

Table E.1: Summary of Opinions of Respondents on the Importance of 3 DRR Measures as well as Closeness of the Beach to their Hotel

	1 Not important at all	2 Very low importance	3 Slightly important	4 Important	5 Moderately important	6 Very important	7 Extremely important	Don't Know	No Response
Importance of hotel having disaster plans	15.5	8.7	5.7	12	11.2	9.3	22.9	9.8	4.9
Importance of guarantees of personal safety from disasters	14.2	8.7	7.4	12.5	10.1	11.2	21.8	8.7	5.4
Importance information about disaster events at hotel	16.9	8.7	6.8	13.9	10.6	12	16.6	8.7	5.7
Importance of closeness of the beach to hotel	4.4	1.9	4.9	8.7	16.9	25.3	31.9	1.6	4.4

As Table E.1 shows, of those that held an opinion on a rating scale of 1 to 7 (where 1= not important at all and 7=extremely important):

- 43.4% of the sample think it is moderately to extremely important that their hotels have disaster plans;
- 43.1% of tourists surveyed think it is moderately to extremely important to receive guarantees of personal safety from disasters;
- 39.2% of tourists think it is moderately to extremely important to receive information about disaster events at their hotel; and
- 82.2% of tourists think that think it is moderately to extremely important that their hotel is close to the beach.