

# **BELIZE NATIONAL HAZARD MITIGATION POLICY**

**FINAL DRAFT**

**Prepared by the National Policy Development Committee**

**Prepared for**

**The National Emergency Management Organization**

**With the support of**

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## ACRONYMS AND ABBREVIATIONS

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BMC	Borrowing Member Countries
BTB	Belize Tourist Board
CRFM	Caribbean Regional Fisheries Mechanism
CDB	Caribbean Development Bank
CDERA	Caribbean Disaster Emergency Response Agency
CDMS	Comprehensive Disaster Management Strategy
CEO	Chief Executive Officer
CHAMP	Caribbean Hazard Mitigation Capacity Building Programme, CDERA
CBO	Community Based Organization
CEPREDENAC	Coordination Centre for the Prevention of Natural Disasters in Central America
CIDA	Canadian International Development Agency
CPACC	Caribbean Planning for Adaptation to Global Climate Change
DMFC	Disaster Mitigation Facility for the Caribbean
DOE	Department of the Environment
CZMA	Coastal Zone Management Authority
GOB	Government of Belize
HOD	Head of Department
MBRS	Mesoamerican Barrier Reef System
NBSAP	National Biodiversity Strategy and Action Plan
NEMO	National Emergency Management Organization

NGO	Non-Governmental Organization
NHMP	National Hazard Mitigation Policy
NHMS	National Hazard Mitigation Strategy
IPCC	Inter-Governmental Panel for Climate Change
OAS	Organization of American States
PDC	Policy Development Committee
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WB	World Bank

# GLOSSARY<sup>1</sup>

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## **ALERT**

The formal, and in some case legal, notice given to the general public of threat indicators which tend to limit phenomenon's impact through preparedness measures.

## **CLIMATE CHANGE**

Change observed in the climate on a global, regional or sub-regional scale caused by natural processes and /or human activity.

## **DISASTER**

A natural or man-made event which causes intense negative impacts on people, goods and services and/or environment, exceeding the affected community's capability to respond.

## **HAZARD**

A potentially damaging physical event, phenomenon and or human activity, which may cause loss of life or injury, property damage, social and economic disruption or environmental degradation.

## **HAZARD ANALYSIS/ASSESSMENT**

Identification study and monitoring of any hazard to determine its potentiality, origin, characteristics and behavior.

## **HAZARD MITIGATION**

Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards. In climate change terminology, hazard mitigation is synonymous with adaptation to some degree. Climate change adaptation is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

## **HAZARD RISK MANAGEMENT**

Comprehensive disaster management employing best practices with sound administrative decisions, adequate legal support, coupled with appropriate responsibilities in conjunction with implementing policies, strategies and practices.

## **HAZARD RISK REDUCTION**

The development and application of policies, practices, procedures and strategies by the society and communities to lessen the negative impact of both natural and technological hazards and includes structural and non-structural measures. This includes structural and non-structural measures to avoid (prevention) or limit (mitigation and preparedness) adverse impact of hazards, as well as the development of coping capabilities.

## **MILPAS**

A type of traditional farming commonly used in Central America and parts of Africa. Farm plots (Milpas) are cut and burnt (slash and burn) to remove weeds and release nutrients into the soil. Plots are cultivated for about three years and then allowed to remain fallow for a number of years as the returning forest rejuvenate soil structure and composition.

## **NATURAL HAZARD**

Natural processes or phenomena occurring in the biosphere that may constitute a damaging event.

## **NATURAL RESOURCES**

Any and all material (s) occurring as a result of the processes and forces of nature such as fish, tree, minerals, that can be exploited by man. Such resources are of two (2) categories. The *renewables* (fish, trees, etc.), which are sustainable, and the *non-renewables* (petroleum, iron, etc.), which are not sustainable.

## **RISK**

The probability of harmful consequences, or expected loss (of lives, people injured, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human induced hazards and vulnerable/capable conditions. Conventionally, risk is expressed by the equation:

$$\textit{Risk} = \textit{Hazards} \times \textit{Vulnerability/Capacity}.$$

## **SQUATTING**

Occupy property without a legal claim: to occupy lands or buildings without title or payment of rent or without the permission of the owner or other rights holder.

## **STAKEHOLDERS**

Person or entity holding grants, concessions, or other type of value that would be affected by a particular action or policy.

## **SUSTAINABLE**

Maintaining ecological balance via a system of exploiting natural resources without destroying said ecological balance

## **SUSTAINABLE DEVELOPMENT**

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of “needs”, in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

## **TECHNOLOGICAL (MAN-MADE) HAZARDS**

Danger originating from technological or industrial accidents, dangerous procedures, infrastructure failure or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

## **VULNERABILITY**

A set of conditions and processes resulting from physical, social, economic, and environmental factors, which increase the susceptibility of a community to the negative impact of hazards.

## **PREFACE**

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This National Hazard Mitigation Policy document was prepared through a collaborative undertaking by the Government of Belize, the Caribbean Disaster Emergency Response Agency (CDERA) and the Caribbean Development Bank (CDB). The Project for developing the Policy document was jointly financed by CDERA through its Caribbean Hazard Mitigation Capacity Building Programme (CHAMP) executed by the Organization of American States (OAS) and funded by the Canadian International Development Agency and CDB through its Disaster Mitigation Facility funded by the United States International Development Agency.

To facilitate the development of the National Hazard Mitigation Policy, a Policy Development Committee (PDC) was established at the April 28-30 workshop in Belize. The function of the PDC was to provide technical guidance to the development of the NHMP; within the PDC a Core Committee, comprised of six (6) persons, was responsible for preparing and writing sections of the policy for discussion and circulation to the wider group. During this process a consultant was hired to further develop the policy based on the framework prepared by the Core Committee. Through its Chair, the PDC was encouraged to ensure that follow-up of undertaking by the members of the PDC were taken. The PDC Chair was also responsible for developing a mechanism for informing national stakeholders of the progress of the project.

In keeping with the planning process the draft document was presented at eight (8) Regional Public Consultation meeting. This gave stakeholders an opportunity to contribute to the development of the document. Further to this, a National Stakeholders meeting was also held at which the Draft National Mitigation Policy was presented for further comments and improvement.

## **1.0 INTRODUCTION**

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### **1.1 Caribbean Vulnerability to hazards**

1.1.1 The Caribbean region is largely comprised of a number of small islands and low-lying coastal States, where the major urban areas, associated infrastructure and key economic sectors are located in area that are highly vulnerable to the impacts of both natural and technological hazards. Over the past decades, the region has suffered from hurricanes and their associated effects. Additionally, the region has experienced several episodes of flooding, landslides, volcanic eruptions and earthquakes. Concerns are also articulated about the region's vulnerability to the impacts of global climate change which are likely to impact the region with greater climate variability (changes in dry and rainy seasons), more extreme events (hurricanes, floods, droughts), and damage to water resources, ecosystems, human settlements, agricultural systems, coastal resources, tourism, infrastructure, and human health.

1.1.2 The vulnerability of the region to climate change is becoming increasingly evident as changes in world climate manifest themselves in increasing occurrences of extreme weather events; greater and more rapid changes in climate variation will enhance the risk to damage and increase the need to implement adaptation measures. The impacts of these factors are further compounded by poverty, the location of settlements in hazardous areas, environmental degradation, poor housing, and generally low levels of preparation for disasters.

1.1.3 The region is also susceptible to technological hazards including large-scale fires from industrial sites, oil and chemical spills, aircraft accidents, accidents from the transportation of toxic and hazardous waste material on land and sea, and large-scale marine and on-land transportation accidents. With most of the development in the region located in coastal areas these types of events can have adverse impacts on people, the environment and major economic sectors, including the tourism industry, which is a major economic sector in most states.

1.1.4 Recognizing the economic and social cost incurred as a result of repeated damage from natural hazard events, and the threat of technological hazards, as well as the increasing awareness that global climate change will impact all countries in the region, mitigation issues have moved onto the policy agenda of a number of Caribbean countries. Governments now recognize that, in the pursuit of their country's development, National Hazard Mitigation Policies must be developed and factored into National Development Policies and plans.

### **1.2 National Vulnerability to Hazards**

1.2.1 Belize has a long, low-lying coastline, which accommodates 45% of the country's population, its ports and its industries.<sup>2</sup> The country is also within the hurricane belt and is affected, on the average, once every three years by a hurricane. And, like most Caribbean countries, Belize has over the past few years experienced the effect of several other natural hazards including storms and floods and, to a lesser extent, technological hazard. The effects of these hazards have resulted in loss of life and destruction of property (Appendix I). Loss of life and destruction of property are exacerbated by poverty, environmental degradation, poor housing and the location of communities in vulnerable areas.

1.2.2. The 20<sup>th</sup> Century has seen a consistent, large-scale warming of both land and ocean surface temperature. This is producing sea level rise. Climate change and sea level rise will make Belize even more vulnerable to natural disasters.

1.2.3 Marine traffic, particularly oil tankers and cruise ships traveling through our coastal waters and the Caribbean Sea present the risk of oil pollution from accidents at sea. Such pollution poses a threat to the Belize Barrier Reef, coastal installations, sea birds and fisheries. Additionally, oil tankers, which transport fuel to inland towns and villages, can threaten water bodies, forest areas and other infrastructure including towns.

1.2.4 Fires present a constant risk in Belize. These fires, which may start by natural causes such as lightning or indiscriminate human actions usually, cause damage to grassland and forest areas. Additionally, Belize City because of its congestion and its tradition of building wooden houses is susceptible to fires. Belize's history of fires dates back to 1802 and includes fires which have destroyed entire neighborhoods (Appendix II). Historically one major fire has erupted each year resulting in loss of property and in some instances, the loss of life.<sup>3</sup>

1.2.5 In order to meet these challenges; it is imperative that a clear and comprehensive national hazard mitigation policy be developed. This policy should advocate for the adoption of intervention methods and preparedness measures, aimed at reducing or decreasing existing risk and minimizing losses and damages resulting from the occurrence of dangerous phenomenon.

### **1.3. National Responses and Capabilities**

1.3.1. A number of initiatives have been undertaken by the Government of Belize to reduce the impact of damage due to hazards. One of the earliest initiatives undertaken by the Government of Belize was the creation of a new town in the Corozal district following the destruction of the town by Hurricane Janet in 1955. Modern Corozal Town, which emerged from the ruins of the hurricane, is the first Belizean township to be planned and built on modern lines. Then, in an effort to reduce losses as a result of damage from hurricanes and ensuing tidal surges, the GOB, following Hurricane Hattie in 1961, established a new settlement, "Hattieville" eighteen miles (18) miles away from the coast. This action was followed by the creation of the new capital City of Belmopan. Belmopan is located in the geographic, "mountainous" centre of the country, about fifty miles southwest of Belize City and 20 miles east of San Ignacio. Construction of the new city began in the mid-1960s and it was officially inaugurated as the Nation's Capital in 1972.

1.3.2 More recently, March 2003, another location "Mahogany Heights" was officially declared open. This site is located some thirty-two mile from Belize City. One reason for its development was that it affords protection from storms and hurricane surges.

1.3.3 In response to Hurricane Mitch (1998) the Government of Belize (GOB) has embarked on an accelerated and comprehensive programme of disaster management. With assistance from the Inter-American Bank (IDB) and the Caribbean Development Bank, a loan for approximately thirty-two million US dollars was obtained for, among other things, retrofitting and construction of hurricane shelters. By June 1999, over three hundred and fifty hurricane shelters were inspected country wide; two hundred and fifty of which were identified for retrofitting. Included in the programme of action was the upgrading of the drainage infrastructure of Belize City, the expansion of the water and sewage capacity in Belmopan and the institutional strengthening of NEMO. Additionally, in 1999 and, in concert with IDB consultants, the NEMO secretariat revised Volume I (Hurricane Preparedness) of the Disaster Management Plan for Belize. In that same year IDB consultants conducted studies and surveys in Hazard and Disaster Management Plans and Programmes, Hazard and Risk Assessment, Emergency Communications and Warning and, Legal Framework for NEMO. The reports on these assignments were completed and submitted to the GOB in January 2000.

1.3.4. A major initiative was the passage of the *Disaster Preparedness and Response Act*<sup>4</sup>, and the Disaster Preparedness and Response Act (Commencement order, 2000). The main enabling legislation provides for the creation of a National Emergency Management Organization (NEMO) and prescribes the legal, regulatory and administrative framework for the NEMO. The NEMO was created in 1999 and given emergency management responsibilities including the task of developing a National Hazard Mitigation Policy.

1.3.5. Additionally, several pieces of legislation, which support hazard mitigation, have been passed. These include the Environmental Protection Act, the Merchant Shipping Act, the Land Utilization Act and the Coastal Zone Management Act. Draft legislation controlling the building processes in Belize, particularly the development of construction standards for residential buildings, has also been prepared and will be presented to the National Assembly for review and approval.

#### **1.3.5.1 *The Environmental Protection Act***<sup>5</sup>

This Act represents one of the most significant advances in the environmental laws of Belize. Enacted in 1992, the Environmental Protection Act provides the Government of Belize with the authority to address modern environmental problems including problems associated with hazards. The Act became effective on the 6<sup>th</sup> January 1993 by Statutory Instrument 157 of 1993. Various regulations have been prepared under the Act including Pollution Regulations and Hazardous Waste Regulations.

#### **1.3.5.2 *The Harbours and Merchant Shipping Act***<sup>6</sup>

Under the Merchant Shipping Act 1989, rules are established to ensure that Belizean cargo vessels operating outside the territorial waters of Belize are properly equipped and operated. Regulation 26 requires that every tanker of 150 gross register tons and above comply with the International Convention for the Prevention of Pollution of the Sea by Oil. The Act also makes a person guilty of an offense if he throws, or permits to be thrown into the harbour any explosive substance, crude fuel, or lubricating oil.

#### **1.3.5.3 *The Land Utilization Act***<sup>7</sup>

The Land Utilization Act requires approval by the Government of Belize for the subdivision of any parcel of land in Belize. Part 111 of the Act empowers the Government to demarcate specific areas as “Special Development Areas” and to stipulate the types of development that will be permitted within these areas. This Act effectively provides government with the opportunity to regulate, promote, create and approve land development applications and, special development areas within which hazard mitigation measures can be incorporated.

#### **1.3.5.4 *The Coastal Zone Management Act***<sup>8</sup>

The Coastal Zone Management Act of 1999 established within the public service, the Coastal Zone Management Authority and Institute with broad consultative and advisory roles on policies and planning relating to coastal development and resource use.

The primary importance of this Act for hazard mitigation reduction purposes is the mandate given by the Act to the Authority to develop a comprehensive “Coastal Zone Management Plan” which could include the prohibition of certain activities in certain areas of the coastal zone. The Authority has, in its Coastal Zone Management Strategy for Belize (CZM 2000), stated its intention to work with other relevant agencies to develop adaptation response strategies to threats posed by natural and man made disaster events such as climate-change and sea-level rise, solid and liquid waste disposal and oil pollution.

### **1.3.5.5 *The Draft Building Bill***

The draft legislation for the control of the building process was developed in recognition of the need to improve building standards and the construction of buildings, especially of low-income houses, to resist severe weather events such as hurricanes. The Bill provides for the review of building plans and the inspection of construction to be carried out by private building professionals and inspectors employed by the Authorities. Parallel activities that are expected to be undertaken in support of the Bill includes the registration of building professionals, artisans and builders, the training of building professionals and builders in hazard mitigation, training of builders in the management of construction activities, and training of building inspectors in the techniques of their craft<sup>9</sup>.

1.3.6. In June 2000, the Caribbean Disaster Management Project was initiated. The overall goal of this project is to mitigate damages in CDERA member states particularly from flood hazards. The project, implemented by CDERA, trains professionals in disaster management planning including the preparation of hazard maps and disaster management plans for vulnerable areas in CDERA communities. This project is being implemented in Barbados, St. Vincent & the Grenadines and Trinidad & Tobago. Belize, as a member of the CDERA community, may benefit from the project, as project outputs will be shared with all participating CDERA member States.

1.3.7. In addition to its partnership with its CDERA colleagues in the Caribbean, the GOB has been collaborating with its Central American Colleagues in the design and practice of local risk management within the framework of the Regional Programme for Risk Management in Central America. This programme is promoted and coordinated by Coordination Centre for the Prevention of Natural Disasters in Central America (CEPREDENAC), with sponsorship from the United Nations Development Programme and the financial support of the United Kingdom's Department for Foreign International Development.

Between 1999 and 2002 the Local Risk Management component of this programme has promoted, in the seven countries in the region, the compilation of an extensive inventory of local level reduction initiatives. The collected works highlighted some twenty-two (22) of these experiences, through a series of seven national debates between local and civil society and political actors in each of the participating countries.<sup>10</sup>

1.3.8. In other areas, training of NEMO staff, in disaster management and risk reduction continues. An Oil Spill Contingency Planning and Policy document is being developed. The National Fire service is upgrading its facilities and its capacity to deal with fires countrywide. Additionally, simulated exercises to test the preparedness and response time of agencies such as the Fire Department, the Police Department, the medical services and related institutions are being conducted.

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## **2.0 RELEVANCE AND PURPOSE OF THE NATIONAL HAZARD MITIGATION POLICY**

2.0.1 A national comprehensive and coordinating policy to guide activities relating to hazard mitigation of natural and technological hazards does not currently exist in Belize. A hazard mitigation policy clearly needs to be enunciated so that conscious, ethical and responsible decisions can be made in determined situations of risk. The main purpose of the policy is to provide an integrated approach to hazard risk management and sustainable development, at national, sectoral and community levels. It also provides an important benchmark for stakeholder cooperation and a useful platform for pro-actively addressing hazard reduction issues within the context of development planning. This conforms to the realization of the goal of “Sustainable Development in the Caribbean”; an objective identified in the larger Caribbean Comprehensive Disaster Management Strategy and being advanced by CDERA with the objective of integrating CDM into the development processes of CDERA member countries. The policy sets out the broad goals and guiding principles for hazard risk reduction, and can inform the development of national hazard mitigation plans.

2.0.2 An integrated approach is critical to the incorporation of vulnerability reduction considerations at all levels of the development planning process. A proactive approach to hazard risk reduction is emphasized by raising awareness among key stakeholders of the various methods used to mitigate against natural and technological hazards.

2.0.3 The formulation and implementation of the policy is informed by previous and existing initiatives and a strong reliance on coordination and collaboration among agencies. Linkages between hazard mitigation and other policies, particularly those related to hazards and environmental management will be identified.

### **2.1 Challenges to Implementation**

A number of issues emerge which could impede the sustainability of the national hazard mitigation policy. Awareness of these challenges must inform the development of the policy.

2.1.1 The following summarizes the challenges to the implementation of hazard risk reduction.

- One of the major challenges identified in implementing the Hazard Mitigation Policy is the lack of knowledge about the importance of hazard mitigation. Discussions on the links between hazards and development and between development and hazards needs to be advanced. This is especially necessary within public and private sector organizations and more importantly, within local community groups whose members will be required to implement the policy.
- There is also a need for greater interagency coordination and the development of links between government ministries and departments and the development of partnerships between government and private sector organizations, civil society and community groups. This is especially crucial to the development and delivery of public education programmes, changing attitudes within the community and focusing efforts and resources in implementing the hazard mitigation policy.
- The regulatory, administrative and institutional framework for hazard mitigation needs to be upgraded particularly in regards to human capacity.
- An overriding challenge to implementation of the policy is the requirement for funding to and upgrade or develop information systems to support and facilitate multi-sectoral decision-making in the implementation of hazard mitigation programmes.

### **3.0 GUIDING PRINCIPLES OF THE NATIONAL HAZARD MITIGATION POLICY**

3.0.1 The management of hazard mitigation for Belize is seen within the context of a set of guiding principles, policy statements, enabling strategies and actions or activities. The guiding principles used to inform this policy include:

- i. The value of vulnerability assessment and reduction
- ii. The importance of an integrated approach to hazard risk management and development planning,
- iii. The requirement for community mobilization and public education,
- iv. The need for protection of the environment, and
- v. The need for good governance

#### ***3.1 The value of vulnerability assessment and reduction***

3.1.1 The value of vulnerability assessment and reduction is based on the need to invest in preventative mechanisms that would make optimal use of scarce resources.

Hazard risk mitigation is a relatively low cost, proactive and preventive activity, which provides the opportunity to save lives and minimize damage to the environment. More importantly, mitigation measures that reduce damage effectively enable scarce financial resources to be diverted to productive activities such as tourism, forestry, agriculture and fisheries, instead of towards post-disaster recovery efforts.

#### ***3.2 Integrated approach to hazard risk management and development activities***

3.2.1 Sustainable development can only be achieved if hazard risk reduction becomes an inherent part of development planning at community, local, regional and national levels. Similarly, in hazard risk management, an integrated approach is critical especially in conditions of scarce human and financial resources. An integrated approach reduces conflicts in policy development particularly when many stakeholders are involved.

#### ***3.3 The critical requirement for community mobilization and public education***

3.3.1 The efficacy of any initiative directed towards hazard mitigation is only as effective as the degree of community support. The mobilization of the public is thus one of the corner stones of the overall thrust to integrate hazard risk mitigation into the development processes of Belize. This is especially relevant where changes in attitudes, behaviours and lifestyles are required. Information therefore should target policy makers, developers, technocrats and the community at large with the intent of increasing the level of understanding of the risk and cost of natural and technological hazards.

#### ***3.4 The need for protection of the environment***

3.4.1 The responsible stewardship of natural resources and the environment is a necessary pre-requisite to the economic and social development of Belize. The links between poverty and the quality and abundance of natural resources is now a firmly established fact; poverty is recognized as one of the critical constraints to development. As long as poverty prevails, efforts to achieve sustainability and best use/practices of resources

will be frustrated. A prescriptive element in an emergent policy must therefore incorporate the application or creation of pro-poor strategies, which address the problems of the poor. This will ensure a positive outcome in advocating support for protection of the environment, proper management of non-renewable resources and sustainable management and conservation of natural resources. Protecting the environment limits the impact of hazards and promotes faster recovery time.

### ***3.5 The need for good governance***

3.5.1 The ability of nations to achieve their sustainable development goals hinges largely on the quality of governance. Governance is a pattern or structure that emerges in a social – political system as a result or outcome of the interacting intervention efforts of all involved actors<sup>11</sup>. Good governance is concerned with structures and processes through which organizations give direction and control activities.

3.5.2 Currently there is little responsibility, accountability or transparency in the decisions and actions taken by individuals or organizations towards existing and future vulnerability to natural and technological hazards. Good governance, involving meaningful stakeholder participation, must be built into the development and implementation of hazard mitigation policies. Good governance will build understanding of the implications of development decisions for hazard mitigation and will also build support for implementation of risk reduction programmes.

## 4.0 POLICY STATEMENT

4. 0.1. The Hazard Mitigation Policy for Belize recognizes that the country is susceptible to a variety of hazard events that could result in incalculable damage to the environment and the erosion of our social and economic development. Hazard mitigation can reduce our vulnerability to these hazards and vastly increase the nation's ability to recover from these events. The policy therefore places emphasis on building national capacities to reduce vulnerability based on the principles of sustainable development and the active participation of all stakeholders in hazard risk reduction activities.

The policy is divided into a 'vision' statement, two (2) 'goals', and a set of enabling 'objectives' in support of these goals.

### 4.1 Vision:

*A society safer from natural and technological (man made) hazards supported by, integrated, social, economic and natural resource development.*

### 4.2 Goals

The main goals of the policy are:

**I. *To enhance sustainable social and economic development and environmental management through the integration of hazard risk reduction into national development processes.***

**II. *To build the capacity of national institutions to more effectively implement programmes and projects to reduce vulnerability of the nation and people to natural and technological hazards.***

## 5.0 POLICY OBJECTIVES & STRATEGIES

A number of objectives and enabling strategies have been developed that are consistent with the two (2) goals articulated above. The objectives of the NHMP identify ‘what’ the policy is expected to achieve. The objectives are further elaborated by some justifications, which explain ‘why’ each objective is targeted. The strategies of the policy describe ‘how’ the objectives identified may be accomplished. It is noted that while several strategies are enunciated, it is recognized that they are not entirely comprehensive. Further elaboration of ‘the strategy’ will be carried out in a future exercise.

The objectives, justification and strategy for each goal are as follows:

### **Goal #1: To enhance sustainable social and economic development, and environmental management through the integration of hazard risk reduction into national development processes**

***Objective #1: To maintain natural resources at viable production levels where they will continue to yield useful benefits to resource users;***

**Justification:** There is a direct relationship between the quality, distribution and abundance of natural resources and the potential benefits accruing to human populations. Thus, managing these resources in a responsible way should impact the quality of life of people concerned in a positive way that should include decreased exposure to technological and/or natural hazards.

#### **Strategy:**

- To rescue, rehabilitate and conserve resources threatened by over-harvesting and depletion

***Objective #2: To recover and sustain the ecological integrity of degraded terrestrial areas and aquatic ecosystems.***

**Justification:** The economic benefits derived from biological systems in Belize is significant, a number of these systems such as the pine forest, and coral reefs are degraded and threatened by unsustainable anthropocentric impacts. It is important that these systems be rehabilitated and resuscitated such that they can continue to yield meaningful benefits that would improve the circumstances of the citizenry, especially the poor and dispossessed whom are more susceptible to natural and technological hazards.

#### **Strategy:**

- To curtail and arrest deleterious activities impacting upon degraded environments;
- To set aside representative portions of ecosystems in the form of terrestrial and marine protected areas to protect these areas from degradation;
- To ensure that decision-making processes affecting the viability of fragile ecosystems are guided the wise use and conservation of those resources;
- To enhance the enforcement capacities of public sector agencies to cancel leases in ecologically sensitive area, and to relocate people from these areas.

**Objective #3: *To ensure that the primary resources of the nation are fairly and effectively distributed to afford the citizenry an improved and acceptable quality of life.***

**Justification:** There is a direct linkage between poverty and the access of people to natural resources such as land, the poor and dispossessed and more susceptible to natural and technological hazards. Any action or activity that would rectify this situation such as the redistribution of land, would in effect contribute to mitigating technological and natural hazards.

**Strategy:**

- To provide the citizenry with the type of information that would allow them to make informed decisions;
- To pursue legislative reform to facilitate the redistribution of the primary resources of the nation.

**Objective #4: *To pursue national development from a planned perspective.***

**Justification:** Development from a planned perspective has been proven to be effective, especially for Lesser Developed Countries (LDC's) and 'Developing Economies'. The increase in poverty in Belize, and the susceptibility of the poor and dispossessed to natural and technological hazards makes planned development an imperative for the nation.

**Strategy:**

- Pursue development from a planned perspective, including the synthesis and implementation of macro-economic and sectoral plans.

**Objective #5: *To discourage the practice of 'squatting' or informal settlement on public lands.***

**Justification:** The informal settlement of people on public land 'squatting' is a major problem in Belize. This is in relation to the heightened exposure of human populations to natural hazards such as floods and hurricanes, as well as in relation to settlement in areas that would impact the quality and productivity of natural systems such as milpa farming or shifting cultivation on steep hill slopes which results in soil loss that impacts the fertility of the immediate area as well as downstream impacts on the reef and other sensitive ecologies - 'squatting' in low-lying mangrove swamps is a major problem in Belize City, especially for the poor in the St. Martin's Deporres and Faber's Road areas. Illegal milpa farming on steep hill slopes is a major problem in the Cayo and Toledo Districts, which is occurring with increasing regularity in Forest Reserves.

**Strategy:**

- Enforce current legislation on land tenure, and protected areas management;
- Educate the public with regard to the description of the relevant laws and the consequences of violating these laws.

**Objective #6: *To promote agricultural and forest practices that are sustainable and consistent with the landform and soil characteristic of the particular area.***

**Justification:** Agriculture is a major contributor to the Belizean economy. The rural poor realize many of the benefits from this sector. However, much of the agriculture practices in Belize are not sustainable as they occur on soils that are marginal and unsuitable, as well as in ecologically sensitive area such as steep hill slopes. A comprehensive “Agriculture Suitability Survey” has been completed by King *et al*, of the British Overseas Development Administration (ODA) in the mid-1990’s. Several recommendations were made in this study that would prove useful in promoting sustainable agriculture and forest practices.

**Strategy:**

- To ensure that decisions governing agriculture are based on soil suitability and other relevant considerations;
- To provide the education, legislation and enforcement capacities to discourage unsustainable agriculture practices;
- To promote alternative sources of livelihood for farming unsustainably.

**Objective #7:** *To improve and expand the volume of information available to the public with regard to the proper handling, disposal and management of hazardous materials.*

**Justification:** The improper handling of waste and hazardous material goes largely undocumented in Belize even though it is recognized as potentially a significant problem. The value of information in motivating people to do the right thing cannot be overstated.

**Strategy**

- Educate the public with regard to the proper use, transportation and disposal of hazardous materials;
- Strengthen and enforce legislation that govern the use, transportation, storage and disposal of hazardous materials;
- Enforce public health and other pertinent laws on the handling and disposal of hazardous materials and substances.

**Objective #8:** *To improve the national capacity to manage waste.*

**Justification:** The proper disposal and treatment of waste is an enduring challenge for Belize City and a number of other urban centres in the country. The impacts of exposure to hazardous chemicals and the potential for the outbreak of diseases from the ‘garbage disposal sites’ as well as the less visible ecological impacts and aesthetic impacts on the growing tourism industry makes this an issue that needs to be addressed with some urgency.

**Strategy:**

- Embark on a national integrated programme of solid waste management, including enforcement, education and the physical collection and disposal of solid wastes;
- Create new legislation and strengthen existing legislation with regard to the transportation of hazardous materials.

**Goal #2: To build the capacity of national institutions to more effectively implement programmes and projects to reduce vulnerability of the nation and people to natural and technological hazards.**

***Objective #1: To decrease the susceptibility of all sectors and particularly the Agriculture, Tourism, Fisheries, Forestry and Housing Sectors to severe weather events.***

**Justification:** Agriculture, Tourism, Fisheries and Forestry are important pillars of the Belizean economy; these sectors have been impacted over the past five (5) years by four (4) major hurricanes. It is important that efforts are geared towards mitigating losses to these sectors given their importance in the generation of revenue. Mitigating actions would also improve the quality of life of Belizeans, including the poor who are most greatly affected by natural and technological hazards that would impact these sectors.

**Strategy:**

- Educate stakeholders with regard to the causes of and impacts of severe weather events, and the consequent mitigation measures that are to be put into effect to circumvent and dampen these impacts;
- Strengthen the capacity of institutions dealing with hazard risk mitigation;
- Build alliances between institutions to encourage and facilitate information and exchange and sharing;
- Educate stakeholders with regard to those conservation measures that would sustain the viability of the natural resources that forms the base of nature-oriented tourism.
- Educate stakeholders so that attitudes, behaviours and lifestyles are modified to enable them to positively respond to hazard risk mitigation issues.

***Objective # 2: To raise national consciousness about geohazards and the threat they pose to people and/or their property.***

**Justification:** Geohazards are any geological or hydrological processes that either occurs rapidly, as with earthquakes, landslides and sink hole collapses or slowly as is evident with siltation, subsidence, expansive soils, salt intrusion, and reduction in biodiversity. There is a need to strengthen the capacities of public sector institutions to identify these hazards and well as to sensitize the public about them.

**Strategy:**

- Develop and implement a natural hazard mapping programme of geological mapping that focuses on the location of known events such as location of land slides, sink hole collapse sites or building damage related to subsidence or expansive soils.
- Embark on public forums to sensitize the public on geohazards. **Objective #3: *To lend greater financial support to public sector institutions with a role in natural resource management and hazard risk mitigation.***

**Justification:** Public institutions are the ‘development arms’ of the GOB. Decreased budgetary allocations to a number of these institutions in both per capita and absolute terms have compromised the effectiveness of these institutions. Efforts should be made towards reorganizing these institutions that would allow them to become more effective and efficient in the collection of revenues and the deployment of human and financial resources.

**Strategy:**

- To privatize and/ or commercialize public institutions with a view to improving their efficiency and with a view to providing the administrative flexibility these institutions need to enable them to generate additional finances to more effectively address their mandates.

**Objective #4: *To develop the appropriate legislative and regulatory framework for enforcement in support of hazard risk reduction.***

**Justification:** There are gaps and weaknesses in the laws of various public sector agencies with a role in hazard risk mitigation. In instances where adequate legislative provisions are made there is the need to develop the institutional ‘will’ and resource capacity to redress these problems.

**Strategy:**

- Strengthen the laws and institutional capacities of public sector agencies to carry out their mandates with regard to hazard risk mitigation.

**Objective #5: *To improve the information available to public sector agencies with a role in hazard risk management.***

**Justification:** The information available to public sector agencies with a potential role in hazard risk mitigation is lacking. There is a need to empower these agencies with the capacity to address this aspect of their mandate

**Strategy:**

- Require public sector agencies to disseminate information with regard to hazard risk mitigation.

**Objective #6: *To strengthen and enhance the capacity of NGOs, private sector and other Stakeholders with a role in hazard risk reduction.***

**Justification:** The national response to hazard risk mitigation needs to be based on a partnership between the GOB and NGOs, CBOs, the private sector and other stakeholders in the development process. There is a need to strengthen the capacities of these institutions to meet the challenge in this regard.

**Strategy:**

- Develop and implement public education programmes highlighting the value of hazard risk mitigation, targeted at GOB institutions, as well as the NGOs, CBOs and the Private Sector.

**Objective #7:** *To focus the attention of communities on their vulnerabilities to natural and technological hazards with a view of enhancing their participation in decision-making processes related to hazard risk reduction.*

**Justification:** The decentralization thrust of the GOB over the last few years has included the empowerment of Local or Municipal Governments such as Town Boards and Village Councils to assume a greater role in the decisions affecting the lives of the citizenry. As a corollary to this the general citizenry must be meaningfully engaged in the governance process to the extent that discussions and decision-making with regard to hazard risk mitigation is made a routine part of the process.

**Strategy:**

- Develop public education and short-term training programmes for the various sectors, especially ‘grass roots communities’, who are impacted by natural and technological hazards and who have a role to play in hazard mitigation.

**Objective #8:** *To improve coordination among Public Sector agencies with a role in hazard risk management.*

**Justification:** The pursuit of development from a coordinated and holistic standpoint is a fairly novel concept in the Public Sector. As a consequence, there is a need to sensitize these agencies to their potential role in hazard risk mitigation, as well as to improve coordination among these agencies.

**Strategy:**

- Embark on a promotion to foster information sharing among public sector agencies in regards to hazard risk mitigation.

**Objective #9:** *To raise national consciousness with regard to the connectivity between global warming and the frequency and intensity of severe weather events.*

**Justification:** Global warming is a phenomena driving and exacerbating severe weather events that are significant natural hazard in Belize. In an effort to mobilize the general citizenry in regard to hazard risk mitigation, there is a need to empower public sector institutions with a role to play in this regard as well as to generally sensitize the public.

**Strategy:**

- Integrate hazard risk reduction in the national policy framework
- Develop and implement hazard risk reduction legislation with regard to land use, housing developments and construction, and other sector development plans.

## **6.0 DETERMINATION OF THE REQUIREMENTS FOR THE IMPLEMENTATION OF HAZARD RISK REDUCTION MEASURES**

Based on current hazard vulnerabilities and the need to address same and, potential hazard vulnerabilities, the following are identified as pre-requisites for implementation of hazard risk reduction measures.

- Conduct a needs assessment for programme implementation.
- Identify institutions and organizations, within the government, private sector and NGO community with capacities to be part of the implementation programme.
- Identify relevant competent and skilled persons within the community.
- Identify available finances and funding requirements.
- Identify, review or develop legal requirements that will facilitate implementation measures.
- Establish effective organizational structures for plan implementation with appropriate human and financial resources.

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## APPENDICES

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### Appendix I

#### Top Sixteen (16) Natural Disasters-Belize: 1903-2001

Disaster	Date	Killed	Affected
Hurricane	10/9/31	1500	
Hurricane Janet	28/9/55	16	
Hurricane Hattie	31/10/61	275	
Hurricane Carmen	2/9/74		70,000
Hurricane Fifi	19/9/74		
Hurricane Greta	18/9/78	5	6,000
Hurricane Mitch	26/10/98		60,000
Hurricane Keith	30/9/00	14	62,570
Tropical Storm Chantal	21/8/01		
Hurricane Iris	8/10/01	30	20,000
Flood	Dec/79		17,000
Flood	20/5/80		
Flood	20/5/90		
Flood	Oct/95		2,600
Extreme temp	1990		
Drought	1975		

\* Sources: Adopted from data originating from EM-Dat: The OFDA/CRED International Disaster Database and the National Meteorological Services

## Appendix II

### Major Fires in Belize City (1950-1998)\*

Name of Fire	Year	Impact
Albert Street Fire	1950	176 homeless; property damaged or destroyed (PoDD)
Harley's Fire	1953	(PoDD). 1 dead
Rocky Road Fire	1964	PoDD
Race Course Street Fire	1964	7 Dead
New Road Fire	1968	PoDD
Fashion Centre	1968	(PoDD)
Easter Monday Fire	1975	(PoDD)
North Front Street Fire	1979	(PoDD)
Melhado's Fire	1979	(PoDD)
Mexican Centre Fire	1980	5 Dead
The Belize Times Press Fire	1980	(PoDD)
Income Tax Fire	1981	(PoDD)
Tigris Street Fire	1982	(PoDD)
Roberto Chee Fire	1992	(PoDD)
Orange Street Fire	1993	(PoDD)
Berkley Street Fire	1995	(PoDD)
East Canal & Pitts Alley Fire	1995	(PoDD)
Hard Rock Café	1996	(PoDD)
Chapel Lane Fire	1995	(PoDD)
Euphrates Avenue Fire	1996	(PoDD)
Gabourel Lane Fire	1997	(PoDD)
Albert & Prince Street Fire	1997	(PoDD)
Pink's Alley Fire	1997	(PoDD)
West Canal Fire	1998	(PoDD)
Albert Street Fire	1998	(PoDD)
Cemetery Road Fire	1998	(PoDD)

\* Source: Craig & Musa, 1999; a catalogue of some major Fires in Belize City  
A major fire occurred in Belize City in 1863 that left 2000 people homeless.

## Appendix III

### Primary Organizations in Belize with a direct or indirect role to play in Hazard Risk Mitigation Management.

Belize Electricity Ltd  
Coastal Zone Management Authority and Institute  
Department of the Environment  
Geology and Petroleum Department  
Housing and Planning Department  
Ministry of Human Development, Local Government and Labour  
National Emergency Management Organization  
National Meteorological Service  
Physical Planning Unit; Lands and Survey Department  
OAS  
PAHO/WHO  
Police Department  
University of Belize  
The Belize Red Cross

#### (Footnotes)

<sup>1</sup> [adapted from “living with Risk” (preliminary version) prepared by ISDR Secretariat, Geneva, July 2002]

<sup>2</sup>

*The Coastal Zone Management Strategy for Belize*

. CZMA 2001

<sup>3</sup> Fire: A catalogue of some of the major fires in Belize Compiled by Meg Craig and Yasser Musa, 1999

<sup>4</sup> Disaster Preparedness And Response Act, 2000, Chapter 145, Substantive laws of Belize, Revised Edition 2000

<sup>5</sup> Environmental Protection Act, 1992, Chapter 328, Substantive Laws of Belize, Revised Edition 2000.

<sup>6</sup> Harbours and Merchant Shipping Act, Chapter 234, Substantive Laws of Belize, Revised Edition 2000.

<sup>7</sup> Land Utilization Act, Chapter 188, substantive Laws of Belize, Revised Edition 2000

<sup>8</sup> Coastal Zone Management Act, Chapter 329, Substantive Laws of Belize, Revised Edition 2000

<sup>9</sup> The initiative to develop residential construction standards for Belize was spearheaded by the Belize Chamber of Commerce.

<sup>10</sup> Regional Programme for Risk Management in Central America; A Lavell, 2003.

<sup>11</sup> Modern Governance: New Government Society Interaction, J. Kooiman (ed.) 1993