UNEP

Disaster Risk Management For Coastal Tourism Destinations Responding To Climate Change

A Practical Guide for Decision Makers

UNEP Manuals on Sustainable Tourism

United Nations Environment Programme

ISDR
International Strategy for Disaster Reduction

CAST
Caribbean Alliance for Sustainable Tourism

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A Practical Guide for Decision makers

United Nations Environment Programme

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Foreword

The sustainability of coastal tourism destinations depends partly on their ability to adapt planning and management practices to the impacts of climate change and also to increase their ability to effectively manage natural disasters.

Scientific evidence suggests that climate change will exacerbate weather-related disasters that will be not only more frequent but also more powerful and consequently will put coastal tourism destinations in an almost constant state of alert.

When sudden disaster strikes, rescuers often have only a short time-sometimes no more than 24 hours-in which they can expect to find survivors. Disaster experts refer to these 'golden hours', meaning the initial period when a rapid response capability is vital, and when preparedness (or lack of it!) can make all the difference. Experience has shown, time and again, that it is local people who are best placed to save lives and to coordinate the return to normality. It is the degree to which people are prepared for disasters that determines how vulnerable or resilient their community will be.

Responding to this challenge UNEP in cooperation with the Caribbean Alliance for Sustainable Tourism (CAST) developed this practical handbook to support coastal tourism destinations to prepare and respond to natural disasters. The handbook has the following objectives:

- ✓ increase the operational capacity of local communities in coastal tourism destinations to respond in emergencies caused by natural disasters;
- ✓ support the adaptation efforts of these communities to climate change; and
- ✓ reduce the impacts of natural disasters to local communities in coastal tourism destinations

The handbook provides disaster managers, local and municipal and community planners, as well as other stakeholders in the tourism sector with a practical guidance on how to better prepare for disasters in coastal destinations.

By using this handbook we hope that coastal destinations will be able to mainstream sustainability into their tourism planning and management process and will be ready to better respond to natural disasters, thus creating better tourism destinations for all.

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GLOSSARY[1]

Capacity	A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster. Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability.
Climate Change	The slow variations of climatic characteristics over time at a given place. Usually refers to the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable periods.
Disaster	A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.
Disaster Risk Management	The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.
Disaster Risk Reduction	The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.
Early Warning	The provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response
Emergency Management	The organization and management of resources and responsibilities for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation.

1 Compiled from the following UN sources: www.unisdr.org; www.unep.org.

Exposure	The process of estimating or measuring the intensity, frequency, and duration of exposure to an agent. Ideally, it describes the sources, pathways, routes, magnitude, duration, and patters of exposure; the characteristics of the population exposed; and the uncertainties in the assessment.
Global Warming	Refers to the gradual rise in the Earth's temperatures that could result from the accumulated gases that are trapped in the atmosphere.
Greenhouse Gas	A gas, such as water vapour, carbon dioxide, methane, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), that absorbs and re-emits infrared radiation, warming the earth's surface and contributing to climate change
Hazard	A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.
Hazard Analysis	Identification, studies and monitoring of any hazard to determine its potential, origin, characteristics and behaviour.
Hydro-meteorological Hazards	Natural processes or phenomena of atmospheric, hydrological or oceanographic nature, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.
Mitigation	Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.
Preparedness	Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.
Prevention	Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters.
Recovery	Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk.

Response	The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.
Resilience	The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures.
Risk	The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions.
Risk Assessment	A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.
Vulnerability	The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

Executive Summary

Introduction

This Handbook, entitled, *Disaster Risk Management for Coastal Tourism Destinations Responding to Climate Change*, brings together three important aspects of the environment-development dichotomy with the practice of disaster management:

1 Tourism as a strategy for economic development;

2 Climate change impacts; and

3 The vulnerability of coastal communities to natural disasters.

These aspects of the development agenda are brought into focus for the purpose of maintaining tourism destination integrity and resilience in the face of more frequent natural disasters and their related hazards. The driving force has been the predominant impact on coastal tourism communities, globally, with huge losses of life, livelihoods, property and infrastructure.

There has been a surge of new and large-scaled resorts in coastal areas, supported by the tourism value chain including communities of workers, transportation services and industry suppliers, among others. This Handbook is therefore an important tool for planners and managers requiring tailor-made guidance for improving the resilience of coastal tourism destinations.

Its specific objectives are:

1 To increase the capacity of coastal tourism communities to better prepare for and respond to natural disaster emergencies;

2 To mainstream disaster risk reduction into coastal tourism destination planning and development; and thereby,

3 To support local climate change adaptation efforts.

The Handbook is premised on the fact that the impacts of disasters can be substantially reduced if vulnerable communities are fully informed about possible hazards and have participated in the formulation of risk and crisis management plans. It adapts UNEP's *Awareness and Preparedness for Emergencies at the Local Level (APELL)* process, used since the late 1980s to prepare communities against technological disasters.

The Handbook also emphasizes that policy makers are responsible for creating a responsive and well-resourced framework for action. Disaster response, however, is primarily a local level activity that requires devolution of authority and responsibility to the competent local government agencies and their associated networks.

Climate Change, Disasters and Tourism

The year 2007 marked a record in global tourism arrivals, which reached 898 million (UNWTO), with the fastest arrival growth rates in the Middle East (13%) and Asia Pacific (10%) regions. With abundant endowments of natural and cultural resources, developing nations are turning to tourism as their economic strategy of choice.

Tourism is a labour intensive industry and it provides very good opportunities for the small business sector in tertiary services, crafts, foods, farming, fishing and other ancillary services. A successful tourism and destination experience is therefore predicated on sound government policy and strategy and the efficacy of the tourism supply chain. This, however, presents the classic development challenge.

As a dynamic global industry, tourism presents destinations with numerous unique challenges ranging from the management and control of industry growth and development, to preserving the quality and the longevity of natural resources and heritage attractions.

Minimizing losses of life, livelihood, and property during a natural disaster is generally an indicator of the destination's capacity to adequately prepare for and effectively manage disaster events. For the tourism industry it is the history of cooperation between local disaster management agencies and industry actors. For many countries, this remains a challenge yet an imperative for creating a resilient industry, with a sound reputation for managing disasters.

Concerns about global warming abound as the world is undergoing a rapid warming trend which will not be reversed for decades. Coastal and marine ecosystems such as coral reefs, beaches, dunes and mangroves, which have been altered, weakened or removed altogether by chronic pollution, cleared for land development or by unsustainable uses, will consequently be more susceptible to climate-induced disaster events.

Population centres and vulnerable communities, tourism, utility and other infrastructure located within narrow coastal zones, are part of the social fabric now at risk from elevated sea levels and more frequent tropical cyclones, from changing climates. Small island communities will struggle with limited options for alternative livelihoods, shelter and food supplies, or shortages in potable water, all of which can increase the cost of local industry operations.

Solutions lie in disaster preparedness planning and climate change adaptation and mitigation strategies. For the industry, the latter involve technological, economic and social changes, use of energy alternatives and changed behaviours among tourists, with objectives to reduce greenhouse gas emissions. Adaptation strategies may also involve shifts in development strategies within countries, for example, repositioning vulnerable communities away from disaster prone areas or strengthening exposed infrastructure – also referred to as "climate-proofing".

Mitigation and adaptation strategies are complimentary and at the national level, provide improved development options for local populations. Vulnerable small island developing states are also encouraged to create and implement more effective national policies, plans and institutions to adapt to climate-risks. The tourism industry must now fully participate and with greater urgency in these initiatives.

Disaster Management Frameworks and Approaches

Promotion of effective disaster preparedness in coastal tourism destinations is a governmental function yet requires the participation of all at the destinations. Disaster management is systematic in approach, promotes collaboration between public, private and community stakeholders and seeks proactive responses to perceived threats. It is a basic 5-step process which includes identifying hazards and risks; assessing community vulnerability to the risk; developing a preparedness and mitigation plan; implementing the plan; and monitoring, evaluating and revising the plan, as conditions change.

These elements are not static but revolve around a continuous cycle of activity and interlocution among the responsible and collaborating agencies, united by a common objective to reduce the probability for disaster occurrence. Current practice promotes deeper analysis of threats and hazards, risk reduction through knowledge and learning from prior experience, sharing cost burdens and the responsibility for preparedness across the destination. The Handbook provides examples of disaster management frameworks at the national, regional and local levels which emphasize that community-level preparedness must be undertaken within these frameworks. This allows for access to resources, expertise, experience and knowledge which serve to strengthen local capabilities.

Managing Disaster Risks at Tourism Destinations

When managing disaster risks,

1. The first task is for the tourism destination to establish a Coordinating Group. The advantage lies in the organization of a representative, multi-agency collaborative group, working with local disaster managers, identifying its resources and networks that will be essential to the response phase of any disaster.

2. Second, the Coordinating Group should arrive at early consensus on its vision, mission and responsibilities and establish working procedures, plans and schedules, with allocated budgets. At this stage also, a communications strategy should be formulated, with the media as key partners. The Group's work should always be harmonized and validated by the local disaster agency.

3. Third, the Group must study and analyze the disaster hazards and risks posed to the destination, especially those which are likely to be amplified by warmer climatic conditions. Some of the common hazards affecting coastal tourism destinations include tropical cyclones, ocean storm surges, coastal and inland flooding and landslides. The Handbook provides guidance on undertaking vulnerability analyses. This entails prioritizing the hazards according to their severity, determining the destination's level of exposure, assessing vulnerability and evaluating the risk reduction options. The output is a hazard or vulnerability map with information on the most vulnerable locations.

Developing the Disaster Preparedness Plan

The next step is writing the disaster preparedness plan. Its main purpose is to assist victims in the immediate aftermath of the disaster and to set the destination on a path of recovery and business continuity in accordance with the plan.

When developing the plan,

1 The first task is undertaking a capability assessment that considers available resources, existing capacity, and the efficacy of the disaster response mechanism – that is, it is institutional in scope. A capability assessment is important for identifying major deficiencies in the existing plan and focuses the Coordinating Group in developing corrective actions.

2 Second, the Coordinating Group in collaboration with the local disaster management and tourism agencies should assemble a small team of experts to write the plan, taking into account all feedback received from the wider group of stakeholders. This provides consensus and industry buy-in, critical for successful plan implementation.

3 Third, the plan must be an approved public document through formal approval and adoption by the responsible local authority, in order to proceed to plan implementation. The latter is a cooperative public and private activity.

The disaster preparedness plan must be relevant to the size and complexity of the tourism destination and community and consider all relevant hazards. For it to be accepted by the industry, it should also be clear and concise delineating the roles and responsibilities of all of the collaborating local governmental agencies, groups and emergency support functions for all phases of the disaster management cycle (prevention, preparedness, response, and recovery). Technical jargon should be at a minimum, yet all the main steps required for preparing tourism communities should be addressed.

Among other procedures, it should explain the early warning systems and triggers for activating or deactivating emergency actions, evacuation and sheltering including critical access and exit routes, and the procedures for mobilizing emergency personnel and resources. Procedures for activating and operating national, regional or local emergency operations centres and the incident command system should also be clearly specified. In Appendix D.3, a model table of contents is provided for the typical disaster preparedness plan.

Implementing the Preparedness Plan

Plan implementation will detect key deficiencies of response, any problems with the overall emergency management system, as well as any challenges related to personnel, equipment and other resources. Plans may be simulated as modular or full scale exercises or drills which have specific logistical requirements. Exercises of all types and scales are necessary for training essential staff in organizational discipline, cooperation and execution of plan requirements. This is especially important for the tourism industry with its interactive supply chain.

Knowledge, experience and learning are also key facets of simulated exercises and real time plan implementation and lessons learned should be discussed in post-event analyses and adjustments made as required. This is a fundamental step in reducing future risks of disasters and in improving resiliency.

The public should always be kept informed and educated as progress is made in the formulation and implementation of the plan. Too often, disaster management planners underestimate the importance of public education and outreach. Tourism communities have multiple interests which also need to be educated about plan objectives and requirements.

Conclusions

Mainstreaming disaster risk reduction at tourism destinations means creating a pervasive culture of disaster preparedness. It also presupposes an alignment of political will and leadership with disaster management goals and objectives, and the actions and resources to strengthen the disaster management infrastructure and operation – all for the purpose of achieving destination resilience. The ultimate measure of this is not only an articulated plan of action but also the achievement of desired outcomes in the face of disaster events.

The Handbook outlines a range of options that tourism destinations should consider for mainstreaming risk reduction in post-disaster recovery including the use of hazard scenarios to anticipate long term recovery issues, establishing a standing recovery task force to oversee reconstruction or by providing incentives or disincentives to either encourage or discourage behaviours.

The choice is clear: climate-proof and resilient destinations and communities are strategies that must be adopted and quickly. The good news is that there is a wealth of know-how, expertise and experience readily available from multiple sources. The evidence shows that businesses adopting sensible and efficient practices by conserving energy, natural resources and critical ecosystems, end up improving their bottom-lines in the short and long term and creating shareholder value. These are also the actions required for mitigating disasters. Coastal ecosystems naturally protect and nourish coastlines. These should be considered a treasured national resource and treated accordingly with diligent care and preservation.

On the other hand, human communities and systems require preventative and preparedness actions against disasters. The challenge is overcoming the barriers to cooperation, inertia and lack of will of decisions-makers at the policy, business and community levels. This may also be addressed through awareness-raising of disaster events, enlightened leadership, public and private sector cooperation and commitment to a common goal. The desired result is a tourism destination that delivers on its promise consistently and has an established reputation for protecting its residents, businesses, and visitors against the effects of natural hazards.

Introduction

1

1.1 *Purpose of the Handbook*

Within recent years, the evidence for increased risk of climate-induced slow-onset (e.g. sea level rise), and increased intensity and frequency of rapid-onset disasters (e.g. super cyclones), has emerged with greater certainty. The predominant impact has been on coastal communities with huge losses of life, livelihoods, property, and infrastructure. This has only served to sharpen the focus on disaster preparedness and management world wide.

In addressing disaster risk management in the tourism industry, the complexity, dynamism, and importance of this industry to the world and small island economies is recognized, along with the potential risks to coastal tourism investments. While the 2004 Indian Ocean tsunami demonstrated well the vulnerability of coastal resorts to ocean surges, it also exposed a great disparity in recovery times between the hotel sector, the tourism destination, and affected communities.

To this end, this Handbook brings together three important aspects of the environment-development dichotomy with the practice of disaster management:

- ❑ Tourism as a contributor to economic development;
- ❑ Climate change impacts; and
- ❑ The vulnerability of coastal communities to natural disasters.

These aspects of the development agenda are brought into focus in this Handbook for the purpose of maintaining tourism destination integrity and resilience, when faced with natural disasters and their related hazards. The Handbook's approach builds upon UNEP's *Awareness and Preparedness for Emergencies at the Local Level (APELL)*. This is a process designed to create public awareness of hazards and to ensure that communities and emergency services are adequately trained and prepared to respond (see Chapter 3).

This Handbook was therefore conceived as an important tool for planners and managers requiring tailor-made guidance for improving the resilience of coastal tourism destinations to climate induced disaster. Its orientation towards coastal tourism destinations is primarily because of the size and popularity of the tourism plant that already exists in coastal areas; the surge in new and large-scaled resort development and unceasing demand for valued coastal real estate; and the elevated risks that resort destinations and communities are likely to face from climate-induced events.

Its specific objectives are threefold:

- To increase the capacity of coastal tourism communities to better prepare for and respond to natural disaster emergencies;
- To mainstream disaster risk reduction into coastal tourism destination planning and development; and thereby,
- To support local climate change adaptation efforts.

The term "risk" is used extensively in this handbook. Risk is most commonly held to mean something to be avoided; in everyday usage, risk is associated with the probability of a loss. In the framework of "disaster risk management" risk is defined as "*the probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions*". Risk may also be computed as the product of a disaster's probability multiplied by the vulnerability and divided by the capacity to adequately respond.

Risk = (Probability of a Disaster x Vulnerability) / Capacity

The larger the capacity to respond the lower the risk. Therefore two main and complimentary approaches to reducing risk can be identified as:

- Decreasing vulnerability
- Increasing capacity.

Based on the above, it is generally agreed that the impacts of disasters can be substantially reduced if vulnerable communities are fully informed about possible hazards and have participated in the formulation of risk and crisis management plans – that is their capacity to respond is greater. Community awareness and involvement are key tenets of the APELL process. The Handbook is therefore premised on the fact that these are also key factors for reducing risk.

Although it is also recognized that tourism is vulnerable to other categories of disasters (e.g. terrorism, technological disasters, global diseases etc.), the scope of the Handbook is purposefully targeted to the risks posed by climate induced natural hazards at coastal destinations e.g. floods, storm and ocean surges, and extreme winds.

1.2 *Target Audience*

The Handbook is principally recommended for addressing coastal tourism destination and community disaster risks. The primary target audiences are therefore:

- *Local level decision-makers, planners and managers:* including municipalities, counties or local government offices and first emergency responders – usually the first to respond to any disaster affecting local communities – and who therefore must be in the forefront of community preparedness planning.
- *Staff at local disaster management agencies:* with major responsibility, authority and resources for preparing destinations against the effects of natural hazards, yet who must also be sensitized to the key vulnerabilities and disaster risks to coastal tourism communities.
- *Tourism destination planners:* who require an appreciation of natural disaster risk and exposure of the tourism plant to climate-induced disasters.
- *National planners:* with responsibility for macro- and spatial planning – a group that features most prominently in mainstreaming climate change adaptation strategies at the national level.

Other tourism organizations, associations, economy and sector planners and managers, communication specialists and especially members of the media, will also find this Handbook to be a useful source of information on coastal tourism risks or for preparedness planning.

All users of the Handbook will need to appreciate that effective disaster risk reduction is predicated upon a system of comprehensive, integrated, nation-wide cooperation and preparedness planning. In particular, the lessons of post-disaster events should be a continuous source of learning for local communities, in order to achieve real and demonstrable improvements to destination resilience.

1.3 *Organization and Content*

As noted above, the Handbook adapts tested practices in disaster risk reduction to community level preparedness at coastal tourism destinations. Whilst it could also support training exercises, this is not its primary objective. It neither comments on nor adds to the scientific evidence for climate change predictions or the discipline of risk assessment. The Handbook serves rather, as an important implementation guide to decision-makers in the tourism industry and should be used alongside other technical resources. The Handbook is structured so that in a relatively concise form, it provides information on key issues that arise in discussions with stakeholders addressing coastal tourism risks, preparedness planning, and disaster reduction. To serve its objectives, it also provides an overview of the latest findings on climate change, disasters, and tourism.

Chapter 2 of the Handbook provides synthesized explanations of:

- The elevated risks and impacts of climate change on coastal areas;
- The peculiar characteristics of the global tourism industry that necessitate strategic and cross-sectoral planning and response actions.
- Climate change adaptation strategies and programs for coastal zones which are available to disaster managers and multi-sector stakeholder groups.
- The special needs and characteristics of small island developing states when combating climate induced-events.

Chapter 3 provides an overview of disaster preparedness and management frameworks at international, regional and national levels and a description of UNEP's 10-step APELL process and its suitability for adoption in disaster risk reduction at coastal tourism communities.

Having established this context, the Handbook addresses an important question: How should we prepare and enhance tourism destination integrity and resilience in the face of more frequent natural disasters and their related hazards? The answer lies in the deeper involvement of coastal tourism communities.

Chapter 4 provides key guidance on how the community can identify and assess natural disaster risk at the coastal tourism destination. The approach promulgated here is a collaborative one with local disaster agencies and intended to be practical and realistic, taking account of any location-specific differences.

Chapter 5 guides users through the disaster preparedness plan formulation stage and writing process, pointing out the role of the coordinating agencies and actors to ensure plan buy-in and approval.

Chapter 6 focuses on plan implementation including drill and simulation exercises and rehearsing, pointing out the need for continuous review and evaluation, incorporating lessons learned from simulated disaster scenarios and including strategies for routine updating, public education and training of key implementation staff.

Finally, Chapter 7 unifies the discussion on local level preparedness and mainstreaming risk reduction into the disaster and development planning process. It is important to have established milestones and targets to ensure that objectives are met and that continuous learning and knowledge are built into destination planning. This provides the best benchmark for achieving community and destination resilience.

The authors encourage regular feedback and comment to ensure that this publication continues to evolve and be relevant to the needs of all users.

Climate Change, Disasters And Tourism

2

The previous Chapter established the basis and purpose of the Handbook. This Chapter examines the climate change impacts on tourism, risks to the tourism industry and the urgent need for all stakeholders at coastal tourism destinations to be more involved in planning for and responding to disasters.

2.1 *Climate Change Impacts on Tourism*

With its traditional use of natural resources and climate-based activities, tourism is considered to be a highly climate-sensitive economic sector similar to agriculture, insurance, energy, and transportation. Climate change is no longer considered an obscure future event for tourism, as its varied impacts are becoming more evident at destinations around the world. As a result, climate change is already influencing decision-making in this global industry. There are four broad categories of climate change impacts that will affect tourism destinations, their competitiveness, resilience and sustainability.

"No destination should assume they will not be affected by climate change" UNWTO-UNEP-WMO, 2008

Direct climatic impacts: Climate is a principal resource for tourism. It co-determines the suitability of locations for a wide range of tourist activities, is a principal driver of seasonality in global tourism demand, and has an important influence on operating costs, such as heating-cooling, snowmaking, irrigation, food and water supply, as well as insurance costs. Thus, changes in the length and quality of climate-dependent tourism seasons (e.g. sun-and-sea or winter sports holidays) could have considerable implications for competing destinations and therefore the profitability of tourism enterprises. Studies indicate that a shift of attractive climatic conditions towards higher latitudes and altitudes is very likely. Uncertainties related to tourists' climate preferences and destination loyalty, require attention if the implications for the geographic and seasonal redistribution of visitor flows are to be projected.

The IPCC has concluded that changes in a number of weather extremes are probable as a result of projected climate change (IPCC 2007a). Changes in weather extremes will affect the tourism industry through increased infrastructure damage, additional emergency preparedness requirements, higher operating expenses (e.g., insurance, backup water and power systems, and evacuations), and business interruptions.

"There is high confidence that the most immediate and more significant consequences of climate change are likely to be changes in the nature of extreme events (e.g. flooding, tropical cyclones, storm surges, heat waves) and climatic variability (e.g. droughts, and prevailing winds accelerating coastal erosion). Coastal areas are particularly vulnerable to extreme wind events". UNWTO-UNEP-WMO, 2008

Indirect environmental change impacts: Because climatic conditions so profoundly influence visitor choices, a wide-range of climate-induced environmental changes will also have far-reaching effects on tourism at local and regional destinations. Changes in water availability, biodiversity loss, reduced landscape aesthetics; altered agricultural production (e.g. food and wine tourism), increased natural hazards, coastal erosion and inundation, damage to infrastructure and the increasing incidence of vector-borne diseases will all impact tourism to varying degrees. In contrast to the varied impacts of a changed climate on tourism, the indirect effects of climate induced environmental change are likely to be largely negative. Importantly, there remain major regional gaps in the knowledge of how climate change will affect the natural and cultural resources critical for tourism in Africa, the Caribbean, South America, the Middle East and large parts of East Asia.

2

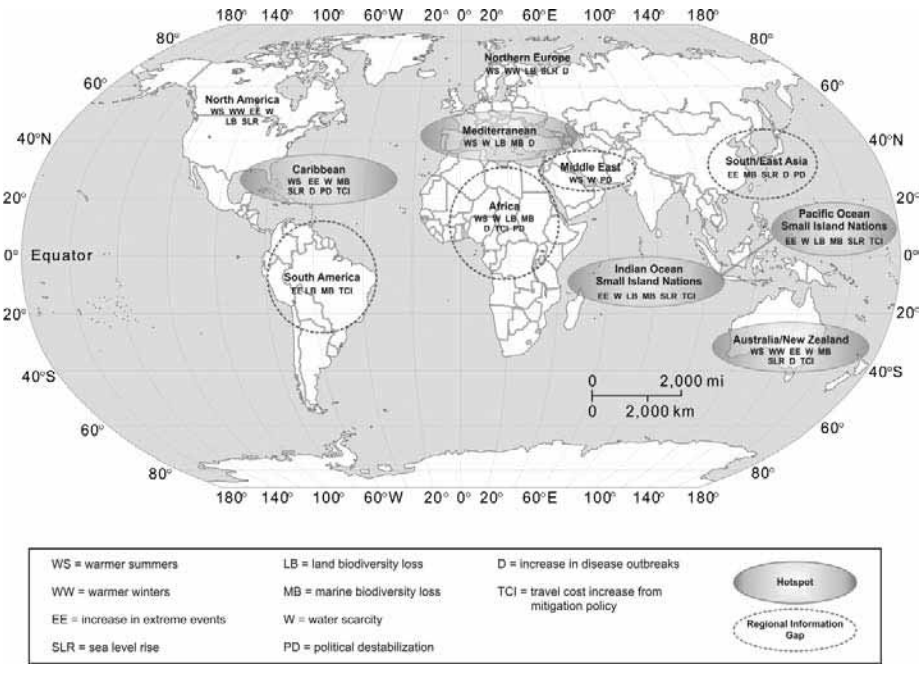
Impacts of mitigation policies on tourist mobility: National or international mitigation policies – that is policies that seek to reduce GHG emissions – may have an impact on tourist flows (Simpson et al. 2008a; Gössling et al. 2008b). They are likely to lead to an increase in transport costs and may foster environmental attitudes that lead tourists to change their travel patterns (e.g. shift in transport modes or destination choices). There has been substantial and recent media coverage on this topic, specifically as it relates to air travel. Long-haul destinations can be particularly affected and officials in Southeast Asia, Australia-New Zealand, Africa and the Caribbean have expressed concern that mitigation policies could adversely impact their national tourism economy.

Indirect Societal Change Impacts: Climate change is thought to pose a risk to future economic growth and to the political stability of vulnerable nations. Any reduction of global GDP due to climate change would reduce the discretionary wealth available to consumers for tourism and have negative implications for anticipated future growth in tourism. Climate change is considered a national and international security risk that will steadily intensify, particularly under greater warming scenarios. Climate change associated security risks have been identified in a number of regions where tourism is highly important to local-national economies (e.g. Barnett and Adger 2007, Stern 2006, German Advisory Council 2007, c.f. Simpson and Hall 2008). International tourists are averse to political instability and social unrest, and negative tourism-demand repercussions for climate change security hotspots, many of which are believed to be in developing nations, are evident.

Tourism Vulnerability Hotspots: The integrated effects of climate change will have far-reaching consequences for tourism businesses and destinations and these impacts will vary substantially by market segment and geographic region. The implications of climate change for any tourism business or destination will also partially depend on the impacts on its competitors. A negative impact in one part of the tourism system may constitute an opportunity elsewhere. Figure 2.1 provides a summary assessment of the most at-risk tourism destinations for the mid- to late-21st century. Due to the very limited information available on the potential impacts of climate change in some tourism regions, this assessment must be considered with caution. Until systematic regional level assessments are conducted a definitive statement on the net economic or social impacts in the tourism sector will not be possible.

Figure 2.1: Climate Change Vulnerability Hotspots in the Tourism Sector

"Travel & Tourism is an inseparable part of the world in which we live, making a vital contribution to the world's economy, as well as to the quality of life of its citizens. It shares in realizing the universal aspirations of uniting friends and families, stimulating exchanges across frontiers, creating sustainable jobs, and countering climate change". WTTC, 2007



Source: UNWTO-UNEP-WMO 2008

2.2 *Tourism as a Contributor to Economic Development*

World travel and tourism is expected to generate approximately $8 trillion in total receipts during 2008, with an annual growth rate of 3%, down slightly from 3.9% in 2007 (WTTC, 2008). The next decade (2008-2018) is expected to see mature, yet steady growth averaging 4.4% in spite of the current global economic downturn from uncertainty in US economy accompanied by a weakening dollar, high oil and food prices driving inflation, and concerns relating to climate change impacts.

Tourism counts among the main economic activities in many countries. Table 2.1 presents data for the top ten countries in the global travel and tourism economy (WTTC, 2008). Among these, China, India, Indonesia and Thailand are also countries most frequently or significantly affected by natural disasters in terms of scale of devastation, mortality and economic losses.

WTO statistics also show that tourism is the world's largest industry with regard to the number of people involved and economic profit. According to the European Commission data, 63% of the European holidaymakers prefer the coast against 25% of those giving preference to mountain locations, 25% to cities and 23% to countryside.

Table 2.1: Global Travel and Tourism Statistics (2008)

Travel & Tourism Economy Employment (Top Ten Countries) 2008 ('000s of Jobs)	Travel & Tourism Demand (Top Ten Countries) 2008-2018 Demand (% Annualized Real Growth)
China 74, 498	India 9.5
India 30,491	China 8.9
United States 14,933	Libya 8.1
Japan 6,833	Vietnam 8.1
Mexico 6,633	Montenegro 7.4
Indonesia 5,936	Romania 7.1
Brazil 5,500	Macau 7.1
Vietnam 4,891	Namibia 6.9
Russia 4,126	Croatia 6.9
Thailand 3,911	Czech Republic 6.8

Source: World Travel and Tourism Council (WTTC), 2003

According to the UNWTO, tourism is a primary source of foreign exchange earnings in 46 out of 50 of the world's Least Developed Countries (LDCs).The tourism sector if properly managed has the potential to make a substantial contribution to the achievement of the United Nations' Millennium Development Goals. An important challenge is the fact that economic considerations, rather than social and environmental considerations, constitute the dominant force directing tourism development, policies and promotion, particularly in developing countries and countries with economies in transition.

Future success, however, demands that the sector adapts to climate change, and, equally as important, reduces its contribution to climate change through emissions of greenhouse gasses. Both aspects require substantial changes in the tourism product development system.

2.3 *Tourism Destinations at Risk*

Tourism businesses and coastal tourism destinations are increasingly challenged by environmental disasters brought on by the rapid onset of climate-induced natural events e.g. drought, floods, windstorms and storm surges, super hurricanes and typhoons, in the short and long term. Recent conclusions of the IPCC's Fourth Assessment (AR4) synthesis highlight some impacts on coastal areas including, inter alia:

- Warmer (expanding) oceans resulting in faster rates of sea level rise and increased sea surface temperatures. Marine and terrestrial ecosystem alterations and species loss, particularly coral reefs which have undergone major bleaching.
- Increase in tropical cyclone intensity, particularly for hurricanes in the North Atlantic, which appears to correlate well with observed increases in sea surface temperatures.
- At higher latitudes, reduced polar ice coverage (i.e. polar caps and ice sheets), retreating glaciers and increased river flow from melting snow.
- Changes in weather patterns e.g. increased rainfall (floods) in the Northern and Southern Americas and Western Europe; decreased rainfall (drought) in the Mediterranean, the African Sahel and Southern Asia;

Recent shocks to the global and regional tourism industry caused by extreme events including climate induced disasters have affected popular tourism destinations directly in terms of loss of life, livelihoods, property, and reduced arrivals immediately following the events.

These concerns can escalate further, when source countries issue travel advisories against offending countries. Following these experiences and in the image-driven business of tourism, tour operators and visitors are now likely to scrutinize more carefully, any destination with visible or perceived threats to health, safety and security.

Even though the 2004 Asian Tsunami is not a consequence of global warming, the rapidity with which the ocean surge (or tsunami-generated) waves devastated coastal tourism destinations in its path, bore many lessons. Recovery of the affected coastal tourism destinations in Thailand in particular, was undertaken through very focused, committed and strategic partnerships between the local public and private sectors and regional and international agencies, and at great cost.

BOX 2.1: The 2004 Indian Ocean Tsunami
The 2004 tsunami caused the death of over 270,000 people and injured half a million with as many as five million impacted in some way. There was also great devastation of physical infrastructure mainly in Indonesia. Coastal resorts in India and Malaysia were hit but the most severely damaged tourism infrastructure was in Thailand, Sri Lanka and the Maldives. In tourism figures this resulted in a great exodus of tourists and cancellation of bookings. January 2005 recorded an 85% decline in international tourists. Hotel occupancy rates fell to 10%. Overseas arrivals into Phuket dropped by 67% in the first half of 2005 and approximately 500 tourism enterprises (employing over 3000 people) collapsed in 2005 (Henderson, 2007).

This highlights the need for improving the resilience of coastal destinations to natural disasters. Coastal and marine ecosystems such as coral reefs, beaches, dunes and mangroves, which have been altered, weakened or removed altogether by chronic pollution, cleared for land development or through unsustainable uses, will consequently be more susceptible to climate-induced disaster events. Rises in sea-level due to climate change makes these areas even more vulnerable.

Integrated coastal zone planning should also not be neglected; coasts are very fragile and have always been subject to strong population pressures causing urbanization and pollution. The traditional marketing and development approaches to selling a “sand, sea and sun” product have resulted in the concentration of tourist facilities in coastal areas. This has contributed to the degradation of the coastal and marine environments and to disruptions in the social fabric of many traditional communities.

Box 2.2: Coastal Development Issues in the Media
In its March 2007 edition, *National Geographic Traveler* magazine’s Geotourism Editor, J.B. Tourtellot authored an article on Belize entitled, “A Reef Takes a Dive”. The article described impacts on the country’s Mesoamerican reef ecosystem from an overabundance of cruise visitors and lack of controls. Here is an excerpt (reprinted with permission):
”Global warming is threatening the reef waters that are literally too hot for coral to handle, causing bleaching and seas that could rise faster than the already-stressed reefs can grow taller. Piling on, Hurricane Mitch in 1998 delivered a devastating blow, destroying much of the southern reef. Local activities add more stress. Pollution, overdevelopment, and overfishing (lots of it by non-Belizeans) thrive in a country too disorganized to enforce its own rules.”

Climate risks therefore can and should be mitigated for their short and long term effects. The IPCC risk scenarios provide an opportunity for destinations to engage in proactive planning against anticipated disaster risks rather than repeatedly being caught reacting to events as they occur.

However, few tourism destinations have a track record of integration and collaboration between tourism agencies and local disaster management agencies to address disaster vulnerability and risk. For many countries, this remains a challenge yet an imperative for maintaining a resilient industry.

Box 2.3 Case Study: Phuket Province Tourism Risk Management Strategy, 2007-2012

Phuket Island and province is located 852km south of Bangkok in the Andaman Sea. At 590 km2, it is the largest of 39 other islands and the most important tourism centre in the country. Its resident population is approximately 250,000 increasing to 500,000 during the tourism high season. The island receives over 3 million visitors annually seeking varied pleasures from its stunning beaches, mountainous landscapes, and its array of hotels, restaurants and other attractions.

Phuket is affected by natural and man-made disasters. Over the past 10 years it has suffered the effects of major local and global disasters ranging from building collapse, hotel fires, civil disturbances, terrorist bombings, SARS, Bird Flu and most notably, the Indian Ocean Tsunami, with high mortality among visitors, residents and industry workers. This has resulted in a significant decline in tourist arrivals immediately following these events. The overall impact on its economy was devastating along with the loss of its reputation as a safe and enjoyable tourism destination.

In response, the Royal Thai Government, in association with provincial agencies, local private and community-based organizations collaborated together over the years following, to recover especially from the tsunami devastation. This included:

Development of a Phuket Tourism Risk Management Strategy, the main objectives of which are to unify, educate and improve cooperation and resilience of the tourism industry;

Integration of the Risk Management Strategy into other operational plans e.g. the National Development Plan, Sub-Regional Development Plan, and refinements to the National Disaster Management Plan.

To develop a culture of prevention and preparedness in the Phuket tourism industry involving well established partnerships and working relationships between the public and private sector.

As plan implementation continues, the Phuket tourism industry is also learning valuable lessons related to involving vulnerable communities in the planning process and overcoming traditional barriers against preparedness and response, in particular the opinions of many on the island who believe that preparedness is mainly a government responsibility.

Source: “Phuket Province Tourism Risk Management Strategy, 2007-2012, Road Map for a Safer and Risk Resilient Phuket as a Tourism Destination”.

2.4 *Mitigation and Adaptation Strategies*

Climate change mitigation strategies may involve technological, economic and social changes, use of alternatives and changed behaviours among tourists, with objectives to reduce greenhouse gas emissions. Adaptation strategies may also involve shifts in patterns of behaviour and development planning within countries, for example, repositioning vulnerable communities away from disaster prone areas or strengthening exposed infrastructure – also referred to as “climate-proofing”. Mitigation and adaptation strategies are not mutually exclusive and together provide improved development options for local populations.

Mitigation activities can include reduced energy use, for instance in airline travel where tourists avoid long-haul flights; or improving the energy consumption and efficiency of hotels and businesses; increasing the use of renewable energy or carbon-offsetting schemes; or through tour operators' choices of sustainable destinations and packaging of responsible travel products. While behaviour changes and technological innovation have considerable potential to achieve reductions in greenhouse gas emissions, this will not be sufficient to satisfy the global emissions accounting for absolute reductions in emissions (UNWTO-UNEP-WMO 2008). For coastal tourism destinations, adaptation to the consequences of climate change will need to be the primary strategy.

Behavioural changes (tourists) as well as structural changes (industry-wide) will thus be of increasing importance for reversing the growing trends of greenhouse gas emissions from tourism. Given the great interest in 'green' holiday options, it seems clear that for those actors embracing industry mitigation strategies, there will be new business opportunities. Current societal trends have already created new markets for low-carbon tourism products, and these markets can be expected to grow in the future.

With debate on the veracity of climate change data and evidence now essentially over, the need to shift towards mitigating the anticipated impacts through national adaptation programs is now paramount. The intent and purpose is to drive destinations and tourism businesses toward urgent actions that will attenuate greenhouse gas (GHG) concentrations in the atmosphere (mainly carbon dioxide, CO2).

Adaptation strategies could also limit the potentially disastrous consequences of climate change impacts on tourism assets, vulnerable ecosystems and their related services, community livelihoods, infrastructure, and property. Given the climate change events predicted to impact coastal tourism communities, ecosystems, critical livelihoods and production systems, mitigation of impacts is an increasingly urgent imperative.

Climate change adaptation is rapidly morphing into a "mainstream development issue". The concern here is for the marginalized poor and particularly in developing countries, who suffer disproportionately from the effects of disasters. The "adaptation" landscape is evolving towards linking its programs to development strategies in order to reduce chronic poverty, the temporal and spatial dimensions of vulnerability, and to address the management of climate risk at destinations and within organizations. This is now the main focus of the development agenda.

Recent studies undertaken by the World Resources Institute (WRI) examine links between climate adaptation and the development agenda. The report discusses a continuum of programs specifically designed to adapt to a changing climate and those which are part of the national development agenda. It reports that this continuum comprises four (4) types of 'adaptation' efforts:

1) Development programs that focus on poverty reduction and that seek to improve the capability for specific development/poverty challenges e.g. HIV/AIDS, literacy, women's rights or improving livelihoods.

2) Programs that seek to improve the capacity of institutions and systems and that overlap with adaptation activities, e.g. development of more robust communications systems, planning processes, weather monitoring & forecasting mapping and natural resource management.

3) Programs designed to manage climate risk by incorporating climate information into decision-making e.g. disaster response planning, drought-resistant crops, or the climate-proofing of physical infrastructure.

4) Activities that are specifically focused on mitigating climate impacts e.g. relocating communities in response to flooding from sea level rise or glacial melting.

The WRI adaptation report concludes that "…*adaptation needs to be regarded as a 'big tent' encompassing the full range of responses – from reducing poverty and building capacity, to managing risk and directly confronting climate change impacts*".

This Handbook accepts and endorses climate adaptation as a strategy for risk management and reduction. Apart from the focus on building capacity and resilience within the community, the Handbook will also promote the preservation of key ecosystem services through biological diversity as a mitigation strategy.

There is undoubtedly any number or type of mitigation and adaptation programs ongoing at tourism-based economies. The idea is to combine traditional development approaches with risk evaluation and reduction planning for the overall goal of building community resilience. Disaster managers, decision makers and tourism industry personnel, will therefore need to reshape their own thinking and practices beyond traditional boundaries and to embrace the realities of climate change. Collaboration and partnership between multi-stakeholders, across sectors and with varying skills, resources and expertise, are essential in order to confront the challenge of climate-induced hazards.

2.5 *Small Island Developing States (SIDs)*

SIDs are limited by their smallness yet well known for their natural, human, and cultural resources which are key tourism assets. These assets and resources are often exposed to persistent stressors and are fast degrading because of a combination of limited capacity and weak institutional structures for the monitoring and control of development and enforcement of legislation.

SIDS' topographic island character, azure seas and beaches serve as a magnet for coastal tourism and prime commercial real estate development. Caught within vast ocean spaces, SIDS' low land-to-sea ratios also make them highly vulnerable to tropical hazards especially cyclones, storm surges, and tsunamis. Many Caribbean and Pacific Island SIDs contend with tropical cyclones each season, which weaken local and indigenous community defenses, infrastructure, and property.

SIDs are particularly vulnerable to global climate variability and sea level rise. One essential fact is that 13 of 25 of the most disaster prone countries are SIDS (Barbados Programme of Action, BPoA, 1994). As their expanding populations demand more services from sectors such as housing, agriculture and tourism, conflicts typically arise and expose the inadequacy and inherent structural weaknesses in environmental and disaster management capabilities. When exposed to natural disasters, the vulnerabilities of SIDS have had a pervasive impact on their populations, economies and environmental resources. The disaster recovery effort also becomes a huge and costly burden with dire consequences for their economies and vulnerable populations.

Studies completed in 2007 assessing climate change impacts and adaptation strategies for SIDS and other Asian, African and Latin American destinations, concluded the following:

> *"Multiple factors converge to make the people inhabiting coastal zones and small islands highly vulnerable. Coasts and small islands are highly exposed to a variety of climate hazards that may be affected by global climate change. The climatic hazards converge with local and regional human pressures to create conditions of high vulnerability, particularly in areas with high concentrations of people and infrastructure in low-lying coasts." (AIACC, November 2007).*

"The AIACC studies suggest that the potential severity and risk of many climate change outcomes are less where social, economic and governance systems function in ways that enable effective responses to prevent, cope with, recover from and adapt to adverse impacts." (AIACC, 2007)

These climate-induced vulnerabilities are frequently exacerbated by "non-climate drivers" that include poor land use decisions and actions, degraded wetland and reef ecosystems, inadequate disaster preparedness and advance warning systems, high dependency on tourism and persistent pollution.

Similarly, population centres and vulnerable communities, tourism, utility and other infrastructure located within narrow coastal zones, are also part of the social fabric now at risk from elevated sea levels and more extreme disaster events. In particular, small island communities will struggle with more limited options for alternative livelihoods, shelter and food supplies. Additionally, at small island destinations in the Caribbean and Pacific, shortages in potable water from extended dry seasons and drought or salt water intrusion can amplify water demand in the tourism sectors there and increase shortages and cost of operations.

It is therefore essential for disaster managers and coastal communities in SIDS to be deeply and conjointly engaged in the process of appraising and preparing for the risks of global warming. The 1994 SIDS' BPoA, also advocates for national policies, strategies and actions to strengthen disaster preparedness institutions, regulatory and enforcement systems, encourage stakeholder, community and media participation, as a disaster mitigation strategy. Furthermore, the BPoA encourages SIDS to take advantage of regional and international support, assistance and expertise.

In the final analysis, taking action at the destination to mitigate climate risks today is sure to limit the costs of recovery tomorrow.

Disaster Risk Management Frameworks And Approaches

3

3.1 *Introduction*

A systematic approach to managing disasters is fundamental for an effective and proactive response. Following the shocks to the global tourism industry in the recent past from both natural and man-made events, greater emphasis has been placed on disaster preparedness planning at tourism destinations. The objectives are to reduce risks, improve community resilience and preparedness, to fast track recovery of the affected destination, and provide tangible evidence of the health, safety and security arrangements for residents and tourists.

Disaster preparedness frameworks are typically public-sector focused given their primary objective for public safety and security. They are also hierarchical by design, delegating authority and responsibility from the highest executive office to the level of the local disaster management and coordination (i.e. vertical integration). They also define the shared responsibilities of collaborating agencies and stakeholders, including neighboring jurisdictions (i.e. horizontal integration). This hierarchical span of control is dependent upon the level of institutional complexity at the destination (e.g. national, state, provincial, county, municipal or local government, NGOs, private industry, community), the levels of vulnerability and exposure, and the nature, frequency and severity of hazards.

This chapter introduces the disaster management cycle and provides examples of disaster preparedness frameworks at the international, regional and national levels.

3.2 *The Disaster Management Cycle*

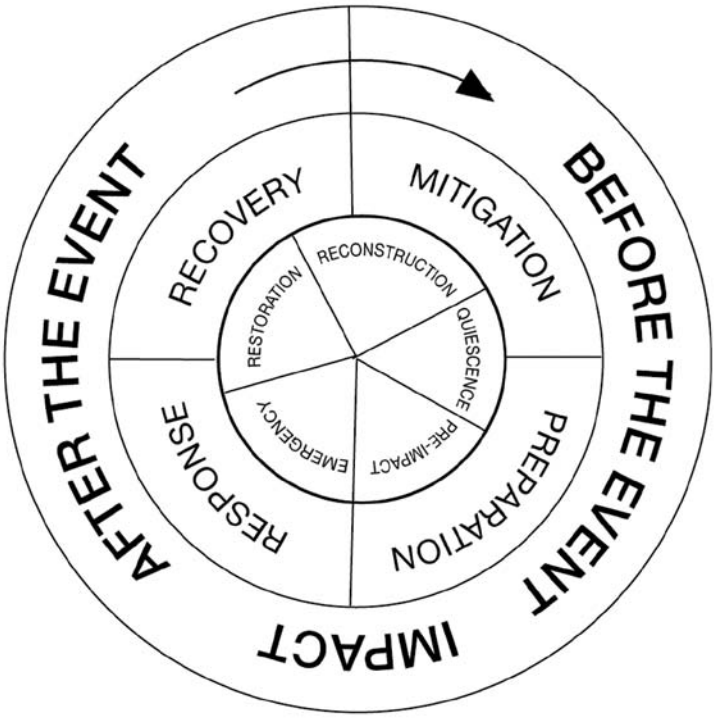
The definition of what constitutes a “disaster” varies semantically between agencies depending upon national objectives and preferences. All definitions point to a major disruptive event or crisis resulting from either natural or man-made causes that exceed the capacity of a community to recover. This Handbook adopts the definition used by the United Nations International Strategy for Disaster Reduction (UNISDR): *a disaster is a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.* A disaster can be the main source of or manifestation of risk. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

A disaster involves hazards which can be detrimental to human life and property e.g. floods, earthquakes, tsunamis, high winds, intense rainfall or drought. These hazards can affect the entire community or selective areas, such as the coastline or floodplain, as part of one or more natural events. The impacts are potentially disastrous when the capacity of the responders is severely tested or exceeded, as in a catastrophic event.

The disaster management cycle, also referred to as the emergency management cycle, involves 4 phases (see Figure 3.1):

- Prevention
- Preparedness
- Response
- Recovery

Figure 3.1: The Disaster Cycle



Source: "Principles of Emergency Planning & Management" by D. Alexander (Harpenden: Terra Publishing, 2002) p.6

The "prevention" phase involves mitigation and risk reduction associated with new construction, planning and redesign of infrastructure, processes and activities for the purposes of climate-proofing tourism destinations and increasing resilience against future disasters. Theoretically this should be addressed prior to disasters, however recent disasters have proven that it usually occurs during quiet post-reconstruction periods. These prevention activities should in fact be considered earlier on in the design, construction, and refurbishment phases of tourism infrastructure development. The "preparedness" or pre-impact phase includes all tasks and activities that build the capacity of the community for an effective and organized response. The "response" phase constitutes all actions geared towards stabilization, containment or control of crisis or emergency conditions. The "recovery" phase refers to a reinstatement of normal or near normal conditions following a disaster event and includes repair, restoration or reconstruction of damaged or destroyed homes, facilities and infrastructure.

The term 'emergency response' has traditionally been used in a reactive sense to describe a community's typical response after a disaster has struck. This approach has largely been replaced by the more proactive practice of 'managing' disasters.

'Disaster management' is a continuum of all the above phases. This continuum is especially relevant for prevention in that it can occur in all phases of the disaster management cycle. Disaster management defines an approach that seeks to understand the full range of impacts, identifies the risks to people, their livelihoods and property and develops preparedness and response measures to reduce exposure, improve capacity and hence to limit the likelihood of a future disaster or its impacts. 'Managing' also requires a team of specialized, knowledgeable and able persons from across multi-sectors and agencies, under strong and focused leadership and with the resources to accomplish tasks and objectives.

Taken together, these elements are not static, but revolve around a continuous cycle of activity and interlocution among the responsible and collaborating agencies, united by a common objective to reduce the probability for disaster occurrence. In order for the responsible agency to prepare and respond effectively, there needs to be an analysis of the key disaster risks that threaten the destination. Disaster management is typically undertaken in five basic and sequential tasks:

- *Identifying hazard risks*: analyzing hazards resulting from a natural or man-made event, along with an understanding of the full range of probable effects and consequences.

- *Assessing a community's vulnerability to the risk*: a community's vulnerability may be measured in terms of its size, geographic location, economic status, level of organization, and available resources; infrastructure, and response capability, among other factors. Its vulnerability will therefore depend upon the level of exposure and its capacity to adapt, respond to or recover from the hazard.

- *Developing a preparedness and mitigation plan*: a plan will be required to address any institutional or systemic weaknesses, which could limit the destination or community's ability to mitigate disaster risks.

- *Implementing the plan:* implementation may be simulated to ensure that the plan is workable during real disaster conditions. It is also important to document the lessons learned from the exercises in order to assemble a databank of learning, experience and information.

- *Monitoring, evaluating, revising and updating the plan*: the information assembled provides essential learning for revising and updating the plan, correcting any areas of weakness or ineffectiveness, reallocating resources for greater efficiency and improving community resilience overall.

Organizing the disaster management capability at tourism destinations is principally the responsibility of national and local governments. To this end, disaster management policies and responsibilities are often enshrined in national laws. These provide the overarching legislative framework through which states and local governments receive the authority to implement their response strategies.

3

Moreover, in view of the chaos that typically manifests during a disaster (i.e. during the response phase), a disciplined process of decision making, communications and reporting is absolutely necessary for the timely exchange of accurate information, the maintenance of order and to carry out the requirements of the plan in the most efficacious way.

Over the last decade, there has been a notable shift away from 'command-and-control' type of disaster management planning towards a more participatory and coordinated approach. This recognizes the effectiveness of collaboration, teamwork and cooperation in situations of crisis and the benefits of sharing resources, expertise and learning.

"Islands and coastal zones are among the most vulnerable tourist destinations to climate change. The main observed and projected climatic changes in island destinations are an increased intensity and frequency of extreme events, sea level rise, changes in ocean circulation, and changes in natural ecosystems."
UNWTO, 2007

Although the spectrum of hazards faced by any destination is relatively broad (see Table 3.1), this Handbook focuses only on the relevant geologic and hydro-meteorological hazards experienced at coastal tourism destinations, and which can be aggravated by climate changes.

Table 3.1: The broad spectrum of natural and man-made hazards

HAZARD GROUP	HAZARDS
Geologic	Avalanches/rock falls
	Earthquakes
	Tsunamis
	Volcanic eruptions
	Landslide/mudslide/subsidence
Hydro-Meteorological	Tropical cyclones (including hurricanes and typhoons)
	Windstorms
	Storm Surges
	Drought
	Coastal Flooding, flash flood
	Tornadoes
Man-Made	Hazardous releases
	Explosion/Fire
	Transportation accident
	Building/structure collapse
	Energy/power/utility failure
	Fuel/resource shortage
	Air/water pollution, contamination
	Financial issues, system collapse, etc.
	Communications systems interruptions
	Health/disease outbreaks & illnesses
	Acts of terrorism: explosions, chemical, biological
	Sabotage/civil disturbance/riots
	Insurrection
	Strike or labour dispute
	Criminal activity: theft, vandalism, arson, fraud, embezzlement
	Workplace violence
	Harassment, discrimination
Technological	IT Systems failure, computers
	Ancillary support equipment
	Telecommunications, email/internet
	Energy/power/utility failure
	Product defect or contamination

The following sections describe the notable international and region-specific disaster management frameworks that assist and enhance the national disaster management organization and capacity.

3.3 *The UNISDR Hyogo Framework for Action (HFA)*

The Hyogo Framework for Action (HFA), developed by the United Nations International Strategy for Disaster Reduction (UNISDR) evolved from the International Decade for Natural Disaster Reduction (IDNDR) during the 1990s. Although legally non-binding, 168 governments signed onto the Framework in January 2005 in Japan, spurred on by the devastation of the December 2004 Indian Ocean earthquake and tsunami.

Specifically designed for public sector disaster management agencies and other collaborating organizations, the HFA goal is the substantial reduction of disaster losses in lives and to the social, economic and environmental assets of countries and communities.

The HFA provides governments with, *inter alia*:

- A comprehensive, action-oriented response framework for mitigating the global effects of disasters on communities and national development.
- An implementation guide, *Words into Action*, with advice for more proactive approaches to managing disasters and developing resilient communities.
- A mechanism for learning through assembly of the latest research, data and studies on disaster management and risk reduction trends.
- Technical and organizational assistance for reducing disaster risks.

The HFA is recognized in this Handbook as the appropriate over-arching disaster management and risk reduction framework recommended for national and local levels. Its implementation is the responsibility of governments and their disaster management agencies, which are expected to adapt the framework to their national and local contexts. The UNISDR also provides support and assistance to its member governments implementing the framework.

3.4 *Regional Tourism Industry Approaches to Disaster Risk Management*

Asia Pacific Economic Cooperation (APEC)

Twenty-one Asia Pacific Economic Cooperation (APEC) destinations have joined together to address disaster risks and protect their tourism economies. APEC formulated an authoritative guideline for managing crises and disasters in the regional tourism industry following the October 2002 terrorist bombing in Bali. The objective is to "*provide government decision-makers and tourism industry members in Asia and the Pacific with an authoritative guide to risk management*". A second objective is to encourage tourism destination managers in Asia Pacific to adopt risk management practices in their planning and development functions.

The APEC guideline for tourism risk management advocates, *inter alia*:

- ❑ Governments' primary responsibility for promoting disaster risk reduction.
- ❑ A four-phased, "Four Rs" approach to risk analysis and management i.e. reduction, readiness, response and recovery, which must guide preparedness planning at all levels.
- ❑ Multi-stakeholder participation through use of national tourism councils.
- ❑ The media as key partners in the process of awareness building and conveyance of accurate and timely information during times of crisis.

The guideline provides a broad analysis of tourism industry risks, focused on systematic risk management as a framework for effective decision-making, understanding and responding to potential crisis situations.

APEC promotes collaboration between disaster management agencies, tourism industry associations and destination management organizations. It establishes the criteria for leadership, regional and national responsibilities, promoting use of national tourism councils as part of a multi-stakeholder, decision-making hierarchy. The latter would comprise a mix of government and industry participants and involve various sub-committees focused on specific planning and coordination tasks. The media as a key partner would be involved in all phases of the disaster management cycle.

The Caribbean Disaster Emergency Response Agency (CDERA)

CDERA was established by a 1991 agreement of the CARICOM Community (CARICOM) of governments in the English speaking Caribbean with 16 member states. It is the main regional coordinating mechanism for disaster response and for the dissemination of disaster management guidance, tools and information.

Headquartered in Barbados, its organizational structure includes 16 national disaster management agencies grouped into four sub-regions for efficient response.

"Risk management is the approach that is being applied. Risk identification forms the basis on which to implement planning for prevention and mitigation, preparedness and response, and recovery and rehabilitation"
CDERA, 2008

CDERA takes an all hazards approach to disaster mitigation and works collaboratively, sharing resources and responsibilities for effective regional disaster response, with other specialized government agencies and NGOs in the Caribbean region (e.g. Association of Caribbean States, Organization of American States, Caribbean Development Bank, and the Caribbean Tourism Organization). Although not solely focused on mitigating disaster risks for the regional tourism industry, CDERA has a history of collaboration with the tourism private sector (the Caribbean Hotel Association and its subsidiary, the Caribbean Alliance for Sustainable Tourism) in providing technical support and training to industry personnel. This collaborative approach recognizes the importance of tourism to regional economies and its vulnerability to natural disasters.

CDERA spearheads the following regional activities:

- ❑ Institutional strengthening of national disaster management agencies including training of disaster management personnel.
- ❑ Formulation of model legislation, policies and guidelines for use by member countries.
- ❑ Development of early warning systems, communications and information systems and dissemination guidelines.
- ❑ Public outreach and education including disaster management tools and guidance materials.
- ❑ Coordination of the regional response for any member state experiencing a disaster event, including activating other government and non-government agencies and resources.
- ❑ Assisting members in disaster planning and management, capacity building, preparedness, response and recovery.

These regional agencies and their operating frameworks have the added advantage of being able to draw from expertise and support across geographic regions or internationally for all disaster management phases. International and regional frameworks and approaches pave the way for improved integration in disaster management at the national level. However, any successful action for responding to crises has to also be efficacious at the local level. It is at this level that the direct impact of any disaster will be experienced. The better a community is prepared, the lower the risk of a disaster.

Box 3.1: Comprehensive Hazard and Risk Management in the South Pacific (CHARM)
Developed as part of the South Pacific Applied Geosciences Commission (SOPAC) Disaster Management Unit support program, CHARM provides an innovative regional approach to disaster reduction and risk management in the Pacific Region. Consonant with the UNISDR's Hyogo Framework, the major goal of CHARM is to develop a national operational framework that has considered the activities of all agencies and encourages countries to develop national risk management programs that incorporate the expertise, experiences and resources of government, NGOs and regional partners. It promotes an all-hazards, integrated and coordinated approach (i.e. multi-agency, multi-sectoral) to risk minimisation, with linkages to national development priorities.
The 5 main steps in the CHARM disaster risk reduction process are:

- ❑ Establishing the context
- ❑ Identifying Risks
- ❑ Analyzing Risks
- ❑ Evaluating Risks
- ❑ Treating Risks

Potential beneficiaries of CHARM are all key stakeholders involved in disaster risk reduction including government planning departments, national disaster management offices, non-governmental organizations, community groups, private sector, donors, and regional partners.

3.5 *National and Local Level Frameworks*

3.5.1 The Bahamas Islands, Caribbean

The Bahamas comprises over 700 islands and 2400 cays located east of Florida, U.S., extending 1200km and covering an area of 13,800 km^2. Only 30 of the islands are inhabited, the main ones of which are New Providence (where the capital, Nassau is located), South Andros, Grand Bahama, Crooked, Eleuthera, Abaco, Exuma, Bimini, Harbour, Inagua, Mayaguana, Rum Cay, San Salvador and Cat islands. These are also important tourism areas. The population is 306,000 (2000 census) with 90% on New Providence, Grand Bahama and Abaco islands (70%, 15% & 10% of total population, respectively).

National disaster management and coordination is the function of the National Emergency Management Agency (NEMA). NEMA takes a modular approach to national disaster management modeled on the US incident command system (ICS). Its lead role spans the four phases of disaster management – planning, preparation, response and recovery.

NEMA is responsible for the formulation, updating and implementation of the National Disaster Plan (NDP). The NDP provides the framework for action during all disaster phases and in collaboration with partnering and contributing agencies. It provides *a process and structure for the systematic, coordinated and effective delivery of assistance from the Bahamas National Government to address the consequences of any major disaster or emergency* (NDP, NEMA).

At the working level, planning is coordinated by NEMA's National Disaster Committee (NDC), which ensures that all functional agencies are equipped and prepared to respond to emergencies. During disasters which overwhelm the capabilities of local agencies, NEMA activates its national emergency operations centre (EOC), which is responsible for coordinating all support agencies during crisis conditions and returning the country to normalcy in the shortest possible time, with minimal disruption to livelihoods, loss of life and property.

For the islands of the Bahamas, NEMA coordinates thirteen emergency support functions (ESFs) ranging from transportation to tourism, and comprising multiple public, private, NGO and emergency response agencies. Each ESF is led by a public sector agency responsible for executing its assigned function, tasks and activities. Depending upon the nature and scale of an event, an ESF may be activated individually to deal with the local emergency.

The Bahamas' Ministry of Tourism and Aviation (MOTA) leads the "ESF 12 – Tourism". It *coordinates activities to ensure that the tourism industry is equipped to effectively respond to and recover from any disaster impacting the nation*. Among other government agencies, ESF 12 is supported by the Bahamas Airports Authority, the Bahamas Broadcasting Corporation, the Bahamas Information Services, the Department of Civil Aviation, the Department of Meteorology and the Port Department.

MOTA has identified hurricanes and associated hazards and ocean surges (in addition to civil disturbances and terrorism) as potential hazards to the tourism sector. Accordingly it has developed a *Hurricane Preparedness and Response Plan* to give effect to its lead responsibility for ESF-12; to ensure that the tourism industry is adequately prepared to minimize disruption to its activities in the event of a disaster; to protect the image and reputation of the islands of the Bahamas; and to protect, mobilize and coordinate all MOTA resources and facilities during hurricane disasters. A Tourism Emergency Coordinating Committee is also established within MOTA to coordinate activities across the industry under this plan.

3.5.2 Phuket Island Province, the Kingdom of Thailand

Phuket Island is Thailand's largest island and one of 76 provinces in the Kingdom. Referred to as the "pearl of the Andaman", the island is 590 km2, which includes other smaller islands. Phuket is the fourth most popular tourism centre, following Bangkok, the capital, Pattaya and Chiang Mai. The island province is governed by a provincial governor with district chiefs, all appointed by the Thai central government. Its administrative centre is in Phuket City. Its resident population of approximately 250,000 comprises Thais who have settled in the tourism destination, as well as ethnic Chinese, Malays and other Asian nationals. During the tourism peak season, the population has increased to a high of 500,000. Phuket Island received over 2.5 million visitors in 2005.

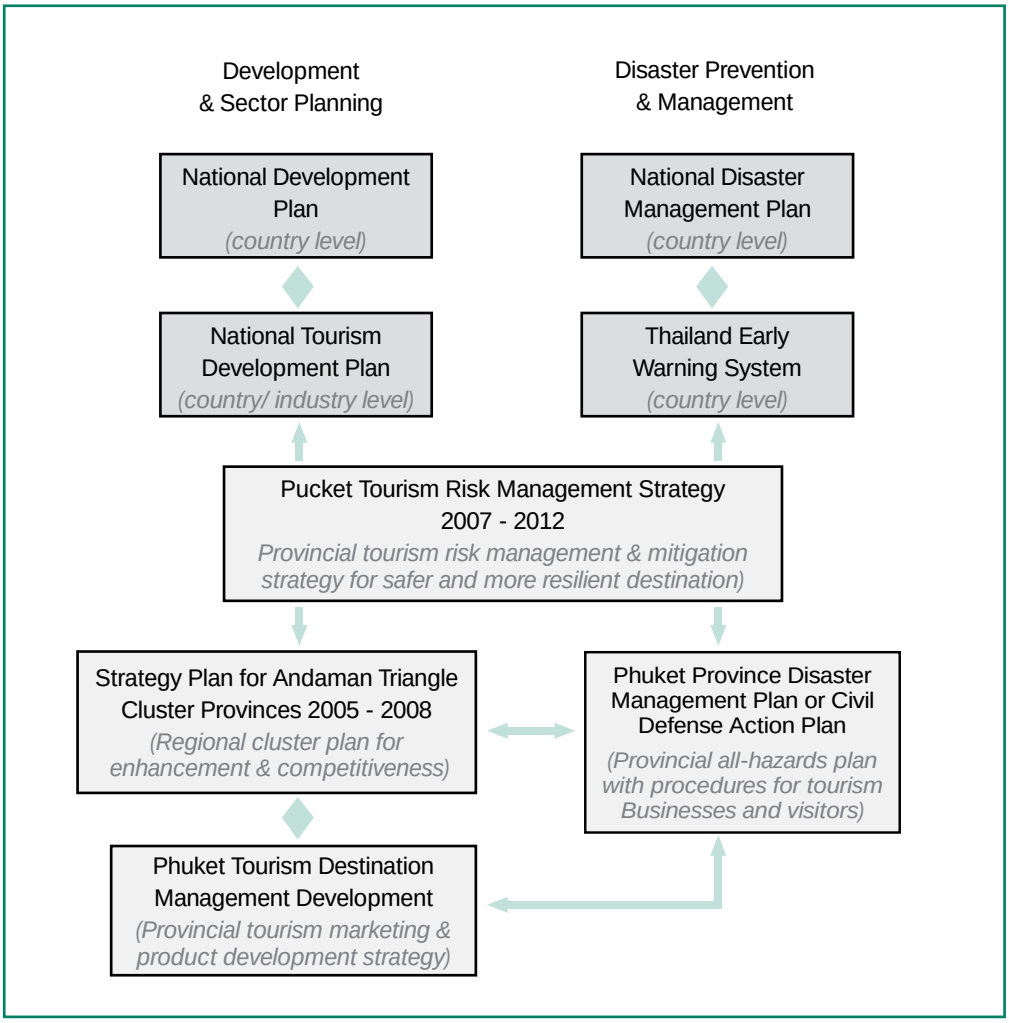
Disaster prevention and management in Phuket province is nested within the national disaster management framework established by the Royal Thai government. The *Disaster Prevention and Mitigation Act, B.E. 2550* [A.D. 2007] proclaimed on August 28th 2007 by His Royal Highness, the King of Thailand, has established the National Disaster Prevention and Mitigation Committee (NDPMC) chaired by the Prime Minister.

This committee also comprises permanent members from 8 government ministries, 5 defense and protective services and other intellectual members appointed by the Royal Thai Cabinet from the city planning and disaster planning and management offices. The Committee is responsible for recommending to Cabinet for its approval, the policy framework for the development and implementation of the National Disaster Prevention and Mitigation Plan (NDPMP).

The NDPMC overseas disaster prevention and management for the Kingdom and its 76 provinces, as well as the operations of the Department of Disaster Prevention and Mitigation. Under the Act, each province, led by its provincial and district governors is required to develop and implement its local and district disaster prevention and management plan, co-opting the support and resources of other government and civil society groups as is necessary to give full effect to the plan.

The Kingdom of Thailand, by virtue of its being a signatory to the *ASEAN Agreement on Disaster Management and Emergency Response* (July 26th 2005), can also access this regional mechanism for engaging external assistance during emergencies, from other nations and parties to this agreement. There are other specialized regional agencies such as the Asian Disaster Preparedness Center (ADPC) and the Asian Disaster Reduction Center (ADRC), which provide Thailand and other member states with assistance and support to reduce disaster occurrence and loss of life.

Figure 3.2: Phuket Province Tourism and Disaster Management Plans *(adapted from the Phuket Province Tourism Risk Management Strategy, 2007-2012)*



Following the mass casualty event of the Indian Ocean tsunami of December 26th 2004, Phuket Island province has developed a 5-year *Phuket Tourism Risk Management Strategy, PTRMS* (see Box 3.2). The PTRMS is integrated with a number of national development, tourism and disaster management plans and strategies (see Figure 3.2) in order to safeguard the tourism destination's reputation for disaster prevention and response. The PTRMS is also related to other action plans and strategies for the province and region, covering the three phases of disaster management.

The PTRMS has prioritized the major hazards that impact the tourism industry: with flooding, tropical typhoons/cyclones, violent storms, earthquakes and tsunamis being the top-ranked. The Province has also identified a stakeholder group comprising representatives of the Phuket government (governor, provincial and sub-district administrators), other government and tourism agencies; tourism industry and association representatives and other supportive and civil society groups. Coordinated by the provincial governor, this stakeholder group oversees the development and implementation of the PTRMS. The operational responsibility for implementation of the PTRMS lies with the Phuket Tourism Crisis Management Team (TCMT), also chaired by the Governor and comprising twelve government and tourism agency members.

3.6 *Awareness and Preparedness for Emergencies at the Local Level (APELL): An International Initiative and Local Preparedness Framework*

The APELL programme was born in the 1980s, following various chemical accidents. UNEP then suggested a series of measures to help governments, particularly in developing countries, to reduce the occurrence and harmful effects of technological accidents and emergencies. One of these measures was to institute a programme – the APELL programme – enabling governments, in cooperation with industry, to work with local leaders to identify the potential hazards in their communities. This programme also developed procedures to respond and to control emergencies that threaten public health, safety and the environment.

As an international initiative, the APELL programme has been developed in full cooperation with partners in industry e.g. NGO's, governments and other international organizations. In particular, direct support for the APELL programme has been received from the International Council of Chemical Associations (ICCA) representing numerous national associations, multinational corporations, the Governments of Canada, France, Germany, Sweden, Switzerland and the USA; and from international organizations such as the Organization for Economic Cooperation and Development (OECD) and the Commission of European Communities.

APELL is also a process that helps local people develop information and decision-making procedures for addressing the hazards affecting their community. APELL can be useful in any situation that requires joint planning for disasters by multiple stakeholders. By engaging stakeholders in a process of structured dialogue and coordination, APELL's sequential 10-step approach leads to the development of a single, unified emergency response plan for the entire community. Implementing the process not only develops the emergency plan, it also fosters awareness-raising, collaboration and feedback within the community.

The APELL process was initially developed to cover fires, explosions, spills or releases of hazardous substances in the chemical industry. It has since been used to address operational impacts and risks from ports, the transport of dangerous goods, specific industry risks such as in the mining sector, and community risks from natural disaster hazards (e.g. earthquakes, tsunamis, floods).

This Handbook adopts the fundamental precepts of the APELL process for use by coastal tourism communities when mitigating climate-induced disasters. The recent predictions of the amplified risk of coastal hazard events brought on by climate change, elevates the importance of adequately preparing coastal tourism destinations.

APELL's step-wise approach to community-focused disaster planning, risk reduction and mitigation is also harmonious with national planning activities. It is particularly suited to building awareness and capacity in communities that have not traditionally been involved in national contingency planning and early warning systems. The 10-step approach (see figure below) also bears similarities to the classic strategic planning and disaster management cycles, i.e. is systematic in approach.

Although APELL is designed as a stand-alone process, it does not eliminate the necessity for effective disaster management and risk reduction to be undertaken in the context of national or sub-national frameworks. This is the underlying premise of the Handbook: that government has primary responsibility for establishing the national disaster management organization and for ensuring disaster risk reduction at tourism destinations.

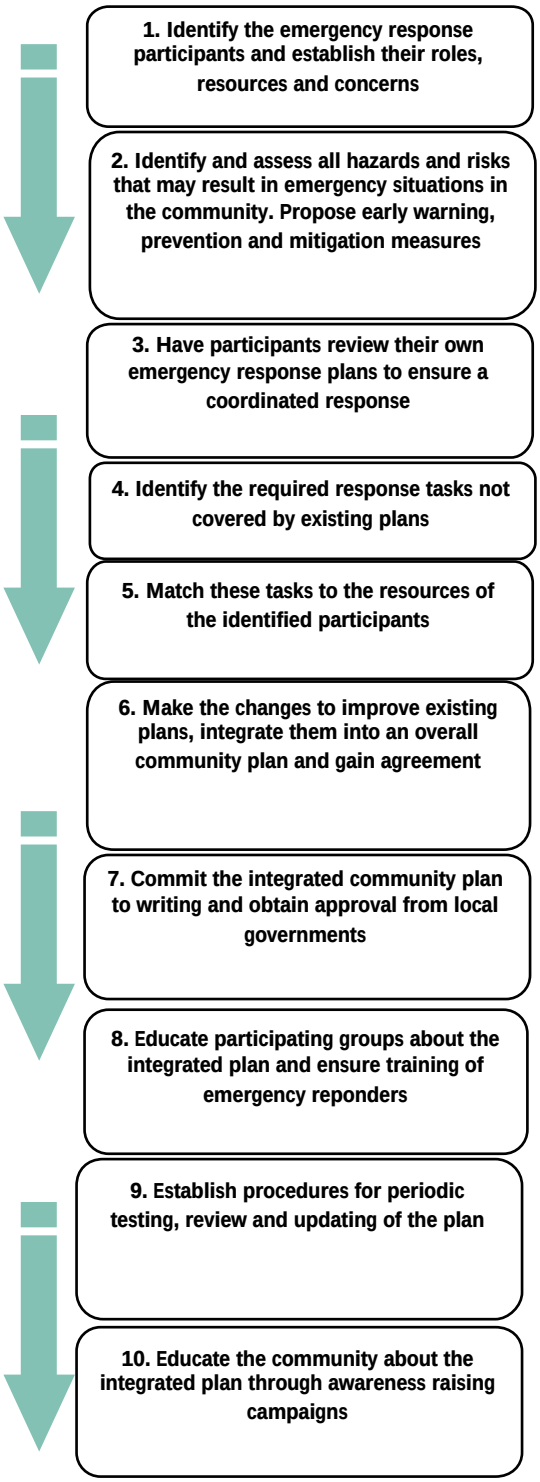
APELL also features a participatory multi-stakeholder process. It therefore relies on adherence to the principles of good governance, transparency, openness and a genuine partnership between the disaster management agency and all stakeholders, including vulnerable communities and civil society groups, in order for it to be effective.

Establishing a formal Coordinating Group (see section 4.2) is a key first step in the implementation of the APELL process. This Group provides a mechanism for interaction and cooperation between the many industry players (i.e. APELL partners) including disaster managers, local authorities, local tourism industry and community leaders, as well as a means to achieve a coordinated approach to emergency response planning. When well implemented, the process will establish industry priorities, identify resources for emergency response, evaluate approaches and enhance communications. It will also draw upon the right people and resources to ensure that the desired results are achieved.

It should be noted that integrated emergency planning involving communities and multi-stakeholder groups requires patient consensus and relationship building, which should instill trust and partnership over the medium term (1-2 year cycle). Implementation of the agreed mitigation strategies should be pursued by consensus and with pride of ownership. Moreover, as in all such group activity, measurement and monitoring of progress is essential for motivating the community toward accomplishment of objectives, within timeframes and budgets, and with identified measures of success.

As an effective adaptation mechanism, however the focus is on reducing community vulnerability and improving response capability. If done well, it will improve a community's ability to act, respond and contribute to the overall development goals and objectives of national risk reduction and climate adaptation strategies.

Figure 3.3: The 10-Step APELL Approach of UNEP



3.7 Conclusions

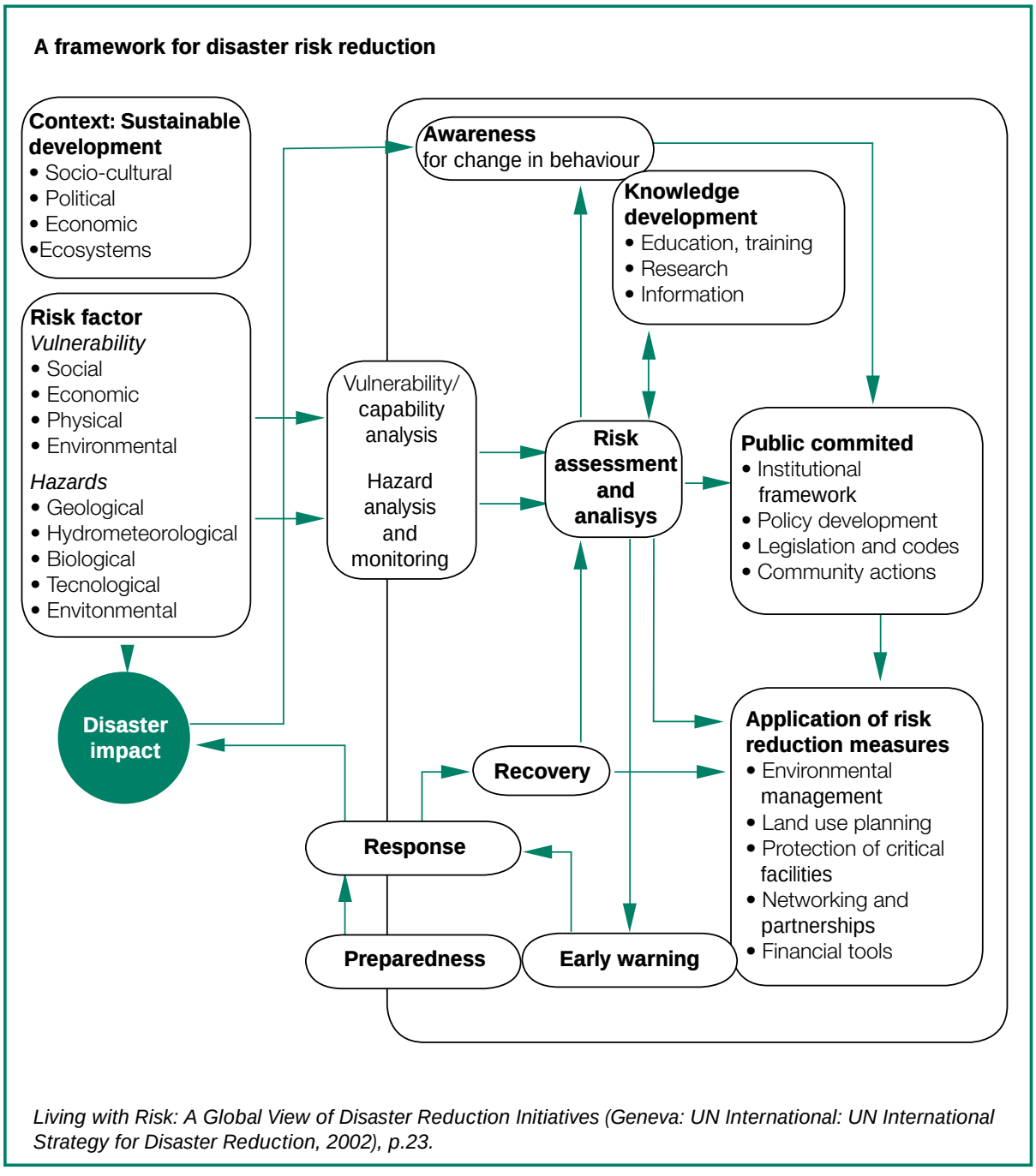
From the preceding discussion, it is essential that all coastal tourism destinations prioritize and participate more meaningfully in the national disaster management and planning process. Tourism is a unique industry and in some cases, poorly understood by those not directly involved. Yet, the industry's emerging importance to national economies, its dynamics and inter-connectivity, and vulnerability to natural disasters, make disaster risk reduction an absolute necessity.

Disaster preparedness can no longer be considered as only a public sector function. It is the responsibility of industry actors to ensure continuity of business transactions in the shortest possible time across the entire destination following periods of crisis. It is also their responsibility to reach across traditional boundaries and to establish new models of cooperation with national disaster management organizations and planners. Given the intensity and risks of current disasters, there is little other option but to escalate the pursuit of deeper public-private partnerships in a spirit of mutual trust and sharing as the foundation of such collaboration.

The question that immediately arises for the tourism industry is how? The following chapters provide answers to this question in the context of organizing industry stakeholders within regional, national and local disaster management frameworks and using commonly-held methods and tools to understand vulnerability and disaster risk and to develop an industry-specific disaster preparedness plan. In other words, the industry must accept its role and responsibility for business continuity and for building resilience.

Figure 3.4 graphically presents the typical network of inter-related activities required for disaster risk reduction (UNISDR, 2002). For the casual reader, the main message is that working to achieve destination resilience requires an understanding of and a commitment to systematically undertaking the major work items in this diagram. These are the main topics addressed in the following chapters.

Figure 3.4: A Framework For Disaster Risk Reduction



Living with Risk: A Global View of Disaster Reduction Initiatives (Geneva: UN International: UN International Strategy for Disaster Reduction, 2002), p.23.

Managing Disaster Risks At Coastal Tourism Destinations: Community Organization, Risk Assessment and Evaluation

4

4.1 *Introduction*

The previous Chapter discussed disaster and risk management frameworks at the international, regional and country levels. Chapter 4 provides guidance on natural disaster risk identification, assessment, and evaluation for coastal tourism communities. The principle espoused here is that effective disaster response occurs at the local level.

It is important to remind Handbook users that as discussed in Chapter 3, the tourism industry requires seamless interface and interaction with all other productive and service sectors at the destination e.g. agriculture, utilities, transportation, health, environment, finance and planning, safety, security and immigration. Integration, however, is typically a challenge.

Compounding these challenges are the demographic peculiarities of any coastal destination that either increase or decrease its hazard risk profile. For example, periods of high vs. low season volume of tourists; accommodation types, the efficacy of the supply chain, cruise shipping, airline and contract carriage operators (i.e. ground transportation), their degree of organization and the history of collaboration and participation of these groups in national disaster planning and response. As recent disaster events have shown, whilst the hotel sector is relatively resilient and can recover quickly, recovery across the destination in terms of utility services, housing, labour and the supply chain, often lags behind.

Managing risks of climate-induced disasters at tourism destinations is therefore contingent upon the overall capability and experience of the tourism value chain and its willingness to contribute to disaster risk mitigation. These are important objectives for the destination to establish a reputation for effective disaster prevention, response and safety and to maintain an unparalled visitor experience.

Cautionary Note:

The challenge in taking a sectoral approach to disaster management (i.e. for the tourism sector) is in recognizing that this industry does not function in isolation from other sectors and is intrinsically linked to the broader community. In defining the scope of preparedness and response planning, therefore, destinations should always include the tourism value chain in the disaster management organization.

4

4.2 *Establishing a Coordinating Group*

Establishing a Coordinating Group at the local community level is the first task to be undertaken by the coastal tourism destination. The local disaster management agency should initiate the establishment of this group.

The Coordinating Group would bring local industry focus and ensure that the right people (i.e. stakeholders), expertise and resources are brought together to collaboratively develop a participatory and responsive process. The Group would function in parallel with other groups, committees or sub-committees within the national disaster management organization. The advantage lies in the organization of a multi-agency collaborative group with resources and networks that will be essential to the response phase of any disaster.

Stakeholders include the full range of public, private and non-profit representatives who have responsibility or interest in managing disaster risks at the coastal tourism destination. For the benefit of community disaster planning, the following categories of representatives should be considered for membership in the Coordinating Group (see Box 4.1):

- ❑ An interdisciplinary team of experts most familiar with local hazards, exposure and vulnerability with knowledge of data collection and natural processes e.g. from the meteorological service, geological and earth science institutes, academia, and other professional organizations e.g. planning, engineering, environmental and architect associations. These persons may already be part of the national disaster management network.

- ❑ Local authorities, police, fire and local emergency management personnel (i.e. the first responders) who have been involved with past natural disasters and emergencies and are familiar with community profiles and logistics;

- ❑ Representatives from the tourism sector (e.g. hotel managers, tour operators, tourism boards, travel agencies, transportation providers, restaurant owners), worker and trades unions and from other related operators in the community;

- ❑ Resident community organizations, women's organizations, NGOs and other relevant civil society groups should also be involved.

BOX 4.1: Example of Coordinating Groups: Asia Pro Eco Project in Kanniyakumari, India
Government sector
District Collector, Kanniyakumari, Goverment of Tamil Nadu - 2 representatives
District Public Relations, Representative of collector's Office
Kanniyakumari Town Panchayat (local authority) - 2 representatives
Tashildar, Agasthiswaram, Goverment of Tamil Nadu
District Superintendant of Police
District Fire Officer or Station Fire Officer
District Health Services
Regional Transport
Tamilnadu Electricity Board
Public Works Department (PWD)
Fisheries Department, Govt. of Tamil Nadu
Govt. of Tamil Nadu Tourist Office
Town Water Administration & Drainage
Divisional Engineer (Highways)
Tamil Nadu State Transport Corpn. (TNSTC)
Poompuhar Shipping Corporation Ltd.
Life Insurance Corporation of India
Bharat Sanchar Nigam Ltd. (BSNL)
Weather Section, Regional Meteorological Centre, Chennai or Meteorological Observatory at Kanniyakumari
All India Radio
Private Sector
Hotel Association (Hotel Ganga)
Mechanised Boat Owners Association
Merchants' Association
Representative of Tour Operators (Triveni Tours and Travels)
Ferry Service
State Minor Port Authority
Auto Rikshaw Association (Transportation)
Tourist Guides Association
The Representative of Restaurants
Community leaders
Representative of St. Anthony's School
Mahalir Association for Literacy, Awareness & Rights (women forum of self-help group)
National Service Scheme (Student volunteers organization)

4.2.1 Activities and Priorities of the Coordinating Group

The Coordinating Group is the nexus between the disaster management agency and the local tourism industry. The Group provides a coordinating function for the destination's preparedness process and therefore it is important to arrive at early consensus on its vision, mission and responsibilities. The following should be undertaken as initial Group activities:

1) *Appoint the group leadership team:* Members should initially select a chairperson, vice-chairs and secretariat. The latter may be undertaken by officers from the local disaster management agency or by a local association. Some destinations may need to appoint co-chairs from government tourism agencies and the tourism private sector. The team will provide Group leadership, focus and follow-up and have a direct relationship with disaster management officials.

2) *Agree on the operating ground rules:* Establishing and agreeing on the operating rules are essential for providing focus and direction for the multiplicity of tourism industry interests and expertise represented. The Coordinating Group should agree on a shared goal and common objectives, scope of work, agenda, working arrangements and a meetings schedule, as well as the ground rules for dialogue, consensus and conflict management.

3) *Establish group priorities and a working plan:* Initial discussions will yield the Coordinating Group's priorities and working plan. This could be an exercise facilitated by specialists from the disaster management agency or alternatively by an outside expert. The latter option, by providing an external facilitation role, helps to maintain objectivity. Working plans should also identify budgetary requirements, shared and allocated resources, as well as specific responsibilities and time lines.

4) *Establish joint working groups or committees:* The technical requirements of risk assessment may require the delegation of this task to a specialist committee. The Group may opt to work on identified priorities such as risk assessment, communications, or public outreach.

5) *Build on tourism sector networks* (e.g. associations, tour operators, etc.): building upon tourism sector networks is important for reaching consensus on needs, priorities and outreach strategies within their memberships.

6) *Obtain government support:* The vertical or hierarchical support of elected officials (mayor, council or other local governing body) is mandatory – the development of a disaster preparedness plan without the leadership and resources provided by the local government would otherwise be a fruitless endeavor.

7) *Establish communication channels:* The decisions, work plans and recommendations of the Coordinating Group should be shared with key officials, participating organizations and civil society. This provides an opportunity for public review and the means for receiving feedback. Developing a media communications strategy provides critical support through all phases of disaster management and response.

8) *Seek external help and support:* Establishing relationships with regional or national emergency management agencies and tourism organizations or with NGO's that may be active in the region provides a multi-disciplinary capability and network, which is essential in times of crisis.

9) *Education and Outreach*: Develop fact sheets for distribution to the general public on hazards, vulnerability and risks, in order to raise awareness and generate support for preparedness plans from the wider community.

4.2.2 Factors Facilitating or Hindering This Task

The following conditions will help ensure the successful functioning of the Coordinating Group:

- ❑ Political endorsement and support.
- ❑ A decentralized, local disaster preparedness and response organization bolstered by additional resources from the private tourism industry and its supportive networks.
- ❑ A designated government lead agency (e.g. ministry or department of tourism) for overseeing the industry's plan preparation and response actions.
- ❑ A good facilitator to guide internal dialogue and consensus building within the Coordinating Group, to document and disseminate findings to key external stakeholders and the public at large.

An awareness of the factors facilitating and inhibiting coordination among the multiple agencies, organizations and stakeholders that are involved in local disaster response activities is important. The Coordinating Group can take advantage of the factors that facilitate coordination by building on the already established networks and patterns of cooperation at the destination. By listing networks, organizations and the services or resources they offer, shared goals and similar resources can be identified, and supportive relationships enhanced, before a future event tests those relationships.

Not all stakeholders may want to participate in the Coordinating Group. Reasons may vary for lack of knowledge of the potential implications of climate change; concerns over time and resource commitments; conflict between agencies (see section 6.5) or lack of timely receipt of technical assistance. All these hindrances must be identified and resolved early in the Group forming process.

4.3 *Assessing Coastal Tourism Risks*

Risk identification and assessment is a process of measuring the potential for loss of life, personal injury, economic impact, and property damages resulting from natural hazards. As discussed in the previous chapters, some of the common hazards affecting coastal tourism destinations include tropical cyclones, ocean storm surges,

coastal and inland flooding and landslides. The increased frequency and intensity of these hydro-meteorological events due to climate change, pose increased risk to coastal tourism destinations.

Risk assessment also involves an evaluation of the vulnerability of people, buildings and infrastructure and answers the question, *"What would happen if a natural disaster occurred at the coastal tourism destination?"*

A starting point for the Coordinating Group should therefore be an assessment of the current understanding of the community's risk and capability to respond to future disaster events (see Box 4.3).

Box 4.3: Initial Considerations for the Coordinating Group

- ❑ If there is an existing emergency plan, does it consider a full range of natural hazards confronting the community?
- ❑ When the plan was last updated?
- ❑ What kind of information on hazards, exposure and vulnerability is available e.g. maps, tourist flows, land use, population clusters, sensitive environmental features, and hazard prone areas?
- ❑ Have historical data on past disasters or emergencies been collected and evaluated?
- ❑ Is there a scenario analysis for the different hazard and vulnerability factors?
- ❑ Has a risk assessment ever been conducted for the tourism destination and have hazard profiles been developed to determine the degree of vulnerability including gender aspects, and the level of exposure to specific hazards?
- ❑ Has an evaluation on community awareness and preparedness for risks and emergencies been conducted in recent times?
- ❑ When was the last significant disaster event and what lessons were learned regarding vulnerability?

Understanding the tourism destination's risk profile and any additional risks from climate change in the region is vital to contingency planning. Identifying the additional or elevated risk is an essential early step and the assessment should include examination of risks to tourism resources (e.g. biodiversity, water supply), plant and infrastructure (e.g. coastal resorts), business risks (e.g. supply disruptions, changes in insurance coverage), or market risks (e.g. changes in competitiveness through increased transportation costs). Both UNEP (2005) and AIACC (2008) specify that current (e.g. extreme climatic events) and future climate-induced risks (e.g. slow onset sea level rise) must form part of the early assessment.

Synthesizing information from existing national or regional climate change assessments may prove valuable at this stage, in order to understand projected climate changes and the implications for natural and human systems that are key to tourism.

Analyzing the impacts of natural hazards and identifying the most vulnerable destination and community locations and assets are essential for establishing the local context.

This will allow the Coordinating Group to better focus their activities when overseeing the development of the disaster preparedness plan.

Identification and assessment of risks involves the following major tasks (see also the risk assessment method in Appendix A.1):

1) Natural hazard identification and prioritization

2) Determining the destination's level of exposure

3) Assessing vulnerability

4) Evaluating risk reduction options.

TIP: Coastal hazards often present ***multiple risks***. For example, cyclonic events such as hurricanes or typhoons may simultaneously create wind damages, inland and coastal flooding, along with landslides and coastal erosion losses. Logically the presence of multiple risks complicates the assessment process. Sometimes these risks do not influence each other during the same event, in other situations they may exacerbate or even nullify each other. There is no single "best" approach to assessing multiple risks but in general, it's important to understand potential losses from each hazard, then try to determine the interaction among them.

4.3.1 Natural Hazard Identification and Prioritization

The Coordinating Group or its designated risk assessment committee should identify all categories of natural events that might affect the coastal community (see Table 3.1) and then prioritize the list according to the most serious hazards impacting the community. It is important to take a systematic approach because a hazard not identified at this stage could potentially be excluded from further analysis. The analysis should review the full range of potential hazards and assess the significant impacts upon the coastal community.

Cautionary Note:

The Coordinating Group should resist the temptation to focus solely on the prevalent natural hazards typically experienced in coastal areas – most likely from tropical cyclones. The Group is encouraged to take an "all hazards" approach by also evaluating the human-induced incidents that may also be key sources of risk.

4

Although some of the following activities may have already been completed by the local disaster management agency, they provide a useful starting point for identifying and prioritizing risks:

1) *Research newspapers and other historical records*. These records will often contain dates, magnitudes of previous events, damages, and further evidence of past natural disasters.

2) *Review existing plans and reports*. National, regional or local disaster management plans, as well as local facility or business continuity plans, may contain information on past natural hazards affecting the tourism destination.

3) *Talk to experts in the community, state or region*. Start locally with the police, fire and local emergency management personnel who have been involved with past natural hazard events. Furthermore, state or national resource agencies, including the geological survey, water and natural resource agencies will have detailed knowledge about the nature and extent of hazards at the destination. University departments and research documents may also provide useful information. In more remote settings, talk to community elders who often have the best anecdotal perspective.

4) *Gather information from Internet websites*. The websites noted at the end of this Handbook can provide general information on particular hazards and their probabilities of occurrence. Search databases or computerized archives with a list of potential hazards and narrow the search by using the name of the destination as keywords.

5) *Assemble a disaster chronology*. Prepare a disaster chronology that lists previous disasters or emergencies that have affected the destination. Describe the magnitude of the event and extent of damages that occurred.

6) *Convene a meeting of the Coordinating Group*. To discuss the findings of the preliminary research. Identify and assess those natural hazards that have repeatedly affected the destination or that the experts regard as the major threats to the tourism destination. Analyze any gaps or deficiencies in the existing plans. Prioritize and rank the list of all potential natural hazards using simple ranking techniques (see Table A.1, Appendix A). The outcome of this process is a short list of primary hazards that will receive more detailed evaluation in the following task.

Box: 4.4: Case Study – Vulnerability Assessment and Hazard Prioritization in Belize

As part of the development of a national risk reduction plan, Belize held a vulnerability assessment workshop to identify its priority hazards. Based upon the experience of the participants, a qualitative priority matrix was developed to rank the relative importance of an inclusive list of potential natural hazards. The participants voted, using a scale from 1 (lowest) to 5 (highest), according to the following formula:

Hazard Priority Score = (likelihood of occurrence + Area of Impact + Frequency of Occurrence) x Potential Magnitude of Damage

The results of this assessment were that the following four hazards were ranked as the top priority hazards for Belize: coastal erosion, hurricane/ tropical storm winds, storm surge and flooding.

Source: *Country Report: Hazard Mapping and Vulnerability Assessment Prioritization Workshop for Belize*. The Caribbean Disaster Emergency Response Agency (CDERA) and the Caribbean Development Bank (CDB); March 2004.

4.3.2 Determining the Level of Exposure of a Tourism Destination

This task involves mapping the prioritized natural hazards that could affect the tourism destination by using the best and most readily available information. Vulnerability mapping depicts areas that are at risk from a potentially disastrous event, which could result in death, injury or damage to property and tourism infrastructure (see Appendix A).

Assessing exposure levels is essential for preparedness planning as it directly affects destination's vulnerability and ability to respond and recover from natural disasters. There will be differing levels of exposure due to demographic, topographic, geologic and environmental considerations, in addition to the influence that the type and quality of the built environment has on the anticipated consequences of hazard events.

Vulnerability maps have value in all phases of disaster management i.e. prevention, preparedness, response and recovery, and also:

- ❑ Allow for improved communication about risks and what is threatened;
- ❑ Provide a visual understanding of vulnerability so that decision makers can easily determine where resources are most needed;
- ❑ Allow destination planners to delineate high risk zones when planning areas for new resorts, businesses and housing;
- ❑ Facilitate evacuation planning through testing of the effectiveness of evacuation routes for both tourists and residents;
- ❑ Permit rescue crews to determine where to respond first, in order to save lives.

It is also important to assess the exposure of critical facilities and essential infrastructure that provide lifeline services to the public following disaster events. These lifeline services include fire, ambulance, medical and police, in addition to the utilities: potable water, sewer and electric power. Destinations should also analyze the exposure of their tourism supply networks e.g. airports and airlines, travel and transportation agencies, suppliers of essential goods and services, among others.

Assessing how vulnerable these critical facilities and services are to specific hazard events will allow the Coordinating Group to better identify weaknesses and anticipate issues that may arise in disaster settings.

Key activities for assessing vulnerability at coastal destinations include the following:

1) *Establish the Situational Context and Jurisdictional Boundaries*

Disaster preparedness plans are typically developed in relation to political boundaries, starting with a local government jurisdiction such as a village, township or city. Likewise, plans are also often prepared at the sub-national level, which may involve county, district or state jurisdictions.

The situational context may also justify a different approach to establishing boundaries, as in the example of a concentration of tourist resorts along a stretch of coast that crosses several jurisdictional boundaries. In this example, a multi-jurisdictional or regional approach may be warranted. In some small island developing states (SIDS), there may be no formal local political jurisdictions and very centralized national governments. In these situations, the delineated boundaries should reflect not only the core resort area but the supporting and surrounding community. In any event, the geographic context and jurisdictional roles and responsibilities must be identified early in the analysis.

2) *Prepare a Base Map*

Create a base map or series of maps for the demographic, jurisdictional or geographic area covered by the preparedness plan so that vulnerable areas or communities can be clearly depicted. Maps provide a common frame of reference when describing where and how hazards affect the community.

3) *Overlay Hazard Mapping Information*

For each of the primary hazards previously identified, obtain the most readily available details on the hazard. Select a single threshold event for each priority hazard that would lead to serious impacts on the community. Appendix A.3 includes a discussion on vulnerability mapping and on the use of hazard mapping information for vulnerability assessment.

TIP: By a single threshold event, the reference is to the frequency or probability that a hazard event of a specific magnitude would occur. This is known as the reoccurrence interval and in the example of flooding; the 100-year flood refers to a flood event that has a one percent chance to occur each year (see Appendix A). The choice of the reoccurrence interval should be based on the most readily available information for a particular hazard. Where detailed hazard maps are not available, planners will need to rely on expert or anecdotal information to approximate the level of exposure.

4) Identify Key Assets, Critical Facilities and Networks

After completing activity 3 above, locate and map critical facilities on the base map to determine which buildings or infrastructure might be vulnerable to the most significant natural hazards. Given the large investment in and the importance of the tourism plant at coastal destinations, key community assets may include:

- ❑ Resorts, hotels and related tourist amenities;
- ❑ Police and fire stations;
- ❑ Hospitals, clinics, community centers, and government buildings;
- ❑ Port facilities, airports and road networks including key evacuation routes.
- ❑ Wastewater treatment plants, electrical power plants and water storage and treatment plants;
- ❑ Civic buildings and schools serving as emergency shelters.

TIP: Once these key community assets are defined, undertake a shelter assessment, reviewing for each building (e.g. hotel, clinics, government buildings, churches etc.) or at higher elevations, the potential for establishing a shelter. Appendix A provides guidance for shelter assessment.

Once risks are identified and potential shelters designated ensure that evacuations routes are identified, and lead clearly and safely to shelters. The evacuation routes and shelters can be different based on the disaster encountered. For example, in the case of a tsunami, the evacuation routes should lead to shelters located at higher elevations. If the disaster is a tropical cyclone, the evacuation routes may ideally lead to a building designed to resist to cyclones.

5) Analyze Tourism Networks

Review also the tourism supply chain and service networks especially the relationships between hotels, tour operators, travel agencies and airlines. This will reveal their capabilities, limitations, resources and flexibility in times of crisis. There are also some unique aspects of coastal tourism destinations that should be taken into account when assessing local capabilities. These include:

- ❑ Tourism cluster developments and in particular those with an abundance of small hotels, guest houses or apartments;
- ❑ Groups of tourists with special needs related to preparedness and response planning (e.g. people with disabilities, the elderly, language limitations, or adventure tourists);
- ❑ Pattern of tourism arrivals e.g. is it seasonal or relatively evenly distributed across seasons and how does the peak tourism season interact with the likelihood of occurrence of the prioritized hazards?

6) *Identify Vulnerable Population Groups*

During the vulnerability analysis, identify those neighborhoods, communities or locations where there are concentrations of vulnerable populations. These should include tourism workers and their families. A few examples of special need groups that may be relevant for the community include:

- ❑ Concentrations of elderly residents or families with young children;
- ❑ Single parent households especially those led by women;
- ❑ Disabled or handicapped persons;
- ❑ Neighborhoods of immigrants or minorities; and,
- ❑ Nursing homes, clinics and hospitals.

7) *Develop Risk Scenarios*

Risk Scenarios are an important tool for disaster managers in preparing an effective response capability (see section 5.3). Preparing a realistic risk scenario requires a carefully planned and thought out group activity that defines the hazard event, estimates the likely damages and secondary effects, and then examines how the community can better prepare for, respond to the specific event, and quickly recover in a more sustainable fashion.

The activities involved in developing risk scenarios include:

- ❑ *Scenario Development*. Select a time, day of the week and month that this event would probably occur. Determine the likely magnitude of the event in order to determine how the event will take shape and what will be affected at the particular time and place that it occurs.
- ❑ *Estimate Damages and Secondary Effects*. Using hazard and vulnerability maps and local knowledge, anticipate the full range of impacts, including any domino effects that might take place, such as potential for contagious diseases, as well as environmental restoration that might be required.
- ❑ *Disaster Management Implications*. Consider the full range of preparedness, response and recovery implications: how best to evacuate and shelter the homeless and vulnerable; stockpile emergency supplies; the communication problems that might arise; relocating residences from hazard prone areas; providing potable water; and, restoring electrical power.

Figure 4.1 presents a composite hazard assessment map prepared for the island of Culebra in Puerto Rico. A common aspect of risk assessment is comparing the likelihood (i.e. frequency or probability) against the consequences (impact) of the priority hazards.

Figure 4.1: Composite Hazard Assessment Map for Culebra Island,

Puerto Rico (Source: Municipality of Culebra, Puerto Rico, Vulnerability Assessment. Prepared by URS Corporation for FEMA Project Impact, 2002. *Used with permission*)

4

Box 4.5: Case Study on UNEP's Community Risk Profile: Assessing the Vulnerability of Local Communities to Disasters - An Interactive Guide and Methodology

The Community Risk Profile (CRP) tool developed by UNEP provides communities with a means of making a rough assessment of key hazards and risks and of making appropriate decisions based on that assessment. It is not a complete risk assessment tool but one that provides users with a qualitative approach whereby they may characterize an expected level of risk and decide on the necessity for further assessment. Although not specifically designed for tourism destinations it covers both natural and man-induced hazards. With these considerations in mind, the CRP may be a useful tool for an initial assessment of destination and community risk.

The tool itself is in the form of a series of interconnected Excel spreadsheets that allow users to compute the risks facing a community by responding to a set of questions. Once all of the answers are are entered onto the spreadsheets, the community's risk profile is produced automatically. The following risk assessment criteria are included in the model that calculates the CRP:

- ❑ Presence of the hazard
- ❑ Intensity characterizes the scale of hazard event (geographic area affected)
- ❑ Probability and frequency
- ❑ Elements at Risk (exposure of population, infrastructure and critical facilities)
- ❑ Vulnerability
- ❑ Knowledge of risk
- ❑ Prevention
- ❑ Protection
- ❑ Level of preparedness
- ❑ Community resilience

A few methodological techniques are described below for use by stakeholder groups which would help to assess risks at coastal tourism destinations.

- ❑ *Brainstorming:* A simple technique best used by groups for developing creative solutions to problems by focusing on an issue and generating possible lateral ideas and solutions from each group member. This technique has the most potential for misjudgments regarding impacts because it is based on the perceptions of hazards by participants.

- ❑ *Qualitative Ranking:* Group members use qualitative rankings to identify and prioritize hazards on the basis of vulnerability and overall level of risk

to the community. Criteria are developed that consider the frequency and consequences of the priority hazards.

- *Vulnerability Assessment Modeling:* Use of quantitative computer models to determine vulnerability for hazards at specific reoccurrence intervals. Often used in combination with GIS tools to depict vulnerabilities.

- *Damage Loss Estimations:* Use of loss estimation techniques to predict the economic damages to residences, buildings and other assets from a specified hazard event. A loss estimation table is a projection of likely damage by magnitude of the hazard (expressed as a percentage of replacement cost), based on observed past damages.

- *Composite Hazard Mapping:* Complex GIS modeling that creates a composite hazard map by summing up the predicted damages associated with multiple hazards. This technique builds upon qualitative ranking or quantitative damage loss models and provides a means to compare hazards that have different probabilities of occurrence and magnitude of impacts.

- *Records Research:* Compilation and storage of information for future reference. Over time the recording of actual events and associated damages will help to better define vulnerabilities and identify mitigation options.

When evaluating which technique to utilize to undertake a risk assessment, the Coordinating Group should also consider:

- The geographic context of the coastal tourism destination;

- Population size and complexity of the community;

- Resource constraints such as available funding, time and availability of local and regional expertise to conduct the assessment;

- The availability, resolution and accuracy of hazard information.

4.3.3 Evaluating Risk Reduction Options

The final task in assessing risk is analyzing available risk reduction opportunities. Although this Handbook is primarily focused on developing an effective preparedness plan for coastal tourism communities, it is also concerned with employing effective strategies for risk reduction. Decisions about which risks are acceptable need to be made against the background of the prevailing social, economic and political priorities of the coastal community.

The Coordinating Group should also be prepared to influence destination planning as it relates to climate change mitigation and adaptation strategies. This may be accomplished through its collaborative work with tourism departments and ministries, the local disaster management and planning agencies.

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The Group or its delegated sub-committee can evaluate the range of mitigation options for unacceptable risks and also make recommendations regarding which risks are considered acceptable. Appendix B provides a brief discussion on the seven major types of risk reduction options that should be considered. The Risk Evaluation Matrix presented below provides a useful visualization of the range of risk scenarios.

For tourism destinations, strategies for addressing risks are categorized into 4 categories which take into account the frequency of risk occurrence and the severity of impact, as illustrated in Figure 4.3. Evaluating the risk reduction options involve accepting, avoiding, reducing or transferring risks.

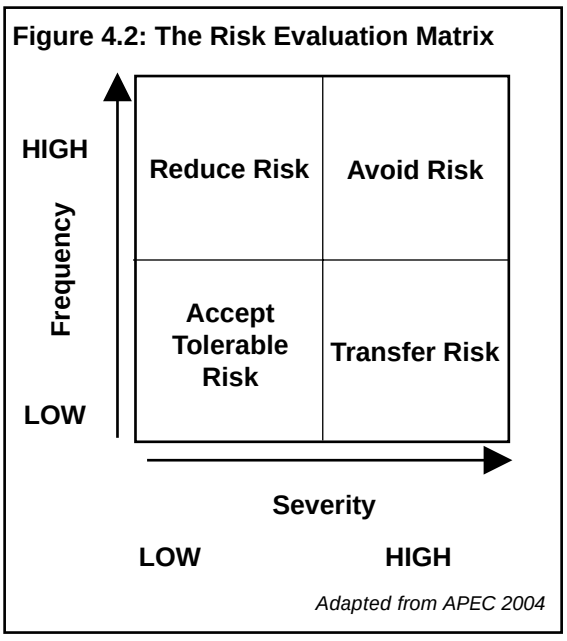
- *Accepting Tolerable Risk:* In situations where the frequency of hazards is low and the severity is also low, tourism destinations would accept a certain level of risk (i.e. the risk is tolerable). Retaining this risk is considered an aspect of the tourism investment.

- *Avoiding Risk:* At the other extreme, when risk frequency and severity are both high, the best option would be to avoid the risk e.g. rejecting a proposed resort expansion in a hazard prone area.

- *Reducing Risk:* Risk reduction involves the broadest scope of community action to mitigate or lessen vulnerability by retrofitting structures to make them more disaster resistant, building capacity for physical planning and development review, or zoning development away from vulnerable coasts, among other options.

- *Transferring Risk:* Where the severity or consequences of risks are high but the event occurs infrequently, such as a super typhoon, resort owners normally rely on insurance coverage to transfer their risks to a third party. This may prove an impediment to small operators. Hence, in order to reduce risk and liability costs, tourism destinations can further mitigate risks by adopting “best practices” and improving their resilience e.g. having written health and safety policies, procedures and signage, staff training, visitor and customer briefings, and performance monitoring through compliance with industry standards (APEC 2004).

Figure 4.2: The Risk Evaluation Matrix



Adapted from APEC 2004

The following activities should be undertaken when evaluating appropriate risk reduction options:

1) *Reducing Risks during the Preparedness Phase*: The best time to begin the process of reducing disaster risks in tourism destinations is before a disaster strikes. Key tasks to be completed in a *pre-disaster* setting include:

- ❑ Demarcating planning zones and establishing guidelines to avoid development in hazard prone areas.
- ❑ Designating hazard prone areas;
- ❑ Targeting the designated 'at-risk' structures for retrofitting;
- ❑ Strengthening local regulations and guidelines for development review;
- ❑ Encouraging resorts, businesses and other facilities at the destination to have a business continuity or disaster preparedness plan.

2) *Reducing Risks during the Response Phase:* This is a challenging task as it requires disaster managers to observe, document and apply the lessons learned during the response phase. While the highest priority during this phase is to stabilize the crisis and address the critical needs of disaster victims, a few trained recovery specialists should be assigned to assess the actual disaster damages, determine why those damages occurred, and identify mitigation opportunities that should be considered during the recovery phase. A routine of daily and diligent reporting to the disaster management head office is also an important source of knowledge and learning.

3) *Reducing Risks During the Recovery Phase:* Although no community wants to be faced with the daunting task of disaster recovery, the fact remains that the post-disaster setting provides a tremendous opportunity for the tourism destination to become more disaster resilient. Time is a compelling factor in determining local recovery decisions and outcomes. There is a short "window of opportunity" to introduce and gain acceptance for new approaches to reconstruction. Tourism destinations must therefore make planning for post-disaster recovery an important element of preparedness plan.

It is important to keep in mind that there is no single right way to conduct hazard identification and risk assessment for coastal tourism destinations. The sophistication of the methodology used is less important than undertaking the important step of organizing to address the problem, then identifying and prioritizing the primary hazards, identifying the community's vulnerability and developing the preparedness plan. The approach taken to assess destination risks will depend to a great extent on the resources available, the complexity of the area being evaluated, the accuracy and availability of hazard data and the commitment of all tourism interests and stakeholders.

Developing The Disaster Preparedness Plan

5

5.1 *Introduction*

The previous Chapter presented steps for identifying hazards, evaluating vulnerabilities, establishing plan study boundaries, and participant roles and responsibilities, as all being essential for understanding the destination's risk. Chapter 5 guides the Coordinating Group through the process of developing the disaster preparedness plan and supporting activities.

It is important to reiterate that community-level preparedness must be undertaken within the national disaster management framework. Plan validity and relevance, resource allocation and continuous improvement therefore, depend upon the flexibility of this national framework.

A transparent and participatory planning approach involving representation from and the cooperation of all key stakeholders and sectors is the foundation of a good preparedness plan. The next step is writing the plan.

The plan should provide guidance on:

- ❑ Standard operating procedures for treating with the primary hazards that threaten the tourism destination.
- ❑ Assisting victims in the immediate aftermath of the disaster;
- ❑ Post-disaster communication, strategies for working with the media and including a public informational and outreach element;
- ❑ The requirements for training first responders;
- ❑ Recovery planning and business continuity;
- ❑ Exercising, testing and updating the plan;

The emphasis throughout the development process is based on APELL principles of strengthening preparedness capability by involving the local stakeholders and making the best use of the available local knowledge, experience and material resources.

5.2 *Plan Development Process*

To review, the plan development process begins with establishing a Coordinating Group and is followed by an intensive effort to understand the destination's risk from natural hazards and evaluating options to reduce that risk. Participants would next have to review existing preparedness plans, identify gaps and weaknesses and then assign each task identified to resources available.

The initial task discussed in this Chapter reflects the need to examine the current level of preparedness of the tourism destination in order to plan for greater responsiveness and resilience during future disaster events. Subsequent tasks address procedures for drafting the plan, how best to engage stakeholders and the general public in providing constructive feedback, and the importance of formal plan adoption. Appendix D provides further guidance on writing the preparedness plan.

5.2.1 Assessing Local Preparedness and Response Capability

This task aims to assess current mechanisms and existing resources to identify needs and untapped opportunities for effective disaster response. A capability assessment considers available resources, existing capacities, operational plans and procedures, as well as communication systems linking the preparedness and response community to higher levels of government decision-making – i.e. it is institutional in scope. The assessment will also consider opportunities and constraints affecting long term recovery of the tourism destination.

A capability assessment is important for identifying major deficiencies in existing plans and focuses the Coordinating Group in developing corrective actions. For tourism destinations without an existing preparedness plan, the capability assessment is an essential tool for evaluating the prevailing physical, institutional, social and economic conditions at destinations. Even if this institutional assessment is undertaken by the local disaster management office, the Coordinating Group should be aware of the findings and be willing to close the gaps and supplement any deficiencies with its own resources, networks and personnel.

Tourism destinations may draw upon some or all of the following recommended activities in order to conduct the assessment:

1) To gather information on available resources in the community:

- ❑ *Community Self Assessment Profile*: A community self-assessment checklist for coastal tourism destinations is provided in Appendix C.

- ❑ *Stakeholder reviews*: interview government officials and other key stakeholders including disaster relief and humanitarian assistance organizations, in addition to local experts on gender issues.

2) Institutional and legal review: The development of legislation, policy and institutional frameworks promote engagement and consensus in disaster management. A review of relevant local and national legislation and regulations ensures that the mandate and responsibilities for disaster management is adequate for coastal tourism destinations. An objective is to ensure that disaster management operates under an adequate legal framework for the requirements of national and local level response plans. A second objective is to ensure that local preventative measures do not conflict with national legislation.

Consider also, the following questions:

- ❑ Does the legislation need to be adapted to address changing risk levels associated with climate change in coastal destinations?

- ❑ Do legislation and policies allow for decentralization so that local authorities can take responsibility for disaster management?

- ❑ Do legislation and policies apply to all sectors of the community including the multi-stakeholder tourism sector?

- ❑ What are the mechanisms that will assist in implementing the legislative mandates?

3) *Lessons learned:* Integrate the lessons learned from past disaster experiences and consider also the findings of the destination's risk assessment.

4) *Understand the strengths and weaknesses:* of existing critical emergency response functions such as command and control, information management, communication, and delivery of medical and other lifeline public services.

5) *Vertical Integration:* Understand the existing network and its capacity to effectively link the tourism destination to regional and national emergency management authorities.

6) *Horizontal Integration:* Evaluate the benefits of mutual aid agreements between local governments, response agencies, industry suppliers and service providers required during the recovery phase.

At this stage, deficiencies would have been identified in the Plan. It is now time to think and to interact with members of the Coordinating Group and responsible agencies in order to make the necessary corrections. This analytical step is called a 'gap' analysis and can help guide the Coordinating Group towards establishing appropriate sub-committees to research specific gaps and develop recommendations for improvement.

The Plan writing team should also consider some of the following challenges facing coastal tourism destinations:

- ❑ Managing growth and development while preserving the quality and longevity of a destination's natural attractions and other heritage resources;

- ❑ Spreading wealth and opportunity to host communities through responsible tourism operations;

- ❑ The highly fragmented nature of the local tourism industry and especially a lack of cohesiveness between policy-makers, suppliers, buyers and other supporting services;

- ❑ Signs of stress at the destination e.g. urban decay, excessive building massing along coasts, overcrowding during cruise ship visits, traffic congestion, high levels of pollution in coastal areas, conflict between visitors and locals and between traditional occupations and tourist-based activities;

- ❑ Deteriorating utility, health and social services and amenities; this often translates into limited or poor quality services to residents and visitors; and,

- ❑ Recurring disaster events disproportionately affecting the more vulnerable members of the community and with extended recovery times for the destination as a whole.

5.2.2 Organizing the Plan Writing Team

In most circumstances, the agency with the lead responsibility for drafting the disaster preparedness plan for the coastal tourism destination would either be the local emergency response agency or the local representative of the ministry or department of tourism. The team assembled to write the plan should be kept small and include public and private sector expertise from the Coordinating Group. There should be a division of writing responsibilities based on the available expertise. However, a single editor should be appointed to oversee the writing exercise and ensure that all contributions fit together harmoniously, without contradiction or conflict.

If resources permit, outside expert consultants could be retained to prepare the plan. However, this approach requires careful attention to ensure that local knowledge and experience is incorporated into the plan. A schedule for preparing and approving the plan should also be developed. Writing the plan could last several weeks or months, but a reasonable writing deadline for the first (and/or subsequent) draft should be established and enforced. This is necessary to maintain interest and engagement in the exercise by the writing team and the wider Coordinating Group.

5.2.3 Engaging Stakeholders and the General Public

With the completed capability assessment and guided by the shared goals and objectives established by the Coordinating Group, the plan writing team should develop and publicize the terms of reference which include the main elements of the Preparedness Plan, to address the disaster mitigation objectives of the tourism destination. Solutions to plan deficiencies identified earlier should also be taken into consideration.

There are several stages in the plan development process where stakeholder and general public involvement is crucial for an acceptable plan document:

- ❑ Once the plan's terms of reference have been developed, these should be presented to the larger Coordinating Group, where a range of stakeholders has the opportunity to question, modify and ratify the scope; and,

- ❑ A public informational meeting is recommended early in the plan writing stage to inform the general public of the importance of this initiative, the terms of reference and to solicit their input and gain their support.

- ❑ When a draft of the plan has been completed, it should again be made readily available to the general public for comment through the approved consultative forums. A record of the proceedings should be maintained for validating any future revisions.

5.2.4 Plan Approval

The plan writing team should address the public's comments and prepare a draft final version for formal adoption by the local authority. Formal approval of the disaster preparedness plan is necessary for:

- ❑ Signaling the end of the plan development process;
- ❑ Announcing the actions required for plan implementation.
- ❑ Providing the plan with much greater authority than a draft document or interim guidance through mechanisms such as an executive order, resolution, or legislative action, as required.

The plan should be formally approved by the most senior local authority to provide the patronage and political support so necessary for successful plan implementation.

5.2.5 Continuous Review Process

The plan should not be considered a static document but will need to be continuously updated and revised over time to address:

- ❑ The lessons learned and the need for continuous improvement;
- ❑ Fundamental changes to the local disaster management organizational structure;
- ❑ New or refined data on hazards, exposure and vulnerability.

The plan should also specify the time frames and procedures for amendment and periodic revision, and include a strategy with associated budgets for strengthening the institutional capacity for preparedness planning, training, and response.

5.3 *Essential Elements of a Comprehensive Preparedness Plan*

The following points illustrate the essential components of local disaster preparedness plans:

1) *Early Warning Systems*: Warnings should be timely, authoritative, and precise. Whether a disaster or emergency comes with little or no warning, or whether, as in the case of a tropical cyclone, they are preceded by advance notice, mechanisms need to be in place to address the following considerations:

- ❑ First, the problem must be detected, and then the threat level must be accurately evaluated and articulated;
- ❑ Next, a decision must be made about what to do and when; and,
- ❑ Finally that decision must be acted on – only then should public warnings be issued.

In addition, the plan should include an Alert Scheme or mechanism to trigger the plan. This describes how information is transmitted throughout the scheme to alert all responsible operational units. Also required is a procedure to officially communicate the end of the alert phase.

2) *Evacuation and Sheltering*: These are critical concerns for coastal tourism destinations because of their vulnerability to storms, cyclones, storm surges, and flooding. Evacuation planning should consider the vulnerability mapping and risk scenarios developed previously. Depending upon the intensity of the hazard, protective actions could involve sheltering in place or evacuation inland to congregate emergency shelters, e.g. such as pre-designated schools or other public facilities. Sheltering needs to be considered in three time phases: *pre-event* as destinations for evacuees; during the *immediate response* phase during which mass care provisioning is required; and sheltering during the *reconstruction* phase (see the shelter assessment in Appendix B).

Evacuation planning should consider, depending on geographic characteristics, that coastal flooding and landslides could result in the physical isolation of neighbourhoods or entire communities within the tourism destination. To this end, the plan should:

- ❑ Anticipate the key points in the road network where emergency access or exit might be blocked or rendered hazardous;
- ❑ Consider alternative evacuation routes in less hazard prone areas; and,
- ❑ For critical emergency evacuation routes, consider mitigation measures that would minimize the potential for road closures under future disaster scenarios.

Hotel buildings can also be used during the immediate response phase as shelters and should be considered as a first option for sheltering guests.

3) *Mobilizing Emergency Personnel and Resources:* Procedures need to be specified for the process of mobilizing emergency personnel and others with secondary emergency management roles when a threat is detected or notification of an impeding threat is issued. These should include:

- ❑ List of material resources available (e.g. emergency lighting, food, vehicles, etc.), from the public entities and the private and commercial entities.
- ❑ Standby arrangements for essential relief supplies and human resources as necessary.
- ❑ Contact lists (with name, title/function, telephone, address etc.) and contingency considerations essential for effective communication and in anticipation of a loss of electrical power or disruption of telecommunications systems.
- ❑ Facilitating the important role that NGO's and disaster relief and humanitarian assistance organizations play in assisting the most vulnerable segments of the population needs to be addressed in the plan.

The emphasis should be on empowering these local responders and disaster workers to make on-the-spot decisions during situations of high stress yet in accordance with the overall objectives of the plan.

4) *Command and Control Functions:* Planners must consider how command and coordination will be handled prior to and following natural disaster events. The plan should match the preparedness and response activities to the resources of the identified stakeholders. The Incident Command System (ICS) is an internationally recognized approach for command and control during natural disasters. The ICS approach features a strong central command role that is modular and scalable for a wide range of emergencies, incidents, crises and catastrophic events, and which delegate roles and responsibilities along clearly delineated lines of authority.

Therefore, a clear definition of responsibility is a key element for Emergency Plans: the writer should make sure that the roles of each stakeholder are defined, and that gathering locations are indicated, in addition to names, function and telephone. Responsibilities for initiating evacuation and for rescue operations should be clearly defined.

A clear line of command - The plan should define a clear line of command, taking into account hierarchy, in particular for the communication system and for operational safety.

TIPS: Writing about lines of authority and responsibility includes answering questions such as:

- ❑ Who is responsible for leading and coordinating rescue operations at local level? Only one person can be the head of operations, but with help from different contacts depending on what kind of accident it is.
- ❑ Who is responsible at local level for weather observation?
- ❑ Who is responsible for providing food, water, blankets etc. in the shelters?
- ❑ Who is responsible at the local level for regular disaster and accident preparedness exercises and drills and the evaluation of lessons learnt from drills and actual rescue operations and disasters?
- ❑ After the disaster, who is responsible for lessons learnt and evaluation of the work/operation/status of the whole operation?
- ❑ After the disaster, who is responsible for the information and contact with media to inform locals and tourists about the situation and when they can return to the area?

Box 5.1 Case Study – Emergent Resource Coordination Model

A top down approach to incident command and control should be balanced with an "emergent resource coordination model" approach (ICMA, 1991). This approach takes a broader view of governance and places greater emphasis on collaborating for decision making. It creates mechanisms for NGOs, community-based organizations, and the private sector to participate in the decision making process. It provides an emergent unified command system mechanism that draws upon the needed expertise from all sectors of society. An ideal disaster management response blends the two approaches:

1) The ICS approach is more valid in the immediate emergency response phase of disaster operations where critical lifeline issues predominate; and

2) The more collaborative decision making process is warranted when the response phase transitions to long term recovery.

5) *Communications Plan, Coordination and Informing the Public:* "Communications" describes the exchange under any type of format, of data, information, and directives. Communication provides the critical links among stakeholders active in the field and disaster managers operating from an existing or makeshift Emergency Operations Center. The stakeholders include not only those responders internal to the emergency management organizational structure but also the network of tourism industry personnel, volunteers, NGOs, tourists and the general public.

Communications can be improved by providing templates of communication messages in the Emergency Plan for use by operational units during a disaster. These should anticipate a range of messages for specific situations and provide consistency, intent and clarity of message.

In emergency management, coordination refers to establishing agreed-upon relationships between independent organizations – relationships that involve the sharing of critical resources and a shared goal of service to the community. Coordination, as more typically defined, becomes especially vital during the response phase of disaster operations which is often chaotic with many pressing issues demanding immediate attention. Key personnel not being able to assume their responsibilities, equipment damaged or inaccessible, lines of authority challenged, and the urgency to act may confuse communications. Contact lists, clear responsibilities and line of commands described in earlier components on the Emergency Plan are helpful to build good coordination.

Several of the key references included at the end of this section provide extensive treatment on the important role of informing the public and especially relevant to tourism destinations where foreign visitors may not be fluent in the prevalent local language. The plan should have procedures in place for a designated spokesperson to inform the general public with clear and consistent messages on preparedness, response and recovery issues.

6) *Risk Scenarios and Contingency Planning:* The risk scenarios described previously in section 4.3.2 are the tools for contingency planning – the art of anticipating and preparing for the full range of emergency response

functions. Contingency plans are concise and address responses to specific events or scenarios for different hazards. They are normally included as annexes to the core preparedness plan (the core document is generally applicable to all hazards). Contingency plans address the operational requirements necessary to effectively respond to a specific hazard by delineating roles, responsibilities and procedures for essential management functions.

7) *Restoring Public Services.* The plan should anticipate the need for temporary and permanent restoration of critical facilities, infrastructure, and essential public services following a disaster event. The destination's risk assessment provides valuable information on the vulnerability of these critical facilities that must be addressed through contingency planning for each priority hazard. This recovery function is normally discussed in a "functional annex" to the preparedness Plan.

8) *Records Management.* Often ignored during the chaos of disaster response and recovery, records management is important and should be addressed in the preparedness plan. The benefits of records management include:

- ❑ Database and records management provides the foundation for continued improvement, knowledge and good decision-making.
- ❑ It is important for securing insurance documentation and financial assistance from central government, and may prove valuable in seeking support from the international donor community.
- ❑ Documentation of disaster damages and how response or recovery operations unfolded following an event is valuable in identifying lessons learned through post-disaster evaluations, often referred to as "After Action Reports".

9) *Planning for Recovery:* Preparedness plans have traditionally focused solely on preparedness and emergency response functions. However, there has been an emerging trend in recent years to incorporate a long-term recovery element in these plans. This innovative approach can help achieve long term disaster resilience in coastal tourism destinations and create more sustainable tourism products. Disasters provide windows of opportunity to implement risk reduction actions, many of which may be impractical to implement in pre-disaster circumstances due to funding limitations or political and social considerations.

Following a major disaster event, the extent of damages, political will, and access to new funding sources can significantly improve the feasibility of implementation. Effective recovery and reconstruction planning focuses on:

- ❑ *Expediting and facilitating the transition from response to recovery*. The plan should identify key personnel or appoint a committee with the responsibility for initiating long term recovery planning – even during the initial emergency response phase (see TIPS);

TIPS: Assessing Damage. If not adequately planned for, damage assessment can be overlooked. This should be considered an integral element of disaster response and if done well, provides a situational awareness for effective disaster operations, as well as, setting the stage for recovery and reconstruction. Select individuals, perhaps from local planning authorities or NGOs, need to be identified and trained prior to an event to conduct rapid damage assessments of homes, businesses, infrastructure and environmental impacts.

- ❑ *Identifying risk reduction opportunities pre-disaster* that could be implemented in a post-disaster scenario; and,

- ❑ *Ensuring mechanisms to better integrate hazard mitigation into long-term reconstruction*. Consider the creation of a recovery task force that could be mobilized post-disaster to streamline recovery while incorporating more sustainable and disaster resistant reconstruction practices.

10) *Plan Revision and Updating:* The plan must be viewed as a living document – one that must be monitored over time, evaluated for its continued relevance and updated periodically to address growth in the destination, along with changes in key personnel and institutional structures. Some key considerations include:

- ❑ An annual review should be the minimum frequency for updating the plan (minor revisions and adjustments) and one that precedes high tourist seasons or periods when hazard events occur (if predictable);

- ❑ A periodic cycle for major plan revisions should also be included and, depending on local circumstances, might range from 3 to 5 years; and,

- ❑ A lead agency, either the local emergency management agency or tourism ministry (or department) or both, and their key personnel should assign responsibility for routine monitoring and updating of the plan.

Implementing The Preparedness Plan

6

6.1 *Introduction*

The previous Chapter discussed in detail the procedures for formulating and writing the disaster preparedness plan, including use of the all important stakeholder participatory network. The truest test of whether a preparedness plan will achieve its goal of preserving lives and property in vulnerable communities depends upon the extent to which the actors involved know their functions and are able to carry them out, can make decisions in high-stress situations quickly and effectively and arrive at the desired outcome with minimal consequences; and the level of awareness of the plan and its requirements at the destination.

The scale and devastation of destinations in South Asia from the December 2004 Indian Ocean tsunami, and of New Orleans, USA from Hurricane Katrina provided many lessons. These events caused mass casualties, huge property losses and created situations of highly charged emotion. They were very demanding on emergency coordinators, responders, and volunteers.

Some of the lessons emerging from these disasters highlighted the following areas as key to responding to disasters:

- *Agility and speed of the disaster response network:* the disaster response effort brought much needed relief and consolation where it was nimble, agile and expeditious in attending to vulnerable populations. A major factor in this was the efficacy of the local level responders, their knowledge of communities, networks and the terrain and their ability to make decisions quickly when situations changed.

- *Multi-agency responses:* the network of agencies with various resources and expertise served to share the burdens and costs of responding to an emergency to save lives, providing assistance and to transport relief supplies where most needed. This is an especially important lesson for tourism destinations. The Coordinating Group should not overlook the importance of local consular offices, and their capacity to help their visiting nationals, stranded at the destination, contact their families and arrange their flights home.

- *Adequate and disciplined staff:* Disaster response is predicated on a disciplined and efficiently run effort. Inadequate staff responding to serious disaster events will not necessarily be able to cope with high stress conditions over long periods, without opportunities for rest and recuperation. The response effort must therefore be adequately staffed in order to rotate tours of workers and volunteers. Hotels unaffected by the disaster should also be prepared to accommodate emergency workers and volunteers.

- *A cooperating and properly informed media:* A dedicated effort to treat the media as partners and conduits of accurate and timely information is a hallmark of a successful and disciplined disaster response organization. Otherwise, the media will serve as an unwelcome distraction to the response effort.

6

These are important factors to bear in mind when implementing the disaster preparedness plan. They stress the importance of training responders and raising public awareness on the Emergency Plan developed in the previous chapter. Accordingly, Chapter 6 provides guidance on drills, exercises and training and on what to expect during plan implementation.

6.2 *Testing the Disaster Preparedness Plan*

Disasters are relatively rare events. It is likely, therefore, that a disaster preparedness plan will not have been tested or implemented. Exercising or drilling the plan is the primary way for emergency managers and responders to test and evaluate components of the plan to determine its effectiveness in an actual disaster event. Various levels of exercising the plan are explained in Box 6.1. Exercises are the responsibility of the local or national disaster management agency. They usually involve staff of the Emergency Operations Centre (EOC), which, in real life disaster situations is established to coordinate and manage the crisis, dispatching emergency first responders and overseeing the recovery stage of operations.

There are four key reasons for testing and evaluating the plan:

1) To detect plan deficiencies.

2) To detect potential problems in the overall emergency management system.

3) To confirm key and potential personnel and identify staffing issues.

4) To detect problems with the functioning, operation of equipment and communication systems.

Box 6.1: Types of Emergency Plan Simulation Exercises

There are three levels of exercises for preparedness training:

Tabletop Exercises. These require minimal preparation. The main purpose is to detect potential problems with emergency coordination and to determine the suitability of assigned responsibilities. Tabletop exercises typically reveal problems in the defined response procedures and help determine requirements for further training. They are most effective for the preparedness and response function but less so for the recovery function. Key staff and selected officials gather in an informal setting (usually around a conference table – hence term “tabletop”) and are presented with a disaster scenario with its related problems designed by the emergency manager. The scenario is discussed in reference to the disaster plan framework and its procedures.

Functional Exercise. This exercise is intended for the Coordinating Group, and emergency responders including the staff of the Emergency Operations Centre (EOC) that coordinates the national disaster response, emergency responders and collaborating agencies. They participate in this speeded-up preparedness scenario and their interactions are tested for efficiency and effectiveness. This is more complex than the tabletop exercise and

is conducted within a hypothetical disaster scenario over 2-3 days. It is designed to test individual or multiple functions of the emergency response framework such as direction and control, decision making, communications, warning or evacuation. The exercise can be conducted at a suitable location where communications equipment is available. It examines how the emergency response function will transition from the plan framework to a real time event and normally also includes the use and exchange of written, telephone, or radio messages.

Full-Scale Exercise. This is a real-time simulation where EOC staff, emergency responders, and the support functions of the national disaster management organization and local agencies are responding to a simulated disaster scenario. It is also referred to as a drill and is important for every community to undertake. The full-scale exercise is the highest level of exercise and the culmination of the plan simulation exercises. The full-scale exercise is designed to evaluate the operational capability of the emergency management system over a substantial period of time. It tests major components and subcomponents of the emergency plan through realistic scenarios that create a high-stress environment. Actions called for by the emergency managers must actually be undertaken. Response agencies must be activated, resources moved in real time, shelters opened, and the EOC fully activated. The media is contacted and involved and often citizens participate in “real time” as the scenario unfolds. Citizens may pretend to be injured or have to be found (search and rescue). This full scale exercise is the only simulation that would require public notification and involvement, and media interaction.

6.2.1 Organizing and Preparing for Exercises

The consistent message of this Handbook is the value of approaching disaster risk reduction and management as a collaborative process. The same principle applies when beginning the process of testing the preparedness plan. In organizing for simulation and drill exercises:

- *Discuss and Agree on the Logistics of the Exercises:* Disaster managers and community stakeholders should first meet in round table sessions to discuss exercise logistics. The basic elements of the preparedness plan should be familiar to all members. The group should then decide on whether it is logistically feasible to exercise the entire plan in one session or if multi-sessions are required. Review all pertinent tasks and activities against the logistics, including the personnel and equipment resources required from the disaster management organization and mutual assistance partners, as well as any regulatory approvals required for activities.

- *Schedule Exercise and Drills:* Exercises should be scheduled based on the availability of all critical personnel, plant and equipment. For the full scale drill it is very important to have consensus on the scheduled dates. Tourism industry high and low season dynamics should also be factored into the scheduling. It is advisable to produce the schedule of tasks and activities on drawing sheets or print using project management software. The industry Coordinating Group should use these visual aids to discuss and eliminate

any potential conflicts and to break out the major tasks and sub-tasks into their constituent activities. The drill should be the only activity of the Group on the scheduled day.

- *Agree on Exercise Goals and Objectives:* The disaster management agency and Coordinating Group should also agree on and write down exercise goals and objectives. Metrics should be defined and allocated to each goal and objective as a measure of success.

- *Assign Roles and Responsibilities:* Emergency response team members should be allocated roles and responsibilities as indicated in the Emergency Plan. If some roles and responsibilities were not captured in the plan, exercising will help to update the plan in this regard. All levels of exercises should be directed and monitored by the incident commander (also known as the primary contact, emergency coordinator, or on-scene commander), who will be the leader with overall responsibility for preparedness plan implementation. This person's alternate should also be active in the drill or exercise.

- *Establish Ground Rules:* It is good strategy to agree on basic ground rules which will apply to all participants. Maintaining discipline in the conduct of the exercises is paramount. Resist the temptation to adjust or amend the preparedness plan on an *ad hoc* basis as revisions should be systemically undertaken after the exercise and only as necessary. However, ensure that detailed notes and comments of discussions and findings are documented.

- *Develop and Disseminate a Media Brief:* It is also important that a media strategy and brief is developed and implemented as the forerunner to the drill in order to raise awareness at the destination before and after and as a means of securing the media's engagement as important partners in the outcomes.

> **TIP:** Key members of the Coordinating Group or emergency response team should also have an alternative or understudy, who is equally familiar with the roles and responsibilities of their positions. This is a precautionary (back up) measure in the event that the main contact is unavailable when most needed. Drill or simulation exercises must never suffer from the absence of key personnel.

6.2.2 Conducting Simulation Exercises

Exercises should always be undertaken with the utmost seriousness and with a sense of real life urgency. It will be up to the incident commander and lead agency to establish this focus and attitude. The purpose is to ensure that the emergency response team members are knowledgeable on the details of the preparedness plan, its resource and personnel requirements and specific triggers. The latter indicates key decision-making points and activates the start or end of a specific task or activation points for the supporting agencies. Exercises should simulate the worst case scenario to address, for example, disaster scenarios during the peak tourist season.

- *Notify Essential Agency Personnel:* The emergency response team along with other agencies and essential personnel should be formally notified and in writing, on the agreed and scheduled date of the exercise. They should also be reminded of their roles and responsibilities under the preparedness plan. Share also with collaborating agencies the overall goal of the exercise. However, the measures of success and achievement should remain known only to the disaster management agency. It is important during exercises to document how emergency response agencies and personnel interpret, make decisions and carry out their roles and responsibilities and react in situations of crisis. Be sure to document these observations as they will be useful for building knowledge and for use during training sessions.

- *Drilling in Multi-Sessions:* If exercises are undertaken in separate sessions because of logistics, ensure that there is continuity between each session and that documentation of key observations and findings is consistent. The tourism industry will likely present a challenge because of its service guarantee to its clientele. Hence, there will be a natural reluctance to drill plans especially if it coincides with the tourist high season. The plan can be simulated in other low seasons or in stages, provided always that the emergency coordinator maintains constant vigilance and a leadership role throughout each stage.

- *Establish an Observation Team:* Subject to the availability of personnel, an exercise observation team should be appointed for the purposes of knowledge building and incorporating learning into the risk reduction process. This team should only be charged with the task of observing and documenting findings. They should be provided with consistent guidance on what is to be observed, measured and documented and should have limited to no interaction with the major actors, particularly in the drill exercise.

6.2.3 Revising and Updating the Preparedness Plan

The Coordinating Group should reconvene a meeting with key actors from the local disaster management, tourism and other collaborating agencies. The observation team is invited to share their findings and impressions, which will facilitate “after action” tasks, as described below.

- *Corrective Action Program:* The documented observations and findings will be used as inputs for a corrective action program. The latter provides a systematic way of making alterations to the preparedness plan. The corrective action program should identify plan weaknesses and shortfalls, areas where decision-making or communications are weak or confused and specify the actions required to correct for same. This is essential for ensuring continuous improvement. The findings will also indicate areas where amendments to the plan are required. The findings will stimulate discussion within the disaster management and tourism agencies, the Coordinating Group and emergency response agencies and personnel as part of the “after action” critique of the entire drill exercise.

- *Amend the Preparedness Plan:* The next step is to amend and update the preparedness plan. This is the task of the lead coordinating agency. It may not be possible to include all recommended amendments, due to constraints in time, budgets, equipment and personnel. However, the critical or prioritized amendments must be undertaken, taking special care to get final approval from the hierarchy and other collaborating agencies, as required, and to consider the sensitivities of vulnerable communities. All plan amendments should be chronologically referenced (i.e. number, date and time) in the documentation record and be consistent with other parts of the Plan.

- *Review all Mutual Aid/Assistance Agreements:* It is important that the disaster management agency review its mutual aid/assistance agreements at the same time that the Plan is being amended. This is to ensure that the agreed corrective actions, which may have implications for participating stakeholders and agency resources, are accurately taken into account under such arrangements.

- *Review Legislative Consequences:* Similarly, if major plan revisions were undertaken after the drill exercise in particular, these may also require a legislative review of the implementation process at the local/municipal, state or national levels. A legislative review of the plan amendments will also be required and should be undertaken by agency counsel to eliminate any potential liabilities, and multi-agency, operational or jurisdictional conflicts. Legislation that is relevant to the community and the destination and supportive of plan goals and objectives is also a factor of success. The process of updating legislation must not unduly hamper or frustrate the progress of the plan. This is ultimately a measure of the priority of the disaster management function at the destination.

The “after action” and post-exercise discussions with follow up action is critical to ensuring that all revisions and recommended actions are completed and within agreed time frames. It is also likely that sections of the preparedness plan will need to be re-drilled or simulated as a test of their suitability. In the final analysis, the disaster management agency will need to ensure that plan implementation is seamless, effective and makes efficient use of limited resources.

6.3 *Capacity Building*

The purpose of building capacity is to ensure that the destination can adequately and efficiently respond to and recover from a disaster. It is not unusual for disaster coordinating agencies in developing countries especially, to lack the level of expertise and personnel required for a fully functional and effective operation. In many countries, the emergency response plan is often only a ‘paper plan’ and remains untested for a lack of resources and expertise, or for that matter, a disaster event. Capacity building is therefore a critical element in bringing the plans to life, familiarizing agencies and personnel with their responsibilities and in achieving objectives over time. Issues must be kept alive, relevant and interesting in order to keep participants engaged.

The disaster management agency is responsible for driving the risk reduction and disaster response process and cycle as designed. These agencies will, however, always be challenged for a lack of financial, personnel and equipment resources. It is in the interest of the collaborating tourism industry groups to contribute and participate in the development of a resilient industry. This requires creativity, specialized talent and the skills to negotiate assistance from the local tourism value chain and from regional and international agencies for their expertise, knowledge and resources.

Building capacity therefore, involves a wider scope of activities than simply providing training and equipment. It requires attention to the following:

- *Training for the Agencies Represented in the Coordinating Group on the integrated emergency plan, especially responders*: The objective is to educate the participating groups (e.g. emergency responders, civil defense) about the integrated plan and ensure that all emergency responders are trained. The training will consider all the potential scenarios developed in the plan. To ensure participation of the trainees the training should be structured according to local conditions, including timing, endorsement of heads of agencies, relevance to local institutional structure etc.

- *Personnel Training and Recruitment:* There is now an abundance of disaster management training programs available internationally through specialized UN and other agencies. Topics and subject areas have become highly diverse and specialized and include the following:

  - Program management, finance and administration,

  - Risk Assessment, evaluation, mitigation and control

  - Incident management and prevention

  - Resource management and logistics, mutual aid and assistance

  - Strategic and tactical planning

  - Crisis communications and warnings including public relations, public outreach and education

  - Operational procedures e.g. emergency response and operations, business continuity strategies, planning and procedures

  - Drilling and simulation exercises, evaluations and corrective actions.

  - Search and rescue, emergency health and triage

  - Hazards vulnerability, analysis & planning.

Training workshops on the preparedness plan may also be conducted in an integrated way, blending the participation of professional disaster managers and administrators with stakeholders at the destination. Experience has shown that the diversity of represented interests, skills and knowledge provides for an equally

enriching workshop experience between participants. This is especially evident in group-based classroom exercises and simulations. Disaster personnel and community members may also acquire learning by sharing their experiences and knowledge with peers at regional and international disaster management or tourism conferences and meetings.

Recruitment of the most effective staff requires a detailed understanding of the roles and responsibilities to be undertaken. There is also an industry of learning and knowledge in the human resource literature and practice about appointing effective, high-performance staff and teams. Many organizations use the human resource recruitment skills and expertise of professional recruiting agencies when selecting high level agency staff (e.g. directors and managers), which should be a priority for building capacity.

- *Program Administration:* This relates to the hierarchy of executive policy making that is transparent, inclusive and articulates a vision, mission, goal, strategies, roles and responsibilities of public agencies involved in the national disaster management organization. This should be adequately supported by allocated financial resources, enabling legislation, plans and procedures to execute the articulated disaster management policy and plans. Decentralization of authority and responsibility in disaster response and decision-making to local response agencies, the private sector and NGOs, is a fundamental aspect of building community resilience.

- *Resource Management:* Disaster management agencies should expand their resource management activities to include inventories of other available non-government resources for the national disaster organization. This includes NGOs specialized in disaster response (e.g. Red Cross, Red Crescent Societies) and tourism private sector associations and supply chains which also have their own networks and channels through which additional resources are available. This immediately widens the opportunity for improving community response capacity. The types of resources that could potentially be accessed may include the following:

  - Heavy construction equipment and vehicles;

  - Personal protective and response equipment and materials;

  - Expertise, training, learning and knowledge;

  - Funding, including grants and donations;

  - Facilities;

  - Information and communications technologies and intelligence.

6.4 *Public Outreach and Education*

The public should always be kept informed and educated as progress is made in the formulation and implementation of the plan. Too often, disaster management planners underestimate the importance of public education and outreach. Tourism communities have multiple interests who also need to be educated about plan objectives and requirements. It is especially important to educate the participating groups and their membership regarding the integrated plan.

Educating communities about the disaster preparedness plan is distinct from the internal communication procedures and requirements needed between agencies (horizontally) and within the disaster management hierarchy (vertically).

A public outreach and education program for the disaster preparedness plan should consider the following points:

- *Develop a Public Outreach Objective And Strategy:* This should be a clearly enunciated policy and strategy informed by a specific goal and objective aligned with the overall community-based disaster management strategy. The purpose is to ensure that the outreach efforts are effective and can be digested and transformed into concerted action by the community for all phases of the disaster management cycle.

- *Identify Target Audiences:* The tourism industry is multi-stakeholder and multi-sectoral based. There is therefore a variety of potential target recipients who will need to be informed and educated on the disaster preparedness plan. Some of these targets include:

  - Hotel & resort owners, managers and workers;

  - Cruise ship, terminal and pleasure craft operators and workers;

  - Industry contract carriage and other operators e.g. tours, attractions, transportation (air, sea, land), diving, entertainment, food and beverage etc.;

  - Tourists;

  - Tourism industry associations;

  - Local population;

  - Adjacent and residential communities including schools;

  - Hospitals, emergency rooms/triage and other primary care facilities.

Each target group may require differently structured information and messages. Be alert to their particular communication needs in order to focus the outreach exercise. For example, ensure where necessary that the messages are multi-lingual for the spectrum of visitors at the destination. Use also an appropriate combination of signage and pictures for the messages to be conveyed to the illiterate or to those who do not speak the native language.

- *Media as Key Partner:* As mentioned above, the media should be considered partners in public outreach and education rather than as merely targeted recipients, and hence should be involved in the development and implementation of the communications strategy for all disaster management phases.

- *Develop the Message:* The message content and delivery mechanisms are important elements of the outreach strategy. Communications specialists are especially relevant to this task. Too much information carelessly put together is just as disingenuous as essential information withheld from the public. Consistency, relevance, accuracy, conciseness and timeliness are worthy objectives to be attained. Depending upon the target group, maintain interest and engagement through use of varied styles of narrative and story telling.

- *Communication Tools:* Dissemination of the targeted messages should utilize tools such as electronic and print media e.g. websites, email, community message boards, annual reports, newsletters, periodic updates, advertising, radio and TV, wherever possible. Some communities also have periodic meetings and annual festivals which provide good opportunities for sharing information, distributing printed matter and hosting themed events and activities on disaster preparedness.

Waiting for a disaster to occur to provide essential information to the public for the first time is a waste of precious resources and can expose disaster managers and coordinators to severe public criticism. This will serve as unwelcome distraction and an added burden in crisis situations. At the very minimum, the most vulnerable members of the community should be aware of the agencies from which support and assistance might be anticipated, and how to react if a disaster strikes.

6.5 *Conflict Resolution*

The planning and implementation phases of preparedness plans should also consider the possibility that major sources of conflict will arise between rival community interests and groups from time to time. The capacity for conflict prevention and resolution (see Box 6.2) will therefore need to be developed. Over the years disaster management and risk reduction practices have increasingly relied on public participatory processes in order to engage diverse community stakeholder groups. This relates to the collaborative tasks of planning, addressing the needs of vulnerable population groups, and dealing with controversial risk reduction measures that touch on sensitive socio-economic issues such as land use, squatter settlements, property rights and vendor rights especially at tourism destinations.

Coastal tourism communities are also sites where frequent land and recreational use conflicts arise, for example between traditional fishing communities and resorts, beach vendors and hotel operators, jet ski operators and beach users and between community members and the local government entity.

Conflict resolution is the process of attempting to resolve the dispute or conflict. Strategies are frequently used to address the concerns of rival groups. These begin with making a sincere attempt to listen attentively and objectively to each side and creating opportunities for successful resolution and outcomes i.e. win-win strategies. Conflict prevention techniques seek to diffuse conflicts before they begin.

Resolution methods that require third party intervention include:

- *Conciliation:* a resolution method that involves a conciliator who meets with the disputed parties separately in order to help resolve the dispute. Conciliation is not legally binding on the parties.
- *Mediation:* This helps the disputed parties arrive at an agreement arranged, but not imposed by an impartial third party.
- *Arbitration:* is a legal process outside the courts. The parties agree to refer their dispute to a third party whose decision is final and the parties agree to be bound by this decision.
- *Litigation:* involves a plaintiff bringing a lawsuit or civil action against the other party in a court of law for legal remedy.

Alternatively the parties in conflict may seek to negotiate directly, bargaining and compromising in order to arrive at a mutually agreeable solution. It is also possible to avoid conflict without achieving a resolution of the underlying dispute. In this case, the parties acknowledge that they disagree and that no further action can be taken at that time. Discussion between the parties can then ensue over a period of time until they arrive at a favourable win-win solution.

Box 6.2: Five Basic Sources of Conflict

Relationship Conflict. This form of conflict is rooted in poor communication, misperceptions, duelling egos, personality differences, and stereotypes. It may be resolved by increased communication; however, often the intervention of a third party is needed to create the appropriate climate for better communication.

Information Conflict. Resulting from a lack of data, contradictory information or misinformation, this type of conflict may lead to different interpretations of the data, disagreements on whether it is relevant, and alternative assessment procedures. These conflicts may be resolved through better group facilitation that permits an open exchange of perceptions or information but may require agreement on a strategy to obtain the necessary information to resolve the issue.

Values Conflict. Values conflicts occur when people disagree about what is good or bad, right or wrong, just or unjust. While people can live with quite different value systems, disputes arise when attempts are made to force on set of values on others or lay claim to exclusive value systems which do not allow for divergent beliefs. Value conflicts may be resolved when people build upon their many shared values rather than concentrate on their differences. It may be necessary to structure a solution so that it is not necessary to resolve the differences.

Structural Conflict. Occurs when the situation is set up in a way that the conflict is built-in. The structure that leads to conflict may be the way roles and responsibilities have been defined, unreasonable time constraints, unbalanced power or authority, uneven control of resources, or geographical or physical constraints. Structural conflicts can be resolved by redefining roles or responsibilities, realigning incentives, or adjusting the distribution of power or control over resources.

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Interest Conflict. This kind of conflict occurs over substantive issues (money, physical resources, time), procedural issues (the way the dispute is handled) or physiological issues (perceptions of trust, fairness, desire to participate, respect). These substantive issues must be addressed before the planning process can move forward again.

Source: Adapted from ADPC, 2004

When implementing the preparedness plan, the industry Coordinating Group and the local disaster management agency would do well to anticipate potential sources of conflict to the extent reasonably possible. Managing stakeholder participatory processes requires an appreciation of human fallibility, sensitivity to varying needs and interests, a commitment to good governance, transparency of operations and above all, good, common sense approaches to achieving the mission.

Achieving Community Resilience

7

The preceding Chapters presented the arguments for disaster management and risk reduction at coastal tourism destinations. The fundamental principle of the Handbook is to empower communities to share in the responsibility of analyzing and mitigating disaster risks to their livelihoods and communities. The Handbook also lists the steps required for writing, implementing and drilling the disaster preparedness plan as a collaborative and participatory process, particularly important for the tourism industry and its cross-sectoral linkages.

Chapter 7 presents the argument for mainstreaming risk reduction practices and creating a culture of preparedness across destinations, in the face of elevated climate risks that could potentially amplify the scale of hazards and disaster damages.

7.1 *The Imperative for Disaster Risk Reduction*

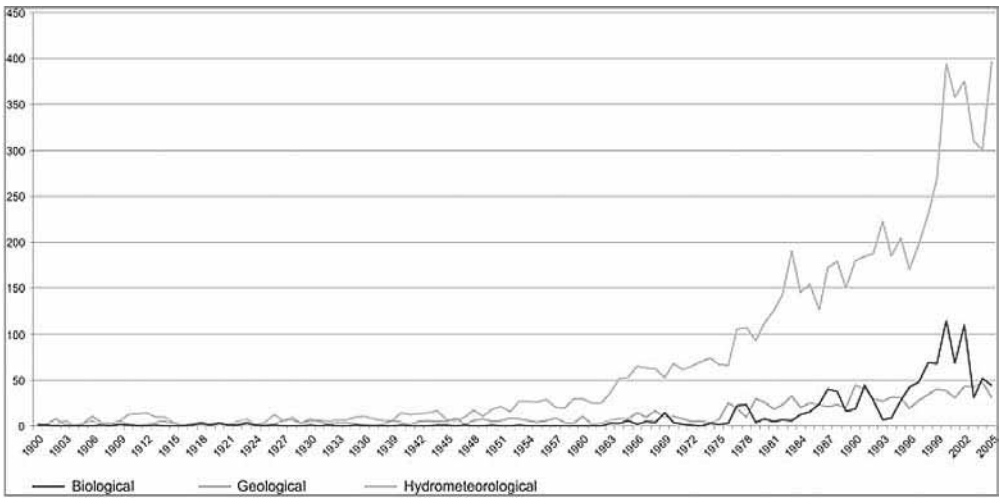
"Inappropriate land use practices and increasing urbanization, together with inadequate planning and poor enforcement of regulations, have served to exacerbate the impact of natural hazards on the [Caribbean] region. These circumstances have influenced and magnified the effects of such events." CDERA, 2007

The past two decades and particularly the last, was a watershed period in global disaster events. In these years were recorded some of the largest and most significant disaster events with high mortality and economic losses from earthquakes, tropical cyclones, flooding and tsunamis (see Figure 7.1). The OFDA/CRED International Disaster Database which routinely collates statistics on global disasters has indicated an increase in the reporting of disasters by countries which partly explains the dramatic increases.

However, the high incidence of disasters with associated high mortality and economic losses during these years also stem from factors related to the prevailing socio-economic, environmental and urbanization conditions at the affected destinations being exacerbated by these natural events.

As discussed in Chapter 4, disaster risk is estimated by considering the concentration of vulnerable populations and the range of economic activities in areas exposed to hazards over a period of time. It is also defined in terms of the community's vulnerability or its capacity to absorb and/or recover from hazard impacts.

Figure 7.1: Number of Global Disasters by Category, 1900-2005 (*Source:* www.unisdr.org *and EM-DAT: The OFDA/CRED International Disaster Database*. http://www.em-dat.net, *UCL - Brussels, Belgium*)



The UNISDR, custodians of the Hyogo Framework for Action (HFA), in 2007 presented its global report on disaster risk for countries signed onto and implementing the recommendations of the Framework. The HFA requires, as one of its fundamental goals that countries build a culture of safety and resilience through knowledge building, education and innovation at all levels of national government (see Chapter 3).

The 2007 UNISDR report concludes that increased climate-induced risk of hydro-meteorological hazards impacting coastal communities will likely result in a growing and substantial increase in mortality and economic loss because of the significant aggregations of populations, social and economic investments and infrastructure especially at coastal locations. “Hotspots” have been identified for various geographic regions based on these conditions. These are countries and destinations with typically large vulnerable populations living in unplanned and marginal areas (e.g. floodplains, steep slopes, coastal cities), in sub-standard dwellings, affected by illnesses and diseases and with limited access to basic services; characterized by weak and inadequate governance, disaster management and early warning systems; and poor land use and development patterns.

Hotspots are of two varieties:

- Intensive disaster risk areas where people and economic activities are heavily concentrated and exposed to occasional or frequent hazards events with chronic impacts. These areas will continue to be affected by events with severe hazards and major impacts of mortality and economic loss.

- Regions of extensive disaster risk where people are repeatedly exposed to localized hazard events of low intensity but with frequent asset loss and livelihood disruption. This systematically weakens populations and their capability systems, thereby increasing their vulnerabilities.

The UNISDR further reports that future disaster losses will be the consequence of climate changes, with high mortality rates experienced in developing countries because of chronic and unsolved environment-development problems and weak or ineffective institutional systems. Communities on the development fringes are most vulnerable.

On the other hand, high economic losses are more likely to be experienced in developed countries, which tend to have better access to resources, technologies, governance and preparedness systems that ultimately minimize disaster mortalities. However, because of their sizeable investment in systems and infrastructure the consequences of economic loss are greater. The US, Japan and China are the top 3 countries reporting total economic losses from natural disasters between 1991 and 2005, of $US365B, $US209B and $US172B, respectively.

One caveat of the report is that it is possible to limit mortality with better designed and implemented disaster risk management policies, programs and plans. This should be the goal. Coastal destinations predominantly exposed to hydro-meteorological events that are likely to be amplified by a warmer climate, should urgently act to mitigate their effects through better disaster preparedness and more resilient human systems. Better disaster preparation today is sure to result in improved community resiliency and faster recovery, tomorrow.

7.2 *Mainstreaming Disaster Risk*

Mainstreaming disaster risk reduction at the destination means creating a pervasive culture of disaster preparedness. Although principally a public sector responsibility, for the tourism industry, this is an imperative, which requires the cooperation and partnership of the private sector. It also presupposes an alignment of political will and leadership with disaster management goals and objectives, and the actions and resources to strengthen the disaster management infrastructure and operation – all for the purpose of achieving destination resilience. The ultimate measure of this is not only the articulated plan of action but also the achievement of desired outcomes in the face of disaster events.

Mainstreaming disaster risk is about integrating the concept of comprehensive disaster management into development policy, planning and implementation. Countries typically have sectoral policies, programs and plans for disaster management, tourism development, environmental management, biological diversity, integrated coastal zone management, among others. With climate risk emerging as a major driver of frequent and more intense natural disaster events, it has now become essential for coastal tourism communities and destinations to integrate disaster risk reduction objectives into routine development planning and industry operations.

On the industry public sector side, when developing risk reduction strategies for implementation in either pre- or post-disaster scenarios at the destination, it is imperative to link these with other government programmes, policies and activities that have high compatibility with local risk reduction objectives. The following strategies merit consideration by the destination to promote greater coordination and integration with ongoing national or international initiatives:

- *Mainstreaming risk identification and analysis:* For tourism destinations, risk identification and analysis must be a routine practice of the industry Coordinating Group and public sector tourism agency. It is not enough for individual resort properties to compute their operational risk in isolation from a wider industry analysis. Furthermore, although the UNISDR reports significant progress with climate modeling and related scientific studies globally, there is limited transfer and application of this science and knowledge to risk-based decision making and development planning. Community based disaster risk reduction must always be underwritten by a culture of systematic data gathering, analysis and risk scenario planning. This provides for better decision-making and greater predictability of the anticipated outcomes.

- *Climate Adaptation and disaster risk reduction:* The UNISDR reports that progress is slow in mainstreaming climate change adaptation and risk reduction strategies into development planning policy and programs. It appears to be far easier for public and private sector agencies to continue with “business-as-usual”. This approach will be costly in the long term. The time has come for a radical shift in thinking, strategy and approach.

  Traditionally hazard mitigation has focused primarily on hazards that have a very long reoccurrence interval (e.g. 1-in-100 or 1-in-500 year storms or earthquakes; see Chapter 4). Current mitigation strategies however, are less relevant for the gradual effects of climate changes e.g. sea level rise, as a slow onset hazard. It will be some time before the effects of sea level rise substantially impact coastal areas. Taking preventative action today to limit impact will be less costly to the coastal destination in the future.

Public sector development control strategies should therefore strengthen building codes and planning standards e.g. zoning developments away from disaster prone areas and relocating vulnerable communities; constructing resorts well back from the high water mark; erection of coastal protection infrastructure (including use of soft engineering features). For some destinations this is a question of stricter enforcement of existing legislation. For the tourism private sector, it is important to reinforce the practices that minimize alterations to adjacent ecosystems and that maintain natural protection along vulnerable coasts.

Incorporating local risk reduction actions into operations should be viewed as the practical short-term steps that help ensure adaptation to long term climate changes.

- *Integrated institutional and legislative mechanisms:* Legislative and institutional frameworks must also evolve synchronously with the pace of national and community-based risk management frameworks. The UNISDR report cites significant progress in countries with regard to modernized institutional systems and especially for coastal destinations impacted by climate risk.

  The Caribbean region has made some progress on this front. The Caribbean Disaster Emergency and Response Agency (CDERA) in its regional work, has assisted Caribbean small island developing states in the development of model national disaster management legislation and national risk reduction plans. This provides a good start towards reducing vulnerability and improving the region's preparedness and response. However, for the purposes of mainstreaming disaster risk reduction, countries need to urgently enforce the legislation and polices that are current with the latest science, strategies and programs for mitigating climate change risk.

- *Integrating ecosystem protection into disaster risk reduction:* Coastal communities become more vulnerable to hydro-meteorological events when key ecosystems e.g. reefs, mangroves, dunes and beaches are weakened, eroded or impaired by indiscriminate use or by persistent pollution. Wetlands, reefs, dunes, beaches and coastal vegetation are interconnected ecosystems and contribute to biological diversity. They nourish and stabilize coastal areas while providing effective and efficient coastal protection. Over the long term, disturbance to these systems weakens their capacity to withstand high waves and storm surges and adapt to gradual sea level rise. Investing in ecosystem and biological diversity preservation and rehabilitation programs or just leaving them undisturbed will prove less costly to coastal communities in the long term.

- *Improving local level response capabilities:* While the policy framework for disaster management is at the national level, response and mitigation remains distinctly a local or community level activity. A community-based risk management approach and strategy must be advocated by the local disaster agency as an effective method of inculcating a culture of risk management.

Historically, preparedness plans have traditionally focused solely on preparedness and emergency response functions. However, there has been an emerging trend in recent years to incorporate a long-term recovery element in preparedness plans. For coastal tourism destinations, this innovative approach is based on building long term disaster resilience and creating more sustainable tourism products.

Effective recovery and reconstruction planning will ensure that local disaster agencies can:

- Expedite the transition from response to recovery relatively quickly; and

- Integrate hazard mitigation strategies into long-term reconstruction.

Box 7.1: Case Study – Mainstreaming Community Based Disaster Risk Management (CBDRM) at the Asian Disaster Preparedness Centre (ADPC)

Community based disaster risk management is a specific focus under the ADPC's Partnerships for Disaster Reduction in Southeast Asia (PDRSEA), a project being implemented in seven Southeast Asian countries since 2001. The program has focused on developing technical capacity of professionals through designing and conducting various training courses, facilitating sharing of experiences, across countries and organizations through newsletters, websites and email list serves. The program has provided support to national networks and led efforts towards regional networking.

Practical tools for practitioners have been developed to support community action; e.g. the CBDRM Field Practitioners Handbook. Recently the focus of program has been on Institutionalizing Community Based Disaster Risk Management in the government policy, planning an implementation. In this regard the program is working closely with the Association of Southeast Asian Nations (ASEAN) Committee on Disaster Management (ACDM) and National Disaster Management Offices (NDMOs) and practitioners. Regional level workshops were held with the ACDM and CBDRM practitioners. Subsequent program phases will focus on the national, sub-national and local levels in helping the government departments develop strategies and action plans to support community action.

Box 7.2: Case Study – Mainstreaming Risk Reduction in Grenada

Grenada is the most southerly of the Windward Islands and its geographic location places it at a much lower risk to hurricanes than most of the other Caribbean small island developing states. Its location, however, did not prevent the island from being devastated by Hurricane Ivan in September of 2004. Approximately 80 percent of the structures on the Island were damaged or destroyed. Grenada is an important tourism destination in the Eastern Caribbean and a number of resorts were extensively damaged or destroyed by Ivan's high winds and storm surge.

The integration of risk reduction into all aspects of the reconstruction process was a major outcome of a national consultation entitled, *Towards a Sustainable Recovery for Grenada*, sponsored by the Government of

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Grenada (GOG) in partnership with UNDP. The GOG worked closely with the Caribbean Development Bank (CDB) and UNDP to prepare the *Policy and Operational Framework for Mainstreaming Disaster Risk Reduction into the Post-Hurricane Ivan Reconstruction Process in Grenada.*

At the time of this catastrophic event, the Caribbean Disaster Emergency Response Agency (CDERA) had embarked on a national risk reduction initiative in Grenada that involved hazard mapping and conducting vulnerability assessments, along with development of a national risk reduction policy and plan documents. A consultancy that involved a legislative review and institutional capability assessment for risk reduction was just getting underway as the hurricane struck the island. Its terms of reference were quickly modified to focus on enhancing opportunities for integrating risk reduction in all aspects of the recovery and reconstruction effort. Major findings of the assessment included: formalizing the role of the redevelopment authority for future events, enacting comprehensive disaster management legislation; strengthening building codes; and, providing tools and mechanisms for integrating risk reduction into the development review and physical planning functions.

In general, the quality of construction is much higher and more disaster resistant since Hurricane Ivan, particularly in the public and formal sectors. There has been less success in the informal sector as owners and builders continue to build non-reinforced structures. The GOG adopted a comprehensive risk reduction plan with annual action plans required to foster implementation. The challenge facing Grenada will be to sustain these risk reduction initiatives over the long term.

There are also a range of options that tourism destinations should consider for mainstreaming risk reduction in post-disaster recovery. Some examples include:

- ❑ Create a standing rapid assessment team which would be mobilized following major disaster events to evaluate recovery and risk reduction opportunities.
- ❑ Use hazard and risk scenarios (see section 4.3.3) to anticipate long-term recovery issues, develop new planning assumptions and delineate primary and secondary institutional roles for long-term recovery and reconstruction.
- ❑ Identify the hazard prone and high risk areas for which post-disaster rehabilitation and relocation of damaged or destroyed housing and public facilities should be prohibited.
- ❑ Establish a standing recovery task force or redevelopment authority that would be activated following a catastrophic event. Legislative action may be required to empower this entity with the necessary authority to assess damages, develop an overall recovery strategy and oversee reconstruction. Once the task force or authority completes its mission of complete recovery, it would then be decommissioned.
- ❑ Plan to restore dunes and coastal habitats to enhance protective environmental functions using “soft” engineering approaches following hazard events.

- ❑ Remove taxes and/or duties on goods and services specifically for risk reduction or retrofitting (e.g. building materials).
- ❑ Introduction of risk-based taxation and insurance premiums for infrastructure located in highly vulnerable areas.
- ❑ Require vulnerability assessments and benefit/cost analysis for major redevelopment projects and restrict redevelopment activities that will exacerbate vulnerability in high risk areas.

In the final analysis, coastal tourism destinations have much at stake in this time of increased climate-risk. This geographic setting is very appealing to resort developers and will continue to be highly sought after. Coasts and beaches are still magnets for tourists and are the cornerstone of the tropical tourism experience.

Yet, the Caribbean region has already witnessed the actions of a major insurance company abandoning its coastal resort clients at a popular island destination because of the increased cost of underwriting their operations; and insurance premiums for hotels have escalated over the past several years. With the upward spiral of oil and food prices the operating environment has been dramatically altered for the tourism industry. Coastal tourism communities and resorts are grappling with escalating costs from these challenges and from repeated battering from coastal hazards.

"Each natural disaster leaves in its wake an overwhelming volume of evidence of how planning and investment decisions contribute to vulnerability – and the consequent risk of further disasters. Natural Hazard Risk Management in the Caribbean: Revisiting the Challenge." CGCED, 2002.

The choice is clear: climate-proof and resilient destinations and communities are strategies that must be adopted and fast. The good news is that there is a wealth of know-how, expertise and experience readily available from multiple sources. The evidence shows that businesses adopting sensible and efficient practices by conserving energy, natural resources and critical ecosystems, end up improving their bottom-lines in the short and long term and creating shareholder value. Coastal ecosystems naturally protect and nourish coastlines. These should be considered a treasured national resource and treated accordingly with diligent care and preservation.

On the other hand, human communities and systems require preventative and preparedness actions against disasters. The challenge is overcoming the apathy and lack of will of politicians, entrepreneurs and residents. This, however, can also be solved through awareness-raising of disaster events, enlightened leadership, public and private sector cooperation and commitment to a common goal. That is, of a tourism destination that delivers on its promise consistently and has an established reputation for protecting its residents, businesses and visitors against the effects of natural hazards.

REFERENCES

"A Reef Takes a Dive" by Jonathon B. Tourtellot; National Geographic Traveler Magazine, March 2007; p. 47.

"A Strategic Environmental Assessment of Fiji's Tourism Development Plan" by Roger Levett and Richard McNally, WWF; May 2003; 115pp.

"Assessment of Impacts and Adaptation to Climate Change"; Summary of the Final Report of AIACC Project; Report submitted by the International START Secretariat and the Academy of Sciences for the Developing World to GEF/UNEP; November 2007; 43pp.

"Blue Print for New Tourism"; World Travel & Tourism Council, 2003; 11pp.

"Climate Change and Tourism: Responding to Global Challenges"; Scott, D., Amelung, B., Becken, S., Ceron, J.P., Dubois, G., Gossling, S., Peeters, P., Simpson, M.; 2007; World Tourism Organization: Madrid and United Nations Environment Programme: Paris;

"Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, tools and practice"; by Simpson, M.C., Gössling, S., Scott, D., Hall, C.M. and Gladin, E. (2008) UNEP, University of Oxford, UNWTO, WMO: Paris, France.

"Community-Based Disaster Risk Management: Field Practitioner's Handbook"; Asia Disaster Preparedness Center; 2004; ADPC; Bangkok, Thailand.

"Community-Based Disaster Risk Management: Integration to Socio-economic Development Process" by Dr. Le Huu Ti, ADPC, 2004.

"Community Vulnerability Reduction Prevention and Preparedness APELL Training Kit for Local Authorities"; UNEP-TIE.

"Community Risk Profile: Assessing the Vulnerability of Local Communities to Disasters - An Interactive Guide and Methodology"; UNEP-TIE

"Development and Climate Change in Fiji: Focus on Coastal Mangroves"; by S. Agrawala et al.; Organization for Economic Cooperation and Development, Working Party on Global and Structural Policies/Development Cooperation and Environment; 2003; 56pp.

"Disaster Response: The Tourism Dimension. Study on the Feasibility of a Global Tourism Disaster Communication Network"; Volume 1: Main Report; World Economic Forum/UN World Tourism Organization; 120pp.

"Disaster Prevention and Mitigation Act B.E. 2550 [A.D. 2007], Kingdom of Thailand.

"Emergency Management: Principles and Practice for Local Government"; International City Management Association; 1991; ICMA; Washington, DC.

"Handbook on Natural Disaster Reduction in Tourist Areas"; World Tourism Organization, 1998.

"Phuket Province Tourism Risk Management Strategy, 2007-2012: Road Map for a Safer and Risk Resilient Phuket as a Tourist Destination"; Royal Thai Government - Ministry of Tourism and Sports, Office of Tourism Development; in association with the Asian Disaster Preparedness Center, the Asia Pacific Economic Cooperation, the APEC International Centre for Sustainable Tourism and the Australian Government/AusAID; 64pp.

"Small Islands Big Issues: Sustainable Development of Islands". Programme of Action for the Sustainable Development of Small Island Developing States, Barbados, 1994.

"Sustainable Coastal Tourism: An integrated planning and management approach", Publication details to be provided before printing.

"Storm Surge Toolkit for Township Planning Strategies: Adaptation for Climate Change and Disaster Mitigation in the Caribbean, IADB/CDERA, 2007; 88pp.

"Thailand's Tsunami: Disaster Management Lessons for Australia" by Bill Patterson PSM; Australian Journal of Emergency Management; Vol.: 21, No. 4; November 2006; pp. 3-7.

"Tourism Risk Management for the Asia Pacific Region: An Authoritative Guide for the Managing of Crises and Disasters"; Jeff Wilks & Stewart Moore; Report Prepared by the APEC International Centre for Sustainable Tourism; 2004; 110pp.

"Words Into Action: A Guide for Implementing the Hyogo Framework, 2005-2015"; United Nations International Strategy for Disaster Reduction; 165pp.

"Weathering the Storm: Options for Framing Adaptation and Development"; by H. McGray, A. Hammill & R. Bradley with E. L. Schipper & J. Parry; World Resources Institute, 2007; 57pp.

Website References:

World Travel and Tourism Council: www.wttc.travel

United Nations International Strategy for Disaster Reduction: www.unisdr.org

United Nations World Tourism Organization: www.unwto.org

For more information on:

- The Hyogo Framework for Action, see www.unisdr.org.
- Asia Pacific Economic cooperation (APEC) see www.apec.org
- Asian Disaster Preparedness Centre: www.adpc.net
- Caribbean Disaster Emergency Response Agency (CDERA), see www.cdera.org.
- Comprehensive Hazard and Risk Management in the South Pacific (CHARM), see www.sopac.org.
- "Thailand Country Report, 2004"; Asian Disaster Reduction Center, see http://www.adrc.or.jp/countryreport/THA/2004/index.html.*:*

APPENDIX A

Guidance on Hazard Identification and Vulnerability Assessment

A. 1 Risk Assessment

As with any risk management initiative, a group of experts that are familiar with the risks are an asset. This could be the Coordinating Group or a subcommittee established by the overall Coordinating Group. It should include a number of key stakeholders from the tourism sector along with representatives from neighborhoods that provide many of the resort staff. Working together in an interdisciplinary risk assessment group will provide comprehensive information about risks and vulnerable facilities. The risk assessment group will be most effective when it includes an assortment of experts at the municipal level.

One simple methodology for identifying and prioritizing hazards is presented below. It uses qualitative indices and can be readily adapted to a broad range of stakeholders and residents of coastal tourism destinations. The following example was adapted from an exercise conducted by the Asian Disaster Preparedness Center (ADPC) for the development of the Phuket Province Tourism Risk Management Strategy in 2007.

Table A.1: Identifying and Ranking Hazards
From the list of coastal tourism hazards provided in Table 3.1 of the Handbook, select the **hazards** *affecting the coastal destination and community and using the table below, rank each hazard for its* **significance** *using the descriptors provided, as relevant.*

Coastal Hazard	Rank	Descriptor	Description of Effects
	1	Insignificant	No disruption to destination; no disturbance of visitors; no financial loss; no media or public interest
	2	Minor	Minimal disruption to destination and visitors; limited or no financial loss; limited media reporting
	3	Moderate	Short term disruption to destination and services to visitors; some financial loss; limited media reporting
	4	Major	Disruption to destination, services and visitors for more than 24 hours; financial losses, anger and frustration on the part of visitors; critical media reports and public criticism of destination
	5	Catastrophic	Unable to meet visitors' requirements and provide normal service type and level; severe financial losses; widespread criticism of destination; critical international media reports; mass cancellation of bookings

Table A.2: Assessing the Likelihood of Hazard Occurrence

For each hazard listed in Table A.1, assess the **likelihood** *of occurrence using the descriptors in the table below*

Level	Descriptor	Description
A	Almost certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Might occur at some time
D	Unlikely	Could occur at some time
E	Rare	May occur in exceptional circumstances

Table A.3: Qualitative Risk Analysis Matrix

Use this table to qualitatively assess the **level of risk** *for each of the identified and ranked hazards above*

Hazard	Likelihood*	Consequences**				
		Insignificant	Minor	Moderate	Major	Catastrophic

Note:

** To assess "Likelihood", use the following qualitative guide:*
A = almost certain

B = likely

C = possible

D = unlikely

E = rare

*** To determine the "Consequences", use the following qualitative guide:*
E = Extreme risk, immediate action required

H = High risk; senior management attention needed

M = Moderate risk; management responsibility must be specified

L = Low risk; manage by routine procedures

Table A.4: Example of a Completed Risk Analysis Matrix for Phuket Province, Kingdom of Thailand (natural hazards only)

(Adapted from: Phuket Province Risk Management Strategy, 2007)

Hazard	Likelihood of Occurrence	Severity of Consequence	Overall Level of Risk
Flood/Storm	Likely	Moderate	High
Landslide	Likely	Moderate	High
Earthquake	Rare	Catastrophic	Extreme
Tsunami	Rare	Catastrophic	Extreme
Drought	Rare	Moderate	Moderate
Typhoon	Possible	Major	Extreme
Health Pandemic	Possible	Major	Extreme

A

A.2 Effect of Climate Change on Reoccurrence Intervals

Reoccurrence intervals that would lead to significant disaster events are determined by the historical record, based upon the assumption that past events can be used to determine the probability of future events. However, the findings of climate change over the past few decades have revealed that the frequency and severity of hydro-metrological hazards is intensifying. Historically, the reoccurrence intervals for natural hazards throughout the Caribbean that lead to substantial disaster damages generally fall into ranges that depend on geography (relation to predominant hurricane tracks) and to geology/landscape features (coral islands, limestone uplifted islands, and volcanic islands).

General ranges for selected coastal hazard reoccurrence intervals follow:

- Landslides: 3 to 10 years
- Hurricanes: 10 to 50 years
- Floods:25 to 100 years
- Earthquakes: 100 to 500 years

Example: Storm surge modeling conducted for the Organization of Eastern Caribbean States (OECS) Member – the Commonwealth of Dominica – evaluated the landward extent of storm surges under various reoccurrence intervals and recommended that the Government restrict intensive coastal development from the 500-year storm surge event due to the effects of climate change including gradual sea level rise. Historically, most regulations have restricted development within the coastal area inundated by the 100-year storm surge event.

A. 3 Vulnerability Mapping

Vulnerability mapping can improve a costal tourism destination's ability to promote disaster risk reduction thereby protecting tourism sector assets, residents and their livelihoods, property, the natural environment, and municipal infrastructure.

A vulnerability map gives the location of facilities or areas where people, the natural environment or property are at risk due a potentially catastrophic event that could result in death, injury, pollution or property damage.

Vulnerability maps can range from simple traced maps to elaborate maps generated by Geographic Information Systems (GIS). The key is finding the most accurate information (best resolution and most current) that is readily available and understood by the community.

If specific hazard maps are unavailable, local knowledge should be used to roughly approximate hazard prone areas – this is still a valid option for understanding the destination's risk until detailed hazard maps can be prepared. For example, at many coastal tourism destinations storm surge zones may not be accurately modeled and mapped. However, experts can approximate the landward extent of storm surges based upon storm intensity and the typical shoreline configuration

Vulnerability maps are most often created with the assistance of computer technology called geographic information systems (GIS) and digital land survey equipment designed for use in the field. However, vulnerability maps can also be created manually using background maps such as satellite imagery, property boundaries, road maps, or topographic maps. In such cases the municipality's planning office should be involved in order to take advantage of the base maps that have already been made for other purposes.

The base map or maps should be as accurate and current as possible and should be planimetric, which is a flat representation in true geographic relationship and drawn to scale. Some options to consider are road maps, topographic maps, or aerial photographs that have been rectified to eliminate displacements.

Collecting information for a Vulnerability Map

a) Form a group

As with any risk management endeavour, a group of experts that are familiar with the risks are an asset for creating a vulnerability map. Members of the Coordinating Group should be part of the exercise. Working together in an interdisciplinary risk group will provide comprehensive information about risks and vulnerable sites. The members of the group will increase their knowledge about hazards and the type and extent of disasters that can be expected.

b) Select the risks.

The group preparing the vulnerability map needs to select those risks that are found in the area to be mapped and decide on which risks will be addressed.

c) Discuss scenarios and determine risk zones

Once the risks have been selected, the group then discusses types of scenarios where one of these risks becomes an actual event. The scenarios will describe the date, the day of the week, the time of day, the intensity of the event, the weather conditions, season etc. in order to determine an adequate picture of how the event will take shape and what will be affected by its impact at the particular time and place that it occurs.

Whatever the scenario will be, it needs to be written with enough detail to provide information about the boundaries of the risk zones. Risk zones should be estimated with the best available knowledge and techniques. With expert help, more accurate risk zones can be calculated for high tides, floods, storm surges, hurricanes, landslides etc.

c) Determine the vulnerable objects in the risk zones

The next stage is to determine the objects within the risk zones that will be considered vulnerable and therefore, will be mapped. Vulnerable sites are those where people live, work and visit. They can also be sites that are difficult to replace or rebuild or which possess historical or cultural values. Habitats with biodiversity or with rare or endemic species preferably require environmental protection.

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Threatened objects may include, among others:

- ❑ Hotels
- ❑ Public places, theatres, sports arena
- ❑ Recreational areas
- ❑ Commercial centres
- ❑ Roads
- ❑ River dykes, drains and levies
- ❑ Culverts
- ❑ Bridges
- ❑ Docks
- ❑ Airport terminals
- ❑ Drinking water supplies
- ❑ Wells
- ❑ Waste water treatment plants
- ❑ Hospitals and medical centres
- ❑ Schools
- ❑ Day Care Centres
- ❑ Senior Citizen Centres
- ❑ Fire and rescue stations
- ❑ Emergency response zones
- ❑ Storage sites for supplies needed for emergencies
- ❑ Shelters (i.e. for cyclones)
- ❑ Bays or lagoons
- ❑ Coastlines
- ❑ Beaches
- ❑ Sand dunes
- ❑ Lakes
- ❑ Rivers
- ❑ Canals
- ❑ Forests
- ❑ Wetlands
- ❑ Special ecosystems (i.e. mangroves)
- ❑ Habitat areas for threatened or endangered species
- ❑ Environmental sensitive areas
- ❑ National parks and nature reserves

Some buildings and facilities require special rescue techniques and can be classified as such on the vulnerability map in order to reduce loss of life when a disaster occurs. Some examples are:

- ❑ Hotels and other buildings with large numbers of visitors
- ❑ High risk buildings
- ❑ Compound buildings
- ❑ Senior citizen retirement homes
- ❑ Homes with handicapped residents
- ❑ Developed areas where the building materials used such as wood or concrete make them especially sensitive to, for example, fires or earthquakes
- ❑ Fishing boats, recreational boats, tankers in the harbour
- ❑ Underground installations (such as subways, utility cables, etc.)

When the map is complete, there will be sufficient information to begin discussions about action plans for the threatened objects such as:

1) *How will the sites be protected?*
2) *In which order will they be protected?*
3) *Who will accomplish the mitigation work?*
4) *Who will check to see if the mitigation work is adequate?*
5) *How will the vulnerable sites be addressed in the disaster preparedness plan?*

Defining the area to be mapped

An important part of vulnerability mapping is defining and limiting the area affected by one or more risks. The scenarios that the risk group has decided upon should be used to determine the extent of the affected zone. The area to be mapped needs to encompass the entire area where a risk can affect the tourism destination and have an impact on tourism infrastructure, natural protected areas, houses and apartments, commercial sites and public facilities, etc.. Availability of resources to do the field mapping should be considered. If resources are not adequate, the area likely to have the highest vulnerability should be selected.

Maps made after a disaster can assist in defining risk areas that were not fully understood or defined prior to the disaster. Historical information is also important for determining the extent of the area to be mapped.

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Determining the greatest risks in the area and the potential consequences

The group can use a risk and vulnerability table to assure that all risks and threatened objects are identified and classified and that the consequences to life, environment and property are noted. In order to assure that the greatest threats in the area are all mapped, a table should be used to register the risk group and the objects that are vulnerable.

Consequences can be estimated on a scale of three where 1 = low 2 = moderate, and 3 = severe, If a scale of five is used, then 1 = unimportant, 2 = limited, 3 = serious, 4 = very serious and 5 = catastrophic.

Creating the vulnerability map

After the risks have been identified, and one or more scenarios have been made and the risk and vulnerability table has been created, the field work can begin. Vulnerability mapping efforts for an disaster begin with an accurate representation of natural features such as rivers, lakes, landforms, topography, and vegetation type. Man-made features can then be transposed on the natural landscape. The map will then include such information as land use, road systems, power stations, tourism infrastructures, official buildings, business areas, housing areas, schools, hospitals, etc. (including all threatened objects). It is important at this stage to define and indicate what is unique about the areas in order to protect biodiversity and cultural integrity for assuring the sustainability of the destination and the community. In addition, any objects that are essential to the emergency operations should be added to the map.

When creating the vulnerability map, consideration should be given to the type of information that will be needed in case a disaster occurs so that lives, property and the environment can be saved. In order to use the vulnerability map in a useful way, an estimate should be made of the area in meters or hectares that would be affected by the specific risk and the number and type of objects within the zone that need protection. Transport routes and statistics about number of passengers should be also considered. In the same way, estimate should be made on the population that will need to be evacuated. If a GIS system with data on the number of inhabitants is not available, then an estimation of population density for areas within any risk zone might be made.

Finally, a list should be made of the environmentally sensitive areas as well as of the land uses that are important for the local economy and livelihoods of the residents in the area.

(Source: Handbook for Vulnerability Mapping, Swedish Rescue Services Agency, developed for UNEP project on "Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms in Coastal Settlements in Asia – Demonstration in Tourism Destinations")

APPENDIX B

SHELTER ASSESSMENT MODEL

Studies show that survivors from disasters often prioritize their preferences for shelter in the following order:

(1) To remain as close as possible to their damaged or ruined homes

(2) To move temporarily into the homes of families or friends

(3) To improvise temporary shelters as close as possible to the site of their ruined homes

(4) To occupy buildings which have been temporarily requisitioned

(5) To occupy tents erected in, or next to, their ruined homes

(6) To occupy tents on campsites

(7) To be evacuated to distant locations.

Given the focus of this handbook, the Coordinating Group should focus on priority number 4 above, i.e. when people are evacuated to occupy temporarily requisitioned buildings. In order to decide which buildings are suitable for temporarily shelters many factors have to be evaluated.

For an example depending on type of disaster or number of affected people, one might choose a specific type of shelter. Other factors such as target group or time/ phase of interest will also affect the choice of shelter.

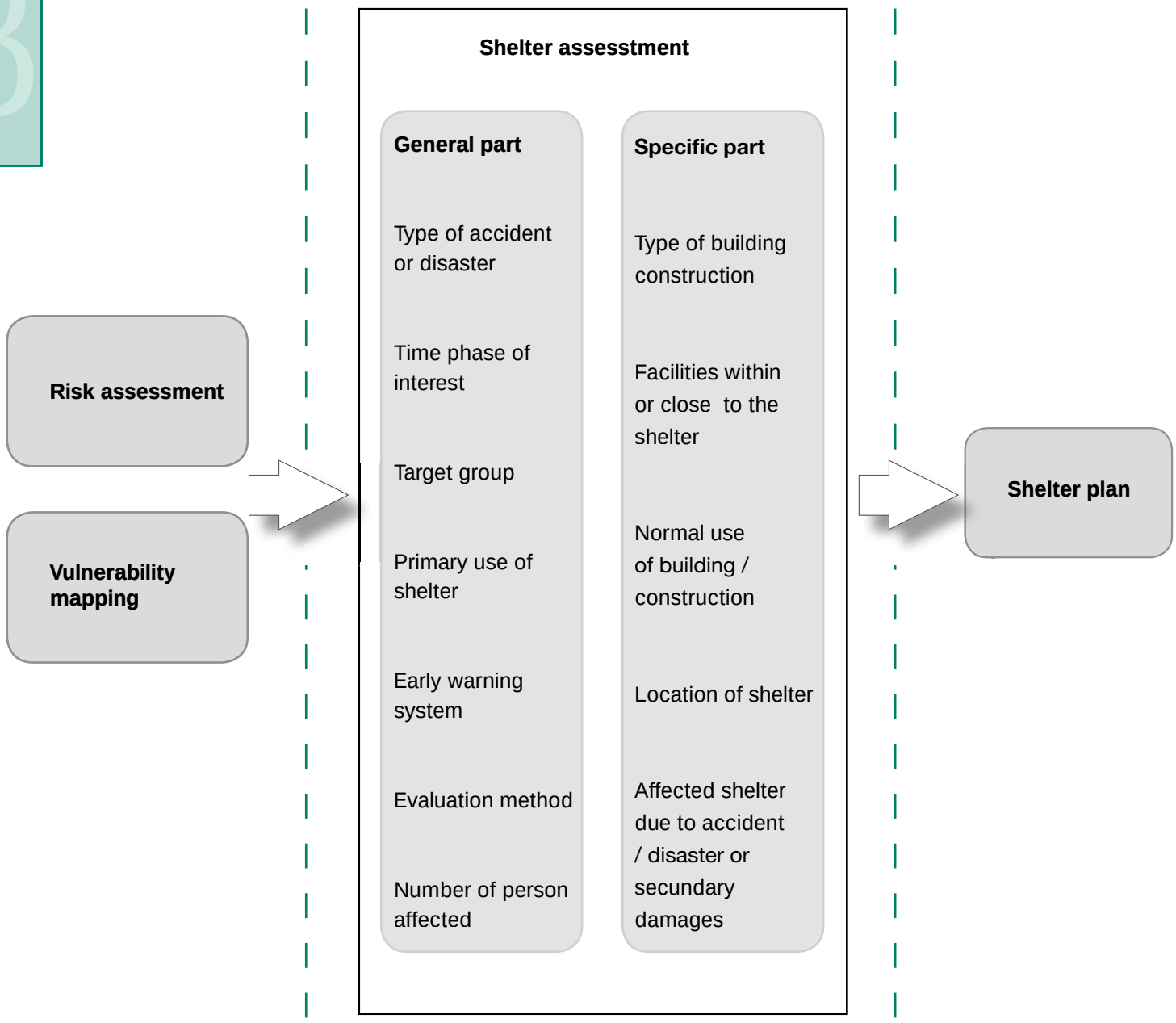
The Shelter Assessment Model

The Shelter Assessment model proposed is divided into two separate parts (see Figure B.1 below). With inputs from the risk assessment and the vulnerability mapping the first (or General part) contains general questions about the type of disaster or accident, the target group, time phase of interest, primary use of interest, early warning system, evacuation method and number of persons affected. The general part is used to define and clarify basic conditions before the second more hands-on (i.e. Specific) part of the assessment begins.

The specific part focuses on local conditions such as an evaluation of different buildings, location of the shelter, its normal uses, facilities within close proximity and whether it can be affected by secondary damages. A detailed description for each step in the shelter assessment model can be found below.

B

Figure B.1: Shelter Assessment Model



General part of shelter assessment

Type of accident or disaster?	What kind of accident or disaster is of current interest?
	Does the accident or disaster have different scenarios? Magnitudes?
	In order to advance with the shelter assessment it is necessary to choose a dimensioning scenario for each accident or disaster.
Time phase of interest?	Which one of the following time phases is interesting for the shelter assessment: • Immediate relief period (impact to day 5), • Rehabilitation period (day 5 to 3 months), • Reconstruction period (3 months onward)?
Target group of interest?	What is the target group for the assessment? • General public (specific groups) • Key positions or organizations in disasters such as police, fire brigade, local authorities, decision-makers, etc • Others.
Primary use of shelter?	What will the primary use of the shelter be? • Protection against cold, heat, wind and rain? • Storage of belongings and protection of property? • The establishment of a staging pint for future action (including salvage and reconstruction, as well as social reorganization) • Emotional security and the need for privacy • Accommodation, for families who have temporarily evacuated their homes for fear of damage • Health care? • Food distribution?
Early-Warning-System?	Is the area equipped with Early-Warning-System for the chosen disaster or accident? How will his affect the evacuation method?
Evacuation method?	What method for evacuation is the most likely? • Spontaneous • Spontaneous, but with guidance from local authorities? • Evacuation planned and organized by local, regional or national authorities?
Number of persons affected?	According to the risk assessment and vulnerability mapping, how many people will be affected by the accident or disaster (dimensional scenario)?
	According to the risk assessment and vulnerability mapping, how many residents, hotels etc will be affected by the accident or disaster (dimensional scenario)?

B

Specific part of shelter assessment

Type of building/ construction	What construction method is used for the shelter?
	Does the building have disaster resistant structures?
	Is the shelter suitable for the chosen type of accident or disaster?
	Does the shelter have reasonable water and sanity facilities due to time phase of interest and number of persons hosted?
	Is the capacity of the shelter enough compared to the number of persons evacuated?
	Is the shelter safe for its normal use?
Where is the shelter located?	Is the location suitable for the evacuation method?
Normal use of the building/ construction	How is the presumptive shelter used under normal conditions?
	Does the building have specific normal use that can be of special interest in case of being used as a shelter? • Hospital? • Official buildings? • Capacity to host many evacuated people? • Good water supplies? • Etc.
	Does the building have to be evacuated before being used as a shelter?
	What preparations can be done to speed up the use of a building as shelter in case of emergency? Agreements? Contracts?
Is it possible that the shelter will be affected in the accident or disaster?	Due to the accident or disaster, is the shelter located to reduce the risk of being affected itself? • Geographic location in relation to accident or disaster? • Topographic matters?
	Is it possible that the evacuation route will be affected by the accident or disaster?
Possibility of secondary damages	Is it possible that the shelter will be affected by secondary damages such as: • Landslides, • Fallen trees, • Demolished buildings or constructions, • Power loss, • Contaminated drinking-water, • Damages to industries or other buildings or installations with chemicals or hazardous material or substances, • Etc.

(Source: Handbook for Vulnerability Mapping, Swedish Rescue Services Agency, developed for UNEP project on "Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms in Coastal Settlements in Asia – Demonstration in Tourism Destinations")

APPENDIX C

CHECKLIST FOR RISK REDUCTION OPTIONS

Consider all of the following categories when evaluating appropriate risk reduction measures

Prevention: activities intended to keep hazard-related problems from getting worse; especially effective in reducing a community's vulnerability where development has not occurred or where capital investments are not substantial. Examples include: development review and physical planning; drainage system maintenance; building codes and standards; taxation and fiscal policies.

Property Protection: retrofitting or "hardening" existing structures to better withstand hazard events, remove them from hazard-prone areas, or provide insurance to cover potential losses.

Natural Resource Protection: reduce risk by preserving or restoring the function of environmentally sensitive areas which are often also hazard prone areas. Examples include floodplains, wetlands, coastal dunes, erosion and sediment controls.

Structural Projects: lessen vulnerability by physically modifying the environment. Examples include: flood walls and reservoirs; groins and other sea defenses; and channel modifications.

Public Education and Outreach: public information and awareness activities are used to advise residents, tourism operators, business owners, and visitors about hazards, hazardous areas, and risk reduction measures they can use to protect themselves and their property.

Emergency Services: availability minimizes the consequences of a hazard event on people and property. Examples include: search and rescue; evacuation planning and exercises; warning systems; and, retrofitting critical facilities.

APPENDIX D

ADDITIONAL GUIDANCE FOR WRITING DISASTER PREPAREDNESS PLANS

Consider the following points when writing the disaster preparedness plan

D.1 *Principles of Emergency Preparedness*

- **Preparedness reduces unknowns.** In the chaotic aftermath of a disaster; preparedness reduces uncertainty by anticipating key issues and defining solutions.
- **Preparedness is an education activity**. The Plan is not the important outcome; it is the planning process itself and educational outreach to inform wider circles of stakeholders and the public at large.
- **Preparedness evokes appropriate action.** Although speed of response is important, the appropriateness of response is a more important goal that is achieved through preparedness.
- **Resistance to emergency preparedness is a given.** In most instances, preparedness receives a low priority by local officials. Preparedness planning requires strong leadership and vision.
- **Modest planning is a reasonable goal.** A highly detailed local plan is not required and, in fact, can be counter productive. It is impossible to plan for every contingency; situations change and detailed plans become quickly out-of-date.
- **Preparedness is a continuous process.** Plans need to be kept up-to-date; tested over time, and revised when necessary.

D.2 *Checklist for Assessing Institutional Capability & Readiness*

Hazard Identification and Risk Assessment

- If there is an existing emergency plan does it consider a full range of natural and technological hazards confronting the community? If so, when was it last updated.
- What kind of information on hazards, exposure and vulnerability is available (maps, land use, population clusters; sensitive environmental features, and hazard prone areas)?
- Have historical data on past disasters or emergencies been collected and evaluated?
- Has a risk assessment been conducted and have hazard profiles been developed to determine the degree of vulnerability including gender aspects, and the level of exposure to specific hazards?
- Is there a scenario analysis for different hazard and vulnerability factors?
- Has an evaluation been conducted in recent times on community awareness and local emergency management capabilities?

- ❑ When was the last significant disaster event and what lessons were learned regarding vulnerability?

Disaster Management Organization

- ❑ Is there a legal framework that gives adequate authority to local agencies and organizations to act during disasters?
- ❑ Has any agency or personnel at the local level been formally designated to be in charge of emergency management?
- ❑ Who are the regional or national emergency management representatives and have they been active by participating in local planning initiatives?
- ❑ Is there an institutional mechanism in place within the local government for preparedness and response?
- ❑ Are there formal or informal cooperative arrangements (mutual aid) between local and regional government agencies and private sector suppliers and businesses?
- ❑ Does the system in place consider coordination between different administrative levels?

Warnings & Alerts

- ❑ Are weather and other indicators of potential emergencies monitored by local emergency responders? Consider linkages to regional and national disaster warning systems.
- ❑ How are warnings currently disseminated to authorities, businesses, citizens and tourists?
- ❑ Who is responsible for alerting the media and the general public about an actual or potential emergency situation?
- ❑ Does the existing warning system take into account the demographic, gender, cultural and other characteristics of the target groups?
- ❑ Are there special provisions for alerting particular population groups such as tourists, the handicapped or those speaking non-native languages?
- ❑ Has the general public been educated about the meaning of the alerting signals and about the corresponding actions to take?
- ❑ Are there drills or other ways to test the effectiveness of early warning systems and levels of warnings?
- ❑ Has the role of the media in alerting the public been coordinated with media representatives?

Evacuation and Sheltering

- ❑ Do existing preparedness plans address evacuation route planning by considering vulnerability mapping and risk scenarios?
- ❑ Were realistic projections made of how many people will be affected under the risk scenarios of varying magnitudes?

- ❑ Have assessments of existing or proposed shelters been conducted to determine their location relative to hazards, construction quality, code compliance, and susceptibility to secondary impacts such as power loss or contamination of potable water supplies?

- ❑ Have target groups such as the general public, tourists and special needs populations, been assessed for their evacuation and sheltering needs?

Mobilization and Stand-by Arrangements

- ❑ Have official and unofficial responsibilities during a disaster been designated for the community's elected and appointed officers?

- ❑ How would key emergency personnel be rapidly notified of a disaster or a potential disaster situation?

- ❑ Are procedures in place for notifying and activating key response personnel? Or if they were out of town and otherwise unreachable, their alternates?

- ❑ Are emergency stockpiles of medical supplies, food, water and shelter available and accessible?

- ❑ To what extent is expertise readily available at destinations in such fields as search and rescue, medical, communication and civil engineering?

- ❑ Does a cadre of volunteers exist to support local officials in emergency response and are they adequately trained?

Media, Communications and Public Outreach

- ❑ Is there a clearly defined and articulated media strategy which has been disseminated to national and international media?

- ❑ Have procedures been established for coordination of information during a response? Which lead organization is responsible for the coordination of communication activities?

- ❑ If there is a data or communications system in place? How does the system rapidly provide responders with information as specific issues arise?

- ❑ Is the local communication system tied into regional and national networks and is there built-in redundancy in case of energy failures?

- ❑ What kinds of public outreach initiatives exist and does it address all phases of the disaster management cycle?

- ❑ Does the public outreach program place specific emphasis on reaching populations living in the most hazard prone areas?

- ❑ Is knowledge of hazards, risks, preparedness and response shared with civil society and visiting tourists?

- ❑ Is there a disaster preparedness component within the formal educational system?

D.3 Annotated Table of Contents for Disaster Preparedness Plans

Section Title	Recommended Minimum Contents
Acknowledgements	List and recognize all agencies local, national or external who contributed to the development of the plan
Lists of Contributors & Reviewers	Members of the writing team and other contributors
Plan Distribution	List the name and functions/titles of recipients who should have a copy of the disaster preparedness plan
Record of Reviews and Authorized Amendments	Listing of the dates of past (minor) reviews with names and initials of those in authority who approved the revisions
Executive Summary	Short synopsis of plan contents
Base Plan	
1 Introduction	
1.1 Purpose and Scope of the Plan	General introduction; overall scope and purpose of the plan
1.2 Role & Importance of Tourism in National Economy	Background of the importance of the tourism industry to the destination and the issues requiring a preparedness plan
1.3 Geographic Setting	Description of the geographic setting of the destination (location, salient physical features and land use patterns, climate/rainfall)
1.4 Socio-economic and demographic features	Description of socio-economic and demographic features including places of mass congregation, population and tourism flows, transport and communication features, and basic social infra-structures
1.5 Disaster Management Policies and Frameworks	Background description of the national and local disaster management framework
1.6 Policies	Brief description of relevant legal authorities and policies
1.7 Planning Assumptions	Key definitions, assumptions , and source of data used to guide plan development
2 Hazard and Vulnerability Analysis	
2.1 Hazard Identification and Analysis	Describe existing hazards and the different disaster types identified in previous risk assessment
3 Disaster Management Organization	

Section Title	Recommended Minimum Contents
3.1 Concept of Operations	Basic overall command and control structure, organizational charts depicting roles and responsibilities for various governmental agencies, relationships with regional and national government authorities, functional responsibilities (emergency support functions, early warning systems, etc.)
3.2 Incident Life Cycle	Initial notification of an emergency and trigger mechanisms, resources and mobilization, emergency response, recovery actions, after action report
3.3 Responsibilities	Text and tables providing a detailed outline of responsibilities of local authorities and government agencies (e.g. municipality, civil defense, police, fire and rescue, health care, meteorological, etc.), private sector (e.g. tourism operators) and volunteer relief organizations Description of command and control functions.
4 Testing and Updating the Plan	
4.1 Training and Testing the Plan	Training program including Identification of key participants who must be trained, and who will train them. Schedule for periodic table-top exercises and drills
4.2 Updating the Plan	Method and schedule for review and revision of the plan, including the incorporation of lessons learnt from drills and tests into the plan
5 Functional Annexes	
5.1 Transportation	Example of emergency support function, primary and support roles for agencies responsible for transportation network in evacuation, re-establishing transportation assets, and emergency access
5.2 Communications	Ensures the provision of communications support to emergency operations center (EOC), restoring communications following major events
5.3 Mass Care	Coordination of government's efforts to provide mass care needs and sheltering to disaster victims
5.4 Recovery	Framework for coordinating long-term community recovery and integration of risk reduction into reconstruction
5.5 Other Examples	Other applicable emergency support functions normally included in preparedness plans include: fire fighting, health & medical facilities, search & rescue, media relations & outreach, information & planning, donations & volunteer management, environment & hazardous materials
6 Incident Annexes	Address scenarios, including one on the primary natural hazards affecting the coastal tourism destination (Cyclone, Flood, Earthquake) providing specific guidance on preparedness, response and recovery implications for each key disaster scenario, (which should be fully described)
7 Appendices	Varies depending upon local circumstances, might include definitions & acronyms, hazard profiles, key maps (including hazardous areas/zones, shelter and evacuation routes, etc.), contact lists, relevant authorities, etc.

APPENDIX E

15 ACTIONS TO DEVELOP A DISASTER PREPAREDNESS PLAN FOR A COASTAL TOURISM DESTINATION

	Actions	Sub-actions	Tips	Further information
1	**Identify and engage key stakeholders**	• Identify all relevant stakeholders in the destination that are involved in disaster related issues – from the private sector (including the tourism sector), the local authorities (including emergency services, planning services and meteorological services) and from the local population • Establish communications with the above mentioned stakeholders • Select a leading agency, define the problem and objectives. These will be framing the process that will be followed by the development of the Disaster Preparedness Plan • Reach common understanding on the process.	• Stakeholders should have responsibility or interest in managing disaster risk at the coastal tourism destination. • Remember to integrate various productive and service sectors at the destination that interface with the tourism sector. • Include the media as key partner.	Regional Tourism Industry Approach to Disaster Risk Management (p. 42-44) Box 4.1: List of Potential Stakeholders (p. 55)
2	**Raise awareness**	• Organise awareness raising workshops and involve the above mentioned actors – propose an approach for a participatory process for the development of an integrated Disaster Preparedness Plan for the coastal tourism destination. • Establish an awareness platform that will last at least during the timeframe of the process	• The media will be a key partner throughout the process to convey messages. Involving the media allows them to better understand and communicate the issues. • Workshops will allow for presentation of the process, and to create awareness on risks and disaster preparedness.	

	Actions	Sub-actions	Tips	Further information
3	**Establish a coordinating group (CG)**	• Among the identified group of stakeholders, establish a coordinating group to lead and support the participatory process, with selected representatives of all stakeholder groups.	Activities and priorities of the CG: • To bring local industry focus • To ensure that the right people (i.e. stakeholders), expertise and resources are brought together to collaboratively develop a participatory and responsive process.	Review Box 4.1: List of Potential Stakeholders (p. 55) Activities and Priorities of the Coordinating Group (p. 55-56) Factors facilitating or hindering this task (p.57) Box. 4.3: Initial Considerations for the Coordinating Group (p. 58)
4	**Define a work plan to the process** (both for the CG and taking into account external assistance needed)	• The CG should establish an objective, a work plan with timeline and activities, deadlines and key roles and responsibilities • Identify stakeholders outside the CG that will have to be regularly contacted. • Set-up a consultation phase to ensure that the work plan addresses the different stakeholders' needs.	• Do not forget to inform the national / regional /local authorities, especially the ones that will officially approve the plan).	p. 75-76
5	**Undertake a local capacity assessment**	• Undertake a legislative check, • Undertake a capacity assessment in terms of human, financial and response resources • Review existing plans, and consider information included.	• You certainly have identified gaps, and maybe have solutions / ideas to improve it. Put the solution into practice now if possible, or take the gaps into account when developing the plan. • The CG must liaise with the local disaster management office (if conducting the assessment) to exchange the information	6 recommended activities that tourism destinations may draw upon to carry out the assessment (p.74-75) Appendix C-C.2:Conducting a Legislative Review (p.122)

	Actions	Sub-actions	Tips	Further information
6	**Assess the current situation of the location**	Assess: • Geographic location, weather, seasons • Tourism and local population flows, and seasonality in the destination	• Consider some of the unique aspects of coastal tourism destinations	p.62
7	**Evaluate and assess the risks:**	• Identify all climate change-related hazards in the coastal tourism destination (map them if possible) and prioritize them taking into account the likelihood of a disaster • Identify potentially threatened assets, facilities and infrastructure, and networks • Determine the destination's level of exposure/ vulnerability (including exposure of tourism supply chain networks) • Assess the coastal tourism destination's risks • Evaluate risk reduction options	• Take an All Hazards approach by also evaluating the human-induced incidents that may be a key risk • When identifying potential threatened assets… consider: Tourist resorts, hotels and amenities; hospitals and clinics; port facilities, airports and road networks; etc.	Climate Change impacts on Tourism (p.23) Table 3.1- The broad spectrum of natural and man made hazards (p.40) Box 4.3: Initial Considerations p58 Key Assets, Critical Facilities and Networks (p 62) Appendix A- Guidance on Hazard Identification and Vulnerability Assessments p. 108 Risk reduction options (p.69,p.71) Checklist of risk reduction options- Appendix B- p. 121

	Actions	Sub-actions	Tips	Further information
8	**Develop vulnerability maps**	• Use output from the risk assessment • Collect information (a survey may be necessary) • Identify on the map, the vulnerable areas related to the local community, tourism infrastructures and facilities, to property and to the environment • Develop the vulnerability map	• Consider tourism flows • Map key assets, critical facilities and networks (i.e. life line services and tourism supply networks)	Usefulness of developing a vulnerability map (p. 62) Appendix A3- Vulnerability Mapping p. 111
9	**Undertake a shelter assessment:**	• Based on the risk assessment and the vulnerability map • Select shelters by location (review the defined key community assets and for each building, i.e. hotels, or upper land areas the potential for being a shelter) • Identify evacuation routes	• When reviewing the potential shelters and their location, keep in mind the nature of the disaster, the accessibility of the evacuation routes to the shelters and the tourism flows • Consider vulnerable population groups	Appendix A.4: Shelter Assessment p115 p. 64, p.78-79
10	**Define specific scenarios**	• Come up with a set of representative scenarios – make sure to include scenarios for different weather seasons and tourism seasons	• Use hazard and vulnerability maps to estimate damages and secondary effects • Consider the disaster management implications considering the local tourism specificities	Activities involved in developing risk scenarios (p.65)

	Actions	Sub-actions	Tips	Further information
11	**Draft the disaster preparedness plan**	• Review and compare existing plans, in light of the previous actions. • Draft the plan taking into account previous actions – vulnerability map, shelter assessment, specific scenarios.	• Clearly define: lines of command, and responsibilities • Ensure that emergency meeting points are indicated and rescue operations are outlined.	Appendix C-(p.122) p.79-80
12	**Submit the plan to local authorities**	• Official approval of the Disaster Preparedness Plan		Plan approval (p. 76)
13	**Build capacities / Train responders and local authorities on the plan**	• Objective: to reinforce ability to respond effectively to disaster events • Organize capacity building seminars on the Disaster Preparedness Plan, to train responders, local authorities and members of the CG. • Prepare drills, exercises and training on what to expect during implementation	• Emphasize tasks and responsibilities of each of the responders and authorities	Activities involved in capacity building (p.92-93)

	Actions	Sub-actions	Tips	Further information
14	**Educate and outreach**	**Develop awareness raising documents** • The objective is to educate all stakeholders (tourists, workers and local populations) on plan objectives and requirements • Develop brochures, Radio/TV broadcasts etc. for local population and tourists • If needs be, develop pictorial signs indicating vulnerable areas and evacuation routes to shelters. • Build a dissemination strategy of awareness raising documents. **Organize awareness raising events:** • Apply the dissemination strategy. • Organise awareness raising workshops and campaigns, involving tourism sector representatives, media, public and tourists. • Prepare a drill, selecting a specific disaster scenario before hand. • Establish an observation team to identify the plan weaknesses and shortfalls.	• Use pictures and drawings • Use simple and clear language, “catchy” or concise phrases. • Tourism sector representatives can convey relevant and appropriate messages to the tourists. • The drill will help to test and evaluate components of the plan. • The drill observation team should include key actors from the tourism sector, local disaster management and other collaboration agencies	Public outreach and education (p.94-95) Four key reasons for testing and evaluating the plan (p.86) Box. 6.1: Types of Emergency Plan Simulation (p.84-85)
15	**Update and review the plan**	• Share observation team findings • Identify the corrective actions needed • Amend the plan accordingly • Assign follow-up actions to ensure that all changes are made • Designate someone to be responsible for reviewing the plan, as well as a timeline for revision.	• Consider the legislative consequences if major changes have been made to the plan (p.91)	

About the UNEP Division of Technology, Industry and Economics

The UNEP Division of Technology, Industry and Economics (DTIE) helps governments, local authorities and decision-makers in business and industry to develop and implement policies and practices focusing on sustainable development.

The Division works to promote:

> sustainable consumption and production,
> the efficient use of renewable energy,
> adequate management of chemicals,
> the integration of environmental costs in development policies.

The Office of the Director, located in Paris, coordinates activities through:

- **The International Environmental Technology Centre** - IETC (Osaka, Shiga), which implements integrated waste, water and disaster management programmes, focusing in particular on Asia.
- **Sustainable Consumption and Production** (Paris), which promotes sustainable consumption and production patterns as a contribution to human development through global markets.
- **Chemicals** (Geneva), which catalyzes global actions to bring about the sound management of chemicals and the improvement of chemical safety worldwide.
- **Energy** (Paris), which fosters energy and transport policies for sustainable development and encourages investment in renewable energy and energy efficiency.
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- **Economics and Trade** (Geneva), which helps countries to integrate environmental considerations into economic and trade policies, and works with the finance sector to incorporate sustainable development policies.

UNEP DTIE activities focus on raising awareness, improving the transfer of knowledge and information, fostering technological cooperation and partnerships, and implementing international conventions and agreements.

For more information,
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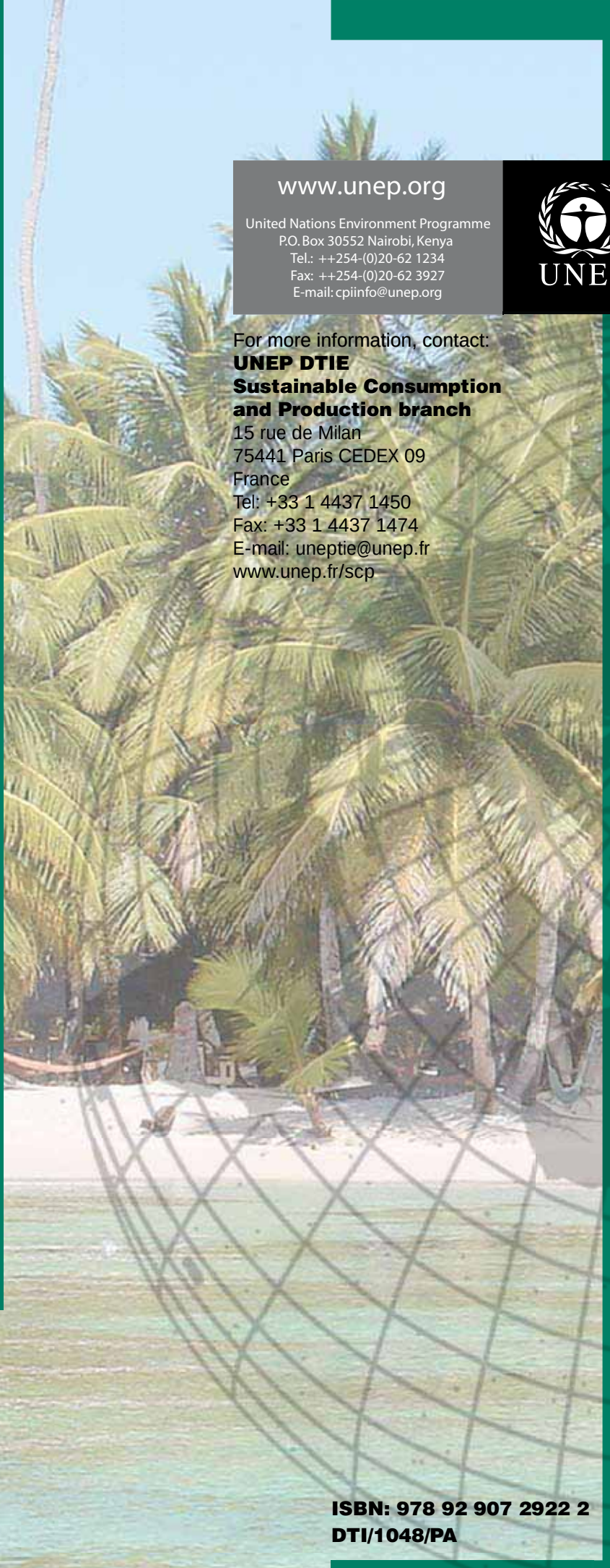
The sustainability of coastal tourism destinations depends partly on their ability to adapt planning and management practices to the impacts of climate change and also to increase their ability to effectively manage natural disasters.

Scientific evidence suggests that climate change will exacerbate weather-related disasters that will be not only more frequent but also more powerful and consequently will put coastal tourism destinations in an almost constant state of alert.

Experience has shown, time and again, that it is local people who are best placed to save lives and to coordinate the return to normality.

It is the degree to which people are prepared for disasters that determines how vulnerable or resilient their community will be.

The handbook provides disaster managers, local and municipal and community planners, as well as other stakeholders in the tourism sector with a practical guidance on how to better prepare for disasters in coastal destinations.



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