



Disaster Risk Reduction - (CP-DRR)

Country Profile for Saint Lucia

November 2012



The United Nations Office for Disaster Risk Reduction

UNISDR



GOVERNMENT OF SAINT LUCIA

OFFICE OF THE PRIME MINISTER

Saint Lucia Country Profile for Disaster Risk Reduction (CP-DRR)

prepared by the
National Liaison Officer for Saint Lucia
UNISDR DIPECHO Project



Humanitarian Aid
and Civil Protection

November 2012



Executed by the
National Emergency Management Organisation (NEMO)

Disaster Risk Reduction Terminology

The terminology used for the preparation of this document is that used by the United Nations Office for Disaster Risk Reduction (UNISDR) or terminology established in the national legal framework. The aim is to promote understanding and use of common disaster risk reduction (DRR) concepts, as well as support DRR efforts undertaken by the government, experts and the public.

A Disaster is:

A serious disruption of the functioning of a community or a society, causing widespread human, material, economic and environmental losses which exceed the ability of the affected community or society to cope using its own resources.

Source: ISDR

Photo Credit: Hurricane Tomas After Action Report (2011)



Disaster = Hazard Exposure x Vulnerability

Disaster Risk Reduction = Reduced hazard exposure and lessened vulnerability

A Glossary comprising the definitions for the terms used in this publication is provided in **Appendix 1**.

TABLE OF CONTENTS

CHAPTER 1: SUMMARY FOR POLICY MAKERS

CHAPTER 2: INTRODUCTION

2.1 Background	22
2.2 Purpose of the Country Profile Document.....	22
2.3 Conceptual Framework for Disaster Risk Reduction (DRR).....	23

CHAPTER 3: METHODOLOGY

3.1 Process	24
3.2 Assumptions and Limitations	27

CHAPTER 4: INTERNATIONAL, REGIONAL AND NATIONAL CONTEXT FOR DRR

4.1 International DRR Context	27
4.2 Regional Context for DRR.....	29
4.3 National DRR Context	30

CHAPTER 5: NATIONAL CIRCUMSTANCES

5.1 Physical Environment	31
5.1.1. Geographic location.....	31
5.1.2 Physiography	32
5.1.3 Climate and Weather.....	34
5.2 Socio-Economic Context	36
5.2.1 Population and demographics.....	36
5.2.2 Socio-Economic Status.....	37
5.2.3 Human Development (Poverty and unemployment, Education).....	38
5.2.4 Gender, youth and children.....	40
5.3 Governance Structure.....	41
5.3.1 Political structure and organisation	41
5.3.2. Local government and levels of decentralisation	41

5.3.3. Coordination mechanisms between State and non-governmental actors.....	42
5.4 Development Context.....	42
5.4.1 National development priorities.....	42
5.4.2 Financial analysis of public investment in DRR.....	43
5.4.3 Knowledge and information.....	44

CHAPTER 6: DRR LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

6.1. Legal Framework.....	45
6.1.1. National and provincial constitution	45
6.2 Normative Framework	46
6.2.1. Normative instruments for DRR	46
6.2.2. Public policy.....	47
6.3. Institutional Framework.....	48
6.3.1. National institutional structure of DRR	49
6.3.2 Multisectoral platform for DRR	51
6.3.3 Local networking groups drivers and risk management	51
6.3.4. Budgetary resources for the development of disaster risk reduction activities.....	52
6.4 National Development Plan in Relation to DRR.....	52
6.4.1. DRR and DRM national plan	53
6.5 Reflections on the Legal, Regulatory, Institutional and Management Capacity.....	54

CHAPTER 7: STATE OF DISASTER RISK IN SAINT LUCIA

7.1 Conditions of Risk in Country	55
7.2 Historical Disaster Analysis	55
7.3. Hazards /Threats	57
7.3.1 Naturally occurring.....	58
7.3.1.1 Type geodynamic/geo hazard	58
7.3.1.2 Type hydro-meteorological	58
7.3.2 Anthropogenic/human-induced	59
7.3.2.1 Type socio-natural hazards	59
7.3.2.2 Type technological hazards	60
7.3.3 Health emergency hazards.....	60

7.3.4 Links to climate change	60
7.4 Vulnerability.....	60
7.4.1 Definition of the analysis criteria and methodology	61
7.4.2 Components of vulnerability	62
7.4.3. Analysis of vulnerability: fragility, exposure, resilience	62
7.5 Capacity Building.....	66
7.5.1 Mapping institutions and levels of coordination.....	68
7.5.2 Mapping programs, initiatives and plans for DRR.....	69
7.5.3 Inventory of tools.....	71
7.6 Reduction of Underlying Risk Factors	73
 CHAPTER 8: RISK ASSESSMENT FOR COUNTRY DRR	
8.1 Defining Criteria and Analysis Methodology	74
8.2 Definition of Risk Scenarios	76
8.3 Prioritization of Risk Scenarios and Areas of Intervention.....	76
 CHAPTER 9: STRATEGIC GUIDELINES FOR COUNTRY DRR	
9.1 Strategic Directions for Country DRR.....	81
 CHAPTER 10: CONCLUSIONS AND RECOMMENDATIONS	
10.1 Conclusions	86
10.2 Recommendations.....	87
 CHAPTER 11: APPENDICES	
APPENDIX 1: GLOSSARY OF TERMS	88
APPENDIX 2: LIST OF ACRONYMS	92

1. SUMMARY FOR POLICY-MAKERS

Introduction

Background

The **Country Profile for Disaster Risk Reduction for Saint Lucia (SLU CP-DRR)** was compiled through financial support under the United Nations International Strategy for Disaster Risk Reduction, Disaster Preparedness and Prevention – European Commission for Humanitarian Aid (UNISDR-DIPECHO) Project. The principal objective of this project is to contribute to “Building the resilience of nations and communities to disasters by increasing awareness surrounding the importance of disaster risk reduction throughout the Caribbean”.

In compiling the SLU CP-DRR, the outputs of existing documents related to hazard risk management and resilience building were reviewed and considered against the backdrop of current and emerging development challenges and the impact of various hazards on key sectors of the economy.

In its Hazard Mitigation Policy [Document No. 0204 of the Saint Lucia National Emergency Management Plan] the Government of Saint Lucia envisages...
“A nation highly resilient to hazard impacts and adaptable to hazard risks”

Purpose of Document

The key objective of the SLU CP-DRR is to provide a comprehensive overview of the status of DRR in the country. It is envisioned that the SLU CP-DRR will be useful as an important national reference document to guide the design of policies and strategies, promote informed decision making, and the formulation of DRR actions and activities. The SLU CP-DRR is intended to identify and link existing DRR information in the country and thus this first SLU CP-DRR, has been designed to be flexible, and adaptable to changing circumstances and to the continuous inclusion of improvements and innovations, in its regular updating. Thus it can become the institutional DRR memory of the country.

The main elements of the SLU CP-DRR are highlighted in **Box 1.1**.

Box 1.1 Main Components of SLU CP-DRR

- International and regional context for DRR
- National circumstances that impact DRR
- Disaster inventory
- Risk identification and analysis - integration of vulnerability and adaptation assessments
- State of disaster risk in the country
- Priorities for DRR in country
- Strategic directions for DRR

Conceptual Framework for Disaster Risk Reduction (DRR)

Disaster Risk Reduction (DRR) is the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development¹.

The key elements of DRR are:

- **Risk awareness and assessment** including hazard analysis and vulnerability/capacity analysis;
- **Knowledge development** including education, training, research and information gathering;
- **Public commitment and institutional frameworks** including organisational, policy, legislation and community action;
- **Application of measures** including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
- **Early warning systems** including forecasting, dissemination of warnings, preparedness measures and reaction capacities

Methodology

The process of preparing the SLU CP-DRR was inclusive and participatory, and coordinated under the leadership of the entity with responsibility for coordination of the national disaster risk management (DRM) system, the National Emergency Management Organisation (NEMO). The process involved the collaboration of all the DRR actors, including national authorities

¹ United Nations Office for Disaster Risk Reduction (ISDR)

responsible for DRR implementation in the country, key stakeholders working on DRR in all relevant sectors (such as health, education, planning, housing and development, economic affairs and finance, etc.), technical and scientific institutions, the private sector, civil society, international cooperation agencies, DIPECHO partners, and members of existing DRR platforms, among others.

The phases in the process included:

- Joint elaboration of a draft SLU CP-DRR based on a standard format and guidelines developed by the ISDR;
- Presentation of the draft document at a national workshop for validation of DRR priorities; and
- Circulation of a draft final SLU CP-DRR for final approval by the NEMAC, followed by approval from the Cabinet of Ministers.

Assumptions and limitations of the document were largely related to the availability, practicality of formats and quality of data and information.

International, Regional and National Context for DRR

The international context for DRR is enshrined in the DRR global strategies and platforms such as the Yokohama Strategy and Plan of Action for a Safer World² and the Hyogo Framework for Action (HFA) 2005–2015: Building the Resilience of Nations and Communities to Disasters³. The Yokohama Strategy and Plan of Action provide guidelines for natural disaster prevention, preparedness and mitigation. The HFA is the reference framework for DRR public policy and its goal is “*the substantial reduction of disaster losses, in lives as well as the social, economic and environmental assets of communities and countries*”.

The international and regional context for DRR is also anchored in global agreements such as the Johannesburg Declaration, the Mauritius Strategy for Implementation (MSI) of Agenda 21 and the Millennium Declaration and the Millennium Development Goals which are driving development aid and development agendas worldwide. Global Climate Change (GCC) has also been recognised as a major threat to the sustainable development of Caribbean countries and Saint Lucia is signatory to the United Nations Framework Convention for Climate Change (UNFCCC).

The Caribbean Community (CARICOM) adopted in 2001 a Strategy and Results Framework for Comprehensive Disaster Management (CDM) in the region, led by the Caribbean Disaster Emergency Management Agency (CDEMA). The revised and enhanced Framework (2007-2012)⁴ places stronger emphasis on disaster loss reduction through risk management. The Regional

² <http://preventionweb.net/go/8241>

³ <http://www.unisdr.org/hfa>

⁴ <http://www.cdema.org/publications/CDMFrameworkInfoSheet.pdf>

Framework for Achieving Development Resilient to Climate Change⁵ (2009-2014) also establishes the direction for the continued building of resilience to the impacts of GCC by CARICOM states.

At the regional level, Saint Lucia is also committed to the implementation of the Barbados Programme of Action (BPoA)⁶. The St George's Declaration of Principles of Environmental Sustainability (SGD) in the OECS⁷, 1979, embodies the commitment of governments of the Eastern Caribbean to “environmentally sustainable development as essential for the creation of jobs, a stable society, and a healthy economy” and by extension, speaks to disaster risk reduction and reducing the adverse impacts of climate change.

The National Environmental Policy (NEP) is the key mechanism for implementation of the (SGD) at the national level. The National Environmental Management Strategy (NEMS) places the focus on hazard risk management as a key element and embodies all other related policies, plans, programmes and strategies, including those developed under international and regional agreements.

National Circumstances

Saint Lucia is a Small Island Developing State (SIDS) located at latitude 13° 59' N, and 61° within the Lesser Antillean Arc of the Caribbean Archipelago, and situated on a volcanic ridge. The island covers a land area of 616 km², characterised by steep, rugged landscapes with deep valleys and fast flowing rivers.

The island experiences a tropical maritime climate with two climatic seasons, a wet season (June to November) and dry season (December to May). Tropical disturbances (waves, depressions, storms, hurricanes) account for the greater amount of the recorded rainfall during the rainy season. As is the case for Caribbean SIDS, GCC is considered one of the most serious threats to the sustainable development of Saint Lucia and the projected impacts are expected to be devastating. The onset of the climate change phenomenon thus imposes new hazards on Saint Lucia and exacerbates existing ones.

The combination of the steep topography and young volcanic soils, constantly subjected to seasonal high rainfall, make the island very susceptible to soil erosion. Poor practices relating to disposal of waste, deforestation and land use also contribute to increased risk to disasters and weakened resilience.

⁵ <http://www.cpdngo.org/cpdc/attachments/article/107/Regional%20Framework.pdf>

⁶ The BPoA sets forth specific actions and measures to be taken at the national, regional and international levels to support the sustainable development of Small Island Developing States (SIDS).

⁷ <http://www.oecs.org>

Large segments of the island's population are located along the coastal belt, where low land agriculture and coastal resources are the main sources of livelihood. The narrow low land strip which circumscribes the island is characterised by concentrations of haphazard and unplanned human settlement and other development. The rapid urbanisation of former rural areas of the island, manifested in approximately 60% of the population residing along the north-west corridor, has resulted in denser populations living in unplanned or informal settlements.

“Disasters have the tendency to exacerbate poverty and undermine development planning, particularly poverty reduction strategies”
UN Secretary General Ban-ki-Moon

A number of externalities have impacted and continue to impact the island's economy, including changing trade regimes, rising fuel prices and the international financial crisis. The economy has consequently undergone significant adjustment from agrarian-based to service-based, with the services sector, and in particular tourism, leading economic growth.

Country data for 2011, show good social indicators, including low levels of maternal and infant mortality, universal primary and secondary education, low fertility, and increasing life expectancy. However, these exist alongside high and increasing levels of poverty – 25.1% in 1995 and 28.8% in 2005/06⁸. Notably, a positive correlation has been demonstrated with increasing incidence of poverty and increased vulnerability to impacts of disasters, in particular rainfall changes (floods and drought) and climate change impacts of sea level rise and increased storm surge.⁹

Saint Lucia is an independent country which has a multi-party structure, dominated by two political parties, with elections constitutionally due every five (5) years. National government comprises a bicameral parliament made up of eleven (11) members of the Senate or Upper House and the House of Assembly comprising seventeen (17) district representatives. Ten (10) districts positioned below the central government, comprising the council of the capital city of Castries, three (3) town and six (6) village councils, form the main local government institutions in the community/township. New appointments of members to the various district (city/town/village) councils were made following national elections in 2011.

Saint Lucia's development agenda is guided by a number of national policy imperatives and instruments, in particular the country's Medium Term Development Strategy (MTDS). The international and regional agreements and DRR strategies and platforms described in the Section 3 on the DRR Context, also drive the development agenda. The development priorities described in the MTDS for the period 2006-2011 are aimed at halting any further decline in the agricultural sector, and encourage agriculture and wider economic diversification; providing an enabling environment to foster increasing returns to the local economy through effective linkages; encouraging education and human resource development; supporting the emerging informatics industry and financial services sector; and also encouraging the adoption of appropriate technology as a means of achieving greater efficiency.¹⁰

⁸ The Poverty Assessment (2005/06) identified the ripple effect of decline in banana earnings into other areas of the economy, spreading poverty beyond the agricultural sector and contributing to increased poverty and vulnerability in rural communities.

⁹ UNISDR Global Assessment Report 2011: Revealing Risk, Redefining Development. Geneva, Switzerland.

¹⁰ GOSL. Socio-Economic Review, 2011.

The development priorities of Saint Lucia provide opportunities for widening the scope of socio-economic and environmental sustainability to include considerations for disaster vulnerability and DRR. While the country's vulnerability to disasters is projected to be exacerbated by climate change, the future vulnerability of Saint Lucia will also depend on its development path. In this context mainstreaming of DRR and climate change adaptation (CCA) that is, climate smart DRR, into development policies, plans and programmes now becomes a pre-condition for sustainable development.

DRR Legal, Regulatory and Institutional Framework

The policy, legal, regulatory and institutional framework governing DRR is quite varied and mixed, reflecting a highly evolved governance framework, though with a strong orientation to disaster preparedness, response and recovery, and lesser emphasis on disaster planning, prevention and mitigation.

The legal and regulatory framework for DRR is underpinned by the *Saint Lucia Constitution (Order 1978)*¹¹ and the Emergency Powers (Disaster) Act of 1995¹². The CDERA model legislation, assented to by Saint Lucia on August 7, 2000, provided the guide for the development of the Disaster Management Act¹³ (DMA) enacted in 2006, which has subsequently formed the foundation of the legislative framework for disaster management in the country. The remit of the DMA, also covers provisions for the application of treaties and the plethora of multi-lateral and international agreements. Disaster management considerations are also reflected in some of the legislative instruments in sectors such as health and education, and cross cutting sectors such as water, national security, however, in most cases driven by international obligations.

The regulatory framework for DRM is given effect through the National Emergency Management Plan (NEMP)¹⁴, which finds authority in the DMA and national CDM Strategy. Also of importance are some key related regulations such as the draft Physical Planning Regulations under the Physical Planning and Development Act (2001); national building codes/standards¹⁵; and draft Environmental Impact Assessment (EIA) Regulations, which all have significant implications for DRR within the context of development planning. Worthy of note also are emerging trends in international and regional standards and regulations for operations within certain sectors such as agriculture, tourism, education and health, which have a stipulated requirements for disaster risk management.

The NEMP outlines eight (8) policies of relevance to DRR at the national level. These are:

1. Damage Assessment and Needs Analysis [DANA] Policy

¹¹ http://www.preventionweb.net/files/8454_constitution.pdf [PDF 71.06 KB]

¹² http://www.preventionweb.net/files/8454_5of95.pdf [PDF 142.25 KB]

¹³ http://www.preventionweb.net/files/8454_Disaster.Management.Act.pdf [PDF 243.57 KB]

¹⁴ The National Emergency Management Plan (NEMP) and its sections and subsections can be accessed on the Government of Saint Lucia Official Website: <http://www.stlucia.gov.lc/nemp>

¹⁵ The Impact of Climate Change on Design Wind Speeds [Cabinet Approved 1151/2009]

Engineering Guidelines for Incorporating Climate Change into the Determination of Wind Forces [Cabinet Approved 1151/2009].

2. Disaster Management Policy Framework
3. Donations and Importation of Relief Supplies
4. Emergency Shelter Management
5. Emergency Housing
6. Governmental Officers Security of Travel Policy
7. Hazard Mitigation
8. Mass Fatality

With the exception of the Hazard Mitigation Policy, all of the other policies identified have a strong focus on disaster preparedness and response, with limited reference to the planning, mitigation and prevention components of DRR. There are also a number of other public and sectoral policies which implicitly address the concepts of disaster risk management (DRM) and disaster risk reduction (DRR), key of which are the National Environmental Policy and Strategy (NEP/NEMs), National Water Policy, National Land Policy, and the Climate Change Policy and Adaptation Plan.

The institutional framework for national disaster management in Saint Lucia comprises the National Emergency Management Organisation (NEMO), supported by a network of volunteers comprising ten (10) National Disaster Committees and eighteen (18) District Disaster Management Committees, operating under the jurisdiction of the NEMO, and involved in the planning and response against disasters. The NEMO organisational structure also allows for the involvement of the national Community Development Officers to act as Ex-Officio members of the District Disaster Management Committees. The Local Government Councils are also integral to the functioning of the District Committees.

A legal, regulatory, and institutional framework, infused with a culture of accountability, will be required for effective governance and service delivery with regard to DRR. A key accountability measure to communities is the extent to which a government is able to address the risk of poorly planned and managed urbanization, environmental degradation, and poverty. Access to information, particularly information on disaster risks, will also generate a social demand for disaster risk management. Adequate national legislation will also be needed to promote the introduction of, and monitor compliance with, monitoring and accountability mechanisms. This will serve to improve policy coherence, enhance the efficiency and effectiveness of resources, minimize duplication and contradictory policies, deal with tradeoffs, and reduce the sensitivity of development activities to current and future climate related and other disasters.¹⁶ Further, the need for proper parliamentary oversight and national auditing systems cannot be underscored.

State of Disaster Risk in Saint Lucia

Conditions of risk for Saint Lucia have been identified in several documents emanating from reviews and assessments including, the National Hazard Mitigation Policy, the Disaster Management Policy Framework, the Risk Management/ Vulnerability Benchmarking Tool (B-

¹⁶ Urwin, K and A. Jordan, "Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance", 18(1) *Global Environmental Change-Human and Policy Dimensions* (2008), 180.

Tool) Report for Saint Lucia¹⁷, the CDEMA Disaster Management Audit Country Report for Saint Lucia (2010).

The Saint Lucia Disaster Catalogue provides a formal historical compilation on disasters, categorizing the history making events based on time period, and by type of disaster event. First produced in 1999¹⁸, the catalogue requires regular updating as events occur.

Hazards/Threats

The catalogue listing of disaster events, and the aforementioned assessments all corroborate that Saint Lucia, by virtue of its geographic location, physical formation and fragile ecosystems, is highly exposed to a number of natural and anthropogenic/human-made hazards, which have the potential to cause loss of lives, severe damage to infrastructure and other economic assets, as well as cause adverse effects on livelihoods. The types of hazards/threats are identified in **Table 1**.

Table 1.1 Types of Hazards/Threats Identified for Saint Lucia

Natural	<ul style="list-style-type: none"> ▪ Geological hazards: earthquakes, volcanic activity and emissions, and seismic related geophysical processes, such as mass movements, landslides, rockslides and surface collapses, debris or mud slides, and tsunamis. Hydrometeorological factors are important contributors to some of these processes. ▪ Hydrometeorological hazards: include tropical cyclones (also known as hurricanes), thunderstorms, coastal storm surges, floods including flash floods, drought, heatwaves and cold spells, El Niño Southern Oscillation (ENSO) and La Niña.
Anthropogenic/Human –made	<ul style="list-style-type: none"> ▪ Socio-natural hazards: High population density in urban areas with inadequate basic-service provision (water, electricity, health, education, transportation). ▪ Technological hazards: Pollution, fires, explosions, toxic spills, deforestation, mining and oil/gas extraction in highly sensitive environmental areas, among others. ▪ Pollution from unexploded arms and munitions. ▪ Armed conflict, civil unrest and related consequences, especially internal displacement and migrations. ▪ Mass casualty (air, sea and terrestrial)
Emergencies affecting Public Health and Safety	<ul style="list-style-type: none"> ▪ Illnesses and epidemics of major occurrence. Examples include: avian flu, traditional and haemorrhagic, malaria, dengue, cholera, among others. ▪ Phytosanitary emergencies - pestilence. ▪ Vector borne diseases such as dengue, and non-endemic illnesses with the onset of climate change

The island is also highly susceptible to the vagaries of international trade, exogenous economic and financial shocks. Safety and security issues are now high on the global and regional agendas

¹⁷ USAID/OECS, 2007. Risk Management/ Vulnerability Benchmarking Tool (B-Tool), National Assessment: Saint Lucia.

¹⁸ A. L. Dawn French, 1999. Disaster Catalogue for Saint Lucia.

and so need to be elevated on the national agenda. Terrorism, biosecurity, food security, and the environmental health and security implication of “open borders” are but some of the concerns.

Historically, hurricanes, storms and flooding have been the most likely hazards to affect Saint Lucia. 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. Droughts have also affected the quantity and quality of available water supplies to local communities, and also productive sectors of the economy. About eight (8) major land slippages, have also resulted in significant loss of lives (the 1938 Ravine Poisson Landslide) and the destruction of homes, dislocation of approximately 145 families, loss of



Figure 1.1 Damage due to Hurricane Tomas

biodiversity particularly from landslides at La Sorcière, and costs totaling over two million

Eastern Caribbean Dollars (EC\$2M).

Damage Assessment and Needs Analysis (DANA) Policy (2007) and more recently the use of the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC) Damage and Loss Assessments (DaLA) methodologies, bear out the issue of the increasing cost of disaster events, related to loss of lives and property, human injury, destroyed tourism and general infrastructure, crops and livestock, and household and commercial and industrial assets. For example, Tropical Storm Debbie in 1994, resulted in losses over EC\$230 million¹⁹. 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 and colossal losses of over EC\$900 million were reported for Hurricane Tomas in October 2010.^{20,21}

Summary of Economic Loss in Saint Lucia as a result of Hurricane Tomas

The Economic Commission for Latin America and the Caribbean (UNECLAC) reports total cost of damage and losses to the different sectors amounting to EC\$907.7 million (US\$336.2 million). The total impact represents 43.4% of GDP; with the scale of impact nine times agricultural GDP, three times tourism GDP, 62% of exports of goods and services, 19% of gross domestic investment

Vulnerability

The plethora of documentation on disaster management widely endorse that Saint Lucia’s vulnerability to devastating natural and anthropogenic/human-induced disasters, can be

¹⁹ GOSL. 2003. Draft Hazard Mitigation Plan for Saint Lucia. NEMO.

²⁰ Government of Saint Lucia, 2006. Natural Hazard Mitigation Plan.

²¹ UNECLAC, 2011. Saint Lucia, Macro socio-economic and environmental assessment of the damage and losses caused by Hurricane Tomas.

attributed to “a dynamic set of risks that emerge from antecedent conditions determined by physical, social, economic, environmental and political factors”²².

Examples of such factors and processes that increase the susceptibility and exposure of a community, structure, service or geographic area to hazards; including (a) its small geographical area, which accounts for the fact that disasters take country-wide proportions; (b) its location in some of the highest risk areas of the planet, such as mid-ocean ridges with strong volcanic and seismic activity, tropical cyclone belts, and direct exposure to the forces of the oceans; and (c) the fact that it is dependent on few sources of income, in the agricultural sector or in tourism, for a substantial part of its gross national product (GNP). These sources of income have been severely reduced for months by a single catastrophic event.

Criteria and methodologies for analysis of vulnerability have not been clearly defined for specific disaster hazards/risks, except in the vulnerability and adaptation (V&A) assessments for the Second National Communication (2010) on Climate Change for Saint Lucia. The Vulnerability and Capacity Assessments (VCAs) coordinated by the Saint Lucia Red Cross (SLRC), involved the use of criteria and methodology outlined in a Community Disaster Response Team (CDRT) field guide, based largely on that for Damage Assessment and Needs Analysis (DANA). The Vulnerability Assessment Benchmarking Tool (B-Tool) developed by the OECS Secretariat, is a quantitative assessment tool which evaluates capacities in the six phases of risk management. Both the CDEMA CDM Audit and the HFA Monitor utilise a more qualitative assessment methodology. Key indicators are proposed by the HFA in the HFA Monitor that enable assessment of progress made in DRR.²³

Some limited national and local assessments based on hazard data and vulnerability information are available, and include risk assessments for key sectors²⁴. However, there are still no systems in place to monitor, archive and disseminate data on key hazards and vulnerabilities and the absence of a comprehensive national multi hazard database/archive with protocols for information sharing impede the use of mechanisms to inform the local and regional DRR effort. Mechanisms for the systemic research, recording and analysis of the hazards which have impacted Saint Lucia and the impacts of these hazards also need to be established.

A comparison of the various capacity assessments undertaken to date utilising the qualitative outputs for the various capacity areas/tools reveals severe limitations in the areas of human capacity, technical tasks and contents, financial resources and information management.

Cognisant that DRM programmes are multi-disciplinary and multi-faceted, the country needs to have access to capacity development programmes that would enhance institutional and community capacity at all levels (systemic, institutional and individual).

²² Adapted from Study Report “Facing Hazards and Disasters: Understanding Human Dimensions. National Academies Press”. <http://www.nap.edu>

²³ <http://www.preventionweb.net/english/hyogo/hfa-monitoring/national/?pid:73&pih:2>

²⁴ The V&A assessments conducted for the SNC highlighted the vulnerabilities of several critical sectors including; water resources; land resources; agriculture; coastal sector; marine resources; forest terrestrial resources; health; financial services; and critical infrastructure.

Risk Assessment for Country DRR

Defining criteria for disaster risk (DR) analysis/management is for the most part difficult, due to the lack of a comprehensive conceptual framework of disaster risk that facilitates DR evaluation and intervention from a multidisciplinary perspective.

The country in keeping with the Disaster Preparedness and Response Act No. 13 of 2000 has developed a National Risk Register. There is also a Saint Lucia National Climate Change Risk Register, dated October 28, 2008.²⁵ Hazard/risk mapping is available for some of the phenomena including landslide, drought, and floods.

Hydro-meteorological hazards and health emergencies were given high risk ratings. Geodynamic/Geological and socio-natural hazards were rated between medium to low risk, with the exception of deforestation, which was rated a high risk hazard. Technological hazards were deemed to be medium risks, but terrorism was unrated, due to the sensitivity of this area.

Saint Lucia is a country with limited experience in the area of disaster risk analysis. Prioritisation of risks has been limited to the sphere of climate change and areas of intervention have been proposed in this regard through the SNC process, and presented in the SNC Report.

However, the current broad level risk assessment/analysis indicates that the country presents predominant conditions of high exposure and susceptibility, social fragility and lack of resilience that favour risk accumulation and incapacity to respond to disasters. It is also apparent that while the country's risks from a macro-economic and financial perspective in terms of responding to catastrophic events may decrease, the country still does not have resources to face catastrophic events.

Priorities outline below for addressing risk have been presented in the Disaster Management Policy Framework approved by Cabinet in 2009²⁶, and are consistent with those emanating from the B-Tool Assessments, SNC and HFA monitoring reports:

- Timely, coordinated and focused direction of resources towards the disaster management system's effective operation.
- Maintaining institutions that are technically capable of efficiently executing the comprehensive disaster management programme.
- Developing local expertise capable of operating and maintaining the disaster management system.
- Ensuring that the public is well informed and educated about disasters, their consequences and preventive and mitigation measures.
- Creating an environment in which the private and non-government sectors contribute meaningfully to the comprehensive disaster management effort.

²⁵ Information provided in the document is deemed valid only at the date of publication as risks are intended to be monitored on an ongoing basis.

²⁶ Objective of the Policy is to advance an approach to disaster management that focuses on reducing risks - the risk of loss of life, economic disruption and damage to the environment and property, especially to those sections of the population who are most vulnerable due to poverty and a general lack of resources.

Some key issues for consideration with regard to risks (Global Assessment Report, 2011)

- The sheer scale of recurrent and probable maximum losses should be enough to shock governments into action.
- Governments are liable for a significant part of total expected losses – and they rarely have the contingency financing to match this liability.
- Governments need to decide how much risk they are willing to retain and how much they can afford to transfer.
- A balanced portfolio of prospective, corrective and compensatory risk management strategies is the most cost-effective way to reduce disaster risks and support development.

Strategic Guidelines for Country DRR

One of the aims of adopting a DRR approach is to help countries transform to a sustainable disaster resilient development path. The need for Saint Lucia to invest in DRR is clear as risks are increasing, as evidenced by the increase in occurrence and the demonstrable severe impacts of multiple disasters, with regard to rising socio-economic losses related to sharp rises in damage to housing and critical local infrastructure and public assets such bridges, schools and health facilities, and the likelihood of further exacerbation by the impacts of climate change.

A national CDM strategy has been endorsed through high level consultations in country since 2001, but there seems to be limited progress in integrating disaster management into the planning process, as the required political leadership to champion the process and technical capacity to implement the type of activities identified were inadequate to enable the requisite paradigm shift.

Strategic directions for DRR were charted coming out of the consultative process for the elaboration of the SLU CP-DRR, based on the priorities identified in Chapter 8, incorporating the findings of the GAR²⁷ and recommendations emanating from the work of UNISDR on Making Cities Resilient, as well as climate change adaptation response in Saint Lucia’s SNC. These all - encompassing strategic directions and guidelines are presented within the context of the five (5) elements of DRR in **Table 1.2**.

Table 1.2 Strategic Priorities and Guidelines

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
Risk Awareness and Assessment	Improve Information on how hazards are changing with detailed risk assessments from diverse sources of knowledge	<ul style="list-style-type: none"> ▪ Enhance the national disaster inventory system to systematically monitor losses and assess risks at all scale using probabilistic

²⁷ UNISDR Global Assessment Report 2011: Revealing Risk, Redefining Development. Geneva, Switzerland.

Saint Lucia Country Profile for Disaster Risk Reduction (SLU CP-DRR)

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
		<p>models</p> <ul style="list-style-type: none"> ▪ Undertake risk mapping of social vulnerability ▪ Conduct multi-hazard analysis and vulnerability and capacity assessments
Knowledge Development	Build Adaptive Capacity: with new skills, knowledge and resources	<ul style="list-style-type: none"> ▪ Enhance systems for Research and Systematic Observation (RSO) ▪ Conduct structured and targeted Public Education and Outreach (PEO) Programmes ▪ Establish effective systems for information sharing and dissemination
Public Commitment and Institutional Frameworks	<p>Empower and support communities to address root causes of vulnerability</p> <p>Build participatory risk governance capacities</p>	<ul style="list-style-type: none"> ▪ Demonstrate political leadership and will by placing policy responsibility for DRR ▪ Harmonise national and sectoral policies to achieve coherence in policies to stimulate and enforce DRR processes ▪ Commit resources for the upkeep and upgrading of the NEMO and other components of the national disaster management framework for implementation of DRR functions
Application Measures	Investment in hazard mitigation/resilience building measures in all public and private development	<ul style="list-style-type: none"> ▪ Increase capital investment for climate sensitive/disaster resilient infrastructure and national assets ▪ Enhance programmes for social protection (e.g.

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
		poverty reduction) to include resilience building <ul style="list-style-type: none"> ▪ Protection of critical ecosystems and buffer zones (e.g. watersheds, forests, reefs, wetlands, beaches)
Early Warning Systems	Improve forecasting, dissemination and preparedness measures and reaction capacities	<ul style="list-style-type: none"> ▪ Enhance and expand sphere of early warning systems ▪ Improve and expand data monitoring networks

Conclusions and Recommendations

Disaster and climate change impacts are cross-sectoral in nature and are usually manifested in effects on the country’s natural resources, national infrastructure and assets and the population. These impacts may however, be further exacerbated by the local risk realities emanating from physical, social, economic, environmental and political factors. At present, considerations for disaster prevention, mitigation or preparedness are not formally and routinely integrated into the appraisal of projects or programmes, particularly those financed by public investments in, for example, infrastructure, health and education. This suggests that costs for rehabilitation post disaster, simply recurs as opposed to having incorporated climate resilience and mitigation measures in projects and programmes.

The Global Assessment Report (GAR), 2011, states that while great strides have been made in reducing loss of life, for at least weather related disasters, the reality remains that disaster-related socio-economic losses continue to rise. This is particularly so in developing countries where damage to housing and critical local infrastructure and public assets such bridges, schools and health facilities has risen sharply.²⁸ It is therefore apparent that the risk of losing wealth to natural

²⁸ Over the past three decades, the risk of economic loss as a result of floods rose by over 160 per cent, while economic loss incurred as a result of cyclones surged by 265 per cent in member countries of the Organisation for Economic Cooperation and Development (OECD). UN. 2011 Global Assessment Report (GAR) on Disaster risk reduction (DRR) – Revealing Risks, Redefining Development. UNISDR.

disasters is beginning to outpace wealth creation, and as advocated, DRR must of need be incorporated in all sustainable development strategies²⁹.

As financial resources continue to decline, the GOSL, like all other governments, will be driven to increasingly give consideration to resilience building. Key challenges in enhancing resilience to climate and disaster risks in Saint Lucia, include managing the overall disaster risks to ensure social protection, maintain economic resilience and minimise environmental degradation; protecting vulnerable and critical infrastructure, promoting sustainable land use planning and reforestation; ensuring security of water supply and water resources; and collecting and analyzing climate change and disaster related data and information in a comprehensive and sustainable fashion in order to be able to respond to the challenges posed by climate and disaster shocks and stresses.

It is clear that a re-shaping of the policy mix to reflect the changing climate and disaster context is needed to provide a strategic framework for action that will promote environmentally sound development, through the resourcing and empowering of local/community level institutions for building the resilience of citizens and the State.

"The good news is that a natural hazard does not automatically have lead to a disaster," Mr. Ban said. "Countries such as Bangladesh, Cuba, Jamaica, Madagascar and the Philippines have shown that good building designs, proper land-use planning, public education, community preparedness and effective early warning systems can reduce the impact of severe weather events."

UN Secretary-General Ban Ki-moon 30 September 2008

The NEMO, as the lead agency for disaster mitigation and prevention, has been recognised as the agency which is best positioned to drive the process to generate the level of commitment required by the GOSL, and in particular all agencies responsible for national development, to collaborate with development partners, to assume their relevant roles and work towards capacity enhancement, to ensure a well constructed framework, integrating elements of policy, institutional structures and processes, and organizational and individual capacities, to effect a more coordinated response to DRR implementation, for the realisation of sustainable disaster resilient development. The NEMO will also need to advocate for requisite and concrete resources (human, technical and financial) to be committed and reflected within the National Budget to support the implementation of DRR activities and for investments in DRR.

²⁹ Nassir Abdulaziz Al-Nasser, President of the General Assembly for RIO +20 Conference in thematic debate on disaster risk reduction: "addressing disaster risk reduction is therefore inseparable from the broader sustainable development agenda,"

2. INTRODUCTION

2.1 Background

The preparation of **Saint Lucia's Country Profile for Disaster Risk Reduction (SLU CP-DRR)** was made possible through financial support under the United Nations International Strategy for Disaster Risk Reduction, Disaster Preparedness and Prevention – European Commission for Humanitarian Aid (UNISDR-DIPECHO) Project.

The principal objective of the regional DIPECHO project is to contribute to “*building the resilience of nations and communities to disasters by increasing awareness surrounding the importance of disaster risk reduction throughout the Caribbean*”. Under the framework of the DIPECHO Action Plan for the Caribbean 2011-2012, Saint Lucia is one of the pilot countries selected to apply a standardized structure and guide to develop country documents for Disaster Risk Reduction (DRR).

The commitment of the GOSL to DRR is enshrined in the Hazard Mitigation Policy [Document No. 0204 of the Saint Lucia National Emergency Management Plan] which envisages... “*A nation highly resilient to hazard impacts and adaptable to hazard risks.*”

In undertaking the compilation of the SLU CP-DRR, the outputs of existing documents related to hazard risk management and resilience building were considered against the backdrop of current and emerging development challenges and the impact of various hazards on key sectors of the economy. These documents included the National Emergency Management Plan (NEMP), National Hazard and Mitigation Policy and Plan (NHMP), Disaster Management Policy Framework, Strategic Plan for Climate Resilience (SPCR), Second National Communication (SNC) to UNFCCC, Mauritius Strategy (MSI), CDM Audit and HFA Progress reports, among others.

2.2 Purpose of the Country Profile Document

The key objective of the CP-DRR is to provide a comprehensive overview of the status of DRR in the country, including an assessment of progress made in reducing risk, the processes implemented for the reduction of vulnerability and the strengthening of resilience to risks caused by natural and other hazards, as well as the economic, social and environmental impacts that risks generate. It is meant to be a joint guide, validated and influenced by national and local authorities³⁰, communities, HFA Focal Point, scientific bodies, regional and international cooperation agencies that identify the major hazards, vulnerabilities and capacities at national, sub-national and local levels, and guide the organisation of coordinated and complementary action for DRR in terms of priority areas and strategies.

³⁰ These include national authorities responsible for DRR implementation in the country, key stakeholders working on DRR in all relevant sectors (such as health, education, planning, housing and development, economic affairs and finance, etc.), technical and scientific institutions, the private sector and civil society.

The SLU CP-DRR is intended to identify and link existing DRR information in the country, both for this initial formulation and the updating of the Country Document, as well as to present a comprehensive view on the current state of DRR in the country and inform as an element of sustainable development. Given the development of new and upcoming information, this first SLU CP-DRR, has been designed to be flexible, and thus adaptable to changing circumstances and to the continuous inclusion of improvements and innovations, in its regular updating. Thus it can become the institutional DRR memory of the country.

It is envisioned that the SLU CP-DRR will be useful as an important national reference document to guide the design of policies and strategies, promote decision making, and the formulation of DRR actions and activities, for bringing about sustainable development, as well as facilitate the establishment of channels for mutual help and cooperation.

The main elements of the SLU CP-DRR derived from the key outputs of the process are highlighted in **Box 2.1**.

Box 2.1: Main Components of SLU CP-DRR

- International and regional context for DRR
- National circumstances that impact DRR
- Disaster inventory
- Risk identification and analysis - integration of vulnerability and adaptation assessments
- State of disaster risk in the country
- Priorities for DRR in country
- Strategic directions for DRR

2.3 Conceptual Framework for Disaster Risk Reduction (DRR)

Disaster Risk Reduction (DRR) is the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development³¹.

The key elements of DRR are:

- **Risk awareness and assessment** including hazard analysis and vulnerability/capacity analysis;
- **Knowledge development** including education, training, research and information gathering;
- **Public commitment and institutional frameworks**, including organisational, policy, legislation and community action;

³¹ United Nations Office for Disaster Risk Reduction (ISDR)

- **Application of measures** including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
- **Early warning systems** including forecasting, dissemination of warnings, preparedness measures and reaction capacities

3. METHODOLOGY

The compilation of the SLU CP-DRR is recognized and appreciated as the result of the combined input and participation of a wide range of stakeholders across the various sectors of the Saint Lucian economy, including government agencies, statutory bodies, non-governmental organisations and civil society. The process, which commenced in March 2012, was executed under the oversight of the UNISDR Focal Points in Panama and Barbados, and coordinated through the Local Project Counterpart, the National Emergency Management Organisation (NEMO).

The phases in the process included the joint elaboration of a Draft CP-DRR based on the standard format and guidelines developed by the ISDR, the presentation of the Draft document at a national workshop for validation of DRR priorities, and circulation of a Draft Final CP-DRR for final approval by the NEMAC, followed by approval from the Cabinet of Ministers.

3.1 Process

The methodology used in the process of preparing the SLU CP-DRR is outlined in **Figure 3.1**.

3.1.1 Participants

The process of preparing the Country Document was inclusive and participatory, under the leadership of the entity with responsibility for coordinating the national disaster risk management (DRM) system, that is, the National Emergency Management Organisation (NEMO). The process involved the collaboration of all the actors, including national authorities responsible for DRR implementation in the country, key stakeholders working on DRR in all relevant sectors (such as health, education, planning, housing and development, economic affairs and finance, etc.), technical and scientific institutions, the private sector, civil society, international cooperation agencies, DIPECHO partners, and members of existing DRR platforms, among others. The report on the stakeholder consultations, which can be accessed on the NEMO website, provides information on the stakeholders consulted.

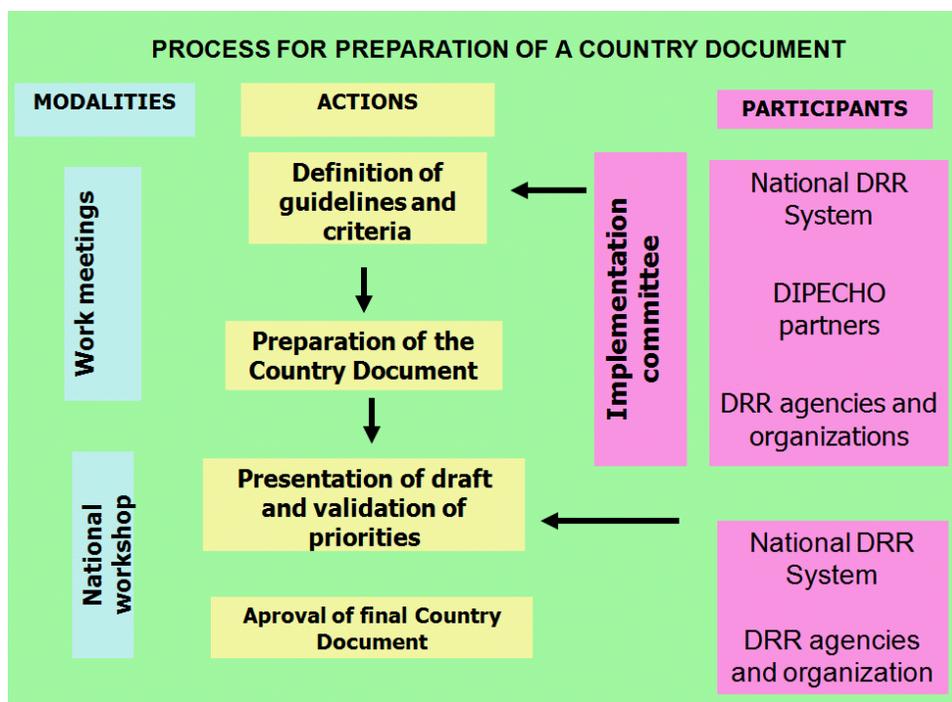


Figure 3.1. Process for Preparation of Country Profile for Disaster Risk Red

3.1.2 Modalities

The process of preparing the SLU CP-DRR was facilitated mainly through the modalities of desk research, work meetings including focus group discussions and one-on-one interviews, and national workshops involving the participation of all the actors. Other modalities utilised during the process of development of the document included telephone discourses and the use of other e-media, such as e-mail and skype. Two broad-based national workshops held with Community Disaster Management Committees on September 11, 2012, and the members of the National Emergency Management Advisory Committee (NEMAC) on September 12, 2012, to obtain feedback at the policy, technical and community levels, to validate and finalise the draft Country Document.

A revised version of the CP-DRR document, incorporating the recommendations from the national workshops, was submitted to the Project Focal Points for further review and feedback. A final draft of the document incorporating feedback of the Project Focal Points was subsequently uploaded to the NEMO website, during the first week of September, 2012, for access by members of the NEMAC, and a hard copy of the Executive Summary and a ballot form requiring signatures indicating final approval, was circulated to same. ,

The acceptance of the CP-DRR by the NEMAC as a nationally approved document assures the speedy approval of the Document by the Cabinet of Ministers by end 2012 and early 2013.

3.1.3 Information Needs

Information requirements for the preparation of the SLU CP-DRR included information about the state of disaster risk and the management of risk reduction at the national level. The knowledge, experience, and perceptions of key stakeholders of the national system, platforms or committees participating in the process of HFA progress reporting and the process for the elaboration of the SLU CP-DRR, are also required to contribute to the information's development.

3.1.4 Phases of the process

The three-stage process, recommended in the standardised format and guidelines for elaboration of the document, was adopted with slight variations in the actions within the stages. These comprised:

- First Stage: Planning
- Second Stage: Joint development or updating of the Country Document
- Third Stage: Consultation and approval

3.1.5 Actions undertaken

The following were the actions undertaken in each stage:

First Stage - Planning:

- Definition of criteria and guidelines for the process,
- Identification and contact with participants and key stakeholders,
- Preparation of the work plan and schedule, and
- Definition of methodological aspects: items for analysis and the design of tools for compiling information.

Second Stage - Joint preparation or updating of the Country Document:

- Gathering of information from direct and indirect sources,
- Organisation of the information compiled,
- Analysis of the information, and
- Preparation or updating of the Country Document.

Third Stage - Consultation and approval:

- Presentation of the draft Country Document,
- Consultation to gather additional information and suggestions,
- National workshop to validate and gather final inputs, and
- Validation and approval of the Country Document.

3.2 Assumptions and Limitations

The main assumptions made in undertaking the assignment were as follows:

- Information and data would be accessible, readily available, in usable formats, and where necessary be up-to-date.
- There was sufficient level of sensitisation and awareness, and understanding of DRM issues and DRR concepts, to generate ownership of and obtain buy-in for project implementation, which would be demonstrated in commitment and cooperation towards project implementation. This in turn would allow for the full range of information to be gathered in order to undertake as comprehensive a review and assessment as possible.
- Stakeholders would be willing to share information, and where information gaps existed would assist in generating the required information through other means.
- Using a participatory approach to ensure a shared vision on the project's direction, methods and results would lead to better stakeholders' understanding of the project and its benefits and help overcome any scepticism with regard to unfamiliar aspects of project implementation.
- The outcomes of the risk assessments would provide a reasonable basis for determination of DRR priority areas and design of strategies.

These assumptions in conjunction with the following limitations would have impacted the quality of the output:

- An apparent pervasive culture of withholding information, and a reluctance to share information, particularly within the local realm, hence difficulty in obtaining relevant information/documents from some key stakeholders.
- An inadequate research and systematic observation framework, resulting in an inadequacy of data to support the process.
- The inadequacy of the existing information, with regard to the level of coverage, currency and the availability of data in varying formats and at varying scales of capture.

To overcome most of these limitations and to permit the timely undertaking of comprehensive assessments within the given time frame, the Consultant had to adapt the methodology, in order to collect substitute/alternative data and information. The intent was to attain the best possible level of accuracy through the innovative use of the existing information supported by anecdotal evidence and expert judgement from the consultative process.

4. INTERNATIONAL AND REGIONAL CONTEXT FOR DRR

4.1 International DRR Context

The definition of an international context for DRR began with the UN International Decade for Natural Disaster Reduction (IDNDR), during the 1990s, which prompted governments, donor agencies and other key players to begin to emphasize mitigation and “comprehensive disaster management”. As a follow-up of the IDNDR, the *United Nations International Strategy for*

Disaster Reduction (UNISDR) was adopted by the member states of the United Nations in 2000, in an effort to ensure the implementation of the *Yokohama Strategy and Plan of Action for a Safer World* which had been adopted since 1994. This strategy aims to achieve substantive reduction of disaster losses and build resilient communities and nations, as an essential condition for sustainable development.

Other global platforms and strategies which define the context for DRR include the European Community Humanitarian Organisation (ECHO), which recognizes disaster preparedness and prevention within its mandate for humanitarian aid and the more recent *Hyogo Framework for Action (HFA) 2005–2015: Building the Resilience of Nations and Communities to Disasters*³², among others. The goal of the HFA is “the substantial reduction of disaster losses, in lives as well as the social, economic and environmental assets of communities and countries” and is the reference framework for DRR public policy.

The Global Platform for Disaster Risk Reduction³³ is also an international element of the ISDR System. It is responsible for raising awareness and reiterates commitments, for sharing experience on implementation among stakeholders and Governments, addressing gaps, and for providing strategic guidance and coherence for implementing the HFA. The *Children’s Charter for Disaster Risk Reduction*³⁴ developed for Africa, Asia and Latin America and the *Panama Declaration on Disaster Risk Reduction* have also served to advance initiatives for disaster risk management in the education sector.

Recent World Disaster Risk Reduction Campaigns such as “Disaster risk reduction begins at school” (2006-2007), “Hospitals safe from disaster” (2008-2009), “Making Cities Resilient – My city is getting ready!” (2010-2015), all of which follow on the themes of the previous campaigns through the global advocacy initiative called “*One Million Safe Schools and Hospitals*”, are also contributing to the dialogue on DRR.

The international context for DRR is also enshrined in agreements such as the *Johannesburg Declaration, Mauritius Strategy for Implementation (MSI)* of Agenda 21, and the *Millennium Declaration* and Millennium Development Goals (MDGs), which are driving development aid and development agendas worldwide. Reducing disaster risk is deemed necessary to achieve the MDGs, particularly those related to poverty reduction and environmental sustainability. Saint Lucia is also committed to the implementation of the Barbados Programme of Action (BPoA)³⁵. The BPoA and the MSI underscore the particular vulnerability of SIDS in the face of climate change and outline specific response measures to be taken at global, regional and national levels.

Saint Lucia is also a signatory to the United Nations Framework Convention for Climate Change (UNFCCC) and several other multi-lateral agreements which have implications for DRR.

³² <http://www.unisdr.org/hfa>

³³ The Global Platform for Disaster Risk Reduction is replacing the Inter-Agency Task Force with its same mandate and open-ended participation by Member States. www.preventionweb.net/globalplatform

³⁴ The Children’s Charter for Disaster Risk Reduction was launched during the Global Platform for Disaster Risk Reduction held in May 2011 in Geneva. See:

http://www.childreninachangingclimate.org/database/CCC/Publications/children_charter.pdf

³⁵ The Programme of Action for the Sustainable Development of Small Island Developing States (BPoA) adopted at the SIDS conference in Barbados in 1994, sets forth specific actions and measures to be taken at the national, regional and international levels to support the sustainable development of Small Island Developing States (SIDS).

4.2 Regional Context for DRR

The Caribbean Community (CARICOM) development agenda is based on sustainable development, which encompasses economic, social, environmental and governance dimensions, with the sub-regional development agenda of the Organisation of Eastern Caribbean States³⁶ (OECS) further espousing the sustainable development agenda within the dimension of human development. The BPoA calls for the integration of natural and environmental disaster policies into national development. The *St George's Declaration of Principles of Environmental Sustainability (SGD) in the OECS* (1979), embodies the commitment of governments of the Eastern Caribbean to “environmentally sustainable development as essential for the creation of jobs, a stable society, and a healthy economy”, and by extension, speaks to disaster risk reduction and reducing the adverse impacts of climate change.

Like in most Caribbean SIDS, the last two decades, have seen radical changes in the policy environment for the region, where issues of disaster risk management (DRM) and DRR were not seen as priority, to where the linkages between DRM and development are being explored in the context of all of the three components of sustainable development: economic development, social development and environmental protection. DRM has slowly begun to infiltrate the various spheres of public policy, programmes and plans. The work of intergovernmental bodies such as the Organisation of American States (OAS), the Organisation of Eastern Caribbean States (OECS), and the Caribbean Disaster Emergency Management Agency (CDEMA), is particularly noteworthy in this regard. The OAS/USAID Caribbean Disaster Mitigation Project (CDMP) in 1993 was one of the first of its kind in the region. In addition, the *Kingston Declaration* (2005) purposed to improve DRM capabilities in the region, while the *Saint Marc Plan of Action*, an agreement of the Association of Caribbean States (2007) gives cognizance to disaster reduction as an important element in the achievement of the Millennium Development Goals, particularly with respect to poverty reduction and environmental sustainability; as well as in the adoption HFA.

Of particular importance is the Comprehensive Disaster Management (CDM) strategic framework, conceptualized for the Caribbean in 2001, by the Caribbean Disaster Emergency Response Agency (CDERA). Comprehensive Disaster Management expanded the focus of disaster management from the prevailing relief and response mode to include disaster risk mitigation considerations into the planning and development stages, and expanded the range or partners in the DRM framework to facilitate this. The Enhanced CDM Framework (2005-2015) reoriented the focus to “building resilience of nations and communities to hazard impacts”, through the expansion and replication of several on-going best practices in the following priority areas:

- Hazard mapping and vulnerability assessment
- Flood management
- Community disaster planning
- Early warning systems
- Climate change
- Knowledge enhancement

³⁶ The mission of the OECS is: “To be a **Center of Excellence** contributing to the sustainable development of OECS Member States by supporting their strategic insertion into the global economy while maximizing the benefits accruing from their collective space.”

The *Regional Framework for Achieving Development Resilient to Climate Change* (2009-2014) also establishes the direction for the continued building of resilience to the impacts of GCC by CARICOM states and is aimed at building mechanisms to systematically address development challenges posed by climate change. The Framework builds on the significant contributions of projects such as Caribbean Planning for Adaptation to Climate Change (CPACC), Adaptation to Climate Change in the Caribbean (ACCC) and Mainstreaming Adaptation to Climate Change (MACC) and Special Adaptation to Climate Change - Implementation of Pilot Adaptation Measures in Coastal Areas (SPACC).

Regional Platforms for Disaster Risk Reduction are also promoted by the UN/ISDR Secretariat and partners for information sharing and coordination among existing bodies. Also of particular note is the sectoral work carried out with regard to evaluation of disaster risks in sectors such as health and education, with the use of tools such as the *Health Sector Self Assessment Tool for Disaster Risk Reduction*³⁷, which were developed based on a regional survey to determine where countries in Latin America and the Caribbean stood in terms of disaster preparedness, mitigation and response.

4.3 National DRR Context

Primary agreements which underpin disaster management at the national level include:

- Articles establishing the Caribbean Disaster Emergency Management Agency (CDEMA)
- International Ship and Port Facility Security Code (ISPS Code)
- Association of Caribbean States (ACS)- Agreement to Create the Special Committee on Natural Disasters
- Memorandum of Understanding between International Federation of Red Cross (IFRC) and Red Crescent Societies (RCS) and United Nations Office for the Coordination of Humanitarian Affairs (OCHA) in regards to the International Federation assuming a Leading Role in Emergency Shelter in Natural Disasters.

The country is signatory to approximately twenty-six (26) multilateral environmental agreements, many of which have implications for DRR, particularly in sectors such as agriculture, fisheries, forestry, health, and sustainable development. A compilation of key agreements and instruments, the focal agencies/points and the particular relevance of the agreement/instrument to the current disaster management framework is presented in the NEMP.

In 2004, the country approved the formulation of an environmental policy as the key mechanism for implementation of the SGD. The National Environmental Policy (NEP) and the National Environmental Management Strategy (NEMS) surpassed the SGD, incorporating all other related policies, plans, programmes and strategies, including those developed under international and regional agreements. Hazard risk management is also a key element of the NEMS. Also worthy of note, is that as far back as 2004, the country had begun the process of promoting Integrated Development Planning (IDP) and had formulated a preliminary set of indicators in this regard.

³⁷ http://new.paho.org/disasters/index.php?option=com_content&task=view&id=1443&Itemid=807

As part of the UN/ISDR systems, a National Platform for Disaster Risk Reduction has been initiated for implementation of the HFA, 2005-2015, with the Director of the NEMO as the National Focal point. The HFA is intended to assist efforts at the national and community level for resilience building in order to better cope with the hazards that threaten development gains. To date however, the main activity has been the compilation of HFA progress reports.

The National CDM Strategy and Framework is a derivative of the Regional Enhanced CDM Strategy and Framework which is explicitly connected to all the above mentioned international and regional agreements, strategies and platforms, including the HFA.

The means to better facilitate international support for DRR at the regional and country levels are now imperatives. Experience to date indicates the need for greater effort to improve at the national level, coordination among national agencies/organisations and regional cooperation agencies to develop synergies and the development of a more holistic understanding of disaster risk reduction, environmental management and sustainable development, and their interaction.

5. NATIONAL CIRCUMSTANCES

This chapter briefly describes the country's physical characteristics, climate and demographics, followed by an overview of the socio-economic situation under which the SLU CP-DRR was prepared. The chapter also includes an outline of the governance structure of the country, with a particular focus on organisational levels and coordination mechanisms between state and non-state actors. The chapter provides the background against which the analysis of disaster risk and vulnerability and adaptation is to be addressed for the SLU CP-DRR.

5.1 Physical Environment

5.1.1. Geographic location

Saint Lucia is situated in the Lesser Antillean Arc of the Caribbean Archipelago at latitude 13° 53' north and longitude 60° 68' west and situated on a volcanic ridge between Martinique to the North and St. Vincent and the Grenadines to the south. (Figure 5.1). The island is 42 km long, 22 km wide, and has a land area of 616 km², and is characterised by mountainous and rugged in topography, with steep slopes cut by fast-flowing rivers.



Source: Google Earth

Figure 5.1: Saint Lucia Map and Location in the Caribbean Archipelago

5.1.2 Physiography

Saint Lucia is characterised by very rugged topography, with a central ridge of mountains, including Mount Gimie, the highest peak at 950m, and numerous steep off-shoot ridges extending towards the coast.

The island comprises thirty-seven (37) main watersheds³⁸; ten of which are small multiple drainage basin complexes³⁹ (Figure 5.2). They all radiate from the central mountain ranges of the interior towards the coast, and activities occurring in one area can very rapidly have negative environmental impacts on surrounding ecosystems and in particular, changes taking place in upper watershed areas very rapidly impact on lower watershed and coastal areas. Within these watersheds, twenty-five (25) water catchments are harnessed for domestic water supply⁴⁰, with most of the water consumed or used on the island coming from runoff from catchment areas in the upper reaches of seven (7) catchments which have their headwaters mainly in the mountainous south-central area of the island.

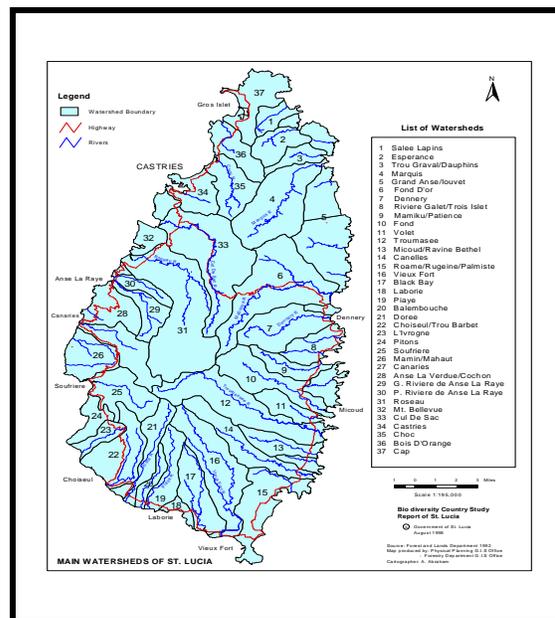


Figure 5.2. Watersheds and Rivers in Saint Lucia

Source: Biodiversity Country Study Report

³⁸ Migeot, J and Hawden, P. 1986. Saint Lucia Water resources: preliminary Assessment. Vols. 1&2. Ministry of Agriculture, Castries, Saint Lucia.

³⁹ Cox, Christopher, A. 2003. Integrated Watershed Management Planning for Saint Lucia. A Thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements of the degree of Doctorate of Philosophy. McGill University, Quebec, Canada.

⁴⁰ AGRICO Ltd. 2001. Saint Lucia National Water Situation and Assessment of National Water Profile. OAS/CSC/CCST Project Entitled “Cooperative Strengthening of National Institutions to Enhance Integrated Water Resources Management”

The island's soils have been divided into three mineralogical groupings⁴¹, allophanes, kaolinites and montmorillonites. The allophone group is representative of younger soils and occupies the highest rainfall areas particularly in the south. Kaolinitic soils occupy the older land surfaces in high rainfall areas in the north and finally, the montmorillonites are located in the drier and some intermediate areas. The interior soils tend to be inherently more stable to surface erosion (good aggregation on account of the extent of weathering), but are easily degraded once the forest cover particularly on steep slopes are removed. The montmorillonitic (expanding lattice) clays dominate the thin soils around the coastal areas and are highly erodible once the vegetation is disturbed.

As a result of the rugged topography and the absence of intermediate collection points for surface water, such as lakes and ponds, the majority of rainfall flows to the sea with very little opportunity for ground water storage. The natural forested areas make a significant contribution to the interception of this rainfall, allowing infiltration into the sub surface, thereby contributing to the sustaining of base flows in the river systems beyond the rainy periods.

Approximately 30% of Saint Lucia's land area is pastoral and arable land with less than 10% of the total land area occurring on slopes of less than five (5) degrees⁴². As a result, the application of some type of soil conservation measure is necessary on more than 90% of the land area for any type of use⁴³.

The forest reserves are regarded as exceptionally well preserved in the country, comprising mainly rainforest ecosystems. Preliminary findings from the National Forest Demarcation and Bio-Physical Resource Inventory Project (2009) demonstrate the diverse forest types (habitats) in Saint Lucia and large variety of biodiversity which they support, as well as the protection afforded to the island's water resources. Between 1990 and 2000, it is estimated that the island lost 36% of its forest cover as a result of clearing of natural vegetation for agriculture, construction and other development purposes⁴⁴. Current efforts are focused at increasing this cover within the Government Forest Reserve (protected forests), in an attempt to redress this loss.

The combination of the steep topography and young volcanic soils, constantly subjected to seasonal high rainfall, make the island very susceptible to soil erosion. Vulnerability to disasters such as landslides is further exacerbated by poor land management practices. In addition, the narrow coastal strip which circumscribes the island is characterised by concentrations of haphazard and unplanned human settlement and other development, posing a growing threat to the sustainability of the fragile terrestrial, coastal and marine ecosystems. For example, coral reefs in Saint Lucia are under threat from high levels of sedimentation and other land based pollutants, with an average loss of 47% of coral reef cover in shallow waters and 48% in deeper water observed between 1995 and 2001 in reefs along the central west coast, particularly those bordering the town of Soufriere. Near shore fisheries are also threatened.⁴⁵

⁴¹ GOSL. 1979. Watershed and Environmental Management Project. Hunting Technical Services for Ministry of Planning and Development. Volume 3.

⁴² Most of the flat or gently-sloping land is found along the narrow coastal belt.

⁴³ GOSL. 1979. Watershed and Environmental Management Project. Hunting Technical Services for Ministry of Planning and Development,

⁴⁴ GOSL, 2008. *Water Quality Monitoring Report for Selected Areas*, prepared by Susanna De Beauville

⁴⁵ *ibid*

5.1.3 Climate and Weather

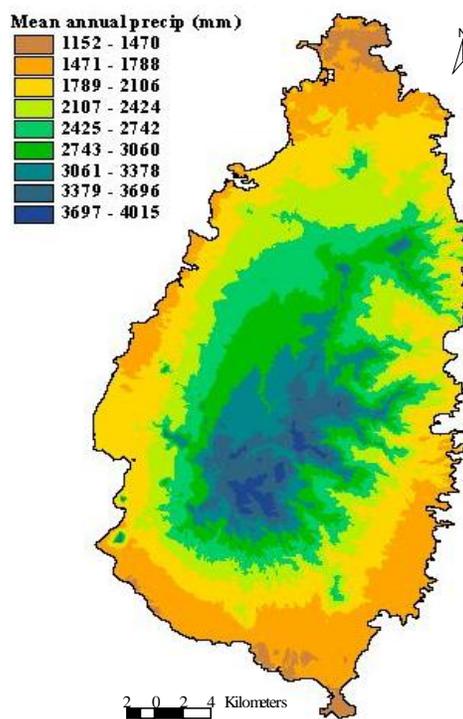
Saint Lucia experiences a tropical maritime climate. Located within the north-east Trade Wind belt the island is normally under an easterly flow of moist, warm air and temperatures with average temperatures of 27° C (79° F) and a relative humidity of 75%. Temperatures rarely rise above 33° C or fall below 20° C⁴⁶. The highest temperatures are recorded around June to September, and the lowest in the months of December.

The amount of daily sunshine received over Saint Lucia is at a maximum from February to May and at a minimum around September. Radiation values vary widely over the island and this is mainly due to cloud cover. As such, elevated regions with greater cloud cover receive less direct radiation than the low-lying coastal regions.

The island experiences two climatic seasons, a wet season which extends from June to November, while the dry season runs from December to May. Tropical disturbances (waves, depressions, storms, hurricanes), account for the greater amount of the recorded rainfall during the rainy season. Local convective showers and other weather systems account for the remainder. Rainfall amounts show annual and spatial variation with the orographic effects quite pronounced as illustrated in **Figure 5.3**⁴⁷. Mean annual rainfall varies from 1,450 mm in a relatively flat coastal region such as Hewannora in the south, to 3,450 mm to an elevated interior region such as Edmond Forest.⁴⁸,

Wind speeds are highest on average during the months of January to July, when the average is 24 km h⁻¹. Between August and December the speeds are less, averaging 16 km h⁻¹. Higher gusts are occasionally experienced with the passage of tropical disturbances and cyclones.

Figure 5.4 shows spatial distribution of areas with high annual cumulative moisture deficit and number of dry months. These scenarios, against the backdrop of un-sustained river base flows, have serious implications for the island's water supply, in terms of water availability at both the community and national level. A further aggravation with regard to the national water supply are the various kinds of activities⁴⁹ taking place in upper watershed areas, which continue



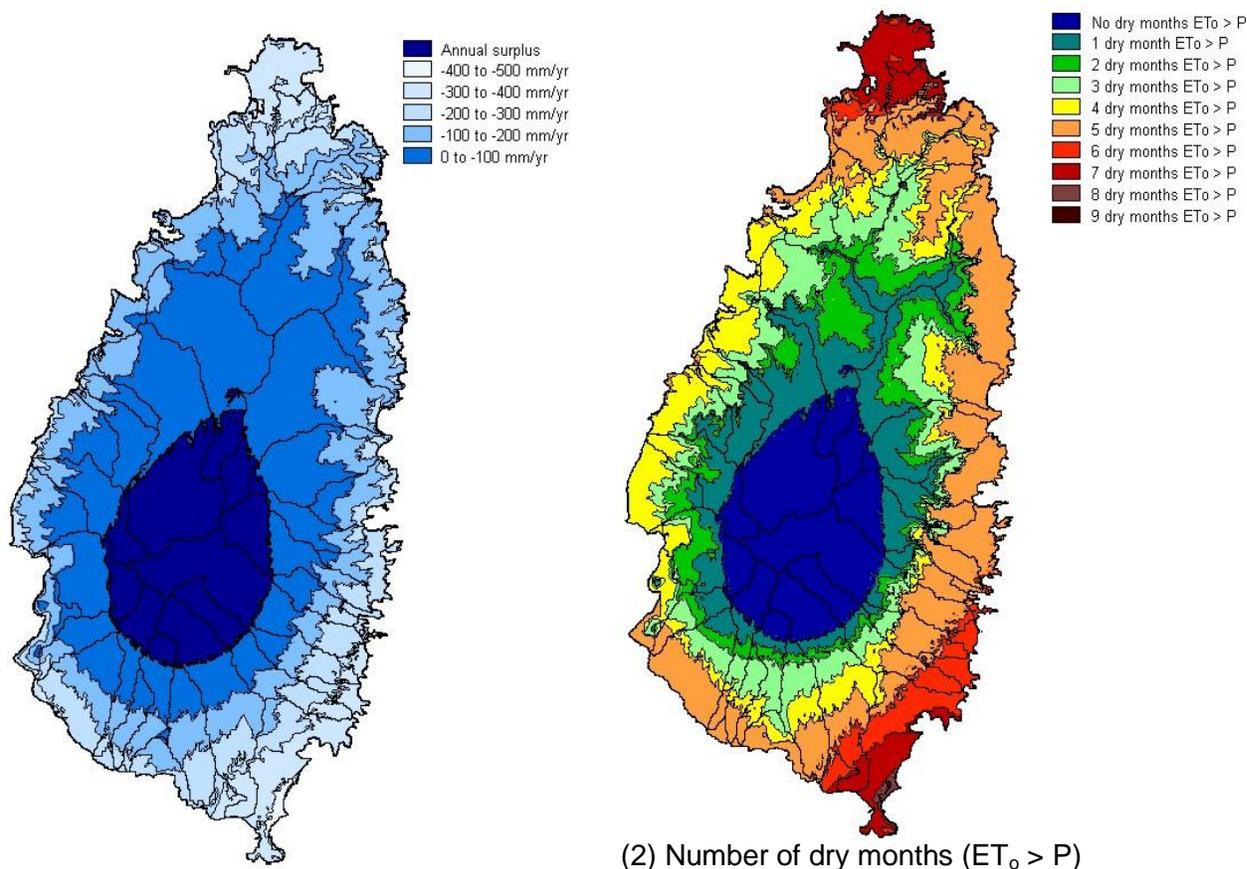
Source: Isaac & Bourque, 2001
Figure 5.3 Spatial Distribution of Mean Annual Rainfall for Saint Lucia

⁴⁶ Cited from Saint Lucia's Second National Communication (SNC) to UNFCCC (2010).

⁴⁷ Isaac C. and C.P.A. Bourke. 2001. Ecological Life Zones of Saint Lucia. Global Ecology and Biogeography. Vol, 10. Issue 5.

⁴⁸ Cited from Chase, Vasantha, Luvette Louisy and Martin Satney 2008. Watersheds in Saint Lucia: Trends and Issues. SFA 2003 - Economic and Agricultural Diversification and Poverty Reduction through Integrated Natural Resources Management (INRM-SFA2003) (INRMP). Financing Agreement EuropeAid/119973/C/SV/LC.

to rapidly impact on lower watershed and coastal areas, and have negative environmental impacts on surrounding ecosystems, in particular, the quality of surface water.



(2) Number of dry months (ET₀ > P)

Source; Cox, Christopher, A. 2003.

Figure 5.4 Estimated Annual Water Deficit Distribution for Saint Lucia

5.1.4 Climate Change

Global Climate Change (GCC) is considered one of the most serious threats to the sustainable development of SIDS in the Caribbean and the projected impacts are expected to be devastating. The main impacts of climate change identified for Saint Lucia include changes in precipitation patterns manifested in longer dry spells (droughts), excessive rainfall (flooding, landslides), more intense storms, increased hurricane intensity, excessive heat and storm surge, especially due to hurricane activity, with storm surges expected to exacerbate with sea level rise. Climate change projections for Saint Lucia have been prepared by the Climate Studies Group of the University of

⁴⁹ These include among others, unsustainable agricultural practices, unplanned human settlements and poor solid waste management.

the West Indies (UWI) are based on regional climate change models⁵⁰. Predictions include a decrease in annual rainfall; increase in frequency of Category 4 and 5 hurricanes from 1.4 to 3-4 per year by 2025; more severe droughts; despite less rain overall, more rain during storms; among others.

It is well recognized that the special characteristics of small islands like Saint Lucia, already pose serious challenges to the attainment of sustainable development. Among these characteristics are relatively small size; an open economy with a negative balance of trade; a limited natural resource base; fragile ecosystems; limited human capacity and resources; limited technological capability; and low adaptive capacity. These characteristics also make these islands inherently prone to the large range of potential impacts from climate change. Climate change has to be recognized as a major concern with respect to food security, water resources, natural resources productivity and biodiversity, human health, desertification, and coastal zones. The unavoidable consequences of climate change are further coupled with the fact that the majority of the country's human settlements and centres of economic activity are located in the coastal lowlands⁵¹, and over 28% of the population is economically and socially vulnerable - under the poverty line.⁵²

The onset of the climate change phenomenon thus imposes new hazards on Saint Lucia and exacerbates the impacts of existing hazards. Climate change is thus expected to bring enormous and unpredictable impacts, likely to trigger disasters that have cross-cutting and multi-sectoral impacts.

5.2 Socio-Economic Context

5.2.1 Population and demographics

Saint Lucia's population is largely African in origin, complemented by large groups of persons of mixed origin, and Indian descent and other smaller groups represented are Chinese, Portuguese, Syrian-Lebanese, Caucasian and Amerindian (Carib).

The estimated population for Saint Lucia as at the 2010 Census was 166,526 , with 51.1% female and 48.9% male, and 24.1% of the population under 14 years and 33.3% between 14 and 34 years. Persons over 60 years make up 8.6% of the population, with 75% of this age group being female. Saint Lucia's island wide population density is approximately 796 persons per square mile, with large segments of the island's population are located along the coastal belt, where low land agriculture, coastal resources, reefs, fisheries and tourism are the main sources of livelihood.

⁵⁰ GOSL. 2009. Saint Lucia: Current Climate, Future Projections. Prepared by the Climate Studies Group Mona, Department of Physics, University of the West Indies, Mona Campus, Jamaica, for Second National Communication Project of the Sustainable Development and Environment Division, Ministry of Physical Development and the Environment.

⁵¹ The high vulnerability of coastal communities to GCC and sea level rise seen in inundation of coastal areas; loss of land, habitat, and ecosystems, as well as ecosystem services and consequently socio-economic losses: including reduction of access to communities; threats to sanitation and health; abandonment of community infrastructure; reduced investment on coastal areas; loss of life and livelihoods; and, loss of traditional values and resources.

⁵² GOSL. 2005/2006. Saint Lucia Poverty Assessment Report, Prepared by Kairi Consultants.

Saint Lucia Country Profile for Disaster Risk Reduction (SLU CP-DRR)

	Urban Poor	16.3%	-
	Vulnerability	40.3%	-
School Enrolment (2010)	Central Government Fiscal Operations (MEC\$) FY10/11		
Primary School Enrolment	18,594	Total Revenue and Grants	858.3
Secondary School Enrolment	15,655	Current Revenue	789.5
Tertiary	2,929	Total Expenditure	1,032.7

Source: Adapted from World Bank, 2010 and PPCR Report, 2011⁵³

At the global level, there are a number of externalities that have impacted and continue to impact the island's economy, such as changing trade regimes, rising fuel prices and the international financial crisis. Global trading arrangements have eroded traditional markets for trade in primary products, (in particular bananas), and cheaper imports continue to threaten local industries and increase the food import bill and balance of trade deficit.

Over the last two decades, the country's economy has undergone significant adjustment from being agrarian-based to being service-based, with the services sector, and in particular tourism, leading economic growth. Manufacturing and industry have remained as important productive sectors. The construction sector too has contributed immensely to GDP and employment. For the foreseeable future, Saint Lucia's economic growth and development will continue to be centred around tourism, agriculture, infrastructural development and commercial sectors, with tourism being at the core of the development thrust.

In recent years, there has been a rapid increase in the exposure of economic assets and earning potential to physical hazards. Consequently, while economic assets and jobs are being created, the risk of losing these economic assets and livelihoods from a disaster is increasing. Despite the magnitude of potential costs and loss of income, reducing disaster risks is still often perceived as a lesser priority than fiscal stability, unemployment or inflation. Notably, the impact of disasters, when all costs are calculated, can represent major losses for government for example in livelihoods, infrastructure, health, housing and education.

Interestingly, the emerging sectors of banking and insurance, though tied to the international financial systems, and as a result tend to respond to anomalies at the global level, still present opportunities to manage disaster risks through mechanisms for risk transfer, thus assisting in making those key economic sectors more resilient to disaster related impacts.

5.2.3 Human Development (Poverty and unemployment, Education)

Country data in **Table 5.1** also show good social indicators, including low levels of maternal and infant mortality, low fertility, increasing life expectancy, and access to universal primary and secondary education,. However, these exist alongside high and increasing levels of poverty –

⁵³ Adapted from Sources: World Bank, 2010. Saint Lucia at a Glance; GOSL, 2010. Economic and Social Review; GOSL, 2011. Strategic Plan for Climate Resilience for Saint Lucia.

25.1% in 1995 and 28.8% in 2005/06⁵⁴, one of the considerable social gaps and deficiencies, primarily in rural areas, and linked to high unemployment and underemployment rates⁵⁵.

Poverty in Saint Lucia has been primarily a rural phenomenon. Poverty data from the Census Report (2010)⁵⁶ show prevalence rates for poverty in excess of 35% in the rural districts of the south and south-west of the island Anse-la-Raye/Canaries, Choiseul, Vieux Fort, with some pockets in the north-east of the island (Figure 5.6). Further, 40.3% of the population was deemed to be vulnerable⁵⁷. As in most countries around the world, children bear the brunt of poverty. Over 50% of the poor are under the age of twenty (20) and the incidence of poverty is higher among children than among adults. The incidence of poverty is slightly higher among men than among women, 29% and 25% respectively. The incidence of poverty among female headed households (21.2%) is about the same as among male headed households (22%).⁵⁸

Unemployment remains high, particularly among the youth. The economically active population is estimated at one third of the population, with 22% employed in agriculture, 25% employed in manufacturing and 53% in tourism and other services.⁵⁹ Declines in the key economic sectors, such as agriculture, have also exacerbated the effects of unemployment and poverty, the combined impact of which has contributed to a slowdown in economic activity in Saint Lucia over the last three years.

Education is free, with the country having attained universal secondary education in 2006. In 2010, the net secondary enrolment rate was 90.8% for males and 95.2% for females. Secondary enrolment, especially among boys, is much lower⁶⁰. Adult literacy stands at 95%⁶¹.

A positive correlation has been demonstrated with increasing incidence of poverty and increased vulnerability to impacts of disasters and climate change impacts (e.g. rainfall changes, sea level

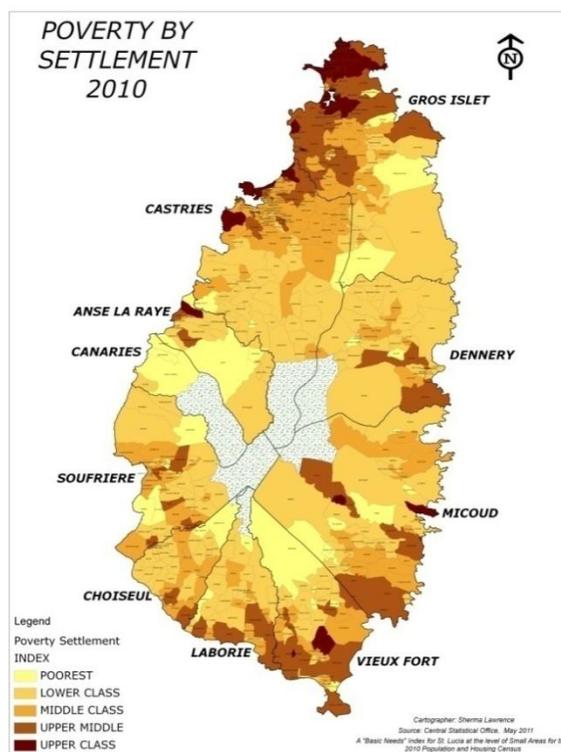


Figure 5.6 Geographic Distribution of Poverty in Saint Lucia

Source: Population Census Report 2010

⁵⁴ GOSL. 2006. Saint Lucia Poverty Assessment Report, Prepared by Kairi Consultants.

⁵⁵ The Poverty Assessment (2005/06) identified the ripple effect of decline in banana earnings into other areas of the economy, spreading poverty beyond the agricultural sector and contributing to increased poverty and vulnerability in rural communities.

⁵⁶ GOSL. 2010. Population and Housing Census Preliminary Report, updated April 2011. Central Statistics Office.

⁵⁷ Vulnerability in this case measures the proportion of the population that would be susceptible to falling into poverty as a result of an unanticipated event such a natural disaster or adverse economic shock; computed using an estimate of 25% above the poverty line (EC\$ 6,357.50 per annum) as the criterion of vulnerability

⁵⁸ Saint Lucia Population & Housing Census 2010

⁵⁹ *ibid*

⁶⁰ World Bank Report, 2012. Trading Economics.

⁶¹ *ibid*

rise and storm surge)⁶². The HFA governance structure also recognises that issues such as increased population densities, environmental degradation, and global warming, adding to poverty make the impacts of natural hazards worse. Recent remarks from UN Secretary General Ban ki-Moon further advance that “*disasters have the tendency to exacerbate poverty and undermine development planning, particularly poverty reduction strategies*”⁶³. Thus, “*addressing disaster risk reduction is inseparable from the broader sustainable development agenda.*”⁶⁴ For example, the interrelationship between poverty and disaster establishes the basis for the identification of potential threats of disaster related impacts to the welfare of the vulnerable segments of the population (e.g. the poor) and implicitly provides a means for addressing issues relevant to disaster management and disaster risk reduction, using the poverty reduction platforms.

5.2.4 Gender, youth and children

The variety of risks to which the various groups within the rubric of gender, youth and the elderly are exposed, further underscores their high level of vulnerability to the impacts of natural and man-made disasters. These risks which range from: unemployment, especially among the youth; household vulnerability associated with adult illiteracy; poor housing and sanitation facilities; and limited community organisational capacity and household assets to buffer against unforeseen events. Interestingly, such risks tend to be associated with prevailing high levels of poverty and illiteracy. The level of exposure to such risks is more severe among the youth and the elderly population. For example, youth unemployment not only leads to loss in productivity but also to a higher prevalence of youth at risk⁶⁵.

Notwithstanding the growing trends in the empowerment of women and a seemingly marginalization of males within the country, it has been recognized that men and women are affected differently by socio-economic and cultural factors such as poverty and literacy, and that these may influence their respective roles in responding to the DRR phenomenon. In particular, women, given their multiple roles in society, may bring particular knowledge and experience to bear in adaptation to vulnerability in this regard.⁶⁶

However, within the dynamics of gender, similar levels of vulnerability for males and females are being observed, though higher levels of indigence was reported for poor men in at least one community, as residual employment tended to favour females.⁶⁷ Inequities in the distribution and access to health services amongst the various population age groups are also noteworthy.

It has been shown that initiatives aimed at social protection are vital to help build partnerships with organisations involved with gender issues, vulnerable populations and disaster risk reduction. They also help create platforms for development of processes to create disaster resilience that is sensitive to gender and the at-risk/vulnerable populations in the society – children, youth, elderly.

⁶² See Footnote 9

⁶³ From UN Secretary General, Nassir Abdulaziz Al-Nasser, Ban-ki-Moon’s address to meeting leading up to Rio+20

⁶⁴ Ibid.

⁶⁵ The Social Protection and Poverty Reduction in the Caribbean, Saint Lucia Country Review. 2004.

⁶⁶ Worthy of note, is that 2012 International Day for Disaster Reduction (GA resolution 64/200 of 21 December 2009), places the spotlight on women and girls who play a key role in community DRR, by making their communities more resilient to disaster and climate risks and helping to protect development investments.

⁶⁷ The Social Protection and Poverty Reduction in the Caribbean, Saint Lucia Country Review. 2004.

5.3 Governance Structure

5.3.1 Political structure and organisation

Saint Lucia is one of the four Windward Islands and a member of the OECS and CARICOM. The island gained independence from Great Britain on February 22nd, 1979, but continues to maintain a Westminster style government with a constitution which guarantees human rights and civil liberties and a well established parliamentary democracy. The country has a multi-party structure, dominated by two political parties, with elections constitutionally due every five (5) years. Its bicameral parliament comprises the Senate or Upper House comprising eleven (11) members⁶⁸ and the House of Assembly comprising seventeen (17) district representatives elected by popular vote from single-member constituencies.

The Head of State of Saint Lucia is the Governor General, who represents the British Monarch. The administrative arm of Government comprises the Office of the Prime Minister, the Office of the Attorney General and fourteen line Ministries⁶⁹. The current Prime Minister, the Honourable Dr. Kenny D. Anthony, leader of the Saint Lucia Labour Party, was sworn into office following the country's general elections in November 2011. Whereas the Ministerial Portfolios and configurations of the Ministries undergo changes based on decisions of the Prime Minister, certain key portfolios of relevance to Disaster Risk Reduction include NEMO within the Office of the Prime Minister, finance, sustainable development, physical development, legal affairs, infrastructure, agriculture, tourism, health, gender relations, education, commerce and business development. In fact, given the all-encompassing nature of DRR, all the ministries will in some measure play a role in ensuring the effective integration of a DRR approach in national development.

5.3.2. Local government and levels of decentralisation

Local government in Saint Lucia is founded upon the Constitution of 1979, which makes reference to the concept of local government but does not specify how local government should be organized. However, a green paper issued in 2000⁷⁰ outlined the importance of citizen participation and devolvement of functions to local authorities, though this was not followed by a subsequent White Paper and/or local government legislation.

For administrative purposes Saint Lucia is divided into 10 districts positioned below the central government, comprising the council of the capital city of Castries, three town and six village councils. These district councils form the main local government institutions in the community/township. City, town and village councils have been appointed by central Government ever since local elections were postponed in 1979. The responsibility for the appointment of council members falls under the Ministry with responsibility for Local Government.

⁶⁸ Six members appointed on the advice of the Prime Minister, three on the advice of the Leader of the opposition, and two following consultation with religious, economic and social groups

⁶⁹ Listing of Ministerial Portfolios can be found at www.stlucia.gov.lc/

⁷⁰ <http://www.arial-programme.eu/en/pacific/59-saint-lucia.html>

A process for the reform of Local Government recommenced in 2006, with a view to restoring elected local government. To date, no formal Act has been passed in this regard. However, following national elections in 2011, developments in the sphere of local government have seen the appointment of members to the various district (city/town/village) councils in 2012.

The restoration of elected local government remains an important item for the local agenda in the pursuit of improved local governance, particularly with regard to resourcing local government with the investment capacity and competence to provide adequate support, including institutions, infrastructure and services and regulations for reducing risks associated with disasters.

5.3.3. Coordination mechanisms between State and non-governmental actors

Several mechanisms have been established at the national level to facilitate an interface between state and non-state actors to manage aspects of the national development agenda. The Disaster Management Act (2006) established the National Emergency Management Advisory Committee (NEMAC), comprising representatives primarily from public/state agencies, with provision for inclusion of other persons and organisations at the advice of the Minister with responsibility for disaster management. It also provides for the establishment of other committees and sub-committees charged with particular responsibilities, at the directive of the Director of NEMO. Non-state actors such as community-based organisations (CBOs) and the small number of Non-Governmental Organisations (NGOs) are also active participants within the national disaster preparedness and response mechanism, as well as within the environmental management framework.

Other coordination mechanisms have been created at the national level with more broad-based representation across public and non-state actors, especially in the sphere of environmental management, such as the Coastal Zone Management Advisory Committee (CZMAC), Climate Change Coordinating Committee (CCCC), and National Biodiversity Coordinating Committee (NBCC). The Draft Environmental Management Bill (2008) also proposes a National Environmental Commission (NEC) as an overarching agency for environmental management.

The potential of the non-state actors, for mainstreaming DRR practices for a resilient economy is however, largely untapped given that the mechanisms for linkages between national level and community level actions are under-developed.

5.4 Development Context

5.4.1 National development priorities

Saint Lucia's development agenda is guided by a number of national policy imperatives and instruments, including the country's Medium Term Development Strategy (MTDS), annual Budget Speeches, Annual Estimates of Expenditure (Budget) and Corporate Plans of individual Ministries, and influenced by the international and regional context for DRR.

The country's MTDS, for the period 2006-2011, focused on exploiting opportunities for sustained growth and development and the restructuring and repositioning of the economy for successful integration within an increasingly liberalized international and regional trading environment, in particular the CARICOM Single Market and Economy (CSME) and the OECS Economic Union. The development priorities described in the MTDS are aimed at halting any further decline in the agricultural sector, encouraging agriculture and wider economic diversification; providing an enabling environment to foster increasing returns to the local economy through effective linkages; encouraging education and human resource development; supporting the emerging informatics industry and financial services sector; and also encouraging the adoption of appropriate technology as a means of achieving greater efficiency.⁷¹

Initially, this broad-based Strategy/Plan did not address in a substantive manner the issue of disaster vulnerability and DRR. However, the need to incorporate these considerations in the development planning process became quite apparent in the aftermath of Hurricane Tomas in 2010. To this end, a National Reconstruction and Development Unit (NRDU) was established with a view to strengthening the institutional framework necessary to accelerate the implementation of the developmental plans outlined in the National Vision Plan and related projects.

The development priorities of Saint Lucia provide opportunities for widening the scope of socio-economic and environmental sustainability to incorporate considerations for disaster vulnerability and DRR. While the country's vulnerability to disasters is projected to be exacerbated by climate change, the future vulnerability of Saint Lucia will also depend on its development path. In this context mainstreaming of DRR and adaptation to climate change into development policies, plans and programs now becomes a pre-condition for sustainable development.

Saint Lucia, like most of the other member countries of the Organisation for Economic Co-operation and Development (OECD) continue to report increasing trends in economic losses due to disasters from natural hazards such as hurricanes and climate related extreme events (these affect population, the environment and ultimately the economy). The island is also quite susceptible to the vagaries of international trade, and exogenous economic and financial shocks. Hence economic loss risks can be further increased as a result of economic development pathways. The implementation of risk management strategies aimed at adaptation to climate change and reducing the impacts of disasters is thus critical for protecting health and safety, in terms of human life, livelihoods and the country's natural resources, as well as economic sustainability.

5.4.2 Financial analysis of public investment in DRR

Information on public investment in DRR has not been disaggregated. However, information from key capital projects undertaken with regard to mitigation activities was used as a means to measure the level of public investment in DRR.

Over the last five years, capital investments through World Bank (WB) have been used to fund projects such as the Emergency Recovery & Disaster Management Project (ERDMP) to the sum of USD 0.18 million (EC\$0.49 million), and the Second Disaster Management Project (SDMP), in the

⁷¹ GOSL Socio-Economic Review, 2011

sum of USD 0.94 million (EC\$2.53 million).⁷² These have been primarily physical prevention and mitigation works, and strengthening emergency preparedness and early warning systems (**See Section 7.5.2**). The current Disaster Vulnerability Reduction Project (DVRP) aims to measurably reduce vulnerability to natural hazards and the adverse impacts of climate change in Saint Lucia. The major outcomes expected from the project include: (i) capacity built to identify and monitor climate risk at the national level; and (ii) reduced vulnerability of key sectors, assets and people to natural disasters, which will have national benefits, with IDA funding of USD 6-10 million (EC \$ 16 – 26.8 million).⁷³

While there is some measure of institutional commitment for investment in DRR, the allocations made by national agencies other than the NEMO, are not considered dedicated DRR resources, and only address some DRR related concerns. Further, these are neither comprehensive nor substantial in nature.

5.4.3 Knowledge and information

There have been several initiatives undertaken on many fronts at the national level, by the NEMO to increase awareness and understanding about disaster risk reduction and resilience building. Public education and outreach (PEO) has spanned a range of target audiences including public and private sector agencies, CBO's, community development organisations (CDOs), and children and schools, among others. A range of tools and communication strategies have also been used in order to engender behavioural change.

The NEMO has also established procedures for the exchange of relevant information during hazard events and disasters, and to undertake post-event reviews, such as a national Damage Assessment and Needs Analysis (DANA) Committee which feeds into the eighteen district level DANA committees, each of which are responsible for making the required assessments at the district level, pre and post disaster events.

One of the most significant activities to date to promote information sharing and networking has been the introduction of the GeoNode⁷⁴, a data sharing platform established at the national level, under the PPCR project.

One of the major issues though, with regard to the effectiveness of PEO relates to access to information across the various levels of the society. Information generation tends to be project driven and as a result data and information is retained within the domain of the sector or agency with responsibility for the specific project. Further, there are no formal mechanisms to promote information sharing and networking, particularly with regard to key DRR related parameters required for decision support systems pertaining to research and systematic observation (RSO), monitoring and evaluation and dissemination of data and information to undertake proper risk analysis and to engender the behavioural change necessary for the deployment of appropriate DRR measures.

⁷² Extracted from documents prepared by the Project Coordinating Unit, Ministry of Economic Affairs and National Development.

⁷³ *ibid*

⁷⁴ <http://sling.gosl.gov.lc/>

Harmonised and standardised information management systems incorporating appropriate Information and Communication Technologies (ICT) and Geographic Information Systems (GIS) tools need to be developed at the local level, and to be supported by other means for promoting information management at the OECS and CARICOM level. This would facilitate the generation of information such as multi-hazard maps based on more appropriate models; events mapping to validate the same; detailed digital elevation models (DEMs); up-to-date land use maps and proposed development plans to inform decision-making with regard to risk management and the validity and practicality of DRR interventions.

Further, public education and outreach activities need to be organized and conducted in a structured and programmatic way, with clear objectives, targets and goals that deliberately pursue behavioural change, and with greater use being made of experts in the fields of information and communication.

6. THE DRR LEGAL REGULATORY AND INSTITUTIONAL FRAMEWORK

6.1. Legal Framework

6.1.1. National and provincial constitution

The Saint Lucia Constitution (Order 1978)⁷⁵ and the Emergency Powers (Disaster) Act of 1995⁷⁶, vest the authority for declaring a State of Emergency in the Governor General. When a State of Emergency exists, the Governor General is authorised to formulate orders under the provisions of the Ordinance to secure essentials of life to a particular zone, and for the preservation of the health, welfare and safety of the public.

6.1.2. Laws and legal binding provisions

The CDERA model legislation was assented to in Saint Lucia on August 7, 2000. The Disaster Management Act⁷⁷ (DMA) enacted in 2006, subsequently formed the foundation of the legislative framework for disaster management in the country. It provides the laws and regulations that establish the legal authority for the development and implementation of the disaster management programme and organization, and defines the

Section 11(3) -- The National Disaster Response Plan shall include – (a) procedures for, mitigation of, response to and recovery from emergencies and disasters by public officers, Ministries and Departments of Government, statutory bodies, local government units, and persons or organisation volunteer or are required by law to perform functions related to the mitigation of, preparedness for response to and recovery and recovery from emergencies and disaster in Saint Lucia.

⁷⁵ http://www.preventionweb.net/files/8454_constitution.pdf [PDF 71.06 KB]

⁷⁶ http://www.preventionweb.net/files/8454_5of95.pdf [PDF 142.25 KB]

⁷⁷ http://www.preventionweb.net/files/8454_Disaster.Management.Act.pdf [PDF 243.57 KB]

emergency powers, authorities, and the responsibilities of the various parties.

Disaster management and/or DRR related provisions are also defined in some of the legislative instruments in sectors such as health and education, and cross cutting sectors such as water and national security. In most cases these legislation are driven by international obligations. The remit of the Disaster Management Act, also covers provisions for the application of treaties and international agreements. However, this is specific to times of disaster or emergency, during which the Governor General can proclaim it to be part of the law.

The DMA is currently being reviewed to incorporate issues related to Comprehensive Disaster Management (CDM), Climate Change (CC), Mass Crowd Events (MCE), and the articles of incorporation of the CDEMA. Provisions for these types of issues are already covered under the DMA, with focus being the development of appropriate regulations to give form to how these issues are addressed within the existing legislation.

Other key legislation of importance to the DRR framework included the Physical Planning and Development Act, Land Conservation and Improvement Act and Forest, Soils and Water Conservation Act. Work is also underway on the finalization of an Environmental Management Act (EMA) to incorporate principles of climate change adaptation (CCA). Given the inextricable link between DRR and land development and CCA approaches, the EMA presents a major avenue for deriving synergies between DRR and physical planning and development, and environmental legislative framework.

The emerging context for DRR also defines other key considerations in pursuing enhancements to the DMA, which include the country's recent commitments under the HFA, as well as new and emerging DRR related issues, such as tsunamis, maritime emergency, chemical, biological, radiological, nuclear and explosive (CBRNE) events, coastal management, biodiversity and invasive species, sustainable land management (SLM) and forest management, among others, to ensure adherence to international obligations. Other national and sectoral legislation that have implications for DRR will also need to be revised to adequately incorporate the aforementioned issues, to ensure a complementary and harmonized legislative framework.

6.2 Normative Framework

6.2.1. Normative instruments for DRR

The major normative instruments that guide the definition of responsibilities of national and sub-national authorities engaged in DRR are the NEMP⁷⁸ and the CDM Strategy. The NEMP was first adopted by the Cabinet of Ministers in 1996, with subsequent revisions in 2007 and 2009 and further inclusions in subsequent years following annual reviews. It provides guidelines for national coordination of all resources, and the operations and functions of all agencies involved in emergency management as they relate to mitigation, preparedness, response and recovery, and is the official reference in any emergency situation associated with natural or human-induced disasters including technological incidents, on the island. It also describes the overall responsibilities of the NEMO and the role of all concerned sectors, and sets out the administrative

⁷⁸ The DMA makes provision for the development of regulations to give effect to the purposes of the Act, and for the purpose of implementing the National Emergency and Disaster Response Plan.

mechanisms for carrying out the country's disaster management plan. The areas of prevention and mitigation are not fully developed in the NEMP, though they are referred to in the Annexes to the plan.

The most recent revision of the NEMP (2006)⁷⁹ comprises the six classes of documents, namely:

1. General guidelines
2. Nine (9) Policy Documents
3. Seven (7) Guideline Documents
4. Four (4) Standard Operations Procedures [SOPs]
5. Twenty-six (26) National Emergency Plans
6. Seven (7) Sector Response Plans

These various documents of the NEMP provide the basis for the regulation of activities and the rationalization of local, national, regional and international resources as well as to inform other development planning regulations in this regard.

Also of importance are some key related regulations such as the draft Physical Planning Regulations under the Physical Planning and Development Act; national building codes/standards, and draft EIA Regulations, which all have significant implications for DRR as it relates to development planning. CCA initiatives, such as the development of Engineering Guidelines for Incorporating Climate Change into the Determination of Wind Forces to inform national building codes and standards, are also quite germane to the DRR framework.

Important to note also, are emerging trends in international and regional standards and regulations for operations within certain sectors such as agriculture, tourism, education and health, which have a stipulated requirements for disaster risk management such as Sector Disaster Management Plans, Emergency Plans, agricultural health and food safety risks management systems, tourism safety standards, etc. These standards and regulations can also be viewed as risk drivers, and are therefore, critical for the planning, prevention and mitigation aspects of DRR.

6.2.2. Public policy

Saint Lucia has an extensive policy framework to guide national action on a wide range of DRR, and related issues. The process for policy formulation in the country has been an iterative one with policies formulated specific to areas and sectors. However, there has been attempts to address policy formulation in a more holistic way in the area of environmental management, which began with a Legal and Institutional Review of Environmental Management commissioned in 2001 to guide future expansion and strengthening of the legal, policy and institutional arrangements for the for environmental management.

National policies specific to the issue of DRR are outlined in the NEMP and include policies for Damage Assessment and Needs Analysis (DANA), Disaster Management Policy Framework, Donations and Importation of Relief Supplies, Emergency Shelter Management, Emergency Housing, Governmental Officers Security of Travel, Mass Fatality and Hazard Mitigation. With the exception of the Hazard Mitigation Policy, all the mentioned policies have a strong focus on disaster preparedness and response, with limited reference to the planning, mitigation and

⁷⁹ The National Emergency Management Plan (NEMP) and its sections and subsections can be accessed on the Government of Saint Lucia Official Website: <http://www.stlucia.gov.lc/nemp>

prevention components of DRR. The Hazard Mitigation Policy is anchored in the concept sustainable development and demonstrates a commitment to a broader and more long-term development process. Emphasis is placed on developing communities, and building institutions and capabilities to reduce vulnerability.

There are also a number of other public and sectoral policies which implicitly address the concept of DRR outlined in the NEMP. Of particular note are the National Environmental Policy and Strategy (NEP/NEMs), National Water Policy, National Land Policy (NLP), and the National Climate Change Policy and Adaptation Plan (NCCPAP) which addresses the issue of hazards associated with GCC.

The country now requires the harmonization of and linkages among the current policy mix so that DRR principles are integrated and find coherence across the spectrum of governance, planning, education, livelihoods (e.g. agriculture and tourism), health and environment.

The HFA progress report (2007-2009) for Saint Lucia also notes the inconsistency in policy commitment and supporting resources for policy implementation. The report quotes that “notwithstanding the expressed commitment to DRR, ‘buy-in’ by the policy makers still appears to be a challenge, as the required level of resources (human, financial and equipment) needed for effective actualization of the DRR policies is grossly inadequate.” This may be due to what is viewed as more acute needs taking precedence over DRR concerns in the order of national priorities.

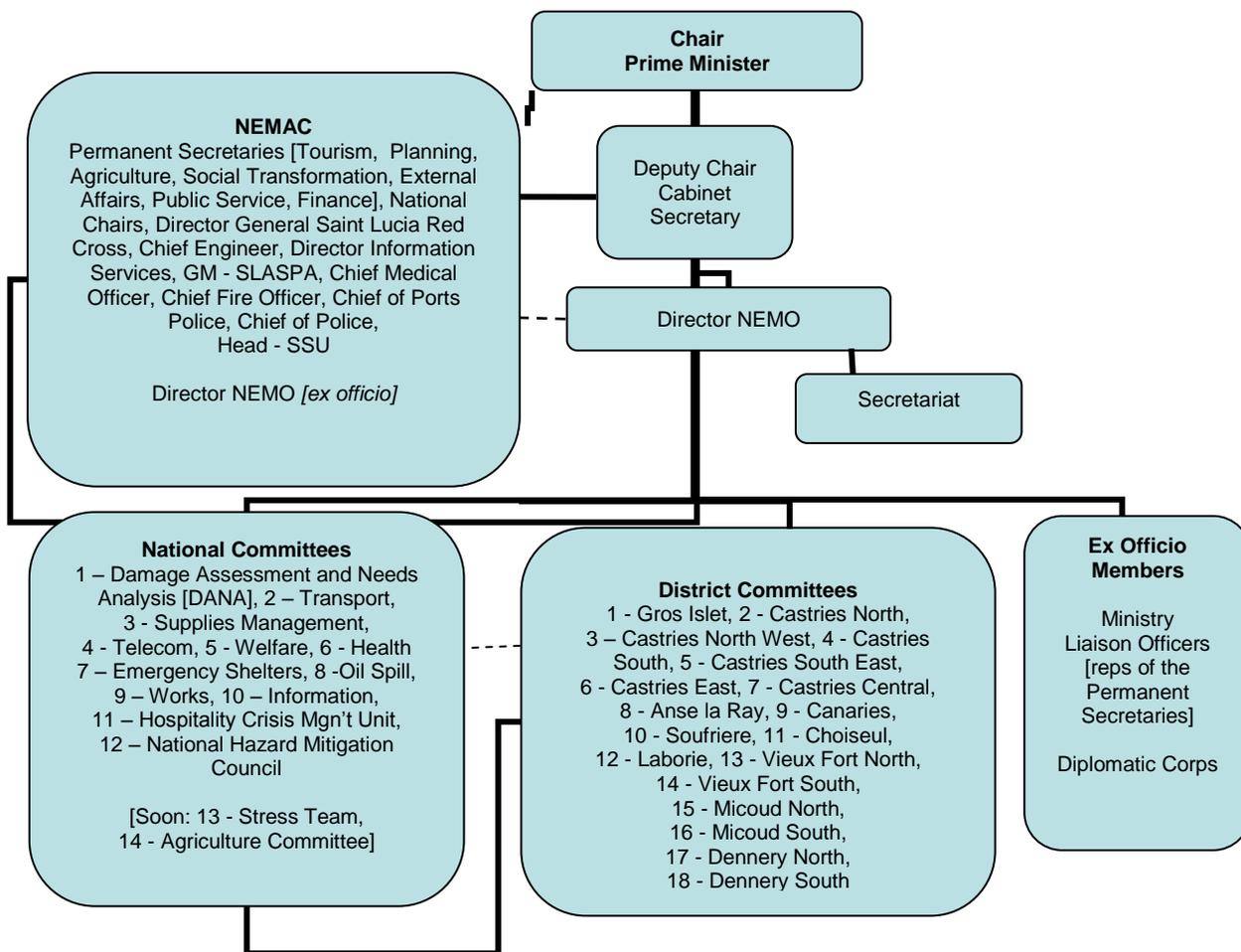
6.3. Institutional Framework

The institutional framework for national disaster management in Saint Lucia is defined under the DMA. The DMA places the responsibility for disaster management under the Saint Lucia National Disaster Management Office (NDMO), which is a separate Government Department within the Office of the Prime Minister, called the National Emergency Management Organisation (NEMO). The DMA vests the authority of Chairperson of the NDMO in the Prime Minister, who has powers to declare a national emergency under the Act, and to activate the NEMP. The NEMO is headed by a national disaster coordinator (NDC), Director-NEMO, which is a paid, full time position reporting to the Prime Minister.

The NEMO is supported by a network of volunteers comprising ten (10) National Disaster Committees and eighteen (18) District Disaster Management Committees, operating under the jurisdiction of the NEMO, and involved in the planning and response against disasters. A similar structure is established at the district level with every district having a distinct Emergency Operations Centre (EOC). The NEMO organisational structure also allows for the involvement of the national Community Development Officers to act as Ex-Officio members of the District Disaster Management Committees. The local Government Councils are also integral to the functioning of the District Committees.

6.3.1. National institutional structure of DRR

The national structure for disaster management is illustrated in **Figure 6.1**.



Source: National Emergency Management Plan (NEMP)

Figure 6.1 National Structure for Disaster Management in Saint Lucia

The roles and functions of the various national actors in the DRM framework are also outlined in **Figure 6.2**.

Saint Lucia Country Profile for Disaster Risk Reduction (SLU CP-DRR)

Office of the Prime Minister (Chairman of National Disaster Management Organisation)	<ul style="list-style-type: none"> •Activation of National Emergency Plan and Operations Centre •Deceleration of an emergency by sector or geographic location •Deceleration of mandatory evacuation
National Emergency Management Organisation (NEMO)	<ul style="list-style-type: none"> •Coordination of all personnel, medical and emergency services •Coordination of implementation of National Emergency Plan
10 National Disaster Management Committees (Volunteers)	<ul style="list-style-type: none"> •Involved in the planning and response against disasters •Carry out awareness campaigns and disseminate information
18 District Emergency Committees (Volunteers)	<ul style="list-style-type: none"> • Involved in the planning and response against disasters • Deploy resources in keeping with the National Plan • Mobilise community for joint action

Source: Extracted from National Emergency Management Plan (NEMP)
Figure 6.2 National Actors and Roles in Disaster Management in Saint Lucia

The NEMO Secretariat serves as the coordinating unit under the jurisdiction of the Office of the Prime Minister and is responsible for handling all the financial and operational aspects and also provides overall management and coordination for all disaster management related activities. Staffing within the NEMO Secretariat currently comprises seven full time staff, three technical and four non-technical staff. The organisational structure and operations of the NEMO are described in the NEMP.

The physical facility of the NEMO provides dedicated office space for executive officers and clerical and support staff with space allocated for training. During an emergency, the facility transforms into the National Emergency Operations Centre (NEOC), with the functions of all essential services and key ministries and national agencies being coordinated from that location. Ministries or sectors are also represented in the NEOC but at the same time co-ordinate several respective organisations, areas within the ministry and sector.

Of particular relevance to the DRR institutional framework is the National Hazard Mitigation Council (NHMC), established to guide technical decisions with regard to hazard mitigation in terms of assessing vulnerability and reducing risk. The Council is chaired by the Minister of Works, and comprises membership of key sector Ministries and representatives of the Chamber of Commerce, Insurance Council, SLRC and NEMO Chairperson of the Emergency Works Committee. Ex Officio members of the NHMC include the Director of NEMO, Chair of the National Climate Change Committee, Chair of the Agriculture, Environment and Natural Resources Sub Committee of the National Council for Science and Technology for Development and Chairs of all other Technical Working Groups. The objectives and operations of the NHMC are fully articulated in the NHM Policy document.

The existing DRR structure comprising the NEMAC, NHMC, other sectoral committees, and community level/district level disaster organisations has served to create the kind of institutional framework required for coordination and collaboration among agencies on DRR issues. However, there are still some issues to be addressed regarding critical gaps and overlaps in institutional responsibilities, insufficient collaboration among public sector agencies, a high degree of fragmentation of authority, roles among the wide range of agencies with DRR mandates and insufficient resources for DRR. Hence, issues of capacity, custody, authority and accountability of agencies with DRR mandates, and in particular as they relate to the NEMO, will have to be rationalized. In addition, arrangements to foster co-management and participatory approaches in various types of partnerships⁸⁰ will need to be clearly defined.

6.3.2 Multisectoral platform for DRR

The existing governance structure for disaster management is particularly noteworthy, as it integrates all levels national, sectoral and community. Several government ministries/agencies are represented within the NEMO, including Finance and Planning, Health, Education, Welfare, Environment, Agriculture, Housing, Public Works, Tourism, Information, Defence and Security, Justice and Transportation; though these agencies do not form part of the NDMO.

Further, all disaster-related activities are advised by the NEMAC. The NEMAC is a technical working group comprising line ministries, non-governmental organisations, representatives from the private sector and is chaired by the Office of the Prime Minister, through the position of the Cabinet Secretary. The NEMAC has an open membership and calls upon different expertise as and when needed. It convenes at regular intervals and is on demand to receive updates on the Emergency Planning process.

Although the NEMO leads the Disaster Management charge with the support of several agencies and the participation of all sectors through the NEMAC, a DRR approach on a national multi-sectoral platform is not apparent, and there is still strong emphasis on disaster preparedness and recovery. The potential for the advancement of DRR principles across a national multi-sectoral platform is however, promising considering opportunities for broadening the functions of mechanisms such as the NEMAC and the NEC, the overarching body for environmental management.

6.3.3 Local networking groups drivers and risk management

The NEMO structure promotes active networking through the National Emergency Operations Centre (NEOC) and 18 District EOCs, which exist to support the response to disasters at the national and district level. The structure also facilitates deeper networking as it allows for the involvement of the national Community Development Officers in Ex-Officio roles on the District Disaster Management Committees. The Local Government Councils are also integral to the functioning of the District Disaster Management Committees.

Urban Search and Rescue (SAR) teams also exist within the Saint Lucia Fire Service and Marine SAR Teams within the Police Marine Unit. Most Schools, Churches and some Community Public Buildings are used as Emergency Shelters. The SLRC is also a key networking partner at the local level, with regard to risk identification and management.

⁸⁰ Private-public, private-private and private-community partnerships.

There is still need however, to provide these groups operating at the local level with a strategic framework and improved management structures to better align DRR priorities and approaches to DRM at the community level and by extension at the national level.

6.3.4. Budgetary resources for the development of disaster risk reduction activities

The NDMO, the NEMO Secretariat, is financed under a separate budget head within the approved national estimates of expenditure. Activities within the programmed framework of the NEMO are financed from the NEMO Secretariat's annual work programming budget. Other support agencies, such as the Ministries with responsibility for Physical Development and for Infrastructure, also have budgetary allocations which would indirectly address many DRR concerns; however, these amounts are not disaggregated. Interestingly a National Disaster Fund has been established in Saint Lucia; however, the mechanisms to have this fund fully functional are still to be implemented.

The approved 2012-2013 budget for the NEMO was EC\$671,260.00. More than 99% of this budget pertains to expenditure to sustain the current operations of the organisation, including personal emoluments and wages, travel and subsistence, utilities, operating and maintenance, communication and insurance. There is no allocation for real investments in DRR activities.

Bilateral, regional and international development partner programs provide various sources of funding for particular activities. For example, several DRR activities to date have been funded through agencies such as the World Bank, which has funded disaster mitigation activities through the projects managed by the national government. Community level activities have also been funded by donors such as Japan International Cooperation Agency (JICA), Food and Agriculture Organisation of the United Nations (FAO), and Global Environment Facility (GEF) small grants in the case of community projects to correct problems identified through the VCA process conducted by the SLRC. The country as signatory to the CDEMA also benefits from financial contributions from this Agency. Funds are also allocated at the regional level through the Caribbean Electric Utilities Services Corporation (CARILEC) [a Caribbean Association of Electricity Companies] to cater for post disaster reconstruction of the electricity network.

With regard to risk transfer, general insurance coverage for hurricane and seismic impacts has been secured under the Caribbean Catastrophic Risk Insurance Scheme (CCRIF)⁸¹.

6.4 National Development Plan in Relation to DRR

As indicated under Section 5.4.1, National Development Priorities, the national development plan as defined in the country's Medium Term Development Strategy (MTDS), though very broad-based in its response to the myriad of development issues, does not address in a substantive manner the issue of disaster vulnerability and DRR. The criticality of the need to incorporate these considerations in the development planning process has been brought to the

⁸¹ Caribbean Catastrophic Risk Insurance Facility <http://www.ccrif.org/>

fore by the spate of natural hazard events over the last several years, and in particular Hurricane Tomas in 2010, which have resulted in loss of lives, loss of national assets, and tremendous damage to property and livelihoods, and funding that could support ongoing development initiatives being diverted to relief and recovery efforts.

6.4.1. DRR and DRM national plan

A national disaster management framework for the country was established as far back as the early 1980s guided by a National Disaster Plan, which later evolved into the NEMP.

The overall national Development Plan on the other hand, is defined in the country's Medium Term Development Strategy (MTDS). As previously indicated the current MTDS, does not address in a substantive manner the issue of disaster vulnerability and DRR. However, the National Emergency Management Plan (NEMP) purposes to outline preparedness, prevention, mitigation and response activities within the national framework, and the organisational and functional mechanisms and procedures required for carrying out the national disaster management programme.

While the NEMP has not developed fully the areas of disaster prevention and mitigation, it outlines clearly the commitment of the Government to disaster preparedness, prevention, mitigation and effective response, to encompass the full spectrum of DRR. The Plan also highlights the responsibility of the NEMO for the coordination of risk reduction programmes and evaluation of effectiveness of risk reduction activities.

The country's CDM Strategy and Programming Framework for the period, 2012 – 2017 has gone further, and addresses the key elements of the DRR conceptual framework described in the UNISDR definition, namely, (i) risk awareness and assessment, (ii) knowledge development, (iii) public commitment and institutional frameworks and (iv) early warning systems.

The overall focus of the national CDM strategy is the building of resilience at national and community level to respond to and cope with hazard impacts. In this regard, concrete resources would be sought to expand and replicate several on-going best practices throughout the region. The thematic areas selected for priority attention reflect a strong DRR approach including: hazard mapping and vulnerability assessment; flood management; community disaster planning; early warning systems; climate change adaptation; and knowledge enhancement.

Further, the national Natural Hazard Mitigation Plan (2006) recognizes the inextricable linkages between DRR and CCA, particularly with regard to similarities in hazard mitigation measures and CCA measures; for example measures required to address storm surge brought and possible impacts of sea level rise, respectively. While the implementation mechanism for the NHMP is yet to be fully elaborated, it is envisaged that the existing framework for disaster management, with its demonstrated successes, can be built on and extended to fully integrate environmental management and CCA, as mechanisms for integrating DRR principles into the country's sustainable development framework.

6.5 Reflections on the Legal, Regulatory, Institutional and Management Capacity

The policy, legal, regulatory and institutional framework governing DRR is quite varied and mixed, reflecting a highly evolved governance framework, though with a strong orientation to disaster preparedness, response and recovery, and lesser emphasis on disaster planning, prevention and mitigation. Seemingly, the existing legal instruments have found limited national-level application and enforcement, especially in the face of inadequate monitoring for compliance. This is probably due to the absence of more specific and targeted regulations required for supporting, and giving form to the existing legislation, as well as the insufficiency of resources for monitoring and regulating compliance⁸². In addition, despite the reasonably well-developed institutional framework for DRR, the structure and capacity for managing risk is still underdeveloped, with regards to authority or capacity to influence decisions related to national development planning and investment in DRR.

A legal, regulatory, and institutional framework, infused with a culture of accountability, will be required for effective governance and service delivery with regard to DRR. A key accountability measure in this regard, is the extent to which a government is able to address the risk of poorly planned and managed urbanization, environmental degradation, and poverty. Access to information, particularly information on disaster risks, will also generate a social demand for DRR. Adequate national legislation will also be needed to promote the introduction of, and monitor compliance with, monitoring and accountability mechanisms. This will serve to improve policy coherence, enhance the efficiency and effectiveness of allocation of resources, minimize duplication and contradictory policies, deal with tradeoffs, and reduce the sensitivity of development activities to current and future climate related and other disasters.⁸³

The need for proper parliamentary oversight and national auditing systems cannot be underscored. The scale and range of internal and international accountability mechanisms has not been fully explored, nor the potential for such mechanisms to be applied to the field of DRR. Accountability measures can guide government and foster support for DRR. Such measures can also promote public awareness, facilitating empowerment and mobilization of civil society to act in support of DRR.

There is also growing recognition among stakeholders about the need for government to pursue effective DRR policy, planning and implementation that is transparent and fully participatory. This of course will require fully developed, coordinated and coherent action on DRR across different sectors, public and private sector, and between central and local governments. Such a holistic approach will ensure optimum use of human, technical and financial resources, to expand avenues for implementation of DRR initiatives. The NEC, in its function as a mechanism for national coordination and collaboration among public and private agencies for the management of environmental issues, presents a possible platform for broadening this pillar of sustainable development to include DRR issues, through the integration of the existing NEMAC coordinating mechanism and as well as those at the community level. Most important would be the

⁸² Provisions for Hazard Inspectors under Part IX, Miscellaneous Section of the DMA, have not been effected due to a lack of resources.

⁸³ Urwin, K and A. Jordan, "Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance", 18(1) *Global Environmental Change-Human and Policy Dimensions* (2008), 180.

establishment of information systems and management structures to facilitate effective organisation, coordination, collaboration, and the development of human and financial capacity at all levels (national, sectoral, and community) to effectively mainstream DRR and resilience building.

7. STATE OF DISASTER RISK IN SAINT LUCIA

7.1 Conditions of Risk in Country

There are various approaches and concepts on disaster risks; however, for the purposes of this exercise the definition for reference on disaster risks developed by the UNISDR will be used: “The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.”

The national documentation on DRR is replete with documents emanating from reviews and assessments that have identified to some extent, conditions of risk for Saint Lucia. This documentation includes the National Hazard Mitigation Policy, Risk Management/ Vulnerability Benchmarking Tool (B-Tool) Report for Saint Lucia⁸⁴, and CDEMA Disaster Management Audit Country Report for Saint Lucia (2010).

These assessments all corroborate that Saint Lucia, like many other Caribbean SIDS, due to its geographic location; relatively small size; open economy with a negative balance of trade; limited natural resource base; limited human capacity and resources; and limited technological capability, is highly susceptible to the vagaries of international trade, exogenous economic and financial shocks. Safety and security issues are now high on the global and regional agendas and so need to be elevated on the national agenda. Terrorism, bio-security, food security, environmental health, and security implications of “open borders” are but some of the concerns. In this regard, the enhanced CDM strategy emphasises the need for “growing attention” to technological or human induced hazards, and the need for a stronger multi-hazard approach and a broadening of concern beyond natural events, particularly hurricanes.

7.2 Historical Disaster Analysis

While there is no historical record regarding the establishment of an office to deal with disasters, anecdotal evidence suggests that a desk was initially set up to deal with disasters sometime in the early 1980s, and by 1990 there was an established Office of Disaster Preparedness, under the supervision of a National Disaster Coordinator. A formal historical compilation on disasters generated from the information from this office has been made in the Saint Lucia Disaster Catalogue, which was first produced in 1999⁸⁵. The catalogue continues to be updated as events occur.

⁸⁴ USAID/OECS, 2007. Risk Management/ Vulnerability Benchmarking Tool (B-Tool), National Assessment: Saint Lucia.

⁸⁵ A. L. Dawn French, 1999. Disaster Catalogue for Saint Lucia.

The DesInventar database was developed in 1994 by the Network for Social Studies in Disaster Prevention in Latin America <http://www.desinventar.org> to provide a mechanism for the formal historical recording and analysis of disaster events. To date, the database continues to be accessed by the national focal point but has not been utilized in practice in the country, largely due to an inadequate system for data collection, analysis and management.

The national catalogue categorises events based on time period and type of event, and includes data and information regarding date of the event, brief description of the event, number of persons killed, number left homeless, costs and comments. However, data for some of the parameters, in particular costs, is incomplete. A summary of type of disaster events and frequency of occurrence during the three time periods is presented in **Table 7.1**.

Table 7.1 Summary of Disaster Events and Frequency of Occurrence in Saint Lucia 1700 -2000s

Type of Event	1700-1800s		1900s		2000s	
	No. of Events	Loss of Lives	No. of Events	Loss of Lives	No. of Events	Loss of Lives
Earthquake	1	1	4	N/A	2	0
Fire	N/A	N/A	5	3	2	3
Landslide	N/A	N/A	5	100	N/A	N/A
Medical	2	1509	N/A	N/A	3	1
Oil Spill	NA	N/A	2	0	3	0
Hurricane/Storm/Flood	4	823	15	35	6	8
Other	1	8	9	70	5	2

N/A – Not available; other includes mass casualty events such as civil unrest, airplane crash, boat tragedy, building and infrastructure collapse

The listing of the history making events during the 1700–1800 range from hurricanes, earthquakes, health epidemic and civil unrest; and in the 1900s: range from hurricanes, storms, fires, earthquakes, landslides, mass casualty (air, sea and terrestrial), pestilence and civil unrest. Further, analysis of the data from the Catalogue reveals a decreasing trend in the occurrence of certain types of disasters such as fires, while there has been an increasing trend in the occurrence of disasters such as hurricanes/storms/floods. However, the data show a decreasing trend in loss of lives for these events. Changes in the type of medical emergencies are also noted, from deadly epidemics such as yellow fever and cholera to less impacting dengue and influenza.

Data from other sources corroborate that 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 million. 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. Damage associated with Tropical Storm Lili 2002 was estimated at EC\$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. Droughts have also affected the quantity and quality of available water supplies to local communities, and also productive sectors of the economy. About eight (8) major land slippages, have also resulted in significant loss of lives (the 1938 Ravine Poisson Landslide) and the destruction of homes, dislocation of approximately 145 families, loss of biodiversity particularly from landslides at La Sorcière, and costs totaling over US\$0.74 Million (EC

\$2million)⁸⁶. Recent assessments⁸⁷ also bear out the issue of the increasing cost of disaster events, related to loss of lives and property, human injury, destroyed tourism and general infrastructure, crops and livestock, and household, commercial and industrial assets, such as the colossal losses of over US\$500 Million (EC\$1,358 Million) from Hurricane Tomas in October 2010.⁸⁸

Since the last major eruption of the Soufriere volcano over 200 years ago, volcanic activity has been latent. However, seismic activity has been ongoing, with the island experiencing at least five swarms of shallow earthquakes over the last hundred years, occurring in 1906, 1986, 1990, 1999, and 2000 (Seismic Research Unit, 2002⁸⁹), though many of the tremors have been insignificant; some strong shocks have been recorded, with one of magnitude 7.5 as recent as November, 2007. The history of Saint Lucia is also replete with development marred by fires, most notable being the 1948 Castries Fire. The 1854 Cholera Epidemic also demonstrates the occurrence of health related disasters.⁹⁰

7.3. Hazards⁹¹ /Threats

Hazard analysis and experience have confirmed that Saint Lucia by virtue of its geographic location, physical formation and fragile ecosystems is at risk from a number of natural, technological and human-induced hazards. Additionally, the island is at risk to “slow on-set” hazards that include droughts, plagues, and the effects of GCC. These hazards have the potential to cause loss of lives, severe damage to infrastructure and other economic assets, as well as cause adverse effects on livelihoods. Some of the natural hazards include hurricanes, flooding, landslides, seismic and volcanic activity. Tropical storms and hurricanes are also frequently accompanied by storm surges, floods and landslides, which give rise to soil, beach and/or coastal erosion. Technological and human-induced hazards include explosions, oil and hazardous material spills, mass casualty, civil unrest, fires and information and communication technology disruptions.

The categorization of hazards found in the Saint Lucia National Risk Register⁹², has been used to describe the range of hazards to which the country is exposed. A synopsis of these hazards is presented in the following sub-sections.

⁸⁶ Draft Hazard Mitigation Plan, Saint Lucia, 2003.

⁸⁷ Damage Assessment and Needs Analysis (DANA) Policy (2007)

⁸⁸ Economic Commission for Latin America and the Caribbean (ECLAC). 2011. Saint Lucia, Macro socio-economic and environmental assessment of the damage and losses caused by Hurricane Tomas: a Geo-environmental disaster, Towards resilience. Prepared by UNECLAC Subregional Headquarters for the Caribbean.

⁸⁹ Cited from A. L. Dawn French, 1999. Disaster Catalogue for Saint Lucia.

⁹⁰ *ibid*

⁹¹ “Natural hazard: natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage”. UNISDR Terminology, 2009.

⁹² GOSL. 2006. Saint Lucia National Risk Register: Modelled on the Sussex Local Resilience Forum: Community Risk Register of 14th November 2005.

7.3.1 Naturally occurring

7.3.1.1 Type geodynamic/geo hazard

The National Risk Register identifies 3 sub-categories of this hazard/threat for the island: earthquake; volcanic eruption and tsunami.

- **Earthquake** sub-categories include ground vibration, liquefaction and ground rupture (unlikely for Saint Lucia). Other threats under this sub-category include secondary effects, common to a number of other hazards such as fires, landslides etc., which may result due to the ground vibration effects.
- **Volcanic activity** includes emissions and seismic related geophysical processes, such as mass movements, landslides, rockslides, surface collapses, debris or mud slides, pyroclastic flows, surges, ashfall, mudflows for the volcanic threat. Secondary effects such as landslides, pyroclastic flows and surges would actually cause damage through various mechanisms such as their physical impact, heat (so therefore, fires) etc. The integrated volcanic hazard zone map developed by the Seismic Research Centre at UWI (Figure 7.1), demonstrates the condition of risk for volcanic hazard in Saint Lucia.
- **Tsunami** is a series of ocean waves generated by sudden displacements in the sea floor, landslides, or volcanic activity. In the deep ocean, the tsunami wave may only be a few inches high. The tsunami wave may come gently ashore or may increase in height to become a fast moving wall of turbulent water several meters high⁹³. Tsunamis in the Caribbean region fall into two categories: 1) teletsunamis triggered by earthquakes along faults off the coast of Portugal, and 2) tsunamis generated by earthquakes along the faults of the Caribbean Plate boundaries.

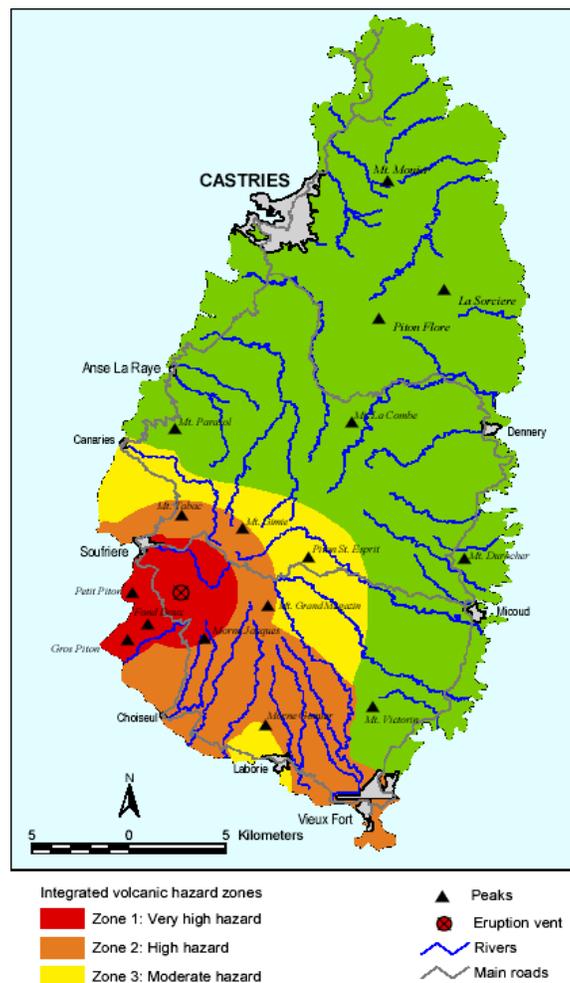


Figure 7.1 Integrated Volcanic Hazard Zone Map
Source: Seismic Research Centre

7.3.1.2 Type hydro-meteorological

Phenomena included under this type of hazard include tropical cyclones (hurricanes and tropical storms associated with high winds), thunderstorms, coastal storm surges, heavy rainfall resulting in floods including flash floods, drought, heat waves and cold spells, effects of El Niño Southern

⁹³ [National Oceanic and Atmospheric Administration \(NOAA\)](http://www.noaa.gov)

Oscillation (ENSO) and La Niña. In the Caribbean, rainfall is influenced by the ENSO and fluctuations in other large scale climate systems. An El Niño episode generally brings with it warmer and drier conditions, while La Niña brings colder wetter conditions, hence the reason for significant inter-annual variability and anomalies. Five sub-categories under a classification of severe weather were created within the National Risk Register for these types of phenomena, namely, hurricane/high winds, coastal flooding and storm surge, flooding of rivers and streams, localised/flash flooding and extreme high temperatures.

Landslide hazard is mapped in **Figure 7.2**. This shows that most of the island is subject to at least moderate landslide hazard, with only a strip of land from Choiseul to Vieux Fort and small pockets of flat land around the remainder of the island subject to low landslide hazard. Much of the island's road infrastructure traverses areas of high or extreme landslide hazard. Further, communities with limited road access are particularly vulnerable to isolation following landslide events.

7.3.2 Anthropogenic/human-induced

7.3.2.1 Type socio-natural hazards

These types of hazards are generally associated with high population density in urban areas, where the effects of human activities can result in, *inter alia*, inadequate basic-service provision

such as supply disruptions with fuel, water, electricity, communications and retail supplies; health with regard to inadequate emergency response cover; and education.

The National Risk Register covers these types of hazards under the categories of civil unrest (and related consequences such as internal displacement and migrations); industrial action (withdrawal of labour) and staff shortage; public safety and security, with regard to mass crowd gatherings; supply disruption; structural emergency; and transport. Each category is further broken down into sub-categories that manifest the hazard at the micro or site specific level. For example sub-categories under transport include: airport crash, sinking of vessels, collision of vessels at sea, major vehicular accidents on road network, incidents on road tunnel, crash transporting hazardous material, and crash transporting radioactive materials. Most of the human-induced hazards are likely to result in disaster in the form of mass casualty.

Deforestation is also another aspect of this type of hazard that can lead to land degradation and exacerbate climate change related disaster impacts.

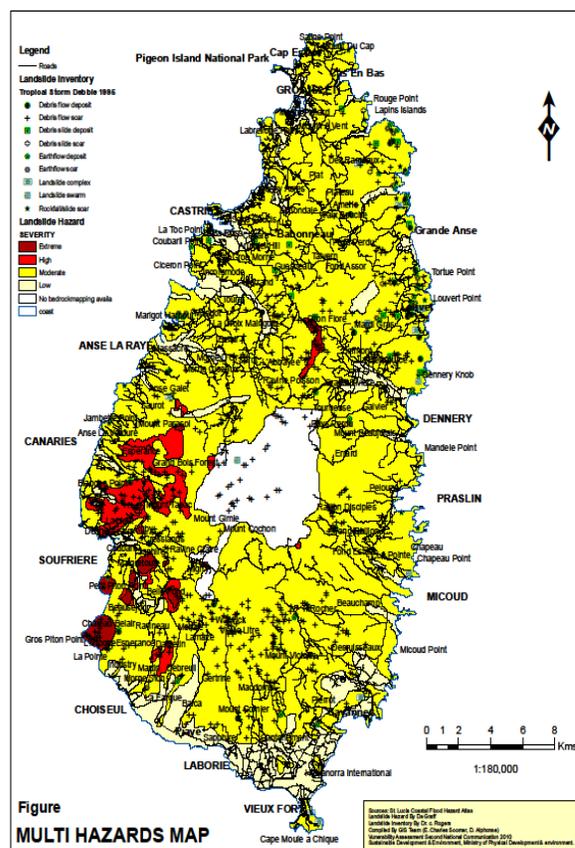


Figure 7.2 Landslide Hazard Map
Source: National Hazard Mitigation Plan

7.3.2.2 Type technological hazards

These types of hazards are considered in the context of both intentional and unplanned. These stem from CBRNE (chemical, biological, radiation, nuclear and environmental pollution) from fires, explosions, toxic spills, bioterrorism, mining and oil/gas extraction in highly sensitive environmental areas, among others. Pollution from unexploded arms and munitions are also considered under this hazard.

The National Risk Register identifies three main related categories in this regard and sub-categories of each. The three categories are 1) environmental pollution/infestation, 2) fire/explosion and 3) terrorism.

7.3.3 Health emergency hazards

These types of hazards are associated with illnesses and epidemics of major occurrence in humans, but also in animals and plants/phytosanitary. Examples include in humans, pandemics such as avian flu; epidemics including traditional and haemorrhagic dengue fever, malaria, yellow fever, cholera; food borne illness or communicable diseases; and mass fatalities such as poi. The National Risk Register identifies animal health diseases, both zoonotic and non-zoonotic, manifested in food product contamination.

7.3.4 Links to climate change

Current and future climate predictions for Saint Lucia indicate increased frequencies of extreme/severe weather events. These events are anticipated to both have negative impacts and exacerbate the impacts of other hazards. Hydro-meteorological factors are considered important contributors to some of the processes that give rise to geological threats. Hence, with the advent of climate change, an increase in the incidence of hydro-meteorological events is likely to bring about an increased incidence of these hazards.

Similarly, climate related health impacts, including vector and waterborne diseases are expected to become more prevalent with climate change.

All of the anticipated impacts are likely to trigger some form of disaster that have cross cutting, multi-sectoral impacts, causing major social, economic and environmental stresses. Alleviation of these adverse impacts can however be pursued through appropriate and timely integration of CCA measures into the DRR rubric.

7.4 Vulnerability

The plethora of documentation on disaster management widely endorse that Saint Lucia, like most Caribbean SIDS, is highly prone to devastating natural and anthropogenic/human-induced disasters. Its vulnerability can be attributed to *“antecedent conditions determined by physical,*

*social, economic, environmental and political factors and processes that increase the susceptibility and exposure of a community to hazards”.*⁹⁴

7.4.1 Definition of the analysis criteria and methodology

Except for the case of the vulnerability and adaptation (V&A) assessments for the Second National Communication (2010) on Climate Change for Saint Lucia, criteria and methodologies for analysis of vulnerability have been very general and at a national scale, and hence not clearly defined for specific disaster hazards and risks.

The main methodology for analysis of vulnerability with regard to disaster risks has been the Vulnerability Assessment Benchmarking Tool (B-Tool) developed by the OECS Secretariat. The B-Tool is a quantitative assessment tool which evaluates capacities in the six (6) phases of risk management, namely (i) risk identification, (ii) risk mitigation, (iii) risk transfer, (iv) disaster preparedness, (v) emergency response and (vi) rehabilitation and construction. The B-Tool provides an index as indicator of the relative strength and weakness of DRR initiatives in country.

Community level Vulnerability and Capacity Assessments (VCAs) have also been coordinated by the SLRC and involve the application of criteria and methodology outlined in a pre-designed Community Disaster Response Team (CDRT) field guide, which are based largely on the criteria and methodology used for Damage Assessment and Needs Analysis (DANA).

Both the CDEMA Disaster Management Audit and the HFA Monitor utilise a more qualitative assessment methodology. However, key indicators are proposed by the HFA in the HFA Monitoring tool that enable the assessment of progress made in DRR in the country.⁹⁵

The methodology provided by the Climate Studies Group Mona⁹⁶ for the vulnerability and adaptation (V&A) assessments for the Second National Communication (2010) on Climate Change for Saint Lucia, qualitatively analyses vulnerability of each sector, using primarily an outcome approach⁹⁷, while seeking to integrate the vulnerability approach⁹⁸. The V&A assessments were conducted on a sectoral basis, hence criteria for impact assessment were sector-specific and were aligned to key thematic areas in the sector. The application of a scenario approach also provided a useful tool for assessing the extent of the country's vulnerability from large to small degrees of changes in climate. This approach is particularly important for an island such as Saint Lucia, whose economy, and by extension, its socio-political structures, is largely natural resource-dependent, and therefore, likely to be directly affected by changes in climate parameters. This approach is also quite applicable to other types of disaster related events.

It is therefore, imperative that Saint Lucia continues the process of V&A assessments particularly with regard to DRR in ongoing and projected development programmes, plans and projects, using appropriately structured and systematic assessment methods. This is necessary if appropriate DRR and CCA options are to be developed and the impacts minimised with regard to changes in the external environment.

⁹⁴ Adapted from Study Report “Facing Hazards and Disasters: Understanding Human Dimensions. National Academies Press”. <http://www.nap.edu>

⁹⁵ <http://www.preventionweb.net/english/hyogo/hfa-monitoring/national/?pid:73&pih:2>

⁹⁶ Climate Studies Group Mona, Department of Physics, University of the West Indies, Mona Campus

⁹⁷ An outcome approach to analysing vulnerability is best suited to the well defined, closed-system impacts/issues, identified for each sector.

⁹⁸ This type of vulnerability assessments is centred around technologically focused adaption and mitigation strategies.

7.4.2 Components of vulnerability

The variety of risks prevailing at both the macro level and micro-level all contribute to the varying facets of the vulnerability of the island, key of which are outlined below:

Physical: The small geographical area of the island, accounts for the fact that disasters take country-wide proportions. Further, it is located in an area with some of the highest risk conditions on the planet, such as mid-ocean ridges with strong volcanic and seismic activity, tropical cyclone belts, and direct exposure to the forces of the oceans, and these account for high vulnerability to a wide range of natural hazards.

Social: The changing social landscape with regard to population growth and demographic changes have given rise to increased conflict for available resources and increased vulnerability to human-induced disasters. Poverty and unemployment further exacerbate vulnerability to the impacts of hazards resulting oftentimes in the escalation of situations of disaster. In most cases, the poor are most vulnerable. Cultural norms and mores were once an integral part of disaster risk mitigation. However, there has been a decline in the use and application of traditional practices and as a result, a loss of traditional knowledge and inadequate human capacity to implement DRR.

Economic: The fact that the island is dependent on few sources of income, in the key productive sectors, in particular tourism and agriculture for a substantial part of its gross domestic product (GDP), increases its vulnerability as these sources of income can be severely reduced for months by a single catastrophic event. Another critical factor which highlights Saint Lucia's vulnerability is its lack of financial capacity to reactivate the development process following major disaster events. The challenges posed by global externalities such as trade liberalization, commodity price fluctuations, rising cost of food and fuel, and the effects of the global financial crisis, further increase economic vulnerability.

Environmental: The island is characterized by fragile ecosystems and most development imperatives often lead to conflict over environmental conservation and protection.

Political: Lack of demonstrated political leadership in seeking to integrate DRR into the development agenda by creating the appropriate governance structures and financing mechanisms often precludes any possibility of developing and implementing meaningful disaster-mitigation and CCA programmes.

7.4.3. Analysis of vulnerability: fragility, exposure, resilience

The World Conference on DRR in 2005, recognized that *“risk is not only associated with the occurrence of intense physical phenomenon but also with the vulnerability conditions that favor or facilitate disaster when such phenomenon occur. Vulnerability is intimately related to social*

*processes in disaster prone areas and is usually related to the fragility, susceptibility or lack of resilience of the population when faced with different hazards”.*⁹⁹

In Saint Lucia, poor land use planning and associated squatter developments, deforestation and developments in disaster prone areas have exacerbated vulnerabilities, while the absence of approved building codes and standards has resulted in a housing stock prone to damage by floods, landslides and high winds. Notably, key economic activities, and associated infrastructure such as airports, sea ports, fuel storage and hotels, as well as critical infrastructure such as hospitals, schools and security services tend to be concentrated along the coast and these have been deemed highly vulnerable to the impacts of extreme climate related events such as increased rainfall variability, land degradation and storm events. The island also suffers from a water deficit in some areas and proposed national development plans which involve large tourism developments, among others will exacerbate vulnerability with regard to water security. Tourism activity and poorly planned housing developments also threaten important marine and terrestrial ecosystems, thus eroding the resilience of natural systems to the impacts of the various natural and human-induced hazards, and are thus likely to add to the economic vulnerability of the island as a whole.

In Saint Lucia, a high percentage of the population lives along the coastal area. Most of these settlements have very little room for expansion except through hillside residential development – areas that are highly susceptible to the ravages of extreme events such as hurricanes.

The extent of Saint Lucia’s vulnerability to disasters and the impacts of climate change and climate variability is influenced by several drivers which are largely socio-economic and ecological in nature. The development of governance structures for managing risk across the three pillars of sustainable development, that is, economic, social and environment, is an imperative, though a major challenge for the Government.

7.4.3.1 Vulnerable Sectors

The V&A assessments conducted during the Second National Communications (SNC) highlighted the vulnerabilities to climate hazards across the critical sectors of water resources, land resources, agriculture, coastal sector, marine resources, forest terrestrial resources, health, financial services, and critical infrastructure.

Climate Change Adaptation (CCA) strategies and measures have also been proposed for these critical sectors of the economy in the Saint Lucia SNC V&A exercise, with major costs associated with upgrading of critical infrastructure and public sector assets such as health care centres, hospitals government offices, among others. For, a small island with a relatively small population, the financial needs for CCA alone are quite substantial. It stands to reason that creating a strategic framework for DRR that integrates CCA will allow for better leveraging and mobilising of the necessary financing and more effective investment in risk management.

⁹⁹ Summary report for session “Visions of Risk and Vulnerability: Patterns, Trends, and Indicators”, World Conference on Disaster Risk Reduction, held in Kobe, Hyogo, Japan, January 18-22, 2005.

7.4.3.2 Vulnerable areas/regions

The Disaster Preparedness and Response Act # 13 of 2000 gives particular focus to addressing specifically the issue of *Specially Vulnerable Areas*, requiring that the NEMO, the National Hazard Mitigation Council (NHMC) and particularly the Ministry with responsibility for physical planning and development, to work together to determine where these vulnerable areas exist in Saint Lucia and delimit them considering the different types of hazards. Special Enforcement Areas have also been declared under the Physical Planning and Development Act. Vulnerability mapping data for two hazards, flood and drought (precipitation change) are available in the Sector Reports for the SNC¹⁰⁰, and illustrate potentially vulnerable zones/areas in Saint Lucia. Knowledge of these areas will allow for better development planning that considers risk and vulnerability in order to implement adequate mitigation measures.

Drought vulnerable regions are indicated over more than 20% of the island, in the north, south east and southern parts of the island and in areas of land use ranging from forest to agriculture to residential/commercial (Figure 7.3).

Three flood hazard zones (high, medium and low) were identified¹⁰¹ on a medium-scaled map delineating important settlements, road networks and the catchments

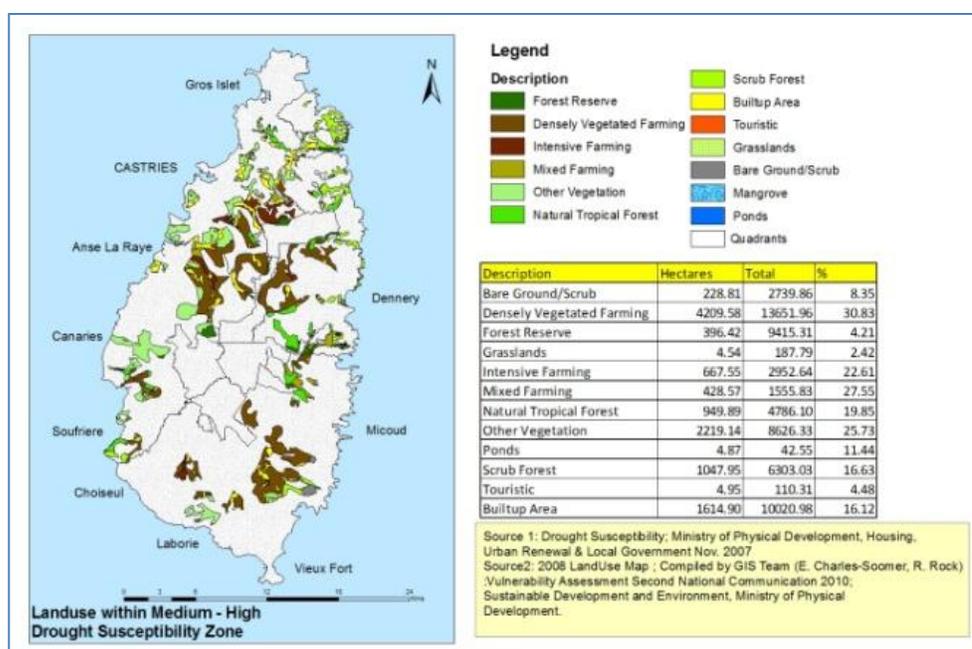


Figure 7.3 Drought Vulnerability Zones for Saint Lucia

contributing runoff to the hazard zones. Most of the island was categorised at low risk to flood hazard. Areas deemed as high risk to flood hazard include the coastal plain north of Hewanorra Airport (flat lands on eastern and north eastern sides) and areas on the western side of the island (Roseau river flood plain). Some of the detailed map assessment also showed that within the city of Castries, the north-central and eastern streets are most prone to flooding.

¹⁰⁰ GOSL, 2010. Lucia's Second National Communication on Climate Change: Vulnerability and Adaptation Assessment, Agriculture.

¹⁰¹ Caribbean Development Bank. 2006. Flood Hazard Mapping of Saint Lucia. Final Report, By Vincent Cooper, Flood Hazard Mapping Consultant and Jacob Opadeyi, GIS Consultant.

The island-wide flood hazard maps identify likely regions to be flooded for extreme rainfall and give a mean depth of flood waters within regions. They do not provide detailed information of flood water levels, velocities or locations of specific hazardous places. Further, they cannot incorporate detailed hydraulic properties of drainage facilities in the region. Notwithstanding these limitations, these maps can still be quite useful.

7.4.3.3 Vulnerable groups

Vulnerable populations are defined by one expert group as follows: “People who cannot comfortably or safely access and use the standard resources offered in disaster preparedness, relief and recovery. They may include people with sensory impairments (blind, deaf, hard-of-hearing); cognitive disorders; mobility limitations; limited English comprehension or non-English speaking; as well as people who are geographically or culturally isolated, medically or chemically dependent, or homeless.” Source: CDCP

Though some work has also been done on mapping the spatial dimensions of some hazards (flooding, drought, landslides) and the 2005/2006 Survey of Living Conditions points to locations of various vulnerable groups (female headed households, children under the age of 14 years and the elderly), there is still a need to map the social dimensions of these vulnerable populations/groups to help reinforce better decision making and more targeted programming. Research

done by the Centre for Disease Control and Prevention (CDCP)¹⁰² further illustrates the importance of disaggregated vulnerability and capacity assessments by gender and other vulnerable groups. For example, the research shows that older adults may have impaired mobility, diminished sensory awareness, multiple chronic health conditions, and social and economic limitations—all of which can impair their ability to prepare for, respond to, and adapt during emergencies.

There has been ongoing progress with regard to the generation of information on hazards and vulnerability. Some limited national and local assessments based on hazard data and vulnerability information are available, and include risk assessments for key sectors. However, there are still no systems in place to monitor, archive and disseminate data on key hazards and vulnerabilities and the absence of a comprehensive national multi hazard database or archive with protocols for information sharing impede the use of mechanisms to inform the local and regional DRR efforts. Mechanisms for the systematic research, recording and analysis of the hazards which have impacted Saint Lucia and the impacts of these hazards also need to be established.

There is also need to generate gender disaggregated disaster impact data at the community level, so that special care is taken to meet the needs of both women and men in a disaster event (e.g. gender sensitive shelter management policy). Risk mapping of vulnerable groups will also help to profile each of these groups within the context of the vulnerable situations in which they live and to identify their coping and adaptive capacities. The mapping will also help to identify hotspots of high vulnerability in Saint Lucia.

¹⁰² Centre for Disease Control and Prevention. *Identifying Vulnerable Older Adults and Legal Options for Increasing Their Protection During All-Hazards Emergencies: A Cross-Sector Guide for States and Communities*. Atlanta: U.S. Department of Health and Human Services; 2012.

7.5 Capacity Building

In 2004 the Pan American Health Organisation (PAHO) cited well developed capabilities for disaster management in Saint Lucia, with very active participation from all stakeholders, as cited in Box below.

National Disaster Management is very active and well developed. St. Lucia has achieved Disaster Management capabilities which other Caribbean countries can follow. Numerous agreements with the private sector, NGO's, Service Organisations, and neighbouring French Departments have been implemented. Health sector mitigation activities have begun and are expected to continue. St. Lucia has all possible disaster plans available and updated thanks to the National Emergency Management Organisation St. Lucia. [SOURCE: <http://www.disaster-info.net/carib/stlucia.htm>]

The level of progress reached in developing institutional and community capacity for DRR has been assessed using various assessment tools, and reported on in the B-Tool Country Assessment Report for Saint Lucia (2006), CDM Audit (2010) Country Report for Saint Lucia and HFA Progress Reports. A summary of the results of the B-Tool Assessment (2006) in terms of the relative adequacy of capacity within the six (6) phases of risk management is presented in **Table 7.2** below.

Table 7.2 Summary Results of Saint Lucia B-Tool National Assessment

Phases of Risk Management	Total Number of Questions (TNQ)	Maximum Attainable Score (MAS)	Total Score	Percentage Score (RMI)
Risk Identification	106	318	157	49%
Risk Mitigation	42	186	93	50%
Risk Transfer	48	144	36	25%
Disaster Preparedness	120	360	247	69%
Emergency Response	57	171	95	56%
Rehabilitation and Reconstruction	56	168	63	36%
Total	449	1347	691	51%

Source: Risk Management Benchmarking Tool (B-Tool), National Assessment for Saint Lucia, 2006

The risk management index (RMI)¹⁰³, calculated as a percentage score from the quantitative assessment methodology used for the evaluation of capacities in the six (6) phases of risk management, serves as an indicator of the relative strength or weakness of DRR initiatives in each of the phases. At the time of assessment, the indices computed indicate reasonably well developed capacity for disaster preparedness and emergency response, a lesser degree of capacity development in areas of risk mitigation and risk identification, and limited capacity development for risk transfer, and rehabilitation and reconstruction.

The national CDM Strategy (2009) emphasises capacity building in areas that address governments, particular ministries, National Disaster Organisations, National Disaster Management Offices, and other key local, national and regional institutions, and include a

¹⁰³ Risk Management Index = Total Score/Maximum Attainable Score - RMI = [TSi / MAS i]

variety of skills sets such as governance, knowledge management and sharing, awareness and promotion, and the links to economic and sustainable development.

The CDM 2010 Audit Report for the country provides a qualitative account of the institutional and community capacity for DRM. The information gleaned from the report describes organisation and management capacity that is reasonably well developed at the institutional and community level. This is further supported by a broad legislative framework. However, the report highlights limitations in human capacity and capacity for mitigation and research.

The self-assessment or progress report on implementation of the HFA, undertaken at the country level, uses *community participation and decentralisation through the delegation of authority* as one of the key priority action areas/indicators for the HFA. In this area, the progress report for 2009-2011 highlights a substantial advancement in the organisational structure of the NEMO, as well as the associated legislation which facilitates a fully participatory approach to DRR that involves district disaster committees and local government councils. The report also defines the level of progress reached in capacity development for various national agencies and highlights areas for further capacity building, such as policy, legislative and fiscal regimes; data and information management including capacity for research and systematic observation (e.g. pest and disease surveillance systems for agriculture and public health); and meteorological and hydrological monitoring (early warning systems at community level e.g. tsunami).

There is growing recognition that the development of DRR capacity is the concern of an entire society rather than of any single agency, area of professional discipline or stakeholder group. In view of the fact that DRM programmes are multi-disciplinary and multi-faceted, the country needs to have access to capacity development programmes that would enhance its capacity to undertake many of the technical tasks required for DRR implementation.

Developing institutional and community capacity at all levels (systemic, institutional and individual), including expanding the information and knowledge base, in terms of up-to-date scientific information, and local knowledge and expertise, still remains a key requirement for DRR. In particular, the areas of policy harmonisation and institutional strengthening, with regard to science-based information for validating, monitoring and linking DRR with sustainable development using appropriate indicators of DRR, requires improvement. Capacity to undertake predictive analysis is also another area to be addressed and would require, proper instrumentation for data collection and data management, including the development or expansion of computerised databases.

The above mentioned are all consistent with the capacity building initiatives elaborated as outputs under the four (4) outcomes of the national CDM Strategy:

1. Enhanced institutional support for CDM program implementation at national and regional levels
2. An effective mechanism and programme for management and sharing of CDM knowledge established and utilised for decision making;
3. Disaster risk management mainstreamed at national level and incorporated into key economic sectors (tourism, health, agriculture, etc.);
4. Enhanced community resilience to mitigate and respond to the adverse effects of climate change and disaster.

7.5.1 Mapping institutions and levels of coordination

The various institutions and levels of coordination in the national structure for DRR have been mapped in **Figures 6.1** and **Figure 6.2** under **Section 6.3.1 National Structure for DRR**, which highlights the extent of collaboration across the range of DRR stakeholders: public and private sectors, scientific and technical institutions, community based organisations, universities, United Nations agencies, international cooperation agencies, Red Cross and Red Crescent societies, nongovernmental organisations, DIPECHO partners, among others.

Section 7.4, Institutional Framework for DRR, describes the leading role of the National Emergency Management Organisation (NEMO), which is a collaboration of Government, Non Government, Faith Based Organisations, Civil Society and many other citizenry groups and individuals, collectively responsible for having the country in a state of preparedness in case of an emergency; also responsible for responding to the needs of the country after a disaster and coordinating the response at local, regional and international levels. The NEMO Secretariat functions as part of the Office of the Prime Minister in the Ministry of Finance and Economic Affairs. DRR implementation is also within the remit of many government ministries.

The wider framework for comprehensive disaster management depicted in **Figure 7.4**, further illustrates the interconnectedness of the regional and national structures for DRM.

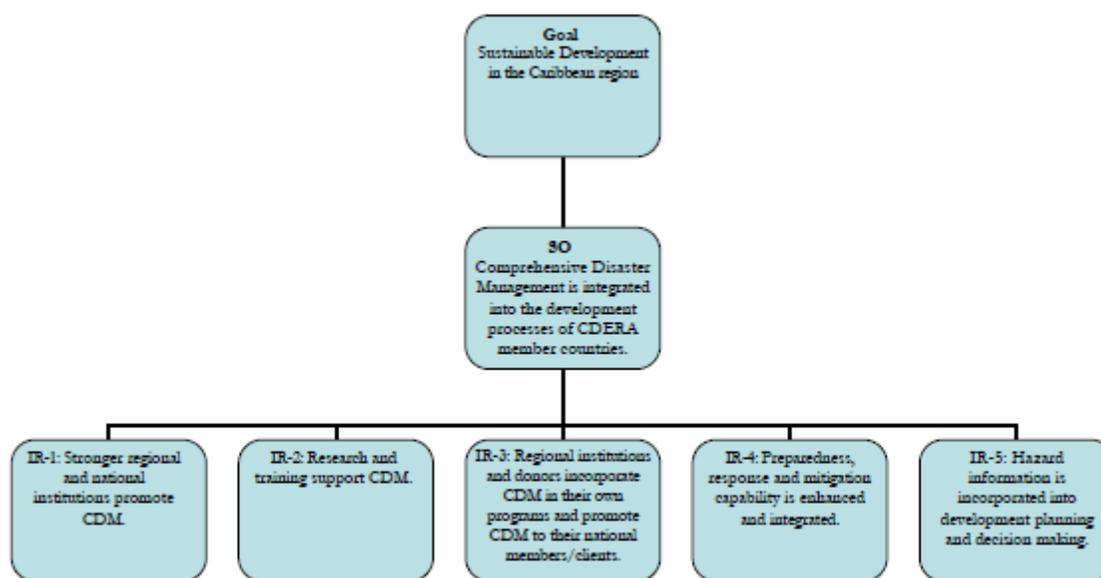


Figure 7.4 Comprehensive Disaster Management Framework

Source: CDM Strategy (2007-2012)

Regional co-operation in DRR is manifested by the country’s membership and/or participation in the following regional mechanisms including Caribbean Disaster Emergency Response Agency (CDERA); Pan-American Health Organisation (PAHO), Regional Security System (RSS); Medical evacuation MOU with Martinique; and Monitoring support from the Seismic Monitoring Unit in Trinidad. The country also participates in regional programs and projects with DRR themes undertaken by regional and international agencies such as the Organisation of Eastern Caribbean States (OECS), the Caribbean Development Bank (CDB), the United Nations Development

Program (UNDP), and the Canadian International Development Agency (CIDA) all of whom foster collaboration and shared learning.

The National Emergency Management Plan which elaborates the National Emergency Management System, describes the levels of coordination for the various other institutions and agencies that currently have DRR related mandates in Saint Lucia, and highlights political administrative entities and the strategic partners involved.

The principal issue at this time appears to be how to effectively link international, regional and national actions to existing and projected resource support. At the national level, the challenge is that of incorporating DRR principles in development planning, decision-making and programme or project design so as to increase the likelihood of access to technical assistance programmes. It is proposed that this can be advanced through the pursuit of improved governance structures that provide a strategic framework for DRR principles to be taken into account into urban and rural planning and development activities, with dedicated disaster management structures at national, sectoral and community level, as a course of action for building resilience.

Best practice already exhibited within the existing governance structure for disaster management, provides a sound platform for an enhanced structure for more effective governance for DRR.

7.5.2 Mapping programs, initiatives and plans for DRR

Several initiatives in the form of programmes, plans, projects, application measures, have been undertaken at the local, national and regional level with regard to DRR and include measures to minimise vulnerabilities and disaster risks, and avoid (prevention) or limit (mitigation and preparedness) the adverse impacts of hazards.

Regional programmes and initiatives such as the CDEMA Comprehensive Disaster Management Framework, Caribbean Open Trade Support Program (COTS), OECS Disaster Response and Risk Reduction Programme, CDM Harmonised Implementation Programme (Phase 1), and Mainstreaming Disaster Risk Management in the OECS, have given specific focus to building national and community level resilience to disasters to contribute to sustainable development.

At the national level, Government programmes and projects such as the CDB funded Drainage Improvement, and World Bank funded Emergency Recovery and Disaster Management Project (ERDMP), Second Disaster Management Project (SDMP), and Disaster Vulnerability Reduction Project (DVRP), all aim to measurably reduce vulnerability to natural hazards and the adverse impacts of climate change in Saint Lucia. Activities involved significant physical prevention and mitigation works, and strengthening emergency preparedness and early warning systems, as well as training and capacity development for community based disaster management organisations, shelter managers and the staff of the National Meteorological Services (NMS)¹⁰⁴. The NEMO also continues to develop and revise national emergency management plans for specific hazards and

¹⁰⁴ These include improvement of the drainage systems in Castries and Anse La Raye and relocation projects funded by CDB and Hewanorra Airport Flood Protection Works, Bridges and Rivers Training. Cul de Sac Flood Prevention Works, Supplementary Reservoir for Victoria Hospital, Disaster Management Programme such as retrofitting shelters, in particular schools and libraries, Study and Design of Coastal Protection for Dennery Village, strengthen and develop the early warning system of the National Meteorological Service (NMS).

sectoral/agency multi-hazard plans. A Disaster Recovery Policy and Plan is also currently being developed, aimed at integrating DRR measures into post disaster recovery and rehabilitation processes.

At the community level the NEMO has also facilitated a project funded by JICA for flood early warning systems. The SLRC has collaborated through DIPECHO funded projects in the development of model disaster plans for schools and assisted in the design of the first set of disaster programmes at the community level. More recently (2010-2012), the SLRC has worked with about ten (10) communities, with and without NEMO groups, to undertake vulnerability and capacity assessments (VCA). Through this process, there has been capacity building at the community level for hazard identification and for undertaking small-scale, community-level, hazard mitigation measures. The FAO has also undertaken projects aimed at resilience building in the agriculture sector, with outputs such as disaster resilient greenhouses and water harvesting systems for mitigating the impacts of climate change, such as drought.

The National Meteorological Services is participating in a regional project (Enhancing Resilience to Reduce Vulnerability in the Caribbean (ERC)) coordinated by Caribbean Institute for Meteorology and Hydrology (CIMH), enhancing resilience to reduce vulnerability in the Caribbean and create a platform to assist with decision-making and enhance early warning systems.

More recently, Saint Lucia has identified under its SPCR (2010), CCA and DRR activities which include measures aimed at hard core adaptation such as coastal area management (including reef restoration, mangrove restoration, beach re-development.); building rehabilitation and retrofitting; slope stabilisation and re-forestation; soft adaptation such as improving data and information management systems for strengthening Research and Systematic Observation (RSO); and Data and Information Acquisition and Knowledge Management for CCA, in particular, the Saint Lucia Integrated National GeoNode" (SLING)¹⁰⁵. There has also been some adaptive research work undertaken on climate change impacts and adaptation to climate change by the Sustainable Development and Environment Department in conjunction with regional and international agencies that aims to improve the scientific basis for impacts, adaptation assessment and decision making. The scientific basis includes the evaluation of fitness for purpose of climate model data, climate downscaling, development of novel methods for assessment of impacts of climate change, especially on biodiversity and water resources, and adaptation, with a focus on robust decision making and challenges posed by large climate changes. Further, a scientific basis would promote the establishment of appropriate legislative, fiscal incentives and regimes to encourage the adoption of CCA and resilience building measures.

These initiatives reflect a growing commitment to multi-hazard mitigation, and will contribute in no small measure to the DRR process at the regional, national and local level.

¹⁰⁵ See: <http://sling.gosl.gov.lc>; an open access platform for access, management and publication of geospatial data for informed decision making. SLING allows national ministries and agencies to populate, catalogue, view, and share data on a central depository. For the first time in Saint Lucia, GIS users, such as land planners and engineers, will be able to access, share, and apply data for disaster risk management applications such as land use maps, engineering designs, and risk assessments.

7.5.3 Inventory of tools

The *Methodological Guide on the Systematization of Tools for Disaster Risk Management*¹⁰⁶ defines tools as “a guide, a product or instrument that stemmed from a project, initiative, programme, experience or intervention, and that serves to improve capacity to design, develop or implement actions to manage disaster risk”.

A preliminary compilation of an inventory of DRR tools for Saint Lucia is presented in **Table 7.3**. The classification for the types of tools in the compilation is based on the list of tools and resources selected for the B-Tool assessment for Saint Lucia, and which were identified as being necessary to effectively and efficiently manage the six components of disaster risk management activities.

Table 7.3 Preliminary Compilation of Inventory of DRR Tools for Saint Lucia

Type of DRR Tools/Resources	Specific Tools/Resources for DRR
Policies and Plans	<ul style="list-style-type: none"> ▪ National Hazard Mitigation Policy and Plan ▪ National Emergency Management Plan with specific hazard management plans, sector disaster management plans, and agency contingency and continuity of operations plans ▪ National Climate Change Policy and Adaptation Plan ▪ Strategic Plan for Climate Resilience
Knowledge and Information	<ul style="list-style-type: none"> ▪ Public education and outreach (PEO) programmes for public and private sector agencies, CBOs, CDOs, children and schools. ▪ Communication strategies to engender behavioural change. ▪ Procedures for the exchange of relevant information during hazard events and disasters, and to undertake post-event reviews – DANA/DaLA ▪ Virtual libraries such as the Caribbean Disaster Information Centre (CARDIN) of the University of West Indies / DRR Centre and national and regional platforms for DRR and PreventionWeb¹⁰⁷ ▪ Decision support systems such as GIS maps ▪ Saint Lucia Integrated National GeoNode" (SLING) - an open access

¹⁰⁶ Developed by the Regional Disaster Information Centre of Latin America and the Caribbean (CRID) as part of the UNISDR - DIPECHO South America 2011-2012 regional project: http://www.eird.org/wikiesp/images/Gu%C3%ADa_Metodol%C3%B3gica_para_la_Sistematizaci%C3%B3n_de_Herramientas_para_la_Gesti%C3%B3n_del_Riesgo_Noviembre_2011.pdf (only available in Spanish)

¹⁰⁷ <http://www.preventionweb.net/english/>

Type of DRR Tools/Resources	Specific Tools/Resources for DRR
	platform for access, management and publication of geospatial data for informed decision making
Monitoring and Evaluation Tools	<ul style="list-style-type: none"> ▪ Risk Management and Vulnerability Benchmarking Tool (B-Tool) [developed by the OECS] ▪ Enhanced CDM Strategy monitored, evaluated and reported on using the Results Based Management (RBM) framework ▪ Periodic assessments conducted by CDERA sometimes targeting specific activities or capabilities, such as Emergency Operations Centers (EOC) preparedness ▪ HFA Progress Reports ▪ ‘HFA Monitor¹⁰⁸’ - an online tool, developed by the UNISDR to enable governments to easily capture the information on progress in HFA and generated through a multi-stakeholder review process
DRM Products	<ul style="list-style-type: none"> ▪ Sector Vulnerability and Assessment Reports for Climate Change, ▪ Drought and flood hazard maps for the island Volcanic atlas for the sub-region ▪ Caribbean Marine Atlas ▪ Outputs of various investigative studies undertaken, especially with regard to disaster management, climate change, biodiversity and environment.

Many of the available DRR tools and resources have been validated at the regional, sub-regional and national level and are generally accessible. However, they tend to be utilised on an ad hoc basis. For example, knowledge and information tools have not been used effectively to ensure the accessibility of information across the various levels of the society. Information generation tends to be project driven and as a result data and information is retained within the domain of the sector or agency with responsibility for the specific project, and with no formal mechanisms to promote information sharing and networking.

Thus, there is need for the application of these tools and resources to be undertaken in an organized, structured and programmatic way, for informed decision-making with regard to development planning and policy making, public education and outreach, and validity and suitability of DRR interventions. Harmonisation and standardisation of information systems and other ICT protocols at the regional, national and local level also needs to be pursued. Multi-

¹⁰⁸HFA Monitor is accessible on the web at: <http://www.preventionweb.net/english/hyogo/hfa-monitoring>

hazard maps based on more appropriate models; events mapping to validate the same; detailed digital elevation models (DEMs); up-to-date land use maps and proposed development plans are also necessary for informed decision-making with regard to risk management and validity and practicality of DRR interventions. Further, many of these tools will require regular updating.

Greater use also needs to be made of experts in the fields of information and communication for the development of more applicable tools and resources. Coherence in DRR related national policies and plans is also required to promote the systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response, mitigation and recovery and reconstruction programmes.

7.6 Reduction of Underlying Risk Factors

To date, the HFA progress reports have shown a growing concern for reducing disaster risk, with significant progress made against the objectives, goals and priorities of the Hyogo Framework for Action. One example is the measurable progress in the reduction in the number of deaths linked to hydro-meteorological hazards as a result of better understanding and improved preparedness and early warning systems. However, while there has been real progress made in early warning, preparedness and response; there remains an urgent need to address underlying risk drivers and investment in DRM particularly at the sectoral and community level.

The following identifies some components, based on the basic indicators of the HFA Monitor, which are considered important in reducing the underlying risk factors:

- Disaster risk reduction enshrined into environment related policies and plans, including for land use, natural resource management and adaptation to climate change.
- Social development policies and plans implemented to reduce the vulnerability of populations most at risk.
- Economic planning and management of human settlements to incorporate disaster risk reduction elements, including enforcement of building codes.
- Disaster risk reduction measures integrated into post-disaster recovery and rehabilitation processes.
- Procedures in place to assess and mitigate disaster risk impacts of major development projects, especially infrastructure.

8. RISK ASSESSMENT FOR COUNTRY DRR

8.1 Defining Criteria and Analysis Methodology

Defining criteria for disaster risk analysis and management is for the most part difficult, due to the lack of a comprehensive conceptual framework of disaster risk that facilitates evaluation and intervention from a multidisciplinary perspective. Most of the available indices and evaluation techniques are not capable of presenting risk in terms that are easily interpreted by the diverse types of decision-makers. Risk need to be identified and interpreted in a manner that attracts the attention of the stakeholders and enables them to move forward decidedly in the reduction of disasters¹⁰⁹.

There is also much difficulty in defining practical indicators and identifying how these should be applied and who should be responsible for monitoring. The issue of identification of indicators for risk assessment and monitoring progress in risk reduction is made even more complicated by political considerations, data availability and quality, resource availability, issues of scale, ownership and a host of other social, organisational and management concerns.

The country in keeping with the Disaster Preparedness and Response Act No. 13 of 2000 has developed a *National Risk Register*. There is also a *Saint Lucia National Climate Change Risk Register*, dated October 28, 2008.¹¹⁰ Of note, is that the National Risk Register was purposed to assist disaster responders in identifying potential significant risks threatening the performance of critical functions in the event of an emergency, which ought to enable them to focus resources in the right areas, and develop appropriate continuity strategies.

The methodology for formulating the register involved a literature review, which combined the identification of past events together with subjective hazard analysis within the context of the probability of a repeat event. Due to a lack of data on parameters needed to derive measurable risk management indicators, the use of qualitative indicators measured on subjective scales was unavoidable. Consequently, the weighting or considerations of many of the indices have been undertaken using expert opinion and informants at the national level. There has been little analysis using numerical techniques that are consistent from the theoretical and statistical perspectives.

Criteria for risk management and vulnerability benchmarking as defined in the risk management framework adopted by the Inter-American Development Bank (IDB) (See **Table 8.1**) were utilised in the B-Tool Country Assessment (2007)¹¹¹ as a context for assessing and evaluating risk.

¹⁰⁹ Summary report for session “Visions of Risk and Vulnerability: Patterns, Trends, and Indicators”, World Conference on Disaster Reduction, held in Kobe, Hyogo, Japan, January 18-22, 2005.

¹¹⁰ Information provided in the document is deemed valid only at the date of publication as risks are intended to be monitored on an ongoing basis.

¹¹¹ USAID/OECS, 2007. Risk Management Benchmarking Tool (B-Tool), National Assessment: Saint Lucia.

Table 8.1 Key Components of Risk Management – IDB/B-Tool

Pre-Disaster Phase				Post-Disaster Phase	
A. Risk Identification	B. Risk Mitigation	C. Risk Transfer	D. Disaster Preparedness	E. Emergency Response	F. Rehabilitation and reconstruction
1. Hazard assessment (frequency, magnitude, and location)	1. Physical and engineering mitigation works	1. Insurance and reinsurance of public infrastructure and private assets	1. Early warning and communication systems	1. Humanitarian assistance	1. Rehabilitation and reconstruction of damaged infrastructure
2. Vulnerability assessment (population and assets exposed)	2. Land-use planning and building codes	2. Financial market instruments (catastrophe bonds and weather-indexed hedge funds)	2. Contingency planning (utility companies and public services)	2. Clean-up, temporary repairs, and restoration of services	2. Macroeconomic and budget management (stabilization and protection of social expenditures)
3. Risk assessment (a function of hazard and vulnerability)	3. Economic incentives for pro-mitigation behavior	3. Privatization of public services with safety regulation (energy, water and transportation)	3. Networks of emergency responders (local and national)	3. Damage assessment	3. Revitalization for affected sectors (exports, tourism, and agriculture)
4. Hazard monitoring and forecasting (mapping, and scenario building)	4. Education, training and awareness about risks and prevention	4. Calamity Funds (national or local level)	4. Shelter facilities and evacuation plans	4. Mobilization of recovery resources (public, multilateral, and insurance)	4. Incorporation of disaster mitigation components in reconstruction activities

The methodology for the B-Tool assessment of risk involved the formulation of a series of management questions that aim to explore the adequacy and content of current disaster risk management tools and resources of the country in each of the six disaster management phases. The methodology includes a scoring system. The questions were phrased to highlight best practices and recommendations for disaster risk management activities. The tool contains a list of easily understood questions that were chosen through extensive review of risk management literature and broad-based consultation.

The aforementioned methodologies, among others, and tools for technical support exist for risk assessment and analysis and those can facilitate effective DRR interventions at the local and national levels.

Reference is further made to the IDB system of Indicators of Disaster Risk and Risk Management, which involves a more analytically rigorous and data driven approach to risk management decision-making. However, at present, in-depth analyses using the IDB risk indicators cannot be readily pursued, due to a lack of data, and insufficient skills for undertaking such analyses.

8.2 Definition of Risk Scenarios

Broad definitions of risk scenarios for the country have been attempted in the National Risk Register and the National Risk Register for Climate Change. Hazard/risk mapping also define geo-spatial scenarios for phenomena such as landslide, drought, and floods.

Risk scenarios for climate change have been further defined for the country in the Saint Lucia Second National Communication (SNC) under the UNFCCC¹¹². The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) makes reference to a number of direct observations of recent changes in climate which are likely, to very likely¹¹³, attributable to human influence. These observations include, among others, changes in wind patterns, rainfall distribution and air temperature. The climate baseline for Saint Lucia with regard to these parameters and the platform for determining how the parameters are influenced by climate change are provided in SNC. Outputs describing the current and future climate change scenarios¹¹⁴ generated for the island are presented in Saint Lucia's SNC. The various scenarios or models¹¹⁵ used to define climate change risks, have all demonstrated that mean temperatures in Saint Lucia are expected to increase markedly over the next century¹¹⁶. The scenarios derived from the various models also describe a discernible shift in the precipitation climatology.

There is a distinct need to define risk scenarios for other non-climate related hazards, based on a holistic approach that will enable multi-hazard analysis and promote more effective, fit-to-purpose solutions/ interventions. Due consideration must also be given to the fact that risk is clearly most detailed at a micro social or location/site specific scale.

8.3 Prioritization of Risk Scenarios and Areas of Intervention

Saint Lucia is a country with limited experience in the area of disaster risk analysis. Limited prioritization of risk has been attempted in the National Risk Register (2006), which identifies risk ratings for main hazards/threats for the country. **Table 8.2** provides a summary of the main categories of hazards/threats identified with a brief description of the process or phenomenon and the risk rating for each threat/hazard.

¹¹² GOSL, 2009. Saint Lucia Second National Communication under the UNFCCC.

¹¹³ In the IPCC Summary for Policymakers, the following terms have been used to indicate the assessed likelihood, using expert judgment of an outcome or a result: *Virtually certain* > 99% probability of occurrence, *Extremely likely* > 95%, *Very likely* > 90%, *Likely* > 66%, *More likely than not* > 50%, *Unlikely* < 33%, *Very unlikely* < 10%, *Extremely unlikely* < 5%.

¹¹⁴ Saint Lucia Current Climate and Future Projections. Prepared by the Climate Studies Group (CSG) of the University of the West Indies (UWI), Mona Campus.

¹¹⁵ Global Climate Models (GCMs) and Regional Climate Model (RCM)

¹¹⁶ This will require Saint Lucia to adjust its building designs, using natural ventilation or energy efficient cooling systems.

Table 8.2 Main Categories of Hazards/Threats Identified for Saint Lucia

Type of Emergency/Hazard	Category of Emergency/Hazard	Sub-Category of Emergency/Hazard	Risk Rating
Natural Disaster and Severe Weather	▪ Geodynamic/Geological hazards:	<ul style="list-style-type: none"> ▪ Earthquakes, ▪ Volcanic activity ▪ Tsunamis (Hydro-meteorological factors are important contributors to some of these processes.) 	<ul style="list-style-type: none"> ▪ Medium ▪ Low ▪ Low
	▪ Hydro-meteorological hazards:	<ul style="list-style-type: none"> ▪ Hurricane high winds ▪ Coastal Flooding ▪ Flooding of Rivers/Streams ▪ Flash Flooding ▪ Extreme High Temperatures ▪ Drought 	<ul style="list-style-type: none"> ▪ High ▪ High ▪ High ▪ High ▪ High ▪ High
Anthropogenic/Man-made	▪ Socio-natural hazards: High population density in urban areas with inadequate basic-service provision (water, electricity, health, education, transportation).	<ul style="list-style-type: none"> ▪ Mass Casualty - Armed Conflict – consequences of internal migration and displacement Public safety and security Civil disturbance Supply disturbance Transport ▪ Deforestation ▪ Structural Emergency 	<ul style="list-style-type: none"> ▪ Low – Medium ▪ High ▪ Low – Medium
	▪ Technological hazards: (intentional or unplanned)	<ul style="list-style-type: none"> ▪ Fire and Explosion ▪ Environmental Pollution/ Infestation Harmful release – CBRNE Toxic spills Oil/Gas extraction Illegal dumping ▪ Terrorism – bio-terrorism 	<ul style="list-style-type: none"> ▪ Medium ▪ Medium ▪ Unrated
Health Emergencies	▪ Pandemic: Epidemic	<ul style="list-style-type: none"> ▪ Public/Human Health ▪ Animal Health – (zoonotic diseases) ▪ Plant Health 	<ul style="list-style-type: none"> ▪ High ▪ High ▪ High

Hydro-meteorological hazards and health emergencies were given high risk ratings. Geodynamic/Geological and socio-natural hazards were rated between medium to low risk, with

the exception of deforestation, which was rated a high risk hazard. Technological hazards were deemed to be medium risks, but terrorism was unrated, due to the sensitivity of this area.

In addition, the National Risk Register for Climate Change identifies seven (7) potential hazards across nine (9) critical sectors (Table 8.3).

Table 8.3 Potential Hazards Across Critical Sectors

Climate Change Impacts/Hazard Identification		
Storms/Hurricanes: Storm Surge Coastal Erosion High Winds	Precipitation: Floods Droughts	Temperature: Extreme Events Cold Spells
Critical Sectors:		
Agriculture	Tourism	
Financial	Health	
Forestry and Biodiversity	Water Resources	
Marine and Coastal Resources	Coastal Zone and Human Settlements	
National Security		

Areas of intervention proposed as derived from the SNC process are elaborated in the SNC Report and include the enhancement of resilience at various levels of society, through tangible interventions; capacity development; education and awareness; research and knowledge management; efficient resource allocation; and the coordination and integration of climate risk management considerations with socio-economic development policies and environmental conservation at the national and local scale.

The various assessments of risk management capacities also provide a basis for the identification of areas for intervention for reducing disaster risk and building resilience. Table 8.4 provides an empirical comparison of the various capacity assessments undertaken to date utilising both quantitative and qualitative outputs for the various capacity areas and tools. The methodology for undertaking the comparative assessment involved a literature review, which combined the identification of key capacity areas and tools from the B-Tool Country Assessment Report (2006), CDM and HFA qualitative reporting, together with the qualitative analysis from stakeholder consultation during the process for elaboration of the SLU CP-DRR.

The assessment ratings of High (H), Medium (M), and Low (L), are based on a subjective measure of resilience¹¹⁷ or adequacy of coping capacities at both the national and community level, with regard to level of organisation, social networks, abilities, leadership, diversified economy, contingency plans and financial mechanisms, among other parameters.

¹¹⁷ The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions” (UNISDR 2009).

Table 8.4 Comparison of Capacity Areas based on the Capacity Assessments

DRR Capacity Area/Tools	B-Tool (2006)	CDM Audit (2010)	HFA	SLU CP-DRR Process
Policies and plans	L	M	H	H
Standards and regulations	M	L	M	M
Legislation	M	M	M	M
Human Capacity	H	L	L	L
Financial Resources	L	L	L	L
Technical Tasks and Contents	M	L	L	L
Public Education and Awareness	M	M	M	M
Infrastructure Development/Investments	-	M	L	L
Administrative Arrangements	-	M	H	M
Assignment/Execution of Responsibilities	M	M	M	L
Stakeholder Participation	H	H	H	M
Information Management	L	L	L	L
Monitoring and Evaluation of Programmes	H	M	L	L
Effective use of DRM Products	H	M	L	L

The comparative assessment emphasizes the limitations in human capacity, technical tasks and contents, financial resources and information management, as determined by most other assessments conducted.

The HFA national reports, which commenced the biennial cycle of reporting in 2009, revealed that significant progress has been made in early warning, preparedness and response, with one notable effect of the HFA process being the bringing together of the many stakeholders in DDR including national and local governments, parliamentary forums, inter-governmental organisations, non-government organisations, community-based organisations, practitioners, private sector, academic and technical institutions, the media and international organisations. However, the reports note that the country is still struggling to address underlying risk drivers, vulnerability and resilience building issues, and that public awareness is still not adequately addressed. Further, there is still limited investment in DRM particularly at the sectoral and community levels.

Presently, there is limited analytical basis for targeted policy and programme development for areas, sectors and populations most economically and socially at risk to disasters. However, the current broad level risk analysis, including the consideration of the components of the IDB Risk indicators, can point to the aspects of DRR implementation that require efforts to improve and create an appropriate National DRR framework. Further, the country presents predominant conditions of high exposure and susceptibility, social fragility and lack of resilience that favour risk accumulation and incapacity to respond to disasters. It is also apparent that while the country's risks from a macro-economic and financial perspective in terms of responding to catastrophic events may decrease, the country still does not have resources to face catastrophic events.

The Disaster Management Policy Framework approved by Cabinet in 2009, identified priorities for achieving the objectives of the Policy, that is to advance an approach to disaster management that focuses on reducing risks such as of loss of life, economic disruption and damage to the

environment and property, especially to those sections of the population who are most vulnerable due to poverty and a general lack of resources. These priorities, which also point to areas for intervention, are consistent with those emanating from the B-Tool assessments, SNC and HFA monitoring reports, and include:

- Timely, coordinated and focused direction of resources towards the effective operation of the disaster management system
- Maintenance of institutions that are technically capable of efficiently executing the comprehensive disaster management programme
- Development of local expertise capable of operating and maintaining the disaster management system
- Ensuring that the public is well informed and educated about disasters, their consequences and preventive and mitigation measures
- Creation of an environment in which the private and non-government sectors contribute meaningfully to the comprehensive disaster management effort.

The HFA has also assisted in making more explicit linkages between DRR and managing climate-related risks and CCA. Hence, due consideration is also given to the Inter-governmental Panel on Climate Change Special Report on Managing the Risk of Extremes and Disasters (IPCC/SREX) [Summary released in November 2011], which demonstrates that many measures to address natural hazard risk such as good land use planning, environmental protection, preparedness and early warning systems are also effective no-regret actions for adaptation to climate change. The HFA is also recognised as a pillar by parties to the UN Framework Convention on Climate Change with regard to efforts to adapt to climate change.

The 2011 Global Assessment Report (section “Revealing risk: Visible trade-offs for informed choices”) highlights some key issues for consideration with regard to risks:

- The sheer scale of recurrent and probable maximum losses should be enough to shock governments into action.
- Governments are liable for a significant part of total expected losses and they rarely have the contingency financing to match this liability.
- Governments need to decide how much risk they are willing to retain and how much they can afford to transfer.
- A balanced portfolio of prospective, corrective and compensatory risk management strategies is the most cost-effective way to reduce disaster risks and support development.

9. STRATEGIC GUIDELINES FOR COUNTRY DRR

9.1 Strategic Directions for Country DRR

One of the aims of adopting a DRR approach is to help countries transform to a sustainable disaster resilient development path. The evidence for Saint Lucia to invest in DRR is clear as risks are increasing. Increasing risks is evidenced by the increase in occurrence and the demonstrable severe impacts of multiple disasters, with regard to rising socio-economic losses related to sharp rises in damage to housing, critical local infrastructure and public assets (such as bridges, schools and health facilities), and the likelihood of further exacerbation by the impacts of climate change. The future level of vulnerability of Saint Lucia will also depend on its development path.

A national CDM strategy has been endorsed through high level consultations in country since 2001, but there seems to be limited progress in integrating disaster management into the planning process. One explanation advanced was that the required political leadership and technical capacity to implement the type of activities identified were inadequate to enable the requisite paradigm shift. The absence of “highly influential champions” for the process, especially within the political arena, has prevented DRM from being elevated to the political agenda in the country. There is need to leverage new entry points for DRR by taking advantage of the new directions for DRR in the country’s CDM Strategy, and integrating them into existing mechanisms, for development decision making and planning, including that for CCA.

Strategic directions for DRR implementation were charted coming out of the consultative process for the elaboration of the SLU CP-DRR, based on the priorities identified in Section 9 and incorporating the findings of the Global Assessment Report (GAR)¹¹⁸ and recommendations emanating from the work of UNISDR on Making Cities Resilient. The compilation on CCA measures and other relevant information in Saint Lucia’s SNC also highlighted a number of key areas where attention was required in building national capacity and improving the institutional and technical framework to facilitate cross-sectoral solutions for climate change impacts. All-encompassing strategic directions and guidelines are presented under the five (5) elements of DRR in **Table 9.1**.

Table 9.1 Strategic Directions and Guidelines for DRR in Saint Lucia

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
Risk Awareness and Assessment	Improve information on how hazards are changing with detailed risk assessments from diverse sources of knowledge	<ul style="list-style-type: none"> ▪ Enhance the national disaster inventory system to systematically monitor losses and assess risks at all scale using probabilistic models ▪ Recover, adopt and enhance existing risk

¹¹⁸ UN 2011. 2011 Global Assessment Report

Saint Lucia Country Profile for Disaster Risk Reduction (SLU CP-DRR)

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
		analysis methodologies <ul style="list-style-type: none"> ▪ Develop country-appropriate risk Indicators/Indices ▪ Undertake risk mapping of social vulnerability ▪ Conduct multi-hazard analysis and vulnerability and capacity assessments
Knowledge Development	Build adaptive capacity with new skills, knowledge and resources	<ul style="list-style-type: none"> ▪ Enhance decision support systems such as GIS pertaining to research and systematic observation (RSO) for effective monitoring and evaluation and dissemination of spatial data and information ▪ Generate spatial data and information on different disaster risk and vulnerability scenarios at regional, national and local/community levels ▪ Develop structured and targeted public education and outreach programmes with special focus on vulnerable groups, to provide information on disaster risks/vulnerabilities and measures to reduce risk and manage disasters to prompt behavioural change ▪ Create appropriate mechanisms / platforms for sharing local and traditional knowledge and experiences
Public Commitment and Institutional Frameworks	Empower and support communities to address root causes of vulnerability through	<ul style="list-style-type: none"> ▪ Demonstrate political leadership and will by placing policy

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
	<p>increased access to resources and promotion of environmentally sound development</p> <p>Build participatory risk governance capacities</p>	<p>responsibility for DRR, including CCA in a central ministry with a high level of political authority over national development</p> <ul style="list-style-type: none"> ▪ Harmonise national and sectoral policies to achieve coherence in policies to stimulate and enforce DRR processes ▪ Address legislative/regulatory shortcomings ▪ Support strengthening of sub-regional mechanisms in order to achieve the objectives of the HFA and the Regional Strategy for Disaster Risk Reduction ▪ Regulate urban and local development with DRR instruments and mechanisms such as building codes and land use planning ▪ Urgently integrate risk reduction strategies into all aspects of development planning and activities ▪ Commit resources for the upkeep and upgrading of the NEMO and other components of the national disaster management framework for implementation of DRR functions ▪ Build risk governance capacities through the institutionalisation of multi-sectoral, multi-stakeholder national/community platforms for DRR ▪ Decentralise DRM functions through an incremental approach in shifting the culture of

Saint Lucia Country Profile for Disaster Risk Reduction (SLU CP-DRR)

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
		<p>public administration to engage citizens and communities in local governance, with appropriate devolution of budgets, etc.</p> <ul style="list-style-type: none"> ▪ Increase country investments in DRR through the allocation of a percentage of the national budget and other revenue dedicated to DRR and incorporate in financial reporting ▪ Identify areas for risk transfer ▪ Continue to mobilise political support, and to advocate for international community, institutions and development partners to support the country's efforts to institutionalize DRR
<p>Application Measures</p>	<p>Investment in hazard mitigation/resilience building measures in all public and private development planning initiatives, programmes and budgets.</p>	<ul style="list-style-type: none"> ▪ Use participatory planning and budgeting to upgrade informal settlements and identify and allocate safe land for low income citizens and promote safe building ▪ Establish protocols and mechanism for data and information sharing and dissemination ▪ Protect ecosystems and natural buffers (e.g. watersheds, forests, reefs, beaches, wetlands) to mitigate impacts of floods, storm surge and other hazards <p style="text-align: right;">Enhance</p>

DRR Elements	Strategic Direction	Strategic Guidelines/Actions
		<p>programmes for social protection such as temporary employment schemes, bundling of micro-insurance and loans, among others</p> <ul style="list-style-type: none"> ▪ Encourage economic development and alternative livelihoods in rural areas and smaller development areas (villages, districts) in order to reduce the pressure of accelerated migration to high-risk peripheral areas and informal settlements ▪ Increase capital investment in infrastructure that reduces risk (e.g. flood drainage) and critical buildings, ▪ Assess safety of schools, health facilities and other critical buildings and national assets, and upgrade through retrofitting, renovation and renewal where necessary
<p>Early Warning Systems</p>	<p>Improve forecasting, dissemination and preparedness measures and reaction capacities</p>	<ul style="list-style-type: none"> ▪ Enhance early warning systems and emergency management capacities for vulnerable communities/areas for various hazards including storms, tsunami, floods, volcanic event ▪ Improve or expand hydrological and meteorological monitoring networks at both national and regional scales

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

- DRR implementation is cross-sectoral in nature and the impacts of poor development planning are usually manifested in effects on the country's natural resources and the population. These impacts may be further exacerbated by the realities of indirect drivers emanating from physical, social, economic, environmental and political factors. At present, considerations for disaster prevention, mitigation or preparedness are not formally and routinely integrated into the appraisal of projects or programmes, particularly those financed by public investments in; for example, infrastructure, health and education. This suggests that costs for rehabilitation post disaster, simply recurs as opposed to the country investing in climate resilient projects or programmes.
- Findings of the 2011 Global Assessment Report for DRR (GAR, 2011) show that while great strides have been made in reducing loss of life, for at least weather related disasters, the reality remains that disaster-related socio-economic losses continue to rise. This is particularly so in developing countries where damage to housing and critical local infrastructure and public assets such bridges, schools and health facilities has risen sharply¹¹⁹.
- The implementation of DRR calls for a coordinated, broad-based, multi-sectoral response aimed at mainstreaming DRR issues into the planning and development process. The perception of, and response to, these existential threats must pervade the national planning process, the operations of government agencies, the practices of the commercial/private sector and the actions of all citizens, from where and how they choose to build their homes, to how they transfer risks.
- The SLU CP-DRR has endeavoured to provide recommendations on the type of DRR construct that is results oriented and strategic in terms of its impact. The Document provides a basis for identifying potential areas to enhance the capacity of the requisite institutions, agencies, communities, groups, etc. to facilitate a more coordinated response to DRR implementation for the realisation of sustainable disaster resilient development.

"The good news is that a natural hazard does not automatically have to lead to a disaster," Mr. Ban said. "Countries such as Bangladesh, Cuba, Jamaica, Madagascar and the Philippines have shown that good building designs, proper land-use planning, public education, community preparedness and effective early warning systems can reduce the impact of severe weather events."

UN Secretary-General Ban Ki-moon 30 September 2008

¹¹⁹ Over the past three decades, the risk of economic loss as a result of floods rose by over 160 per cent, while economic loss incurred as a result of cyclones surged by 265 per cent in member countries of the Organisation for Economic Cooperation and Development (OECD. UN, 2011. 2011 Global Assessment Report (GAR) on Disaster risk reduction (DRR) – Revealing Risks, Redefining Development.

10.2 Recommendations

- It is clear that a re-shaping of the policy mix to reflect the changing climate and disaster context is needed to provide a strategic framework for action that will promote environmentally sound development, through the resourcing and empowering of local/community level institutions for building the resilience of citizens and the state.
- It is also apparent that the risk of losing wealth to natural disasters is beginning to outpace wealth creation, and as advocated, DRR must be incorporated in all sustainable development strategies¹²⁰.
- As financial resources continue to decline, the GOSL, like all other governments, will be driven to increasingly give consideration to resilience building. Accounting for disaster losses is a first step towards taking responsibility for, and assessing disaster risk for successful resilience building. Adapting existing development instruments such as national public investment planning, protecting vulnerable and critical infrastructure, promoting sustainable land use planning and reforestation, ensuring security of water supply and water resources, and collecting and analyzing climate change and disaster related data and information in a comprehensive and sustainable fashion can help to scale up DRM efforts to reach the many risk-prone citizens. Such strategies reduce disaster risk and strive towards the objectives of the HFA, and are also important for adapting to climate change and achieving the Millennium Development Goals¹²¹.
- It is anticipated that the beneficiaries will utilise the observations made regarding the key performance drivers, in particular policy environment, the organisational framework and institutional and individual capacities, gaps and constraints to pursue real capacity enhancement and improve practices and skills in a manner to ensure that the desired improvements in DRR implementation can be achieved.
- The singular risk is that observations and outputs presented in the SLU CP-DRR may not be effectively applied by the beneficiaries and potentially lose validity, unless the requisite efforts are made to fully integrate them into a functional framework for addressing current gaps and constraints. Additional sensitisation and training may well be required to enhance stakeholder awareness and education with regard to the benefits of a DRR approach that would further enhance the application of outputs.
- The NEMO, as the lead agency for disaster mitigation and prevention, will seek to drive the process to generate the level of commitment required by the GOSL. Further, the NEMO will work with other agencies responsible for national development, to collaborate with development partners, to assume their relevant roles and work towards capacity enhancement, to ensure a well constructed framework, integrating elements of policy, institutional structures and processes, and organisational and individual capacities, to effect a more coordinated response to DRR implementation for the realisation of sustainable disaster resilient development.
- The NEMO will also continue to actively demonstrate the need for requisite and concrete resources (human, technical and financial) to be committed and reflected within the National Budget to create the right environment for the implementation of DRR activities, including adequate human, technical and financial resources.

¹²⁰ Nassir Abdulaziz Al-Nasser, President of the General Assembly for RIO +20 Conference in thematic debate on disaster risk reduction: "addressing disaster risk reduction is therefore inseparable from the broader sustainable development agenda,"

¹²¹ UN 2011. 2011 Global Assessment Report

11. APPENDICES

APPENDIX 1: GLOSSARY OF TERMS

Anthropogenic hazards

Hazards created through the action of human activity (Baastel-ESL and Stakeholders)

Capacity

Physical social, economic and institutional means as well as skilled personal or collective attributes such as leadership and management (ISDR)

Capacity building

Efforts aimed to develop human skills or societal infrastructures within a community or organization needed to reduce the level of risk. Capacity building also includes development of institutional, financial, political and other resources, such as technology at different levels and sectors of the society. (ISDR)

Comprehensive Disaster Management (CDM)

Comprehensive Disaster Management which includes attention to all phases of the Disaster Management Cycle – prevention, mitigation, preparedness and response, recovery and rehabilitation (CDERA). It includes emphasis on reducing risk. This nomenclature is the term that reflects the global trend in the discipline for increased focus on risk management and the intense desire among disaster management Stakeholders in the Caribbean to accelerate initiatives in promoting disaster loss reduction. DRM as defined by ISDR is explained below.

Community Resilience

The ability of a community to cope with the effects of a hazardous event through appropriate prevention, mitigation, preparedness, response and recovery mechanisms (adapted from WCDR)

Coping Capacity

The means by which people or organizations use available resources and abilities to face adverse consequences that could lead to a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions. The strengthening of coping capacities usually builds resilience to withstand the effects of natural and human-induced hazards (ISDR)

Disaster Risk Management (DRM)

The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards. (ISDR)

Disaster Risk Reduction (DRR)

The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development. DRR involves:

- Risk awareness and assessment including hazard analysis and vulnerability/capacity analysis;
- Knowledge development including education, training, research and information;
- Public commitment and institutional frameworks, including organizational, policy, legislation and community action;
- Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
- Early warning systems including forecasting, dissemination of warnings, preparedness measures and reaction capacities (ISDR)

Early Warning

The provision of the means by which people or organizations, use available resources and abilities to face adverse consequences that could lead to a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions. The strengthening of coping capacities usually builds resilience to withstand the effects of natural and human-induced hazards (ISDR)

Hazard:

The potential to cause harm; (**risk on the other hand is the likelihood of harm**).

Intermediate Results (IRs)

Interim Targets set to measure progress toward achievement of Strategic Objective (CDERA CDM Strategy)

Mainstreaming

Making Comprehensive Disaster management an integral dimension of the policies and programmes in all political, economic and societal spheres (BCPR)

Mitigation

Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards (ISDR)

National Disaster Organization (NDO)

The NDO in this document refers to the national organizational structure of agencies linked for the purpose of attending to the legal, institutional and operational aspects of disaster prevention and mitigation, preparedness and response and recovery and rehabilitation. The NDO is generally headed by the Prime Minister or Head of government in the respective country. (Baastel-ESL)

National Disaster Management Office (NDMO)

The NDMO is the government agency with focal responsibility for disaster management in the respective country. It is generally headed by the country's Disaster coordinator (Baastel-ESL)

Outcomes

Targets to be achieved in the Medium-term in the results-based framework. Outcomes result from an amalgam of short-term outputs (Baastel)

Outputs

Short-term Results from activities undertaken toward the medium-term outcome (Baastel)

Preparedness

Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations (ISDR)

Prevention

Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters. Depending on social and technical feasibility and cost/benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters. In the context of public awareness and education, related to disaster risk reduction changing attitudes and behaviour contribute to promoting a "culture of prevention". (ISDR)

Recovery

Decisions and actions taken after a disaster with a view to restoring or improving the predisaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery (rehabilitation and reconstruction) affords an opportunity to develop and apply disaster risk reduction measures (ISDR)

Relief / response

The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Resilience

The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures. (ISDR)

Results Based Management

“Rather than focusing programme/project management efforts on the monitoring of inputs, activities and processes, an RBM approach concentrates on ‘results’ and places emphasis on the following dimensions: **Defining realistic results** based on appropriate analysis and context; **Clearly identifying programme beneficiaries** and designing programmes/projects that meet their needs and priorities; Using results information to **make effective management decisions**; **Monitoring the progress made towards expected results** with the use of appropriate indicators (Baastel)

Risk

The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions.

Conventionally risk is expressed by the notation $\text{Risk} = \text{Hazards} \times \text{Vulnerability}$. Some disciplines also include the concept of exposure to refer particularly to the physical aspects of vulnerability. Beyond expressing a possibility of physical harm, it is crucial to recognize that risks are inherent or can be created or exist within social systems. It is important to consider the social contexts in which risks occur and that people therefore do not necessarily share the same perceptions of risk and their underlying causes. (ISDR)

Vulnerability

The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards (ISDR)

More: http://www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf

APPENDIX 2: LIST OF ACRONYMS

ACCC	Adaptation to Climate Change in the Caribbean
BPoA	Barbados Programme of Action for the Sustainable Development of Small Island Developing States
BCPR	Bureau for Crisis Prevention and Recovery
B-Tool	Vulnerability Assessment Benchmarking Tool
CARDIN	Caribbean Disaster Information Centre
CARICOM	Caribbean Community
CARILEC	Caribbean Electric Utilities Services Corporation
CBO	Community Based Organisation
CBRNE	Chemical, Biological, Radiological, Nuclear and Explosive Events
CC	Climate Change
CCA	Climate Change Adaptation
CCCC	Climate Change Coordinating Committee
CCCCC	(5C's) Caribbean Community Climate Change Centre
CCRIF	Caribbean Catastrophic Risk Insurance Scheme
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency (formerly CDERA)
CDERA	Caribbean Disaster and Emergency Response Agency
CDM	Comprehensive Disaster Management
CDMP	Caribbean Disaster Mitigation Project
CDO	Community Development Organisation
CDRT	Community Disaster Response Team
CEHI	Caribbean Environmental Health Institute

CIDA	Canadian International Development Agency
CIMH	Caribbean Institute for Meteorology and Hydrology
CPACC	Caribbean Planning for Adaptation to Climate Change
CPC	Caribbean Programme Co-ordination Office (PAHO) in Barbados
CSME	CARICOM Single Market and Economy
CU	Coordinating Unit
CZMAC	Coastal Zone Management Advisory Committee
DaLA	Damage and Loss Assessment
DANA	Damage Assessment and Needs Analysis
DEMS	Digital Elevation Models
DIPECHO	Disaster Preparedness and Prevention – European Commission for Humanitarian Aid
DMA	Disaster Management Act
DRM	Disaster Risk Management
DRR	Disaster risk Reduction
DRRC	Disaster Risk Reduction Centre
DVRP	Disaster Vulnerability Reduction Project
EC	Eastern Caribbean
ECHO	European Community Humanitarian Organisation
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
ENSO	El Niño Southern Oscillation
EOC	Emergency Operations Centre
ERDMP	Emergency Recovery & Disaster Management Project

FAO	Food and Agriculture Organisation of the United Nations
GAR	Global Assessment Report
GCC	Global Climate Change
GCM	Global Climate Model
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNP	Gross National Product
GIS	Geographic Information System
GOSL	Government of Saint Lucia
HFA	Hyogo Framework for Action
IADB	Inter American Development Bank
ICT	Information and Communication Technologies
IDP	Integrated Development Planning
IDNDR	International Decade for Natural Disaster Reduction
IFRC	International Federation of Red Cross
IR	Intermediate Result
ISDR	International Strategy for Disaster Reduction
ISPS	International Ship and Port Facility Security
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
MACC	Mainstreaming Adaptation to Climate Change
MCE	Mass Crowd Events
MOU	Memorandum of Understanding
MSI	Mauritius Strategy for Implementation

MTDS	Medium Term Development Strategy
NBCC	National Biodiversity Coordinating Committee
NCCPAP	National Climate Change Policy and Adaptation Plan
NDC	National Disaster Coordinator
NDO	National Disaster Office
NDMO	National Disaster Management Office
NEC	National Environmental Commission
NEMS	National Environmental Management Strategy
NEMAC	National Emergency Management Advisory Committee
NEMO	National Emergency Management Organisation
NEOC	National Emergency Operations Centre
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
NHMC	National Hazard Mitigation Council
NHMP	National Hazard Mitigation Policy
NLP	National Climate Change Policy and Adaptation Plan
NMS	National Meteorological Services
NOAA	National Oceanic and Atmospheric Agency (US)
OAS	Organisation of American States
OCHA	Office for the Coordination of Humanitarian Affairs (UN)
OECD	Organisation for Economic Co-operation and Development
OECS	Organisation of Eastern Caribbean States
PAHO	Pan-American Health Organisation
PEO	Public Education and Outreach

PMP	Project Monitoring Program
RBM	Results-Based Management
RCM	Regional Climate Model
RCS	Red Crescent Societies
RSO	Research and Systematic Observation
RSS	Regional Security System
SAR	Search and Rescue
SDMP	Second Disaster Management Project
SGD	St George's Declaration of Principles of Environmental Sustainability in the OECS
SIDs	Small Island Developing States
SLASPA	Saint Lucia Air and Sea Ports Authority
SLING	Saint Lucia Integrated National GeoNode
SLM	Sustainable Land Management
SLU CP-DRR	Saint Lucia Country Profile document for Disaster Risk Reduction
SLRC	Saint Lucia Red Cross
SNC	Second National Communication
SO	Strategic Objective
SPACC	Special Adaptation to Climate Change - Implementation of Pilot Adaptation Measures in Coastal Areas
SPCR	Strategic Plan for Climate Resilience
UN	United Nations
UNDP	United Nations Development Programme
UN-ECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNEP	United Nations Environmental Programme

UNFCCC	United Nations Framework Convention for Climate Change
UNISDR	United Nations International Strategy
US	United States
USAID	United States Agency for International Development
UWI	University of the West Indies
V&A	Vulnerability and Adaptation
VCA	Vulnerability and Capacity Assessment
WB	World Bank
WCDR	World Conference on Disaster Reduction



UNISDR

The United Nations Office for Disaster Risk Reduction



GOVERNMENT OF SAINT LUCIA

OFFICE OF THE PRIME MINISTER

Saint Lucia Country Profile for Disaster Risk Reduction (CP-DRR)

prepared by the
National Liaison Officer for Saint Lucia
UNISDR DIPECHO Project



Humanitarian Aid
and Civil Protection

November 2012



Executed by the
National Emergency Management Organisation (NEMO)