



Government of Saint Lucia

Hazard Mitigation Policy

Document of the Saint Lucia National Emergency Management Plan

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Caribbean Disaster Emergency Response Agency / Caribbean Development Bank*

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SAINT LUCIA NATIONAL HAZARD MITIGATION POLICY

PREFACE

Natural and man-made hazards can result in the loss of life or injury, property damage, social and economic disruption or environmental degradation. This National Hazard Mitigation Policy outlines the intention of the Government of Saint Lucia with regard to the reduction and or elimination of the adverse impacts of natural and man-made hazards. The Policy therefore sets out the broad goals and objectives for vulnerability reduction and the overall strategy for achieving these objectives.

The preparation of the Policy document was initiated at a three-day workshop entitled *Model Hazard Mitigation Policy Adaptation, Saint Lucia* which was held in May 2003 and was attended by representatives from a broad cross section of the public and private sectors. A Policy Development Committee (PDC) was subsequently formed and an independent consultant recruited to coordinate the formulation and documentation of the Policy, under the technical guidance of the PDC. A number of PDC meetings were held under the general direction of the chairperson - Director of the National Emergency Management Organisation (NEMO), Saint Lucia. The CDERA-CDB *Model National Hazard Mitigation Policy*¹ was used as a template to develop the national Policy.

The first draft of the Policy document was circulated to all public libraries, the Saint Lucia Gazette and posted on Government's website to obtain public comments. In order to develop a more comprehensive and participative approach to hazard mitigation in Saint Lucia, a National Public consultation on the first draft of the Policy document was held on 11th September 2003. Various Government ministries, statutory agencies, private sector, non-government and Christian organizations, as well as trade unions and other representatives² including regional agencies and service groups were invited to attend the National Consultation. A second draft of the Policy document was completed after incorporating the recommendations of the National Consultation. The document was then forwarded to the National Emergency Management and Advisory Council for comments prior to submission to the Cabinet of Ministers for their approval.

The Project to develop the national Hazard Mitigation Policy of Saint Lucia was jointly financed by the Caribbean Disaster Emergency Response Agency (CDERA) through its Caribbean Hazard Mitigation Capacity Building Programme (CHAMP) and the Caribbean Development Bank (CDB) through its Disaster Mitigation Facility for the Caribbean (DMFC). CHAMP is being executed by the Organization of American states and is funded by the Canadian International Development agency. The DMFC is a partnership between CDB and the United States Agency for International Development Office of Foreign Disaster Assistance.

¹ As presented at the Adaptation Workshop by CDB and CDERA with funding by OAS, CIDA and USAID

² See Annex I for full listing of representatives

CONTENTS

ACRONYMS AND ABBREVIATIONS

GLOSSARY

1.0 INTRODUCTION	1
2.0 RATIONALE FOR AND PURPOSE OF THE POLICY	1
3.0 BACKGROUND	2
3.1 Status of Hazard Vulnerability.....	2
3.2 Overview of Enabling Policy Instruments	3
3.3 Current Hazard Mitigation Efforts	4
4.0 POLICY CONTEXT.....	5
5.0 CHALLENGES TO IMPLEMENTATION OF HAZARD MITIGATION.....	5
6.0 GUIDING PRINCIPLES	6
7.0 POLICY STATEMENT.....	7
7.1 Vision Statement.....	7
7.2 Policy Goals	8
7.3 Policy Objectives	8
8.0 IMPLEMENTATION OF THE POLICY	8
8.1 Strategy	8
8.2 Priority Areas For Action.....	9
8.3 Strategic Interventions	9
8.4 INTEGRATION OF A HAZARD RISK MANAGEMENT POLICY	12
ANNEXES	
Annex I Enabling Policy Instruments	21

GLOSSARY³

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

Disaster – A serious disruption of the functioning of a community or a society, causing widespread human, material, economic or environmental losses that exceed the ability of the affected community/society to cope using only its own resources. Disasters are often classified according to their cause (natural or manmade).

Hazard – A potentially damaging physical event, phenomenon and or human activity, which may cause the 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 behaviour.

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.

Hazard Risk Management – The systematic management of administrative decisions, organization, operational skills and responsibilities to apply policies, strategies and practices for hazard risk reduction.

Hazard Risk Reduction – The development and application of policies, procedures and capacities by the society and communities to lessen the negative impacts of possible natural hazards and related environmental and technological disasters. This includes structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse impact of hazards, as well as the development of coping capabilities.

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

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

³ Adapted primarily from “Living with Risk” (preliminary version) prepared by the ISDR Secretariat, Geneva, July 2002.

Stakeholders – Persons or entity holding grants, concessions, or any other type of value that would be affected by a particular action or policy. These include government, non-governmental organisations including the private sector, local community groups and individuals.

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 limitation imposed by the state of technology and social organization on the environment’s ability to meet present and the future needs.

Technological Hazards (Man-Made Hazards) – Danger originating from technological or industrial accidents, dangerous procedures, infrastructure failures 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 increases the susceptibility of a community to the impact of hazards.

ACRONYMS AND ABBREVIATIONS

CDB	Caribbean Development Bank
CDERA	Caribbean Disaster Emergency Response Agency
CDM	Comprehensive Disaster Management
CHAMP	Caribbean Hazard Mitigation Capacity Building Programme
CIDA	Canadian International Development Agency
CPACC	Caribbean Planning for Adaptation to Global Climate Change
DM	Disaster Management
DMFC	Disaster Mitigation Facility for the Caribbean
IPCC	Inter-governmental Panel for Climate Change
NEMAC	National Emergency Management Advisory Council
NEMO	National Emergency Management Organisation
NGO	Non-Governmental Organisation
NHMC	National Hazard Mitigation Council
NHRM	Natural Hazard Risk Management
OAS	Organisation of American States
OECS	Organisation of Eastern Caribbean States
SIDS	Small Island Developing States
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
USAID	United States Agency for International Development

1.0 INTRODUCTION

Saint Lucia is highly vulnerable to a number of natural and man-made hazards with the potential for substantial loss of life and property damage. These hazard events include hurricanes, floods, earthquakes, volcanic eruptions, and fires, marine accidents involving oil and hazardous material spills as well as other man-made hazards. Additionally, there is growing concern about the vulnerability of Saint Lucia to the threat of climate change.

Experience from previous disasters has indicated that the potential impact of hazards is severe, particularly in terms of damage and losses. Whilst some hazard events are inevitable and cannot be prevented or controlled, long-term hazard mitigation measures can serve to reduce the impacts of these hazards and offer many potential sustained benefits over time. With respect to the predicted slow and cumulative deleterious effects of the hazards associated with climate change, adaptation measures have the potential to lessen those impacts thereby resulting in significant benefits.

In view of the deleterious impact of hazards, the Government of Saint Lucia has already undertaken several initiatives at the national, regional and international level to reduce the impacts of natural and man-made hazards. However, insufficient emphasis is being placed on multi-hazard mitigation that could minimise the impact and consequently, reduce the cost of future hazardous events. It is against this background that the National Hazard Mitigation Policy has been developed to express Government's intention for the promotion of hazard mitigation in Saint Lucia.

2.0 RATIONALE FOR AND PURPOSE OF THE POLICY

The National Hazard Mitigation Policy has been developed as a strategic instrument for hazard mitigation to be integrated into all aspects of public and private sector activities including those of local communities and individuals. The development of the Policy will serve to ensure that programmes for hazard mitigation are implemented according to clear objectives and common approaches. Further, the Policy is intended to facilitate the more effective use of scarce technical and financial resources in a comprehensive approach to disaster management in Saint Lucia.

This Policy marks a further development in the process of creating an enabling framework within which all stakeholders can continue to coordinate their disaster management efforts and cooperate across all sectors. The Policy is therefore expected to guide the formulation and implementation of the National Hazard Mitigation Plan. It is anticipated that the Policy will enhance national will and commitment to undertake hazard mitigation measures in which all stakeholders can contribute to the full extent of their capacities. Whilst the Policy is intended to harmonize comprehensive disaster management in Saint Lucia, it is essential that specific disaster preparedness and response programmes be implemented simultaneously with the Policy in order to achieve effective long-term hazard mitigation.

3.0 BACKGROUND

Hazard analysis and experience have confirmed that Saint Lucia is at risk from natural, technological (man-made) and “slow onset” hazards. Some of the natural disasters include hurricanes, flooding, landslides, seismic and volcanic activity. The man-made hazards relate to dam collapse, explosions, oil and hazardous material spills, mass casualty, civil unrest, fires and information and communication technology disruptions. Additionally, the island is at risk to “*slow on-set*” hazards that include droughts, plagues, and the predicted effects of global climate change.

3.1 Status of Hazard Vulnerability

Natural Hazards

Historically, hurricanes, storms and flooding have been the most likely hazards to affect Saint Lucia. Tropical Storm Debbie in 1994, resulted in losses over EC\$230 million⁴. The Tropical Wave of October 1996 also incurred an estimated EC\$12 million in damages to property and infrastructure particularly in Soufrière, Anse la Raye, Vieux Fort and Castries. Tropical Storm Lili-damage in 2002 was estimated at \$20 million. Flooding has been of major concern particularly in low-lying areas as well as coastal villages and has resulted in the displacement of people and the destruction of property in communities.

By virtue of its geographical location, Saint Lucia is also susceptible to earthquake (seismic) hazards. Many of the tremors have been insignificant; however, strong shocks of magnitude 7.5 have been recorded. Also, the Soufrière Volcano has demonstrated its ability to produce violent and destructive eruptions causing serious damage to life and property. Since the last major eruption was over 200 years ago, one of such magnitude is considered less likely in the near future; however, small and moderate eruptions are more likely to occur.

Man-made Hazards

The uncontrolled or untimely releases of water from the John Compton Dam due to weather conditions, natural and other causes, may lead to flash flooding in downstream areas and eventually destruction of property and loss of lives.

The Caribbean is one of the two regions in the world that face the greatest risk to its marine environment from major oil spills. Marine traffic, especially oil tankers and cruise vessels in transit through coastal waters in the Atlantic Ocean and Caribbean Sea present the risk of oil pollution from marine accidents. Such pollution can threaten recreational areas, sea birds, marine life, coastal installations and fisheries.

The history of Saint Lucia is replete with development marred by fires. These fires which may start by natural causes such as lightening or indiscriminate human actions often lead

⁴ Source – Draft Hazard Mitigation Plan, Saint Lucia, 2003.

to significant damage to bush or grasslands and forests that cover extensive areas. In addition, the environment is at risk from terrestrial activities, which include the transportation, storage and use of hydrocarbons and other hazardous materials and waste. Potential pollution sources include garages, service stations and industrial installations, many of which lack suitable facilities to prevent uncontrolled discharge into the environment.

Slow-Onset Hazards

There is general consensus that the world is entering a stage of significant global climate change. Some of the hazard related issues that are likely to emerge from global climate change are sea level rise, increased frequency and severity of large storms or hurricane events as well as droughts. Sea level rise is likely to have dramatic adverse impacts, the most apparent being shoreline erosion and flooding. This has serious implications for Saint Lucia as a large proportion of development, including many towns, villages, the capital city, Castries and associated infrastructure is located in coastal areas. Droughts have resulted in the immediate as well as cumulative deterioration in agricultural productivity and the gradual loss of biodiversity. Further, droughts have adversely affected the quantity and quality of water supplies available in local communities and other productive sectors of the economy.

3.2 Overview of Enabling Policy Instruments

There are a few existing policy instruments that provide an enabling environment for hazard mitigation. One of the main existing legislations which specifically support the Saint Lucia Hazard Mitigation Policy is the *Disaster Preparedness and Response Act # 13 of 2000* which relates to the legal, regulatory and administrative framework for the role of NEMO. The Act is based on the CDERA Model Disaster Management Legislation and gives emergency management responsibilities to NEMO, its director, members and sub-committees including the National Hazard Mitigation Council (NHMC) and the National Emergency Management Advisory Council (NEMAC). Other legislative support for hazard mitigation include the *Emergency Powers (Disaster) Act of 1995* of Saint Lucia and the Constitution (Order 1978) as well as the draft *Emergency Shelter Management Policy*, which provides a basis for undertaking hazard mitigation actions within available resources. In particular, the recently approved Climate Change Policy and Adaptation Plan provide an enabling environment with regard to the predicted hazards associated with global climate change.

Additionally, there are a number of policy instruments that tend to support hazard mitigation. Among these are the Physical Planning and Development Control Act, the Saint Lucia Fire Services Act, the Public Health Act, and the Plant Protection Act. More recently, some policy instruments that have implications for hazard mitigation are currently being formulated. These include, the National Water Policy and Action Plan, the Green Paper on the National Land Use Policy and the National Environmental Management Policy and Strategy.

It should also be noted that this hazard mitigation policy is likely to have implications for other existing legislation. Consequently, there will be need for harmonization of those existing legislation in order to facilitate effective hazard mitigation.

3.3 Current Hazard Mitigation Efforts

A number of initiatives have been taken by the Government in order to reduce the impact of damage due to hazards. These include inter alia:

- i. Development and revision of a number of disaster management plans by NEMO to reflect growing commitment to multi-sectoral hazard mitigation. These include among others, the draft National Hazard Mitigation Plan, National Hurricane Plan, the Oil Spill Plan, and the Business Contingency Plan.
- ii. A National Building Code has been developed to improve the construction quality of structures in order to minimise the impact of the main natural hazard events on the Island's infrastructure and properties. In that regard, the new Physical Planning and Development Act (No. 29 of 2001) will provide the supporting legislative framework under which the Building Code would be implemented.
- iii. Several natural hazard mitigation projects that have been/are being implemented, including:
 - The Improvement of the Drainage Systems in Castries and Anse La Raye; the construction of the Castries River Wall and the Vieux Fort East Drainage project and the Black Mallet Landslide Investigation and the Black Mallet/Carellie Relocation Projects funded by CDB.
 - The World Bank/OECS Emergency Recovery and Disaster Management Projects, including the Hewanorra Airport Flood Protection Works, Bridges and Rivers Training, Cul de Sac Prevention Works, Supplementary Reservoir for Victoria Hospital, Disaster Management Programme for schools and libraries, Study and Design of Coastal Protection for Dennery Village.
 - A series of Government special hazard mitigation initiatives undertaken within Government ministries post Tropical Storm Debbie (1994). With the advent of the Tropical Wave of 1996 these Ministries were again called upon to revisit those actions that were undertaken in 1994.

Traditionally, most disaster management efforts have tended to focus on natural hazards and disasters, mainly utilising a post-disaster approach (disaster response, recovery and rehabilitation). However, it is evident that there is a need to place greater focus on long-term hazard mitigation that would address all types of hazards and embrace all relevant economic and social sectors inclusive of the public and private sectors. This comprehensive approach to hazard mitigation minimises human suffering, infrastructural damage and demand for large capital investment after the impacts of future natural and man-made hazards and disasters.

4.0 POLICY CONTEXT

The current economic challenges of globalization and trade liberalisation demand that small island states such as Saint Lucia develop their limited resource base whilst remaining cost competitive. In order to meet these challenges and achieve sustainable development, it is critical that social and physical infrastructural gains made in the past are maintained and that less scarce resources are diverted to recovery and rehabilitation following a hazardous event. Therefore, this hazard mitigation policy is based on the underlying belief that long-term hazard mitigation can significantly minimize the deleterious impacts of hazards on the social and economic fabric of Saint Lucia. This reduction in hazard vulnerability can result in savings in the recurrent cost of recovery and rehabilitation after a disaster, thus realizing overall benefits to the nation and lead to sustainable development.

In view of this broad policy context, existing initiatives at the national, regional and international level provide a supporting framework for hazard mitigation. At the national level, legislation to establish NEMO and the various disaster management plans has given significant impetus to Government's commitment to the principles of hazard mitigation. Additionally, at the local community level, the establishment of a number of committees by NEMO has served to encourage community participation in disaster management, thus initiating a hazard mitigation *mind-set* within the society

Through its active participation in regional initiatives, the Government of Saint Lucia has taken a number of additional steps in support of hazard mitigation. Some of these include inter-alia, support from the *Strategy and Results Framework for Comprehensive Disaster Management* in the Caribbean (2001) and the *CDERA Model Disaster Management Legislation* (1996). At the international level, the Government of Saint Lucia is also a signatory to a number of conventions including the *Basel Convention on the Trans-Boundary Movement of Hazardous Wastes and Their Disposal* (1993) as well as the United Nations' conventions on *Biological Disasters* (1993) and *Climate Change*.

5.0 CHALLENGES TO IMPLEMENTATION OF HAZARD MITIGATION

The major challenge to be addressed in implementing hazard mitigation is the inculcation of a multi-hazard mitigation ethos within public and private sector organisations and more importantly, in local community groups and individuals. This challenge has far-reaching

implications for the technical, human and financial resources required to implement hazard mitigation measures. In particular:

- The administrative, institutional and legislative framework for hazard mitigation is limited and would require upgrading, particularly with respect to strengthening human capacity and enforcement mechanisms.
- Existing public education and outreach are insufficient to build desired relations behaviour and attitudes within community groups, private sector organisations and civil society who are key partners in the formulation and implementation of hazard mitigation measures.
- Funding for the implementation of hazard mitigation programmes is insufficient and would need to be given higher budgetary priority by the public and private sectors.
- The information and communication system to support multi-sectoral decision-making in the implementation of hazard mitigation measures is inadequate and would therefore require upgrading.

6.0 GUIDING PRINCIPLES

The following guiding principles are considered fundamental in underpinning the Hazard Mitigation Policy:

- i. Hazard risk management integrated in development planning
- ii. Minimising risks to the environment
- iii. Fostering stakeholder participation, collaboration and integrity
- iv. Promotion of public awareness and capacity building
- v. Availability of hazard information and data
- vi. Hazard mitigation is an investment in sustainable development

(i) Hazard Risk Management Integrated In Development Planning

Hazard mitigation is more effective when integrated into the economic, social and environmental aspects of development plans for all sectors of the economy. An integrated approach serves to promote coordination among all stakeholders groups involved in hazard mitigation and reduce any potential conflicts in policy development and implementation.

(ii) Minimise Risks to the Environment

Hazard mitigation presents several opportunities for preventing damage to the environment. It also serves to improve environmental management by lessening the impact of hazards on the environment. Further, hazard mitigation measures that

minimise risks to the environment provide feasible long-term approaches to hazard risk reduction and have the potential to optimise future benefits to the nation.

(iii) Maximum Stakeholder Participation and Collaboration

In order to be successful, it is necessary that hazard mitigation involve the full participation of all stakeholders including individuals, local communities, public and private sectors, non-governmental organisations, and regional and international agencies. A multi-stakeholder approach should be based on mutual respect, commitment and integrity, which is essential from an early stage to gain genuine support and partnership in reducing vulnerabilities to hazards.

(iv) Promotion of Public Awareness and Capacity Building

Hazard mitigation is most effective when there is full public awareness and public support at all levels of the society. Strengthening public awareness and mobilising capacities serves as a mechanism for the support of implementation of hazard mitigation measures within a comprehensive disaster management framework.

(v) Availability of Hazard Information And Data To Hazard Mitigation

The development, dissemination and appropriate use of information as well as data on all aspects of hazards are essential to successful hazard mitigation. The availability of information and data enhances the ability to identify hazards and to assess hazard vulnerability as well as prioritising and implementing long-term hazard mitigation measures by all stakeholders.

(vi) Hazard Mitigation Is an Investment in Sustainable Development

Hazard mitigation is consistent with sustainable development. Current investments in proactive measures to limit the impact of hazards, result in permanent reduction in disaster losses and consequently, to a decline in the recurrent cost of recovery as well as faster disaster recovery time. The reduction in the demand for recurrent post-disaster investments leads to the long-term social, economic, financial and environmental development as well as recurring benefits to future generations.

7.0 POLICY STATEMENT

Saint Lucia is vulnerable to a wide range of hazard events that could lead to severe social, economic and environmental damage to our nation. Sustained hazard mitigation can significantly reduce vulnerability to these hazard events. Therefore in striving to become resilient, hazard mitigation measures that incorporate the broad principles of sustainable development will be pursued.

7.1 Vision Statement

A nation highly **resilient** to hazard impacts and adaptable to hazard risks.

7.2 Policy Goals

In order to achieve the vision, the goals of the national Hazard Mitigation Policy are to:

- i. Develop social, economic, and environmentally sustainable measures that minimise the risks of hazards.
- ii. Incorporate hazard risk reduction in everyday activities at every level of society.

7.3 Policy Objectives

The objectives of the Hazard Mitigation Policy are:

- i. To encourage the incorporation of hazard mitigation measures in all public and private sector development planning initiatives and programme budgets.
- ii. To foster a collaborative approach to hazard risk reduction among all stakeholder groups.
- iii. To empower local community groups, institutions and individuals to undertake hazard mitigation measures.
- iv. To increase the awareness of hazard mitigation at every level of society and encourage their involvement in hazard risk reduction.
- v. To develop an effective and comprehensive legislative and institutional framework that supports hazard mitigation.

8.0 IMPLEMENTATION OF THE POLICY

The policy is centered on the belief that a culture of multi-hazard mitigation is critical to achieving sustainable development particularly in a Small Island Developing State. Therefore, a long-term strategic approach will be used in implementing the Policy.

8.1 Strategy

The broad strategy to implement the Policy is the integration of hazard mitigation measures in all aspects of development planning and implementation of public and private sector programmes and projects. This strategic approach will require the full participation of public and private sector organisations as well as the collaborative involvement of local community groups and individuals in hazard mitigation measures. The National Hazard Mitigation Plan will be the vehicle for implementation of the strategy.

8.2 Priority Areas For Action

Priority attention will be given to seven broad areas for action. These priority areas will provide the platform for the development of strategic interventions necessary to implement the Policy. The priority areas are:

- i. Incorporation of hazard mitigation measures in all public and private development planning initiatives and programme budgets.
- ii. Development, implementation and enforcement of an effective and comprehensive legislative and regulatory framework that supports hazard mitigation.
- iii. Increased public awareness and outreach at every level of society and encourage their involvement in hazard risk reduction.
- iv. Promotion of a collaborative approach to hazard risk reduction among all stakeholder groups.
- v. Empowerment of local community groups and institutions to undertake hazard mitigation measures.
- vi. Development of an effective information system to support multi-sectoral decision-making in the implementation of hazard mitigation measures.
- vii. Determination of the human, technical and financial resources required for implementation of hazard mitigation

8.3 Strategic Interventions

A number of specific interventions have been identified to achieve the objectives of the Policy. These include:

8.3.1 Incorporation of hazard mitigation measures in all corporate and development planning initiatives and programme budgets.

- i. Incorporate hazard risk reduction into sectoral policies and plans.
- ii. Provide incentives for the use of hazard mitigation practices.
- iii. Develop and implement strategic land use planning.

- iv. Promote the conduct and use of hazard impact assessments in development plans.

8.3.2 *Development, implementation and enforcement of an effective and comprehensive legislative and regulatory framework that supports hazard mitigation.*

- i. Review, update and coordinate all existing legislation that has implications for hazard risk management to allow for more effective administration.
- ii. Develop regulations and standards to implement legislation.
- iii. Ensure the incorporation of legislative initiatives that would enhance the responsibilities and participation of the private sector in hazard mitigation measures.
- iv. Strengthen institutional capacity to implement laws, regulations and standards.
- v. Enforcement and periodic revision of legislation and regulations that relate to hazard mitigation.
- vi. Establish an effective monitoring system to ensure that all development initiatives are consistent with the relevant regulatory framework

8.3.3 *Increase public awareness and outreach at every level of society and encourage their involvement in hazard risk reduction*

- i. Develop and undertake training programmes aimed at sensitising specific community groups and institutions in hazard mitigation.
- ii. Develop and implement a public awareness programme to sensitise all stakeholders with respect to their roles and responsibilities in hazard risk management.
- iii. Strengthen the financial capacity of local communities and agencies to implement hazard mitigation measures.
- iv. Develop a mechanism and action plan to facilitate participation by community group and individuals.
- v. Regular monitoring and evaluation of the effectiveness of public awareness programmes.

8.3.4 *Promote a collaborative approach among all stakeholder groups for the implementation of hazard mitigation measures.*

- i. Design an integrated approach to hazard mitigation involving all stakeholder groups.
- ii. Identify key stakeholder groups and their roles in hazard mitigation.
- iii. Assess the capacity of each stakeholder group to undertake hazard mitigation measures.
- iv. Mobilize all stakeholder groups to undertake hazard mitigation measures.
- v. Regular monitoring and evaluation of the collaborative approach of all stakeholder groups.

8.3.5 *Empower local community groups and organisations to undertake hazard mitigation measures.*

- i. Develop specific programmes, projects and activities in hazard mitigation for implementation by community groups and organisations.
- ii. Design and conduct appropriate hazard mitigation training programmes for all levels to improve the technical capabilities and attitudes in hazard risk management.
- iii. Include a line item in Government programme budgets for annual hazard mitigation projects to be implemented under the direct management of community groups.
- iv. Develop programmes for recognising the participation as well as contribution of individuals, community groups and organisations in implementing hazard mitigation measures.

8.3.6 *Development of an effective information system to support multi-sectoral decision-making in the implementation of hazard mitigation measures.*

- i. Prepare a comprehensive inventory of existing hazard information.
- ii. Identify baseline data for hazard risk assessment and hazard mitigation.

- iii. Conduct hazard risk assessment and maintain hazard mitigation data and information.
- iv. Develop and maintain information and data on the human resource capacities of various stakeholders including community groups and individuals.
- v. Develop an effective system to disseminate information and data to all stakeholders to facilitate the identification, prioritisation and implementation of hazard mitigation measures.
- vi. Regular Monitoring and evaluation of the information system.

8.3.7 Determination of the human, technical and financial resources required for implementation of hazard mitigation

- i. Undertake human, technical and financial needs assessment for implementation of the Policy.
- ii. Prepare a responsibility matrix and timeframe for implementing Policy.
- iii. Review and update the Hazard Mitigation Plan in collaboration with all stakeholders.
- iv. Establish mechanisms for monitoring and evaluation of the Policy implementation process.

8.4 INTEGRATION OF A HAZARD RISK MANAGEMENT POLICY

8.4.1. THE RATIONALE FOR AN INTEGRATED HAZARD RISK MANAGEMENT POLICY

Saint Lucia's open, fragile and dependent economy combined with its: (a) geographic location within the hurricane belt; (b) small size and limited land space; (c) location of major settlements and infrastructure in low-lying coastal areas prone to flooding and storm damage; (d) its location within a tectonically-active area, allowing for the possibility of significant earthquakes and; (e) limited human and financial resources; make it highly vulnerable to the impacts of Climate Change and other natural hazards.

Climate Change is a major environmental phenomenon with serious ramifications for the country and all nations of the world. Scientific evidence that the global climate is changing is now

unchallengeable. The projections of the Intergovernmental Panel on Climate Change (IPCC) are that by the year 2100, global average temperatures will rise by between 1.4 and 5.8 degrees centigrade. Changes of this magnitude are expected to produce dramatic impacts on various parts of the global climate system, with substantial regional variations. Under IPCC scenarios, global seal level is expected to increase by between 0.09 and 0.88 metres by the year 2100. It is anticipated that warmer seas will provide additional energy for storm formation resulting in extreme weather events. Within the Caribbean, there is widespread concern that such extreme events have already begun, with an unprecedented number of hurricanes of Category-5 strength having been experienced between 1995 and 2004.

While Saint Lucia and other Small Island Developing States contribute only a minute amount of total global greenhouse gas emissions, they bear an overwhelmingly disproportionate level of risk to the impacts of Climate Change due to their inherent vulnerability. Scientific research has indicated that

Climate change-related impacts are likely to include:

- Changes in the frequency, intensity and duration of extreme events including hotter days, heat waves and heavy precipitation events;
- Sea level rise (SLR) leading to land and infrastructure losses, beach erosion, storm surge, floods and inundation of low-lying areas;
- Loss of marine and terrestrial biodiversity as a result of changes of temperature and rainfall;
- The depletion of water supplies;
- Reduced agricultural productivity;
- An increase in the occurrence of pests and vectors, contagious diseases and stress-related diseases;
- increased coastal erosion and infrastructure damage as a result of the increased intensity of cyclonic events and storm surges.

8.4.2. Policy Directives

8.4.2.1. Human Development

i. Settlements and Infrastructure

Government and the Social Partners accept that notwithstanding the significant investments made over the years in the development of human settlements around the island, many informal settlements and slums can still be found especially in the inner areas of the cities and townships and in some rural areas. The poor quality of construction of many homes in these settlements and their location in high risk areas, on steep slopes, along flood plains and river banks, leave households highly susceptible to disaster risk.

It is recognised that Climate Change is likely to increase the frequency and severity of weather events and worsen the living conditions especially in informal settlements. Significant damage to social and economic infrastructure is also predicted.

In order to address such impacts and to promote the implementation of appropriate hazard mitigation and adaptation measures, the Government of Saint Lucia, in collaboration with other relevant entities, will:

- (a) develop adequate capacity for research into and analysis of the relevant climate processes which may affect human settlements;
- (b) Undertake a comprehensive assessment of human settlements and related infrastructure at risk from the effects of climate and other natural hazards and use the results to ameliorate existing vulnerability and reduce natural hazards that have accumulated through past development pathways;
- (c) Encourage the incorporation of disaster risk reduction measures in all corporate and development planning initiatives and programme budgets;
- (d) Collect basic data at national and sub-national levels on disaster risk and the development of planning tools to track the relationship between development policy and disaster risk;
- (e) Factor risk into disaster recovery and reconstruction programmes;
- (f) Implement fiscal measures to promote the use of climate risk reduction technologies and practices;
- (g) develop a comprehensive national land use and management plan, which *inter alia*, incorporates climate and other natural hazard concerns and which identifies suitable locations for future settlements;
- (h) develop and implement a plan for the relocation of settlement utilities and infrastructure at risk;
- (i) Promote the development and enforcement of a building code that addresses all natural hazards;
- (j) Ensure that national infrastructure standards are adequate to withstand the impacts of climate and other natural hazards;
- (k) Integrate climate and other natural hazard considerations in the physical planning process including the implementation of environmental impact assessment requirements;
- (l) Empower local community groups and organisations to:
 - Design and conduct appropriate hazard risk reduction training programmes to improve the technical capabilities and attitudes in climate risk management;
 - Include a line item in Government annual programme budgets for hazard risk reduction projects to be implemented under the direct management of community groups;
 - Develop programmes to recognize the contribution of community groups and organisations in implementing hazard risk reduction measures;
- (m) Foster increased public awareness of Climate Change and other natural hazards and their effects of human settlements;
- (n) Develop and implement a public awareness programme to sensitize all stakeholders with respect to their roles and responsibilities in hazard risk management;
- (o) Strengthen the financial capacity of local communities and agencies to implement hazard risk reduction measures;

- (p) Maintain a regular information management system on hazard risk reduction measures and human resource capacities of the various community groups and institutions;
- (q) Develop an Action Plan to facilitate the participation of community groups in regular monitoring and evaluation of the effectiveness of hazard risk awareness programmes;
- (r) Foster a collaborative approach among all stakeholder groups for the implementation of natural hazard risk reduction measures;
- (s) Mobilize all stakeholder groups to undertake hazard risk reduction measures;
- (t) Encourage the financial sector to develop mechanisms to assist human settlements affected by Climate Change and other natural hazards;
- (u) Adopt physical planning standards and tools that facilitate adaptation and adoption as well as retreat and relocation of human settlements from vulnerable areas;
- (v) Strengthen early warning systems;
- (w) Ensure the availability of purpose-built emergency shelters and trained shelter managers in each community.

ii Human Health

Recognising that a healthy population is fundamental to sustainable development; and in an effort to promote appropriate and adequate adaptation to the health implications of Climate Change and other climate hazards, the Government of Saint Lucia, in collaboration with other relevant entities will accelerate the adoption and implementation of relevant provisions of the draft Integrated Vector Control Management (IVCM) Policy. In particular, the Partners will:

- (a) conduct the necessary research and information gathering in order to guide and strengthen decision-making;
- (b) ensure that appropriate short, medium and long-term measures to address Climate Change and other climate hazard issues are incorporated into national health and disaster management plans;
- (c) Sensitise and educate health and disaster management personnel and the public about climate hazard-related health matters;
- (d) Ensure that adequate stocks of medicines and medications are available year-round to treat health disorders related to climate change and other hazards.

8.4.2.2. Economic Sector Policy Directives

i. Agriculture

It is recognised that climate sensitive, primary, resource industries such as agriculture, forestry and fisheries are highly vulnerable to the impacts of Climate-change associated hazards, such as floods, droughts, the salinization of water supplies and soil and the proliferation of agricultural pests.

In order to address such impacts and to promote the implementation of appropriate climate- hazard, risk reduction measures, Government will strengthen the analysis and

planning capacity of the Ministry of Agriculture, Fisheries and Forestry, the National Land Conservation Board, the Fisheries Department and other relevant agencies.

In particular the relevant agencies will be mandated to:

- (a) identify drought-resistant crop varieties that yield more mass per unit of water consumed;
- (b) promote better soil management, fertilization and pest and weed control;
- (c) improve irrigation management through better timing of water supplies to help reduce stress at critical crop growth periods;
- (d) use more deficit, supplemental and precision irrigation systems;
- (e) encourage improved farming practices that reduce land degradation;
- (f) develop a hazard risk reduction strategy for the agricultural sector to address impacts over the short, medium and long term;
- (g) Incorporate the hazard risk reduction strategy for the agricultural sector into the national physical and spatial planning process;
- (h) include hazard risk reduction policies into the national policy formulation process.
- (i) Formulate and implement any other such strategies and measures which may contribute to food security and the sustainability of forest resources;
- (j) Ensure the inclusion of climate-hazard considerations during the implementation of strategies and plans including the National Biodiversity Strategy and Action Plan (NBSAP), the Action Plan for the Desertification Convention and the National Land Policy.

ii. Tourism

Government and the Social Partners know that the tourism industry tends to suffer heavily from the direct and indirect effect of natural disasters, mainly by virtue of the location of tourism assets in vulnerable zones and the intrinsic vulnerability of airlines and cruise lines to wind and wave damage, erosion and sea level rise. In addition, the industry has suffered:

- the loss of economic returns due to the possible changes in, or destruction of coral reefs, beaches, natural forests and other natural resources and attractions;
- Reduced visitor arrivals as a result of a higher frequency of extreme weather events such as hurricanes, as well as reduced inducement for travel as a result of higher temperatures in traditional tourism centres;

In an effort to ensure appropriate approaches to natural hazard risk reduction in the tourism sector, Government, in collaboration with other relevant entities, will:

- (a) Conduct the necessary research and information gathering to support decision-making;
- (b) Ensure that appropriate physical planning guideline such as coastal setbacks are enforced for new tourism developments;
- (c) Work with stakeholders in the tourism sector to develop a strategic development plan which incorporates climate hazard considerations and appropriate measures such as water conservation programmes as well as general sustainability concerns;

- (d) prepare robust but adaptable disaster management plans that prepare for worse case scenarios;
- (e) establish clear restoration policies and plans with the full involvement of all key stakeholders and test these instruments;
- (f) retro-fit infrastructure based on an assessment of future risks;
- (g) ensure that corporate disaster plans are integrated into national disaster plans;
- (h) explore options for self-insurance and/or joint insurance.

iii. Financial Services

The Partners are aware that Climate Change and changes in weather-related events perceived to be linked to climate change have increased actuarial uncertainty in risk assessments, placed upward pressure on insurance premiums and have caused certain risks being reclassified as being uninsurable with subsequent withdrawal of coverage.

The Partners are convinced that building effective resilience to natural disasters requires sound economic, financial, fiscal, social and environmental policies and programmes that produce robust economic growth and that enables the Government to implement speedy and effective disaster preparedness and response measures.

To ensure appropriate approaches to adaptation in the financial sector, the Government, in collaboration with the Social Partners will:

- (a) Ensure the adoption and implementation of building codes and other standards in order to minimise risk from climate and other natural hazards;
- (b) develop appropriate hazard risk management measures to address the impacts of natural hazards including the development of lending mechanisms for ensuring adequate financial support for rehabilitation and reconstruction activities;
- (c) explore opportunities for pooled insurance and reinsurance arrangements among regional Governments;
- (d) encourage insurance companies to develop appropriate capacity to identify and forecast risk;

iv. Natural Resources

Coastal and Marine Resources

The Government of Saint Lucia and its Social Partners recognise that coastal and marine resources are at greatest risk from the effects of natural hazards, including Climate Change, due in large measure to:

- exposure to high-impact weather events which are common in the region;
- changes in sea temperature, to which coastal ecosystems such as coral reefs are very sensitive;
- sea level rise, which is one of the primary, anticipated results of climate change and which will affect numerous ecosystems as well as the coastline itself;

- cumulative effects of the above impacts, where there is increased vulnerability of coastal resources to high-weather impact events due to degradation of protective coral reefs;
- vulnerability to the impact of potential tsunami waves, generated by seismic or volcanic activity.

Government is extremely concerned that Climate Change may:

- imperil coastal livelihoods
- damage social and economic infrastructure
- Inundate coral reefs, seagrass beds and mangrove swamps as a result of sea level rise;
- Erode beaches and coastal lands;
- Reduce fisheries production;
- Increase coastal structural and ecosystem damage;

In order to address these and other impacts of Climate Change and other natural hazards on coastal and marine resources, the Government of Saint Lucia, in collaboration with its Social Partners will:

- (a) Adopt policies and strategies that encourage non-coastal development.
- (b) adopt integrated approaches to the management of natural resources in general and coastal and marine resources in particular;
- (c) implement a continuing monitoring and assessment programme with particular emphasis on:
 - the sustainable utilization of living and non-living resources within coastal and marine areas;
 - the enhancement of modelling capabilities to distinguish between human-induced and natural changes in coastal processes;
 - regular assessments of the vulnerability of social and economic assets;
 - research on comparable methodologies that will facilitate decision-making based on the precautionary principle;
- (d) Adopt measures to protect coastal areas and to increase the resilience of coastal ecosystems and resources, including the construction of coastal defence structures, enforcement of setbacks and restoration of coastal wetlands;
- (e) facilitate the restoration of impaired coastal resources and coastal ecosystems where technically and financially feasible;

- (f) Develop a comprehensive national land use and management plan, which incorporates natural hazard concerns and which guides the location of developments within the coastal zone;
- (f) Identify and promote alternative fishery and resource use activities where predicted impacts on ecosystems and natural resources preclude the continuation of traditional activities;
- (g) foster increased public awareness and knowledge regarding climate hazard impacts on the coastal and marine environment;
- (h) design and implement poverty reduction programmes for coastal communities including income - generating schemes built around sustainable resource use and management, education and training, settlement upgrading and conflict resolution;
- (i) promote a culture of collaborative resource management that includes negotiated agreements between resource users and that sets out obligations, rights, responsibilities and expectations of all parties;
- (j) Work in conjunction with other countries and international organizations towards the development and implementation of an effective Early Warning System.

v. Water Resources

The Social Partners are also mindful that Climate Variability and Climate Change can bring about dramatic changes in the temporal and spatial distribution of water due to severe events such as cyclones and droughts and the contamination of groundwater from salt-water intrusion due to sea level rise. Of concern is the negative impact that these changes can have on the island's food security, on human health and on the sustainability of the environment.

In this regard, Government will seek to build the capacity of capability of all relevant agencies to:

- (a) undertake an effective planning process that takes account of potential hazards and the vulnerability of people and ecosystems to extreme events;
- (b) undertake risk assessments that can inform decisions on appropriate mitigation strategies to deal with water-related, natural and human-induced hazards, such as resource scarcity, water quality, non-average climatic events, public health and ecosystem change;
- (c) analyse the nature and distribution of potential harm from water management policies and practices;
- (d) evaluate public perceptions of risk and risk mitigation priorities;

- (e) undertake flood and drought forecasting.
- (f) develop a long-term national water management plan which incorporates and addresses climate hazard concerns including catchment and watershed protection and saltwater intrusion;
- (g) Undertake reforestation and other measures to increase the resilience of watersheds and catchments;
- (h) Assess and address needs for water storage and distribution infrastructure to ensure water availability during drought periods;
- (i) promote initiatives to identify and where necessary exploit non-traditional water resources.
- (j) develop public awareness campaigns directed to the general population and other stakeholders addressing water issues such as scarcity and pollution.

vi. Terrestrial Resources

Government and the Social Partners accept the scientific evidence indicating the likelihood of significant impacts on terrestrial resources including changes in the composition of natural vegetation and alterations in plant-plant, animal-animal and plant-animal associations due to changing climatic and hydrological and conditions.

Government will accelerate the implementation of the National Land Policy, especially those provisions that will strengthen the capacity of land management agencies to promote the adoption of sound land-use practices. In addition, Government will seek to:

- (a) mitigate the negative impacts of physical development on natural and environmental resources;
- (b) preserve important sites, ecosystems and wildlife habitats;
- (c) protect rivers, buffers and other critical watershed areas and establish riparian buffer zones;
- (d) develop a comprehensive, national land use and management plan which incorporates Climate Change concerns;
- (e) Develop or strengthen a national adaptation strategy for the forestry sector to address climate-related impacts over the short, medium and long term;

- (f) Ensure the inclusion of climate-hazard considerations during the implementation of strategies and plans including the National Biodiversity Strategy and Action Plan and the National Forest Action Plan;

ANNEX II
SAINT LUCIA HAZARD MITIGATION POLICY
ENABLING POLICY INSTRUMENTS

POLICY INSTRUMENT <i>(Legislations and Policy Initiatives)</i>	MAIN OBJECTIVE	HAZARD MITIGATION ISSUES AND COMMENTS
Disaster Preparedness and Response Act (2000) National Emergency Powers Act (1995);	Coordination of efforts at mitigating natural and man-made disasters, including floods, droughts, hurricanes, tsunamis, earthquakes, dam collapse, famines, and plagues.	Specifically related to the preparedness and response aspects of disaster management and not hazard mitigation per se; hence the need for this Hazard Mitigation Policy
National Hazard Mitigation Plan	Framework for strategic coordination and prioritisation and implementation of hazard mitigation programmes, projects and activities	In final stages of review. Vehicle for implementing the Hazard Mitigation Policy
Water and Sewerage Company Act (1999)	Production and maintenance of supply of freshwater resource and waste water treatment	Consistent with the Hazard Mitigation Policy particularly concerning mitigation of droughts, dam failure and man-made hazards related to waste water.
Forest, Soil and Water Conservation Act	Protection of Forest, Soil and Water, Wildlife resources including Management of water catchments by Forestry Dept.	Consistent with the Hazard Mitigation Policy particularly with regards to mitigation of landslides.
Physical Planning and Development Control Act (2001)	Land use planning, development control; formulation and implementation of housing policy and environmental impact assessments	Consistent with the Hazard Mitigation Policy with respect to disaster resistant buildings and the adoption of the Building Code and enforcement of environmental regulations
Agriculture Small Tenancies Act (1983)	Enforcement of regulations for soil and water conservation practices on land leased for agricultural purposes.	Consistent with the Hazard Mitigation Policy with respect to environmental degradation due to soil erosion

POLICY INSTRUMENT <i>(Legislations and Policy Initiatives)</i>	MAIN OBJECTIVE	HAZARD MITIGATION ISSUES AND COMMENTS
Pesticides and Toxic Chemicals Control Act (No. 15 of 2001).)	Control of import, use, labelling and storage of pesticide; Registration of and licenses for use and storage of pesticides.	Consistent with the Hazard Mitigation Policy in terms of chemical spills and other technological hazards.
Plant Protection Act, (1988); & Regulations SI, 1995	Control of pest and diseases injurious to plants;	Consistent with the Hazard Mitigation Policy with respect to preventing the introduction of potentially harmful exotic species.
Public Health Act (1975); & Public Health Regulations 1978, 1980	Regulatory oversight of water quality, excreta disposal, sanitary facilities, food safety and drainage.	Consistent with the Hazard Mitigation Policy in terms of ensuring quality of resource suitable for human consumption to prevent man-made hazards.
Saint Lucia Solid Waste Management Act (1996);	Management and disposal of solid waste	Consistent with the Hazard Mitigation Policy in terms preventing environmental degradation and pest and disease control
Saint Lucia Fire Services Act (1976)	Installation and maintenance of fire hydrants; Front-line response during fire-related emergencies.	Supports Hazard Mitigation Policy in so far as it regulates slashing and burning of lands.
Saint Lucia Constitution Order	Protection from deprivation of property rights	Supports Hazard Mitigation Policy in terms of the provision of compensation in cases of compulsory acquisition or curtailment of rights of hazard prone property.

POLICY INSTRUMENT <i>(Legislations and Policy Initiatives)</i>	MAIN OBJECTIVE	HAZARD MITIGATION ISSUES AND COMMENTS
Crown Lands Ordinance Cap 108	Governs the management of Crown Lands, including unallocated Crown lands and vacant lands. It also governs acquisition and divestment.	Supports Hazard Mitigation Policy with regard to protecting catchment areas and lands prone to disasters and the prohibition of use of those lands.
Land Conservation and Improvement Act 1992, No. 10	Governs procedures for land development and management, establishment of conservation areas, compulsory acquisition and vesting of lands	Consistent with the Hazard Mitigation Policy in terms of procedures to facilitate swift acquisition of lands prone to disasters.
Land Acquisition Ordinance	Governs procedures for acquisition of and compensation for lands by the Crown.	
Maritime Areas Act 1984, No. 6	Implementation of the provisions of the United Nations Convention on the Law of the Sea, and sets the basis for the demarcation and management of the Exclusive Economic Zone	Supports the Hazard Mitigation Policy in terms of prevention of access within certain limits particularly with regards to prevention of oil spills
Saint Lucia National Housing Corporation (NHC) Act 2001	Gives NHC power to develop and manage housing developments and slum clearance	Supports the Hazard Mitigation Policy in terms of providing planned development; reduce settlement/construction in hazard-prone areas.
National Coastal Zone Management Policy	Comprehensive framework for coastal zone management.	In final stages of review and consistent with Hazard Mitigation Policy in terms of prevention of damage to coastal resources.

POLICY INSTRUMENT <i>(Legislations and Policy Initiatives)</i>	MAIN OBJECTIVE	HAZARD MITIGATION ISSUES AND COMMENTS
National Environmental Management Policy and Strategy (NEMPS)	Provides holistic framework for environmental management of sustainable resources.	In preliminary stage of formulation and fully consistent with and reinforces Hazard Mitigation Policy
National Water Policy and Action Plan (2002)	Framework and action Plan for water and watershed management.	Policy is in final stage of review. Fully consistent with Hazard Mitigation Policy.
National Climate Change Policy and adaptation Plan (2002)	Framework and Action Plan to address slow onset of hazards due to climate change.	Recently formulated policy. Fully consistent with and reinforces Hazard Mitigation Policy
Green Paper on National Land Policy (2003)	Provides a broad policy framework for land development, management, and administration.	In preliminary stage of formulation and fully consistent with Hazard Mitigation Policy.
National Biodiversity Strategy and Action Plan (NBSAP) - 2001	Overall framework for the conservation and sustainable use of Saint Lucia's biological diversity.	NBSAP identifies a number of specific programmes and projects that supports Hazard Mitigation Policy with regards to sustainable environment.
National Agriculture Sector Policy	Framework for development of the agricultural sector in era of globalisation and trade liberalisation	Policy is in final stage of review. Fully consistent with Hazard Mitigation Policy.
National Hurricane Disaster Preparedness and National Impact Mitigation Plan for the Agricultural Sector (1999)	Proposed disaster preparedness and impact mitigation programmes, action plans and measures for agricultural sector.	