Organization of
American States

A Capacity Needs Assessment of

Disaster Risk Reduction (DRR) in Saint Lucia

Draft Report

Department of Sustainable Development
Executive Secretariat for Integral Development

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Organization of American States

CONTENTS

LIST OF TABLES

STATEMENTS

The Secretariat for Integral Development of the General Secretariat of the Organization of American States is pleased to have assisted the Government of Saint Lucia in conducting an assessment of its capacity for effective disaster risk management, the results of which are shared in this document.

Disasters continue to pose serious threats to the sustainable development prospects of all OAS Member States, but more particularly to those in the Caribbean.

The recommendations in the study are intended to assist the Government of Saint Lucia as well as other Caribbean governments in their on-going efforts at strengthening their policies, institutions and strategies to reduce the impacts of disasters at the national and regional level.

I commend the Government of Saint Lucia for readily offering to be the pilot country for this important case study and also for ensuring the active engagement of the relevant officials in all of its aspects and phases.

The OAS stands ready to render any assistance it can, to the Government of Saint Lucia and other CARICOM Member states, including working through CDEMA's Physical and Environmental Planning Sub Sector Committee (PEPSSC) in the implementation of the recommendations in the report.

Ms. Sherry Tross
Executive Secretary for Integral Development

Saint Lucia is a Small Island Developing State (SIDS), with a total land area of 616 square kilometres (238 square miles). As a SIDS, and by virtue of our geographical location, we are prone to many natural disasters. Regrettably, our situation is further compounded by the impacts of climate change, seen through an increase in the frequency and severity of tropical cyclones and the loss and damage experienced from slow onset impacts like sea level rise and ocean acidification.

Every year, we anticipate with terrifying suspense, the announcement of the forecast for the Atlantic Hurricane season, from June 1st to November 30th. This simply reality is predicated by the fact that we know first-hand the effects of hurricanes and storms, such as the devastation of Hurricane Tomas in October 2010 and the recent off-season trough in December 2013, which caused destruction almost parallel to that of a category two hurricane, because of the unprecedented associated rainfall.

Unfortunately, high levels of debt and weak economic growth restrict our government's fiscal space and our ability to respond to the urgent problems of today, while concurrently taking action to address the pressing imperatives of tomorrow, including increasing our resilience to natural hazards. Therefore, the incorporation of Disaster Risk Reduction (DRR) strategies should be a fundamental part of our national planning.

This document highlights the various mechanisms that exist to assist with building DRR in Saint Lucia and the rest of the Caribbean. It is intended to provide guidance on measures that could be adopted in meeting our DRR goals. It adds value to some of the strategies that already exist. These include information sharing on how hazards are changing; the provision of detailed risk assessments; building adaptive capacity in both the public and private sectors, as well as among civil society groups; empowering communities to address root causes of vulnerability; and investment in hazard mitigation and resilience building in all public and private sector development planning initiatives.

Having identified the capacity needs for DRR in Saint Lucia, we look forward to continued support from our development partners to reduce our vulnerabilities to the myriad challenges that confront our country.

Hon. Dr. James Fletcher
Minister for Sustainable Development, Energy, Science and Technology

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ACRONYMS

BPOA	Barbados Programme of Action
CARICOM	Caribbean Community
CATHALAC	The Water Centre for the Humid Tropics of Latin America and the Caribbean
CEHI	Caribbean Environmental Health Institute
CELP	Caribbean Emergency Legislation Project
CEPREDENAC	Coordination Centre for the Prevention of Natural Disasters in Central America
CCA	Climate Change Adaptation
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Caribbean Strategy on Comprehensive Disaster Management
CIDA	Canadian International Development Agency (CIDA)
CIMH	Caribbean Institute for Meteorology and Hydrology
CMORPH	CPC Morphing Technique
CROSQ	CARICOM Regional Organization for Standards and Quality
DALA	Damage Assessment and Loss Analysis
DCA	Development Control Authority
DRR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
EU	European Union
EWS	Early Warning Systems
EOC	Emergency Operations Centre
GIS	Geographic Information System
FIDIC	International Federation of Consulting Engineers

GOSL	Government of Saint Lucia
GS/OAS	General Secretariat of the Organization of American States
HFA	Hyogo Framework for Action
INDM	OAS Inter-American Network for Disaster Mitigation
IDB	Inter-American Development Bank
IICA	Inter-American Institute for Cooperation in Agriculture
IMF	International Monetary Fund
MEA	Multilateral Environmental Agreements
MDEST	Ministry of Sustainable Development, Energy, Science and Technology
MFEA	Ministry of Finance and Economic Affairs
MIPST	Ministry of Infrastructure, Port Services and Transport
MPDHUR	Ministry of Physical Development, Housing and Urban Renewal
MTDS	Medium Term Development Strategy
NDO	National Disaster Organisation
NEMAC	National Emergency Management Advisory Committee
NEMO	National Emergency Management Organization
NEOC	National Emergency Operations Centre
NHA	National Housing Authority
NICE	National Initiative for the Creation of Employment
NOAA	National Oceanic and Atmospheric Administration
OAS/DSD	Organization of American States/Department of Sustainable Development
OECS	Organization of Eastern Caribbean States
PAHO	Pan American Health Organization
PEOC	Private Sector Emergency Operations Centre
PROUD	Programme for the Regularization of Unplanned Development

SLBS	Saint Lucia Bureau of Standards
SLSWMA	Saint Lucia Solid Waste Management Authority
SEDI	Secretariat for Integral Development
SIDS	Small Island Developing States
UNISDR	United Nations International Strategy for Disaster Risk Reduction
US-DOS	United States Department of State
USAID	U.S Agency for International Development
WRMA	Water Resource Management Agency
WASCO	The Saint Lucia Water and Sewerage Company Inc.

GLOSSARY OF TERMS

Terms	Definitions
Acceptable risk	The level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions.
Adaptation	The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Many disaster risk reduction measures can directly contribute to better adaptation.
Capacity development	The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.
Climate change	The Inter-governmental Panel on Climate Change (IPCC) defines climate change as: "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use".
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
Disaster risk	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.
Disaster risk management	The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.
Disaster risk reduction	The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.
Early warning system	The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.
Ecosystem services	The benefits that people and communities obtain from ecosystems.

El Niño-southern oscillation	A complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts over many months, such as altered marine habitats, rainfall changes, floods, droughts, and changes in storm patterns.
Emergency management	The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.
Environmental degradation	The reduction of the capacity of the environment to meet social and ecological objectives and needs.
Environmental impact assessment	Process by which the environmental consequences of a proposed project or programme are evaluated, undertaken as an integral part of planning and decision-making processes with a view to limiting or reducing the adverse impacts of the project or programme.
Greenhouse gases	Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds.
Hazard	A dangerous phenomenon, substance, human activity or condition 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.
Hydrometeorological hazard	Process or phenomenon of atmospheric, hydrological or oceanographic nature 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.
Land-use planning	The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.
Mitigation	The lessening or limitation of the adverse impacts of hazards and related disasters.
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.
Preparedness	The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.
Prevention	The outright avoidance of adverse impacts of hazards and related disasters.

Resilience	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.
Risk	The combination of the probability of an event and its negative consequences.
Risk assessment	A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.
Risk management	The systematic approach and practice of managing uncertainty to minimize potential harm and loss.
Risk transfer	The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.
Vulnerability	The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

1.0 BACKGROUND

The Department of Sustainable Development (OAS/DSD) in the Executive Secretariat for Integral Development (SEDI) is the principal technical body within the General Secretariat of the Organization of American States (GS/OAS) for responding to the needs of Member States on matters of sustainable development. To that end, the Department executes technical cooperation projects which generate experience and knowledge for the formulation of regional and national policy, and fosters dialogue and the exchange of information and expertise in matters of environment and development through relevant Inter-American networks.

With financial support from the US Department of State (US DoS), OAS/DSD is executing the project "Country Needs Assessment for Enhancing National Systems for Disaster Reduction and Improving Hemispheric Coordination and Cooperation." In the project's first phase, OAS/DSD worked in close cooperation with the Coordination Centre for the Prevention of Natural Disasters in Central America in the Central American Isthmus (CEPREDENAC).

Following consultations between OAS/DSD and representatives of the Caribbean Disaster Emergency Management Agency (CDEMA) and the Ministry of Sustainable Development, Energy, Science and Technology of Saint Lucia (MDEST), it was agreed that a capacity needs assessment in the Caribbean Community (CARICOM) region should focus on physical planning and development, supporting in this way the new thematic area of the Comprehensive Disaster Management (CDM[1]) 2013-2023 Strategy and its Outcome #1, "Effective institutional arrangements and support for CDM implementation at the national and regional levels." It was also agreed that OAS/DSD would conduct an assessment of Saint Lucia's capacity for integrating considerations regarding disaster risk reduction (DRR) and adaptation to climate change in its development plans and, more specifically, in physical planning.

The expected outputs include:

(1) A comprehensive analytical document with an identification of country needs, practical experiences, lessons learned and good practices, as well as a comparative analysis of the CDM 2013-2023 Strategy vis-à-vis the post-2015 Hyogo Framework for Action (HFA);

(2) A set of initiatives for horizontal and triangular cooperation, with the participation of CDEMA member States and other OAS member States outside the region; and

(3) A collection of good practices, documented and uploaded into the on-line database of the Inter-American Network for Disaster Mitigation (INDM).

[1] CDM has been defined under the Disaster Emergency Response and Management Systems (DERMS) project of the UN Development Program (UNDP) as including integrated management of all natural and human-induced hazards and involving management throughout all phases of the Disaster Management Cycle viz. Prevention and Mitigation, Preparedness, Response, Recovery, and Restoration. CDM engages the public and private sectors, civil society, urban and rural communities, and the general population in hazard prone areas. CDM is therefore multi-hazard and multi-sectoral in its application and is concerned primarily with integrating vulnerability assessment and risk reduction into development planning and management.

1.1 Assessment Objective

The Saint Lucia study is intended to serve as the basis for a broader discussion with experts and decision-makers in the region regarding actions that could be taken at the national level and/or supported at the regional level and international level including through CDEMA's Committee on Physical Planning and Development and the OAS's Inter-American Disaster Mitigation Network.

1.2 Scope of Study

The Study is focused in the following areas:

1. *Policy/institutional capacity and structure for DRR*: challenges, strengths, weaknesses gaps and overlaps in competencies, roles and functions across ministries and government agencies and institutional arrangements for implementing decisions.
2. *Decision-making Support Information System for DRR*: availability and use of geo-referenced databases and analytical tools and applications that are critical for implementing risk reduction policies from within physical planning and development processes and data integration through cloud-based platforms.
3. *Land Use Policy and Planning*: recommendations regarding land tenure; rationalization of unplanned settlements and location of critical social and economic infrastructure.

1.3 Assessment Methodology

Activities undertaken to achieve the objectives of the study included the following:

- Desk research of relevant base documents such as the Hyogo Framework for Action (HFA) and the United Nations Strategy for DRR (UNISDR), the Inter-American System, the Caribbean's and Saint Lucia Legal Framework for DRR;
- Interviews with representatives of key stakeholder institutions shown as Appendix 1 to the report;
- Discussion sessions with Focus Groups shown as Appendix 2 to the report;
- Survey of institutions involved in disaster risk reduction in Saint Lucia;
- Meetings with administrative and professional staff involved in disaster risk reduction in Saint Lucia; and
- Fieldtrips to identify disaster sites with rehabilitation works currently underway.

2.0 THE SUSTAINBLE DEVELOPMENT CONTEXT OF DRR

The UNISDR defines a disaster as 'a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources."

Natural hazards are defined by the UNISDR as 'natural processes or phenomena 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."

The links between disasters and sustainable development are well established. It is well known that disasters can undermine sustainable development. However, the fact that unsustainable development can create the conditions that fuel disasters is not always fully appreciated. As development progresses and as more social and economic infrastructure is exposed to natural hazards, inevitably, risk increases. In addition, development can undermine the health of natural ecosystems leading to environmental degradation and compromising the contribution of ecosystem services to development. Successive disasters result in further environmental degradation and sets in motion a debilitating cycle of poverty – disasters – environmental degradation – and back to more and higher levels of poverty and more disasters, each becoming more catastrophic than its predecessor.

In many cases, the root causes of disasters lie in vulnerability arising out of social and economic inequality and in issues such as land-tenure, land markets, poverty, access to education, affluence and unemployment. Poorly functioning land markets and prohibitive land prices drive low income families to settle on the peripheries of cities, often on steep slopes, in flood plains, and on fragile soils that are prone to erosion and generally in areas where there are no basic services and where housing developments do not follow any safety regulations. In these areas, self-construction is predominant resulting in unsafe buildings with little or no consideration of disaster preparedness and response, building codes, water and sanitation requirements, and electricity. Poor accessibility and unsafe construction combine to create an environment that is even more hazardous to human health and public security.

This study focuses on issues of capacity defined by the UNISDR as 'the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to reduce disaster risk and the impact of natural hazards on a system. While this definition shares many elements of vulnerability, it centers the attention in acquired attributes, resources and skills of a system to cope with a given hazard.

This study is driven by a conviction that effective physical planning is absolutely essential to breaking the cycle of negative reinforcement between unsustainable development practices and disasters.

2.1 The Global Context

The global context of the study is provided by two major processes that though complementary, have so far proceeded in separate domains. The first of these is Global Climate Change (GCC) which is

anchored in the UN Framework Convention on Climate Change (UNFCCC) and is supported by the Intergovernmental Panel on Climate Change [2](IPCC) and by the World Meteorological Organization (CMO), through its Global Framework on Climate Services (GFCS). The second domain is DRR, which is being supported by the United Nations International Strategy for Disaster Risk Reduction (UNISDR)[3].

2.1.1 The Challenge of Global Climate Change

The IPCC defines climate change as: "a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use".

The five reports released by the IPCC over the past two decades of its work suggest that the global climate is changing, mainly under the influence of anthropogenic greenhouse gas emissions. The IPCC asserts that because current emissions levels have already caused such global climate change, and because most greenhouse gases persist in the atmosphere for many decades, GCC will continue and possibly accelerate in the future, resulting in an increase in global mean sea-level rise of between four and 88 centimetres. While such impacts are likely to vary across regions, the predictions for CDEMA Member States, is for an increase in the intensity and frequency of extreme precipitation events, as well as a decline in the return periods of extreme rainfall events, meaning more floods and landslides and the likelihood, in a no-action scenario, of more disasters.

The WMO's Global Framework for Climate Services (GFCS) which emerged from the 3rd World Climate Conference held in 2009 recognizes that limited access to operational climate services is a significant impediment to sustainable social, economic and human development in Least Developing and Developing Countries worldwide. The initiative is managed by Intergovernmental Board for Climate Services (IBCS). Several Caribbean states are members of the IBCS. The Caribbean Institute for Meteorology and Hydrology (CIMH) represents the region's interests on the management committee of the IBCS.

The GFCS seeks to promote transformational socio-economic development in the Caribbean by mitigating the impacts of climate shocks on socio-economic activities in the Caribbean. Over the next 10-years, the GFCS will aim to facilitate the development of operational climate services and products at varying spatial and temporal scales to support the following sectors (i) agriculture and food security, (ii) health, (iii) disaster risk reduction and (iv) water resources management. Various funding mechanisms to support the initiation of interventions in these targeted areas have been secured at global, regional and national levels. The acquisition of funds to expand, enhance and sustain initiatives under the GFCS is underway.

[2] The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

[3] http://www.unisdr.org.

However, expanding and sustaining GFCS implementation will depend on: (i) access to sustainable financing from national, regional and international, (ii) integration of the Framework into national and regional development planning and strategies, (iii) strong dialogue between the users and developers of climate services, (iv) development and acquisition of human and technical capacity at regional and national levels and (v) engagement with the national and regional private sector.

2.1.2 DRR

The UNISDR defines DRR as "the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events."[4]

Globally DRR is primarily influenced by: (1) the Yokohama Strategy Plan of Action for a Safer World[5], which provides guidelines for natural disaster prevention, preparedness and mitigation; (2) the Hyogo Framework for Action (HFA) 2005-2015[6]: Building the Resilience of Nations and Communities to Disasters, which outlines the public policy elements of DRR and aims at "the substantial reduction of disaster losses in lives as well as the social, economic and environmental assets of communities and countries;" and (3) a suite of regional and global agreements including Agenda 21, the Barbados Programme of Action (BPOA), the Johannesburg Declaration[7], the Mauritius Strategy of Implementation (MSI)[8], the Millennium Declaration[9]and the Millennium Development Goals (MDGs). Saint Lucia is signatory to the UNFCCC[10], the Convention on Biological Diversity (CBD) and the UN Convention on Combating Diversification and Drought (UNCCD).

Given the inherent and acquired vulnerability of the Caribbean region to disasters, and given that in a business-as-usual scenario, GCC will compound such vulnerabilities, and expose lives, livelihoods, social and economic infrastructure and ecosystems to increased risk, DRR offers a platform which, if fully integrated into the development planning process can help to build the resilience of the region to climate-related disasters.

[4] http://www.unisdr.org/we/inform/terminology.

[5] The Yokohama Strategy Plan of Action for a safer World is the output of the World Conference on Natural Disaster Reduction, held in Yokohama, Japan, from 23 May to 27 May 1994. It provides guidelines for natural disaster prevention, preparedness and mitigation. http://preventionweb.net/go/8241.

[6] The HFA outlines five priorities for action, and offers guiding principles and practical means for achieving disaster resilience.

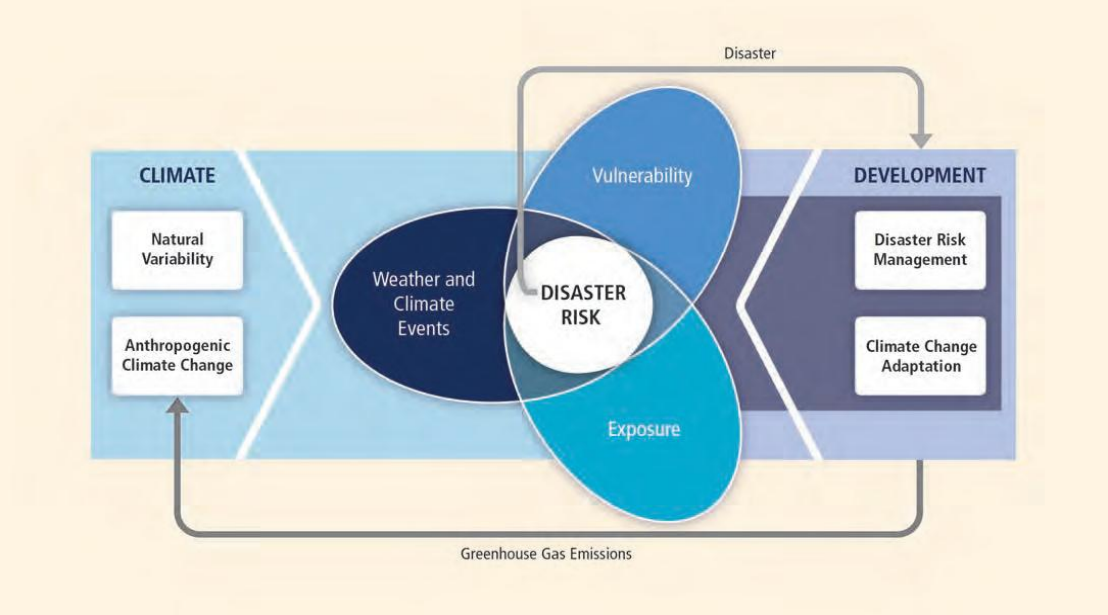
[7] Adopted at the World Summit on Sustainable Development (WSSD) in 2002.

[8] Adopted at the Mauritius International Meeting (MIM) to Review the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States in 2005.

[9] New York. September 2000.

[10] Rio de Janeiro. June 1992.

Figure 1 below captures the links between DRR and GCC and development.[11] Disaster risk is shown as the common element at the intersection of weather and climate, vulnerability and exposure and with a causal link to development. The incorporation of disaster risk management and climate change adaptation into the development planning process is depicted as positively impacting weather and climate, vulnerability and exposure, as well as anthropogenic climate change and natural variability.



2.2 The Hemispheric Context: the OAS and the Inter-American System

The General Secretariat of the Organization of American States (GS/OAS) has had a long-standing involvement in DRR and climate change adaptation and mitigation in the Americas from both a policy and programmatic perspective. In the case of the former, the OAS has been facilitating high-level policy dialogue on disaster management issues at various levels, including through its annual General Assembly, its Permanent Council and its subsidiary, Committee for Hemispheric Security and its Inter-American Committee for Natural Disaster Reduction (IACNDR).

Over the past four decades, the GS/OAS has treated disasters as an integral part of its development programs and projects, and has supported the efforts of the OAS Member States in addressing the root causes of disasters through an ecosystem approach and using as the planning and management unit watersheds and biospheres – particularly, those that extend across international boundaries.

The *Primer on Natural Hazard Management in Integrated Regional Development Planning, published in 1991* by the OAS places DRR at the core of the development processes. A pioneering document in every sense of the word, the Primer provides a suite of tools to assess risk within development projects and programs, by mapping hazards and exposed socio-economic infrastructure, and identifying vulnerability and risk, as well as mitigation measures.

[11] Source: Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPPC).

While climate change was not at the forefront of the international cooperation agenda as it is today, the document had already flagged the urgency of adapting to extreme weather that is associated with climate variability. DRR and adaptation to climate change (ACC) had long since been integrated into programs and projects of OAS/DSD dealing with integrated water resources management (IWRM), biodiversity and land management, and sustainable energy. Moreover, the underlying causes of disasters, such unsustainable land-tenure policies, environmental degradation, land use planning that does not integrate environmental impact and disaster risk assessments, poor access to quality education and health, and increasing social and economic inequity, among others, are continually being addressed through the Department's programs .

Additionally, the GS/OAS has been supporting an Inter-American political dialogue informed by technical and scientific data and information that has led to a suite of hemispheric instruments and mechanisms. For example, the Inter-American Convention to Facilitate Disaster Assistance, adopted in 1991 is the only regional legally binding instrument in the world on matters of humanitarian assistance[12]-[13]. The Convention represents a relevant instrument for addressing the challenges of international humanitarian assistance. It defines (i) requests for and offers and acceptance of assistance; (ii) the National Coordinating Authority; (iii) matters of direction and control of assistance; (iv) transport vehicles, equipment and supplies; (v) access and transit routes –including considerations for transit states; (vi) assistance personnel –including matters of immigration and protection; (vii) restricted areas and risk; (viii) costs; (ix) claims and compensation; as well as (x) governmental and non-governmental organizations. As required by Article 111 of the convention, the Saint Lucia Government has designated the National Emergency Management Organization (NEMO) as the Office responsible for transmitting requests for assistance, receiving offers of assistance and coordinating the distribution of the assistance.

The IACNDR, created in 1999, coordinates activities of member organizations of the Inter-American system and facilitates strategic thinking among OAS member States on DRR-related issues. The Inter-American Strategic Plan (IASP) for Policies on Risk Reduction, Risk Management, and Disaster Response, developed in 2003 at the request of the General Assembly represents another relevant instrument for the member States and the Inter-American System to advance DRR at all levels and sectors of government.

In 2007 the OAS General Assembly established the Inter-American Network for Disaster Mitigation (INDM) as the main hemispheric mechanism for strengthening practical cooperation among governments and inter-governmental agencies in DRR, especially by sharing technical information and best practices. In 2007, Saint Lucia and the other participating Member States of the OAS recognized the INDM. All CDEMA member states Caribbean countries are represented in the INDM by national agencies responsible for emergency/disaster management. Saint Lucia is represented by its National Emergency Management Organization (NEMO).

At its XLII ordinary meeting in 2012 in Cochabamba, Bolivia, the OAS General Assembly endorsed the Inter-American Plan for Disaster Prevention and Response and the Coordination of Humanitarian

[12] The Convention entered into force in 1996 with the second ratification by Perú.

[13] Santiago de Chile. June 1991.

Assistance, The Plan aims at coordinating the efforts of member States at overcoming the main challenges of disaster mitigation and prevention, preparedness and response, and international humanitarian assistance. A major focus of the plan is to assess existing legislative and coordination mechanisms in natural disaster and humanitarian assistance and to update them where necessary. The plan involves a programme for risk management and for the coordination of international humanitarian assistance within a framework of national sovereignty and the active participation of citizens.

At the programmatic level, the OAS/DSD has implemented several capacity building projects in the Caribbean, the most recent being the Caribbean Hazard Mitigation Project (CHAMP) which was implemented between 2001 and 2005 and the Mutli-hazard Resilient Housing Project, which was implemented in Grenada and Dominica following the passage of Hurricane Ivan in 2004.

The goal of the CHAMP was to reduce vulnerability within the Caribbean to the impacts of natural hazards on the population, economy and built environment." Its purpose was "to develop comprehensive national hazard vulnerability reduction initiatives through: the development of hazard mitigation policies; the creation of appropriate policy implementation programmes through comprehensive mitigation frameworks; and the development and implementation of safer building and certification programmes. Seven outcome level results and corresponding output level results were identified as outlined below.

- Establishing how regional and country bodies will work together;
- Securing investment to support the action plan;
- Proposing a monitoring and evaluation system; and
- Obtaining buy-in from Governments and relevant funders across the region.
- Design of a model hazard mitigation policy developed and adapted for use throughout the region;
- Update and/or development of new models and guidance documents for hazard mitigation policy;
- Design or viable national hazard vulnerability reduction implementation programs;
- Strengthening of CDERA's/CDEMA's capacity for assisting member countries with comprehensive vulnerability reduction policy development;
- Training of builders and artisans active in construction in the informal sector trained in safer building techniques;
- Design and delivery or training and certification programs for safe building and their incorporation into appropriate organizations in the region; and
- Increasing the awareness of building suppliers of the importance of stocking appropriate safe building materials.

The outcomes and impacts of both projects are discussed later in this document.

2.3 The Caribbean Context

The Caribbean is well served in climate change and DRR by a suite of regional organizations and agencies. However the analysis in this section is limited to the roles of select organizations whose mandates are most relevant to this study.

2.3.1 The Caribbean Community Climate Change Centre (CCCCC)

The CCCCC was established in 2002 to implement and coordinate activities for member countries stemming from the UNFCCC. The Centre serves as an "articulating mechanism" for mainstreaming the climate change agenda into the way public and private institutions operate. Specifically, the Centre has been: (a) providing scientific and technical advice to the CARICOM member countries on climate change policy; (b) serving as a coordinating body for climate change adaptation and mitigation activities; and (c) enhancing institutional effectiveness and maximizing synergies and cross-sectoral linkages among multiple stakeholders, national and regional institutions (public and private).

True to its mandate, the CCCCC has been using the platform established by the Caribbean Planning for Adaptation to Climate Change Project (CPACC) to build the capacity of CARICOM countries to assess the risks associated with climate change and sea level rise (SLR) and to cope with and adapt to their effects. This capacity building efforts have continued through successor projects including the Adapting to Climate Change in the Caribbean Project (ACCC) project, and the Mainstreaming Adaptation to Climate Change in the Caribbean Project (MACC). Through these projects, the capacity of Governments and select regional institutions was strengthened in the following areas: environmental information management; use of geographic information systems for coastal inventories; coastal vulnerability assessments; coral reef monitoring; economic valuation of coastal and marine resources; and in the design of economic regulatory instruments. CPACC spawned the design and delivery of an MSc programme in Climate Change at the University of the West Indies.

The CCCCC also spearheaded the design of a *Regional Framework for Achieving Development Resilient to Climate Change by CARICOM Member States* for the period 2009-2015. Approved in July 2009, it defines CARICOM's strategic approach for coping with climate change and is guided by five strategic elements and twenty goals designed to increase the resilience of social, economic and environmental systems in CARICOM Member States." The strategic elements of the framework are: (i) mainstreaming climate change adaptation strategies into the sustainable development agendas of CARICOM states; (ii) promoting the implementation of specific adaptation measures to address key vulnerabilities in the region; (iii) promoting actions to reduce greenhouse gas emissions through fossil fuel reduction and conservation, and switching to renewable and cleaner energy sources; (iv) reducing the vulnerability of natural and human systems to the impacts of a changing climate; and (v) promoting action to derive social, economic, and environmental benefits through the prudent management of standing forests in CARICOM countries.

In the Liliendaal Declaration issued following their 30th annual conference, CARICOM Heads of Government recognized the importance of adopting a common regional approach to address the threats and challenges of climate change and committed themselves to provide more effective mechanisms for dealing with natural disasters through enhanced risk assessment and material coordination along with the streamlining of risk reduction initiatives and to strengthen national and regional educational

institutions to provide training, education, research and development programmes in climate change and disaster risk management particularly in renewable and other forms of alternative energy, forestry, agriculture, tourism, health, coastal zone management and water resources management to increase the region's capacity to build resilience and adapt to climate change (CARICOM 2009).

In March, 2012, CARIOM Heads of Governments approved an implementation plan for the strategy for the period 2011 – 2021. The plan involves:

- Establishing how regional and country bodies will work together;
- Securing investment to support the action plan;
- Proposing a monitoring and evaluation system; and
- Obtaining buy-in from Governments and relevant funders across the region.

The CCCCC has signed cooperative agreements with the OAS, the Caribbean Meteorological Organization (CMO) and with the Caribbean Disaster Emergency Management Agency (CDEMA).

2.3.2 The Caribbean Disaster Emergency Management Agency (CDEMA)

CDEMA, formerly known as the Caribbean Disaster Emergency Response Agency (CDERA) was established in 2009 to promote the adoption of the principles and practices of Comprehensive Disaster Management (CDM) as an integrated and proactive approach to disaster management and for reducing the risks and losses associated with natural and technological hazards and the effects of climate change. The CDM seeks to integrate disaster management considerations into the development planning and decision-making process of CDEMA's participating countries. In 2007, the CDEMA, together with its partners, completed an *Enhanced Regional Strategy and Programming Framework to guide CDM Programming in the Caribbean*, for the period 2007-2012. This strategy was established within the context of the 2005-2015 CARICOM Regional Framework and was developed in line with the Results-Based Management (RBM) principles and approaches.

At a regional stakeholder consultation convened in May 2013, in Barbados, CDEMA and its partners agreed to a new Logic Model for the CDM Strategy for the period 2013 to 2023. The main objective of the new strategy is to achieve safer, more resilient CDEMA Participating States through Comprehensive Disaster Management (CDM) by 2023.In keeping with the new model, each CDEMA Participating State is expected to make amendments to its existing national CDM strategy and work programme. The CDEMA Coordinating Unit (CU) is expected to provide support to Participating States to enhance their work programmes, including by mainstreaming climate change adaptation and gender.

Four specific outcomes have been identified under the proposed Logic Model for the strategy 2013 - 2023. A description of activities to be undertaken to achieve each of the outcomes is shown in Table 1 below.

Table 1. Identification of specific outcomes under the proposed Logic Model for the strategy 2013 - 2023.

Outcomes	Actions
CDEMA CU and National Disaster offices strengthened/restructured for effective support of the implementation, monitoring and evaluation of CDM in Participating States	• CDM is integrated into national policies, strategies and legislation • Partners programming aligned and embedded into national CDM programming and priorities • Preparedness, response recovery improved at the national and regional levels • Resources for CDM at all levels increased
Enhanced knowledge management learning for CDM	• Regional disaster risk management network for informed decision-making at all levels improved • Infrastructure for fact-based policy and decision-making established/ strengthened • Incorporation of local/community and sectoral-based knowledge into risk assessment improved • Education and training material for CDM standardized, improved and applied in the region
Effectiveness of CDM at sectoral levels improved	• Regional disaster risk management programme at the sectoral level improved • Hazard information integrated into sectoral development planning and programming • disaster proofing of development programming and investment decision-making at the sectoral level strengthened
Enhanced community resilience in CDM states/territories	• Standards for safe communication development developed, agreed and applied • Community-based disaster management capacity built/strengthened for vulnerable groups • Community-based disaster management capacity of vulnerable groups strengthened • Community early warning systems integrated, improved and expanded • Community livelihoods safeguarded and strengthened through effective risk management

2.3.3 Caribbean Institute for Meteorology and Hydrology (CIMH)

The CIMH has been providing climate services to the Caribbean for many years. Under the Global Fund for Climate Services (GFCS), partially funded by USAID, the range and reach of these services are expected to grow through investments aimed at building its institutional capacity and facilitating greater interaction with users of these services through its role as the WMO's Regional Climate Centre for the Caribbean. In addition, the GFCS initiative will seek to strengthen the National Meteorological and Hydrological Services (NMHSs) to support the development and delivery of climate products and services to national stakeholders. Additional tangible benefits from the GFCS investments will include (i) expansion and enhancement of national and regional climate and weather observation networks; (ii) increased opportunities for human capacity development in climate science and regional adaptation to

increasing climate variability and climate change; (iii) increased technologies and computational infrastructure, and (iv) improved national and regional policies to address to support the region's climate adaptation agenda. It is expected that these benefits will facilitate national and regional innovation in the development of climate products and services.

2.3.4 Water Centre for the Humid Tropics of Latin America and the Caribbean (CATHALAC)

Established in 1992, CATHALAC's objective is to promote sustainable development through applied research and development, education and technology transfer on water resources and the environment, and facilitating the improvement in the quality of life in countries of the humid tropics of Latin America and the Caribbean. In 2014, CATHALAC conducted a comparative analysis showing how the rainfall received in Dominica, Saint Lucia and St. Vincent and the Grenadines during the passage of a low level trough system between 24 and 25 December 2013 compares with the climatology of the region.

2.3.5 Caribbean Catastrophe Risk Insurance Facility (CCRIF)

Perhaps the most critical regional organization in DRR from a Government perspective is the Caribbean Catastrophe Risk Insurance Facility (CCRIF). Established in 2007 as a risk pooling facility, CCRIF is owned, operated and registered in the Caribbean for Caribbean governments. It is designed to limit the financial impact of catastrophic hurricanes and earthquakes to Caribbean governments by quickly providing short term liquidity when a policy is triggered. It was capitalized through contributions to a multi-donor Trust Fund by the Government of Canada, the European Union, the World Bank, the governments of the UK and France, the Caribbean Development Bank and the governments of Ireland and Bermuda, as well as through membership fees paid by participating governments[14]. At December 2011, CCRIF has made disbursement of over $32 million to 7 member Governments who were affected by cyclones, earth and excess rainfall events. CCRIF also delivers a range of products that combine risk reduction and insurance for low-income groups such as farmers.

Beyond its insurance role, CRRIF implements a highly effective technical assistance programme through which it provides scholarships to Caribbean nationals wishing to pursue Bachelors, Masters and MBA studies in disaster risk management and climate change.

2.4 The Sub-regional Context: the OECS Organization of Eastern Caribbean States (OECS)

Since the 1970s, the OECS Commission has been supporting disaster management efforts in Saint Lucia and the other Eastern Caribbean countries both directly and through wide-ranging, natural resources management initiatives. In 1999, OECS governments adopted the St. Georges Declaration of Principles of Environmental Sustainability (SGDPES) in which they commit themselves to pursue "environmentally-sustainable development as essential for the creation of jobs, a stable society, and a healthy economy."[15]OECS Heads have taken this commitment a step further by enshrining it in the

[14] http://www.ccrif.org/.

[15] Signed by the OECS Ministers of the Environment in the third Meeting of the Organization of Eastern Caribbean States (OECS) Environment Policy Committee (EPC) in September 1999.

Revised Treaty of Basseterre, establishing the OECS Economic Union (OECSEU). Each member state is required to implement the SGDPES to minimize environmental vulnerability, improve environmental management and protect the region's natural, historical and cultural resource base for optimal social and economic benefits for Member States.

Activities implemented under the Comprehensive Disaster Management (CDM) within the last decades have focused on risk reduction through waste management given its implications for human settlement. In more recent years, the focus of the OECS Secretariat has been on climate change adaptation, economic investment and watershed management as they relate to DRR. More recently, the OECS Secretariat prepared model legislation which covered areas from disaster preparedness to relief management. The Act took into consideration the exposure of the eastern Caribbean countries by virtue of geography and topography, as well as the impact of metrological hazards, particularly landslides and floods.

The OECS Secretariat has been very active in a number of other areas including watershed management, the design of building codes, forestry management and fisheries policy and policies on physical development. The Secretariat has also promoted the application of standard DRR benchmarking tools, techniques and policies to assist with the preparation of annual progress reports. OECS has trained a number of Community Development Officers to operationalize and encourage the use of the tools among local communities. Representatives from the participating countries have been trained to use software but due to a high level of staff turnover, the Secretariat has to repeat the software training and conduct refresher courses from time to time.

In addition, the OECS Secretariat has collaborated with the UN-ECLAC[16] to conduct training in Damage Assessment and Loss Analysis (DALA)[17], and worked with OECS governments to carry out such assessments. The report on the impact of December 2013 Trough system in St. Vincent made a number of short, medium and long-term recommendations. At the time of writing, the assessment in Saint Lucia was being completed. In the long-term the Secretariat plans to conduct post-damage needs assessments in collaboration with UNDP and the World Bank. The UN-ECLAC works through the National Focal Point to conduct macro post-damage loss assessment while National Emergency Management Office (NEMO) will continue to coordinate the conduct of preliminary Damage Assessments and Needs Analyses.

One of the main challenges identified by the OECS Secretariat is the need to harmonize the legal instruments across the sub-region that address DRR. Legislative review was among the activities undertaken by the OECS Secretariat as part of the CDM implementation. The OECS Secretariat has also promoted other model legislative instruments such as the OECS Protected Areas Act.

[16] UN-ECLAC: UN Economic Commission for Latin America and the Caribbean.

[17] The Damage and Loss Assessment (DaLA) Methodology was initially developed by the UN-ECLAC in 1972. It has since been improved through close cooperation of WHO, PAHO, World Bank, Inter-American Development Bank, UNESCO, ILO to capture the closest approximation of damage and losses due to disaster events. Source: World Bank.

The OECS Secretariat is currently implementing a US$ 14.5 million USAID-funded regional project, **"***Reducing Risk to Human and Natural Assets Resulting from Climate Change (RRACC)."* This project, aims at enhancing the overall, long-term, capacity of the OECS region to respond to climate change, while strengthening the near-term resilience of Member States to climate change impacts through concrete, on-the-ground actions (OECS, 2011).These actions include: (1) reinforcing the policy, legislative and institutional framework that the region needs as a foundation for effective adaptation; (2) direct, targeted actions that improve the management of freshwater and coastal resources; (3) supporting the development of critical climate change information needs; and (4) developing and implementing a comprehensive education programme on Climate Change and Variability (OECS 2011).

In February 2014, the OECS Secretariat began implementation of a project entitled, Global Climate Change Alliance Project on Climate Change Adaptation and Sustainable Land Management in the Eastern Caribbean[18]. This project which is being supported through a Euros 10.6 million grant from the European Union is aimed at improving the resilience of the region's natural resource base to the impacts of climate change through:

- Effective and sustainable land management policy, capacity, awareness, and practices; and
- Implementation of specific physical adaptation measures, including soil & land stabilization, river & sea defence, forest & ecosystem restoration.

2.5 Summary of observations

From the foregoing, it is clear that Saint Lucia and the rest of the Caribbean have at their disposal an impressive suite of agencies with a mandate to build DRR capacity in the region. By and large, these agencies are attempting to fulfill their respective mandates, with varying levels of effectiveness and success. All of the agencies are highly dependent on external funding and consequently all are affected by issues of adequacy and unpredictability of such funding. More critically, while these agencies exist to assist their member states, they can only be as effective as their member states wish them to be. Regional agencies cannot force their member states to adapt and adopt regional instruments, or to design and implement national policies (even when these are prepared for them) or to put in place the requisite coordinating and collaborating mechanisms to give full effect to integrated DRR.

The evidence gleaned from the social, economic and environmental impacts of extreme weather events that have impacted the region over the past decade in particular, clearly indicates that the region has a considerable way to go if it is to break the link of inevitability with which extreme weather events and other natural hazard events escalate in(to?) disasters.

In this regard, the lessons from the 2004 hurricane season - one of the most active on record - are instructive. Between July and September, there were 14 weather systems with winds ranging from 50km/hr to 275km/hr. Seven (7) of these systems were hurricanes (Alex, Charley, Danielle, Frances, Ivan, Jeanne and Carl) which together resulted in the loss of 49 lives and approximately US$2 billion in damage, most notably, The Bahamas, Cayman Islands, Grenada and Jamaica. The most intense and damaging system of the Season was Hurricane Ivan which attained Category 5 status and which killed 16 people and damaged 90% of homes in Grenada.

[18] http://www.oecs.org/our-work/projects/rracc.

The findings from the post-disaster assessments done in 2004 are as applicable in 2014 as they were 10 years ago. The assessments confirmed that disaster management agencies face considerable challenges in promoting mitigation activities. At the macro level, policy directives for disaster risk tend to be articulated primarily during or immediately after disaster events or periods, and relate primarily to crisis management measures. The failure of development policy to draw on hazard and/or environmental evaluation tools or approaches in the majority of CDEMA Member States is exacerbating the vulnerability of these countries to disaster risk. This is seen, for example, in the generally unplanned and arbitrary allocation of land for residential and commercial development with only limited attention placed on land capability and level of exposure to disaster risks and hazards (UNDP, 2004).

Another major lesson from the 2004 Hurricane Season with continuing relevance is a continuing failure to recognize that economic, social and environmental systems are naturally integrated can increase vulnerability to natural disasters and lead to a loss of resilience, thus negatively impacting sustainable development. Further, failure to anticipate shocks can lead to partial solutions that do not take account of the natural integration between social, environmental and economic processes and ignore the returns from resilient solutions.

A key recommendation in all the post-assessment reports is the need for improved physical planning and zoning regimes, particularly relating to building standards, and environmental protection, including beach and coastal preservation. In countries such as Cayman Islands with improved building standards and effective code enforcement, only moderate damage to building structures was recorded, thus confirming the need for all countries to review and revise the basic, reference wind speeds for structural design purposes as well as the need for greater inspection and enforcement of wind-resistant design and construction standards.

The analysis in the preceding section raises concerns about the sustainability of the impacts of regional projects. There is room for the view that CARICOM member states ought to be better organized and capacitated in DRR especially in light of past and current donor-led interventions such as the CHAMP, CPACC, ACC, CDM and MACC projects, among others. The reasons for this state of affairs may include:

- A lack of political will;
- The absence of a clearly articulated national vision and well-designed, integrated national development policies plans and physical development strategies;
- Fragmentation of national agencies dealing with DRR with weak or ineffective coordinating mechanisms between them;
- Absence of effective HR policies to retain trained personnel;
- Absence of effective mechanisms to monitor and evaluate the impact of DRR-related policies and activities;
- Lack of data; and
- The absence of sustained and predictable financing

3.0 THE NATIONAL CONTEXT: – A REVIEW OF SAINT LUCIA's DRR CAPABILITIES

3.1 Background

Saint Lucia is part of a chain of Lesser Antillean volcanic islands stretching from Grenada to Saba. The island is rugged with steep mountains and deep valleys. These geographic features explain the wide dispersion of the population; the preponderance of human settlements within the coastal zones; the location of agricultural activities in the valley areas; and the mixed nature of the island's economy.

Saint Lucia is located within the Trade Wind belt. Winds approach from between the east-northeast to east-south-east. Stronger, more northerly, winds are common from December to May. The island's climate is characterised by a dry season which runs from January to May, and a wet season from June to December. The hurricane season extends from late June to the end of November. The island has been hit by a number of storms and hurricanes during the last several decades, the most recent being Tropical Storm Debbie in September 1994 which caused extensive flooding in low-lying areas.

Despite its small size, Saint Lucia possesses a high degree of ecosystem diversity. Approximately 35% of the land surface is covered by natural forest and the rainforest in particular is home to a wide range of flora and fauna, including one of the rarest birds in the world, the Saint Lucia Parrot (*Amazona versicolor).*

Although they are relatively small, Saint Lucia's wetlands are representative of most (Caribbean?) wetland ecosystems. The total wetlands area has been reduced from 320 hectares to 193 hectares, with some areas currently under considerable stress. Reef systems along the west coast are more diverse than those of the east coast. In general, fringing reefs are located mainly along the south-east (Anse des Sables), central west (off the districts of Anse-la-Raye, Soufriere and Laborie), and north-west coasts (Choc Bay). These reefs are threatened by high levels of land and sea-based pollution and, consequently, near-shore fisheries are also threatened. Natural disasters such as hurricanes and storms have also taken a toll on the island's reef systems and seagrass beds. The healthiest and most diverse reefs are found along the central west coast.

3.2 The Policy, Legal and Institutional Framework for DRR in Saint Lucia

DRR in Saint Lucia is framed by several legislative and policy instruments, including the Saint Lucia Constitution Order 1978, the Emergency Powers (Disaster) Act of 1995, the Disaster Management Act of 2006 and the Physical Planning and Development Act 29. (2001)[19]*- as amended in 2005. These instruments are supported by other sector-specific laws and regulations, and bilateral and multilateral agreements. However, except for the Physical Planning and Development Act, in general these instruments address more disaster management than DRR.

[19] There is a Physical Planning and Development Act 29 (2001), which regulates development. This act does not specifically provide for a Building Code. However, Part 6 Section 56 of the Act gives authority to the Minister to "make regulations" for giving effect to the provisions of this Act. There is however an intention to adopt the Building Code as part of the Regulations.

The Saint Lucia Constitution addresses the circumstances under which a state of emergency is declared as a result of the occurrence of any earthquake, hurricane, flood, fire, and the outbreak of pestilence or of infectious disease". The Emergency Powers Act, as its title suggests, establishes the hierarchy of responsibility and actions to be taken after a public emergency is proclaimed.

The Disaster Management Act (2006) contains detailed provisions regarding the functions and operations of NEMO. The Act requires a Director to head the organization along with a National Emergency Management Advisory Committee (NEMAC) chaired by the Prime Minister and including Permanent Secretaries, heads of first response agencies and representatives of other organisations identified by the Minister. The NEMO Director serves as an ex-officio member. The Act provides for the establishment of National Disaster Committees and Sub-Committees as well as District and Agency Disaster Committees. Currently, there are 14 district and 18 agency committees. Areas covered by these committees include Transportation, Supplies Management, Telecommunications, Damage Assessment and Needs Analysis, Information, Wellbeing, Stress Management, Shelter Management, Oil Pollution Action, Health and Reconstruction. The responsibilities, structure and administration of the various national committees are being reviewed, as part of revision of the National Emergency Management Plan (NEMP), and recommendations are being made for capacity building to better deliver on the disaster management mandate.

The Act is currently being reviewed in the context of DRR to:

- Provide for adequate institutional support for NEMO in the context of CDM;
- Include specific references to disaster risk reduction, disaster risk management, risk assessment and vulnerability;
- Specify the functions of the Director of NEMO with respect to the National Comprehensive Disaster Management Strategy, disaster management information system and prevention and mitigation;
- Reflect the roles and roles and responsibilities of persons involved in disaster risk management;
- Include procedures related to disaster risk management roles of Government Ministries, and Departments of Government, statutory bodies and other organizations;
- Include procedures for mobilizing services and systems for disaster risk management; and
- Include provisions for a National Multi-Hazard Alert System, operated by relevant agencies in conjunction with the Director.

The Physical Planning and Development Act No. 29 of 2001 and its amendments of 2005 govern the operations of the Ministry of Physical Development and Development Control Authority (DCA). The Act provides for the making of regulations. However, EIA regulations and the Building Code are yet to be introduced by the Minister, depriving the Ministry and the DCA of effective enforcement procedures to guide the physical planning function.

3.2.1 Disaster Management Policy Development

Saint Lucia has introduced several national policies and strategies to guide the implementation of major disaster management activities. Included among these approved disaster management policy documents are the following:

- Comprehensive Disaster Management Strategy
- Damage Assessment and Needs Analysis Policy
- Disaster Management Policy Framework
- Emergency Shelter Management
- Hazard Mitigation
- Hyogo Framework of Action
- Mass Fatality

An in-depth vulnerability assessment of all public facilities and critical infrastructure is urgently required. Although the CDM strategy provides for such an approach, its mainstreaming has been minimal because it is perceived mainly as the business of the Government of Saint Lucia (GOSL). The *Hurricane Tomas After-Action Report* prepared in 2011 contains a number of recommendations for improving DRR. However, little has been done to implement these recommendations because of poor attendance of NEMO decision-makers at post disaster meetings convened to review the recommended follow-up action required and to assign responsibility and resources. Table 2 below highlights the challenges and capacity needs in Saint Lucia, for implementing the Hyogo Framework of Action. A detailed assessment of the competencies of NEMO in the context of DRR is provided at Appendix 4.

Table 2: Country Report on the status of implementation of the Hyogo Framework Action: Challenges and capacity needs.

No	Focus Area	Challenge	Capacity Need
1	The more effective integration of disaster risk consideration into sustainable policies, planning and programming at all levels.	Achieving behavior change among citizens with respect to DRR.	Need adequate funding to conduct disaster management training and to share information or knowledge on mainstreaming gender in disaster management.
2	The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.	Poverty continues to challenge the ability of households to make DRR a priority.	Adequate human/financial resources needed to facilitate training, sharing knowledge with the community and to ensure community resilience building initiatives.
3	The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction effort of affected communities.	Resource limitations and the ability of regulators to enforce the requisite building code.	Adequate human and financial resources, to strengthen the physical planning system and to enforce the national building code.

3.2.2 Disaster Response Planning

While the main focus of NEMO's efforts is on disaster response, it is also charged under the Disaster Management Act with risk assessment functions. The Hazard Risk Mitigation Policy, and Hazard Risk Mitigation Plan of Action acknowledge the predicted impacts of climate change, but these have not been implemented. Also, while NEMO has Geographic Information System (GIS) equipment and software, at the time of writing this report, it does not have a GIS Specialist on staff. Additionally, NEMO does not have any internal mapping capability and depends on the Survey and Mapping Unit of the Ministry of Physical Development for this service. Moreover, there is no mechanism for data sharing among ministries that would facilitate the maintenance of an up-to-date, geo-referenced database by NEMO.

The National Emergency Management Plan outlines standard operating procedures, policies and guidelines to be applied in response to specific hazards, including hurricanes, floods, earthquakes, volcanic eruptions, oil spills, drought and landslides. Other plans exist that address hazard mitigation, stress management response, medical waste, bio-hazardous waste management, relief distribution, telecommunications, transportation, evacuation and marine search and rescue. Sectoral and/or agency plans have also been prepared by or on behalf of critical ministries and departments of government such as the Ministry of Health, WASCO, the Ministry of Infrastructure, the hospitality industry, the Ministry of External Affairs, and the Meteorological Services Department (MSD)[20].

Some mitigation work is being carried out by various public agencies. However, these efforts are not centrally coordinated. There is need to reassess meteorological phenomena using suitable models and historical data, as well as for greater collaboration between the Meteorological Office, the Water Resources Management Agency (WRMA) and other relevant public agencies. It is also important to map historical events and develop hazard risk maps. Such data could have a positive influence on banking and insurance sector policies.

The annual budgetary allocation for NEMO does not allow it to adequately fulfill its mandate. Previous annual reports of NEMO have identified the need for NEMO to build the capacity of disaster management personnel. The position of Deputy Director has been vacant for some time. The recommended additional staff positions are one (1) Geographic Information System (GIS) Specialist and one (1) Mitigation Officer.

NEMO serves as a referral agency of the Development Control Authority (DCA) on matters relating to disaster management but it is not represented on board of the DCA. In light of this, there is need to formalize provisions of the Disaster Management Act for NEMO to review and provide feedback on Environmental Impact Assessments (EIA).More generally, there is a need for Integrated Development Planning (IDP) at both national and local levels. However, IDP cannot happen without political commitment, and without integrated institutional arrangements, particularly with respect to: (a) the management and coordination of environmental policy at the national level; (b) the operation of mechanisms for civil society and private sector participation in policy processes; and (c) the full integration of national policies and programmes within regional and global policy frameworks.

[20] In some instances these plans have been drafted but do yet not have the formal approval of the Ministry.

Saint Lucia is a member of the Inter-Governmental Oceanographic Commission (IOC)[21] and as such participates in meetings of the Inter-Governmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions. The Saint Lucia's Meteorological Service is the designated National Tsunami Focal Point and as such is responsible for receiving and disseminating tsunami warnings. Saint Lucia is expected to submit an Annual Tsunami Report on the country's activities for the year and is currently up-to-date with its Annual Reports.

3.2.3 Physical Development, Housing and Urban Renewal

Ministries with responsibility for physical planning and development have traditionally served as the technical arm of the Development Control Authority (DCA) from its inception as a creature of the Land Development (Interim Control) Act of 1971. Under this arrangement, the Chief Physical Planning Officer served as the Executive Secretary of the DCA and until 1994 the Permanent Secretary of the Ministry of Planning served as the Chairman of the DCA. Throughout its life, the Board of the DCA has comprised a mix of private individuals and technical staff drawn from specialized Ministries, including the Chief Engineer in the Ministry of Communications Works and Transport now the Ministry of Infrastructure Port Services and Transport (MIPST).

The Land Development Act remained in its interim status until it was repealed by the Physical Planning and Development Act of 2001. During its 30-year life, no regulations were passed and no zoning plans were approved, meaning that the DCA operated in a climate of voluntary compliance which negatively impacted its effectiveness. During this period, there was a proliferation of illegal developments driven partly by the social and economic conditions that existed at the time and partly by a lack of enforcement capability of the DCA.

The Physical Planning and Development Act (2001) was amended by Act 3 of 2005 to retain the Development Control Authority (DCA). The original Act provided for the Head of the Physical Planning and Development Division to perform the functions of the DCA upon its dissolution.

At the time of preparing this report, there was no approved Building Code in existence. However, the Saint Lucia Bureau of Standards (SLBS) in collaboration with CARICOM Regional Organization for Standards and Quality (CROSQ) is designing a new model building code, which will be available for

[21] The IOC is the United Nations body for ocean science, ocean observatories, ocean data and information exchange, and ocean services such as Tsunami warning systems. Its mission is to promote international cooperation and to coordinate programmes in research, services and capacity building to learn more about the nature and resources of the oceans and coastal areas, and to apply this knowledge to improved management, sustainable development and protection of the marine environment and the decision making processes of States. Source: http://www.unesco.org.

adaptation and adoption by Saint Lucia and other Caribbean countries during 2014. The introduction of a new Building Code will require amendments to be made to the Physical Planning and Development Act.

The capacity of the Ministry of Physical Development Housing and urban Renewal (MPDHUR)[22] to fulfill its mandate under the Physical Planning and Development Act is not where it should be. With its limited resources, the focus has been mainly on development control. The absence of an approved national building code (including building guidelines for small buildings) has exacerbated the problem. Draft EIA regulations guide the Department but these have not been passed into law and their application is therefore limited.

The limited forward planning capacity within the MPDHUR and the absence of approved land use and zoning plans has not served the cause of orderly development. Between 1988 and 1992, comprehensive zoning plans were prepared for many of the major population centres by a team of physical planners made available under the UN Volunteer programme. While these plans were used internally to inform the work of the DCA, they were never formally adopted. The Ministry proposes to establish a Forward Planning Unit. A National Policy and strategic Action Plan for Urban Renewal and is awaiting the approval of Cabinet. These two initiatives should better facilitate the ability of the MPDHUR to deliver on its planning functions.

Forward planning and development of land use policies and plans must be based on geographically-referenced data, such as land capability, hazard vulnerability, and location of critical and other infrastructure. Inter-agency collaboration is important in the development of land use plans. Multi-sectoral perspectives are required, but inter-ministerial collaboration is weak and informal.

Risk assessments should be routinely applied in the DCA application appraisal process. The existing checklist should be revised to include requirements pertaining to risks analysis and locations plans with detailed information on hazard-prone areas. Further Environmental Impact Assessments (EIAs) should include risk analysis for hazards such as flooding, landslide, soil erosion and wind.

The routine application of Geographic Information Systems (GIS) is needed to support decision-making by all relevant agencies in relation to land. The MPDHUR has completed the design of a national GIS platform, the use of which is being phased in, as funding becomes available. Under the Pilot Programme for Climate resilience (PPCR), a Spatial Data Management Coordinator (SDM) has recently commenced a 1-year attachment to the MOPD. He will be required to develop and set the required standards and policies, and manage the implementation of the GIS as well as maintain and enhance the deployment of the existing GeoNode[23]. The SDM is tasked to:

[22] http://physicaldevelopment.govt.lc/.

[23] One component of the spatial data management system in the form of a GeoNode platform has been designed to directly support the planning and implementation PPCR and SPCR activities.

- support GIS units across Government ministries and agencies to develop a standardized National GIS;
- Develop standards for GIS deployment and use within the MPDHUR, other Ministries and Agencies, and strategies for maintaining database security;
- Oversee and coordinate the creation or revisions of existing GIS maps and charts on projects or activities for disaster related mapping with relevant Agencies;
- Review other GIS project plans and defines requirements, tasks and resource needs, ensuring that there is an established link with all internal and external players;
- Compile and generate geographic data from multiple sources in preparation for the digital conversion process;
- Manage the established GIS database and ensures that it serves as a platform for the installation of GeoNode technology which currently exists within the MPHDUR;
- Maintain computer generated maps, reports and data in a well-organized format and assists others with the use of the information in the GIS created format;
- Determine the ArcGIS Server web applications for internal and external use;
- Oversee the governance of a GeoNode system to facilitate data sharing between Government Departments, Ministries and Agencies;
- Integrate GIS with other computer applications including the GeoNode system; meet with users and review requests; develop and tailor applications to meet the various user needs;
- Create new GIS layers along with the relevant line Agencies when necessary representing the national GIS assets – examine and analyze data from ground surveys, original maps, aerial photographs, civil engineering plans, plot maps and other data to ensure completeness and accuracy of the GIS layers;
- Establish an inter and intra Governmental GIS User Group and directly support their ongoing activities including meetings, awareness, etc. – prepares and delivers GIS demonstrations and presentations to stakeholder Agencies and Government Ministries; and
- Provides GIS training, instruction and support to users within the identified Units of the Ministry of Physical Development, Housing and Urban Renewal and select Government Ministries and Agencies, in GIS systems, methodology and technology, including the development of GIS course outlines and training material and tutorials, as required.

3.2.3.1 Hazard mapping

A number of hazard maps exist, and some of these are kept by the MPHDUR. The following list is provided in the National Hazard Mitigation Plan:

Table 3: Available Hazard Maps.

Hazard	Map Name	Date	Scale	Location
Flood in Corinth	Flood Early Warning System FEWS (Corinth)	2013	1:2,500	NEMO, WRMA
Drought	Drought Hazard Map 1.Drought Vulnerability Map 2. Drought Sustainability Map 3. Crop Sustainability Issues 4. Report	2007	1:25,000	MOPD
Wind	Saint Lucia Wind Hazard Atlas 50 year Maximum Likelihood Event 100 year Maximum Likelihood Event 100 year 90% Prediction Limit Event	2006	1:25,000	MOPD
Coastal Flooding	Saint Lucia Coastal Flood Hazard Map 50 year Maximum Likelihood Event 100 year Maximum Likelihood Event 100 year 90% Prediction Limit Event	2006	1:25,000	MOPD
Flood in Castries	Flood Hazard Occurrence for Selected Return Periods (2, 5, 10, 25 years) Castries	2003	1:2,500	MOPD
Landslide	Landslide Hazard Map	1985	1:50,000	MOPD

These maps are not routinely used in appraisals. An issue with the available hazard maps is the scale of data capture.

After the passage of Hurricane Tomas, the MIPST completed a landslide study, with a risk assessment of the primary road network. A flood risk and mitigation plan was developed for Bexon. Soufriere and Dennery flood risk maps have also recently been developed. Most of these initiatives are funded under the World Bank DVRP project. It is not clear however, which agency leads these initiatives, maintains the outputs, and manages the sharing of information with professionals responsible for planning and design, or with the public, to guide their land purchase and development decisions.

3.2.3.2 Inter-ministerial collaboration in Physical Planning

In the mid-1980s, the DCA established a referral system that allows line Ministries, such as those responsible for environmental health and communications, to provide input in the decision-making of the DCA on development applications submitted for its consideration. From time to time, the input of

the Ministry of Agriculture is sought on applications involving a change of land use out of agriculture into other land uses, primarily housing, commercial and industrial land uses. The system continues to attract its fair share of criticism mainly because of the inordinate delays in receiving the inputs of agencies.

Outside of this system, collaboration among referral agencies on forward planning is not institutionalized. Over the years, a number of inter-ministerial committees and councils have been established with the intention of improving multi-sectoral collaboration, exchange of information and integrated planning at the national level. These committees meet infrequently, if at all. One of the few that meets consistently and is reasonably well attended is the NEMAC, likely because this is a meeting chaired by the Prime Minister.

3.2.3.3 Capacity needs in the construction sector

The draft Building Code stipulates the requisite capacity of persons to supervise private construction works, but since this is not a legal requirement, it cannot be enforced, and is typically not complied with, even for construction financed by the banking sector.

The construction sector in Saint Lucia has for been afflicted for some time by low efficiency, low productivity and poor public image which has been attributed to: (a) declining skills and competency levels of the workforce; (b) the absence of a sound regulatory framework; and (c) the absence of informed standards of professional practice to govern the operations of the industry. In an attempt at addressing this situation, the Government of Saint Lucia with funding support from a CIDA Construction Industry Standardization and Certification Project (CIP) implemented a suite of activities aimed at: (i) improving the skills and competency of the workforce through a continuous training programme for all entrants into the construction industry; (ii) designing and implementing a system of certification for regulating the entry of workers into the industry; and (iii) raising the standards of professional practice in the industry to the desired levels. The key deliverables included:

- The enactment of a draft Construction Bill and accompanying regulations, including a draft Building Code and related Guidelines (referred to earlier);
- Standard forms of contract and standard methods of measurement;
- A proposal for a National Certification and Licensing Authority (NCLA) to govern the operations of contractors and tradesmen;
- The enhancement of courses and programmes related to the construction industry, offered by the Sir Arthur Lewis Community College (SALCC);
- Training of at least 160 contractors supervisors and tradesmen in areas such as: Cost Estimating, Carpentry and Joinery, Masonry, Plumbing Installation, Electrical Installation, Fundamentals of Financial Management, Retrofitting, Basic Tendering and Contacting, Painting and Tiling, Fundamentals of Planning and Project Management; Introduction to Entrepreneurship, Health and Safety Procedures and Site Leveling and Setting Out;
- The design and implementation of a public education campaign involving the dissemination of relevant information to the public on the proposed establishment of the NCLA and related matters is to be addressed in part by this consultancy.

The public education and awareness program established broad support among contractors, tradesmen and the public for such a certification and licensing program. However, to date, the system has not been introduced.

3.2.3.4 Unplanned Settlements

Through the implementation of the Programme for the Regularization of Unplanned Development (PROUD)[24], the Government of Saint Lucia (GOSL) is seeking to improve living conditions within unplanned developments. Efforts by the MPDHUR to regularize squatter development have been stymied by various challenges. People who live in unplanned settlements have no title to the property they occupy and therefore are unable to use the land or house as collateral to secure funding for any purpose or to access basic utilities such as water, electricity and telecommunications. Further, many become embroiled in disputes with neighbours over encroachment issues on the occupied lands. The Caribbean Development Bank (CDB) now requires that multi-hazard risk assessments be undertaken for projects under PROUD. PROUD was designed to address the regularization of unplanned development with transfer of title. A common misconception is that the Programme's sole objective is the relocation of squatters. The lack of enforcement of the Physical Planning and Development Act has weakened the impact of the Programme and has led to the expansion of unplanned settlements.

According to the records of the Housing and Urban Renewal Division, in 2004, Saint Lucia had a total of fifty-four (54) communities with squatting issues and about one thousand, eight hundred and ninety (1,890), households occupying unplanned settlements in eleven (11) communities. Actions taken by the Department to regularize unplanned developments under PROUD included the construction of roads, proper drainage systems and retaining walls, the installation of water and electricity services, and the conveyance of title to the occupants through sale of the occupied lands at subsidized rates. Relocation was undertaken only as required to facilitate the implementation of the other actions.

PROUD has actually resulted in a number of negative practices. First, the initiative appears to have emboldened many landless citizens to engage in indiscriminate squatting on both public and private lands, often with the tacit support of their parliamentary representatives. Second, many squatters occupy marginal lands such as hillside areas with poor drainage systems that are prone to landslides after heavy rainfall, or low-lying areas that are prone to flooding after heavy rainfall, that ideally should remain undeveloped. Third, the squatters develop an attitude of dependency on the government to provide roads and drainage, and facilitate access to utility services in areas that are relatively expensive to develop. Fourth, the increasing number of unplanned settlements creates a drain on the resources of the government to provide the squatters with the range of services needed.

The Department has incorporated hazard assessments into the PROUD procedures to meet CDB requirements. If people occupy land in flood- or landslide- prone areas, the Department would typically propose relocation. Very often, the Department relies on testimonials to determine the community's disaster risk. After conducting its research and analysis of the situation in each area, the Department submits its recommendations to Cabinet for consideration.

[24] In 2000, Government initiated a Programme for the Regularization of Unplanned Development (PROUD),which rationalizes unplanned settlements, provides title to property, and upgrades the living conditions of the persons within these settlements. Source: http://www.pnuma.org/

3.2.3.5 Housing

Successive governments have committed to improve the quantity and quality of the housing stock including through a range of tax incentives for homeowners and contractors alike.

Since the 1960s, the quantity, quality and general aesthetics of Saint Lucia's urban and rural housing stock has been steadily improving on the back of robust performances of the banana and tourism industries and the growth of the middle class. Generally, the housing stock in approved sub-divisions is more resilient to a wider range of natural hazards than it was 50 years ago. Equally importantly, more of these homes are now insured against common hazard risks such as extreme weather, landslides and flooding. It is common practice for banks to require owners of mortgaged properties to carry comprehensive insurance coverage. However, it is also an equally common practice for homeowners to discontinue or to significantly reduce insurance coverage after mortgages are repaid. Consequently, the majority of homes in Saint Lucia are either uninsured or under-insured.

Despite improvements in the quality and overall resilience of the housing stock, the risk profile of the housing sector is still quite high, a fact which is reflected in the high cost of insurance and reinsurance premiums. Many persons build on lands which they own or do not own, rather on lands with low hazard risk characteristics. Risk abatement and/or transfer have tended to be a low priority for many home builders and in a situation of lax enforcement, the overall vulnerability of the housing stock has continued to increase.

3.2.3.6 Sustainable Development and DRR

Between 1992 and 1997, there existed in Saint Lucia a ministerial arrangement that many development partners deemed as a model. In this arrangement, planning (economic, physical and social), housing, environment, survey and mapping, land registration and architecture (including the design of government buildings and social infrastructure) were all housed within the same Ministry. That Ministry also had responsibility for managing the Capital Budget of the Government and the public sector investment program. This arrangement helped to support integrated development planning and more effective coordination of key development planning functions. However, since 1997 this arrangement has been gradually altered during successive changes in government. The Ministry of Sustainable Development, Energy Science and Technology (MSDEST) was created in 2012.

In its draft strategic plan, the MDEST describes its mission as leading the process of "…achieving sustainable development through the facilitation of an integrated and participatory approach to governance; the promotion of environmental management and innovative technologies; building capacity to adapt and mitigate the impacts of climate change; and demonstrating the value of building a green economy" (MPEST, 2013). The MSDEST has responsibility for the implementation of several land and ecosystems-related programmes and accompanying MEAs, including the three Rio conventions namely the UNFCCC, the UNCCD), and the UNCBD. However, apart from the reactivated National Environmental Commission (NEC) which is not yet fully established and the National Climate Change Committee (NCC), there is no formal mechanism for collaboration and/or coordination between the MSDEST and the MPDHUR, resulting in a palpable gap in land management and DRR functions which is only corrected by the MSDEST's role as a referral agency for EIAs.

As part of the implementation of the Hyogo Framework of Action (HFA), the MSDEST has sought to identify gaps, and clarify the roles of various agencies in physical planning and important areas for collaboration. The review also involves an economic evaluation of mangroves, coral reefs and invasive species.

Since the floods caused by Christmas Eve Trough on 24-25 December 2013, the MSDEST has identified as a priority, the design and implementation of *Early Warning Systems* (EWS). At the time of preparing this report, an Early Warning System and Hydrological Monitoring for Water Management and Disaster Risk Reduction Project is underway. It includes the identification of priority sites for installation, training in design of hydrologic models and modeling of critical watersheds.

Among the prime challenges to the full and proper standardization of monitoring equipment and their integration across the DRR and physical planning system is that where such equipment is provided as part of a donor –funded project, the local implementing agency may not always be permitted to specify the type of equipment that it requires. This results in the installation of equipment with differing levels of accuracy that may not be ideally suited to the local terrain, or differing brands that are not compatible with available software for the operation of existing equipment. Officials of the MSDEST also identified other shortcomings as follows:

- The lack of physical planning skills;
- A gap between MEAs and national policies; and
- The absence of geo-referenced data to inform EIAs and to measure the rate of environmental degradation and its impact.

The WRMA has improved monitoring of river water quality and stream flows within the constraints of its resources. There is an urgent need for public policy on deforestation and for the management of forest reserves that are under private ownership. In order to ensure sustainable forest management the government should offer incentives for land use through its taxation policy and strengthen the WRMA) so that it can perform its role much more effectively.

As part of a CDB-funded project entitled "Institutional Strengthening of OECS Member States in Environmental Management" a National Environmental Policy and Management Strategy has been prepared which aims at establishing a sound framework for enhanced environmental management, inclusive of a revised National Environmental Policy and Management Strategy, an Environmental Management Bill, a transition/business plan and a feasibility study for the establishment of a dedicated environmental fund for Saint Lucia. The Ministry has also embarked on the design of a 5-year strategic plan aimed at streamlining its operations for greater impact.

Of further relevance to this study is the MSDEST's implementation of the Strategic Programme for Climate Resilience (SPCR)/Disaster Vulnerability Reduction Programme (DVRP), which falls under the Pilot Programme for Climate Resilience (PPCR). The interventions to be made through the Strategic Programme for Climate Resilience (SPCR) fall under five strategic programme areas, namely: (i) human welfare and livelihood protection; (ii) integrated natural resource protection, conservation and management to promote sustainable development; (iii) building resilience through business development, innovation and productivity enhancement; (iv) capacity development/building and institutional/ organizational strengthening; and (v) reducing risk to climate-related disasters.

Given the cross-cutting nature of many of the interventions to be undertaken, the activities under the strategic programme areas will be implemented under the following three components: (i) Adaptation Facilitation, (ii) Adaptation Implementation and (iii) Adaptation Financing.

The Capacity Development/Building and institutional/organizational strengthening components of the SPCR focus on:

i. Strengthening national level policy, legislative and institutional framework for climate resilience and enhancing PPCR Implementation

ii. PEO for climate change resilience building

iii. Research and systematic observation and data and information acquisition and management for CCA

iv. Human Resource Capacity Building

Results and key performance indicators for the capacity building component of the programme are as follows in Table 4: below.

Table 4: Key Performance Indicators for the PPCR.

Results	Performance Indicators
• Improved policy, legislative and institutional structures and processes to respond to climate variability and climate change • Increased knowledge & awareness of climate variability and climate change impacts and adaptation options among government, private sector and / civil society (This includes more comprehensive scientific knowledge which becomes widespread in the form of increased understanding across society, in the public sector, private sector, and civil society). • Increased capacity to integrate climate resilience into development planning and implementation processes (this relates to new and enhanced skills, knowledge, and abilities within a variety of government bodies) •	• Number of policy documents and sectoral initiatives which incorporate climate resilience • Number of communities incorporating climate resilience measures into local development plans • Extent of use of country specific CCA information (including risks and vulnerability information) in decision making – KAP focusing on targeted groups such as vulnerable groups, financial and insurance sector • Central repository for climate change data operational, and information shared among agencies through GeoNode platform • Information and dissemination of information to at least five target groups • Number of climate change community-based and sector-level training workshops held for target groups • Number of households/ communities/ businesses adopting new technologies better adapted to climate change and climate variability

The National Climate Change Committee (NCCC was established in 1998 by Cabinet and to provide an advisory role and to facilitate inter-agency coordination. Its composition is provided in Table 5 below (some portfolios have since shifted, but the departments represented remain the same).

Table 5: National Climate Change Committee Composition

Entity	Department/Unit/Section
Ministry of Agriculture, Lands, Forestry and Fisheries	Biodiversity Unit Department of Agriculture Department of Fisheries Department of Forestry
Ministry of Physical Development and the Environment	Physical Planning Section Sustainable Development and Environment Division (Chair/Secretariat)
Ministry of Health	Environmental Health Division
Ministry of Education	Sir Arthur Lewis Community College
Ministry of Tourism	-
Ministry of Finance	-
Office of the Prime Minister	National Emergency Management Organization
Ministry of Communications, Works, Transport and Public Utilities	Meteorological Services Division Public Utilities Division
National Insurance Council of Saint Lucia	-
Saint Lucia Bankers Association	-
National Conservation Authority	-
Saint Lucia Electricity Services Limited	-
Saint Lucia Solid Waste Management Authority	-
Saint Lucia Air and Sea Ports Authority	-
Water & Sewerage Company	-

A Climate Resilience Committee is established for the purposes of the project, as a sub-committee of the National Climate Change Committee to function as the decision-making body of the PPCR/SPCR. This sub-committee is expected to meet *at least* once every two months.

3.2.3.7 Infrastructure Planning and Development

As the Ministry with lead responsibility for the design and maintenance of the island's social and economic infrastructure, the Ministry of Infrastructure, Port Services and Transport (MIPST)[25] has a critical role to play in physical planning, DRR and climate change mitigation. The MIPST works closely with NEMO and is represented on NEMAC. One of its mandates is to undertake post-disaster damage assessments of communications infrastructure in collaboration with NEMO. The focus of these assessments tends to be on immediate, post-disaster rehabilitation and reconstruction. Long-term mitigation is often not adequately considered. Post-disaster damage assessments are often delayed due to a lack of qualified engineers to undertake these assessments. To overcome this shortcoming, the DANA Committee and MIPST often revert to the use of members of the Association of Professional Engineers on a volunteer basis in the immediate aftermath of an event, Recommendations made in assessment reports are generally used to inform strategic and operational planning. The Ministry is reviewing its functional relationships with other critical coordinating ministries such as the MSDEST and the MPDHUR on matters relating to post-disaster analysis and information dissemination. With the recent appointment of a Director of Works, the MIPST is now in a better position to collaborate with the Ministry MPDHUR in setting construction standards and/or specifications for buildings and drainage. The Chief Engineer of MIPST serves on the Development Control Authority (DCA) in the Ministry of Physical Development, and in this capacity is able to provide technical guidance on matters being considered for DCA approval.

It is not clear to what extent MIPST engineers take account of climate change adaptation considerations in design and/or preventative maintenance of social and economic infrastructure. The MIPST has not developed some of its core competences and it currently requires personnel with expertise in environmental engineering, geotechnical engineering, coastal engineering, proposal writing and project management. The MIPST has a Special Projects Unit[26] to coordinate project implementation. Disaster management skills within this Unit need to be enhanced. The MIPST is also considering the establishment of a Corporate Planning Unit to improve the prioritization and planning of infrastructure works and a resource library to support research and project cycle management. Presently the MIPST is designing a National GIS-referenced database on infrastructure, transport and locations. These are regarded as priorities that will enhance the Ministry's institutional capacity.

The Ministry is also responsible for the construction and maintenance of most public buildings, including critical infrastructure. A determination and categorization of critical infrastructure is required, and decisions taken on whether specific facilities such as hospitals, schools and main roads and bridges should be retrofitted for disaster resilience or disaster resistance.

The Ministry will be responsible for implementing the infrastructural aspects of the Disaster Vulnerability Reduction Project (DVRP). A Project Coordinator will be appointed within the Ministry for coordination of these aspects.

[25] http://infrastructure.govt.lc/.

[26] http://infrastructure.govt.lc/ministries/infrastructure-port-services-and-transport/special-projects-unit.

3.2.3.8 Meteorological Services

Meteorological Services fall within the ambit of the MIPST. Saint Lucia has a network of 17 Automatic Weather Stations reporting to two (2) base stations located at the island's two airports – Sir George F.L. Charles Airport and the Hewanorra International Airport. This network has been in operation since 2004 and is now in need of upgrading. The George F.L. Charles Airport base station has not been working for some time due to hardware failure, thus reducing system reliability. A further challenge has to do with the maintenance. The Meteorological Services Department (MSD) is often challenged in keeping all the stations functional because spare parts are sometimes unavailable and/or cannot be bought because their cost exceeds the Department's budget. Vandalism of the automatic weather stations is also a challenge. The Water Resource Management Agency (WRMA) as well as the MSDEST is currently involved in the implementation of several projects with similar objectives, leading to a duplication of initiatives, despite the intention for the two agencies to collaborate.

The MSD is challenged by staffing issues resulting in low efficiency. Additionally, most of its field staff requires specialized training particularly in the area of forecasting. The Department is about to procure a Global Telecommunication System (GTS) which will help to improve its forecasting capabilities.

Another major limitation of the MSD is the lack of an early warning system (EWS) to track tropical cyclones from their inception. The Department routinely issues daily weather reports, and has SOPs in place for issuing hurricane and tsunamis warnings. However, there are no SOPs for issuance of warnings in advance of other extreme weather events. For the December 2013 Trough, weather reports were issued in the normal manner which encouraged persons in flood-prone areas to take the necessary precautions. However, the Department did not predict that the event would have been as extreme as it turned out to be. Although the MSD updates its documents every year, it has no protocols in place to track the rapid intensification of systems that develop outside of the hurricane season. Instructively, many of the significant meteorological events that have affected Saint Lucia, such as Hurricane Allen (1980), Tropical Storm Debbie (1994) and Hurricane Tomas (2010) have struck late in the night or during early morning hours. The December 2013 Trough occurred outside of the traditional period of the hurricane season (June to November) and caused significant damage in part because the Department had little time to advise citizens to take precautions.

Public awareness of meteorological phenomenon should be increased. To achieve this objective the Department will have to develop public education programmes and engage in outreach activities, particularly among school children and civil society groups.

3.2.3.9 Design and maintenance of drainage systems

Notwithstanding the flood mitigation project implemented on the north side of the city, drainage systems in the capital city and in towns and villages are inadequate. Generally, these under-perform for a variety of reasons. They are aged, under-sized and poorly maintained, and over time they have been compromised in several areas by approved and as well as illegal development. De-silting of riverbeds and drains is among the many mitigation measures that must be undertaken in many areas in the country. Over the years, the national approach to de-silting of waterways has been largely reactive, under duress from disaster situations, rather than as part of a structured preventative maintenance

programme. The experiences of Hurricane Tomas and the latest weather system of December 2013 make clear that government will have to devise and fund a comprehensive and continuous national plan for de-silting and maintain drains across the country.

3.2.3.10 Water and Sewerage Services

Surface water abstraction is inherently vulnerable to natural hazard risks, and therefore ought to be designed and managed with DRR considerations in mind. The fact that water and waste water infrastructure systems are routinely compromised during moderate to extreme weather events suggests that insufficient attention is being given to DRR by managers of the water sector. The Water and Sewerage Company Inc. (WASCO) routinely clears silt from its intake structures across the island. Since the passage of Hurricane Tomas in 2010, WASCO and the government have been working on a plan to de-silt the John Compton Dam[27]. Activities are likely to include removing silt from the reservoir, dewatering it and trucking it away for disposal or reuse.

Over the years, WASCO has been involved in national disaster planning, emergency preparation, post-disaster needs assessment, resource mobilization and restoration activities. However, the company does not have a clearly documented mandate and there is need to articulate its role so as to facilitate decision making in unpredictable situations.

WASCO officials liaise with NEMO on matters relating to disaster preparedness. The company activates its Emergency Operations Centre at Headquarters after an extreme event, to coordinate the response, and staff generates reports as required. WASCO has established an Internal Technical Team to undertake post-disaster damage assessment of capital infrastructure and revenue loss. Members of the team possess expertise in technical, financial and environmental management matters.

The team presents preliminary reports on the extent of damage to the water and wastewater infrastructure. The findings of this preliminary assessment are used by management to set priorities, assign tasks and make other decisions relating to the immediate commencement of restoration works. Based on past experience, extreme weather conditions usually affect various aspects of WASCO's water supply system in many communities around the island at the same time, and as a result consumers experience water shortages in the first few days after the disaster. Generally, the nature of work required to restore the water supply varies from retrieving pipelines that were washed away, clearing landslides to gain access to intakes and treatment plants, repairing broken pipelines to de-silting and clearing clogged intakes. Restoration works are typically undertaken in high risk environments, and can be time consuming. Repairs are often required in snake ridden areas, in trenches through saturated grounds. WASCO would where necessary, secure portable treatment plants for emergency water supplies to affected consumers.

3.2.3.11 Economic Development and DRR

Over the years, the role of the Ministry of Finance and Economic Affairs (MFEA) in DRR has been primarily in the area of disaster response and recovery. As a member of NEMAC the Ministry

[27] The John Compton Dam serves the potable water supply requirements of the entire north of Saint Lucia.

participates in decision-making on disaster management issues. The Ministry makes an annual budgetary allocation to NEMO to implement its operational activities. The inadequacy of NEMO's budget has already been noted.

In the aftermath of a disaster the MFEA uses money from the Contingency Fund to undertake immediate clean-up activities and to support basic restoration works. Additionally the Ministry mobilizes funding from local, regional and international sources to facilitate timely completion of restoration works identified in post-disaster Damage Assessment and Needs Analyses. The Ministry coordinates reviews of post-disaster assessment reports developed by NEMO's DANA Committee and agencies such as CDEMA and PAHO. The Ministry's implementation role is to ensure that Saint Lucia complies with the conditions of grants and/or loans from the donor community.

The Ministry accepts that Saint Lucia's high disaster losses are unsustainable from a financial, economic, social and environmental perspective. The Ministry appreciates that, as the main custodian of the capital and recurrent budget of the Government and the public sector investment programme (PSIP), it has a significant role to play in DRR to help to break the cycle of inevitability involving the occurrence of natural events and disasters; to reduce the heavy financial burden generated by major disasters over the years, which have had to be met from extra-budgetary sources; and in enabling the economy and society to bounce back as quickly as possible following such events.

Over the years, the effectiveness of the management of the PSIP has declined resulting in several large, capital projects including public buildings not receiving proper analysis from a DRR or climate change adaptation perspective. Consequently, many new and old public buildings and other public facilities are highly vulnerable to various hazards. The fact too, that many of these buildings are uninsured or under-insured means that Government must bear the full cost of repair or replacement of these buildings in the event of full or partial damage during a hazard event.

The advent of the Caribbean Catastrophe Risk Insurance Facility (CCRIF) has helped to reduce Government's post-disaster burden.[28] Saint Lucia received nearly $3.7 million for damage caused by an earthquake which struck the island in 2007 and from damage caused by Hurricane Tomas in October 2010. However, it should be noted this figure represents only but a small fraction of the true rehabilitation and reconstruction costs carried by the Government from these disasters.

3.2.3.12 The Education Sector and DRR

Extreme weather events over the past 20 years have exposed the vulnerability of several schools, especially those located in flood-prone areas and/or near rivers. The vast majority of schools were financed through grants or loans from external agencies, raising doubts about the adherence of these agencies to DRR principles and practices as well as about the suitability of these schools as emergency shelters. More than fifty percent (50%) of buildings certified by the Ministry of Infrastructure as

[28] The Caribbean Catastrophe Risk Insurance Facility (CCRIF) is a risk pooling facility, owned, operated and registered in the Caribbean for Caribbean governments. It is designed to limit the financial impact of catastrophic hurricanes and earthquakes to Caribbean governments by quickly providing short-term liquidity when a policy is triggered. Source: http://www.ccrif.org/.

Emergency Shelters are schools. Many schools do not meet the minimum standards set for shelter operations. Maintenance of all publicly owned buildings including schools is the responsibility of the Ministry of Infrastructure, whose budget for this purpose is inadequate, far less to upgrade them to meet shelter standards. However, it should be noted that the use of schools as emergency shelters is now strongly being discouraged as it disrupts the education of school children.

3.2.3.13 The Agriculture Sector and DRR

For some time now, the agriculture sector has been exempt from planning approval and development control. The task of encouraging good agricultural practices was left to Agricultural Extension Officers (AEOs) employed by the Ministry of Agriculture (MOA). At the same time, farmers continue to receive considerable fiscal incentives from the Government with no concomitant requirement that they pursue sound agricultural practices. In this lax culture, farmers continue to operate on steep slopes and within river buffer zones, encouraging land erosion and sedimentation of rivers and pollution of the near-shore marine environment.

There is a need for standards and guidelines, and enforcement mechanisms to promote good agricultural practices (GAP), and to optimize the use of the country's limited land resources, in particular agricultural land. While the MOA has a cadre of well-trained, agricultural professionals, at its disposal, it is still inadequate for the task at hand. AEOs advise farmers on proper field management and environmental standards. Also they advise livestock farmers on issues relating to water contamination, and process exemptions for farm establishments.

The MOA also serves as a referral agency to the DCA. However, in the absence of standardized response mechanisms and reporting guidelines, MOA personnel produce reports that do not specifically address disaster risk reduction issues. Also, the factors that trigger the collection and management of agricultural data on the ground are not always directly related to disaster risk management.

The disaster risk reduction focus in the agricultural sector relates particularly to animal disease and crop protection. NEMO relies on the various sectoral agencies to collect data to inform the DANA. Ministry officials believe that the quality of agricultural data collected in the aftermath of disasters could be improved if the Damage Assessment and Loss Analysis (DALA) process was standardized and tailored to the specific needs of the agricultural sector. The Ministry of Agriculture has had a draft Disaster Plan for some time, but there is need for decisive action to ensure early completion. Presently, the Ministry is preparing a Banana Risk Mitigation Plan to be funded under the Banana Accompanying Measures (BAM).

While the Ministry does not have a functioning disaster committee in place, its officials are fully committed to ensuring that it has the technical and administrative capacity to handle its disaster management responsibilities, which includes providing assistance to the farming community in the recovery phase, repairing greenhouses, de-silting drains, stabilizing riverbanks, and restoring animal pens, aqua-culture ponds, irrigation lines and ponds. However, the level of support the Ministry is able to provide depends largely on available financial resources and the level of funding secured from donor agencies and friendly governments.

3.2.3.14 Tourism and DRR

Given tourism's axial role in the economy, the incorporation of DRR in the decision-making process of the Ministry of Tourism is not at entrenched as it ought to be. Unlike the agriculture sector, tourism activities receive the attention of the DCA. The size of tourism establishments and their location within sensitive coastal and terrestrial areas implies the use of EIA's as part of the planning approval process. These studies are usually carried by assessment teams contracted by proposed developers, based on terms of reference prepared by DCA staff. However, the capacity of the DCA to prepare TORs and/or to review EIA reports requires strengthening, both in terms of numbers and competence. Such strengthening should help to address a critical concern of the political directorate and developers alike, about perceived delays in the approval of planning applications generally and for tourism projects in particular.

The deliberate siting of tourism infrastructure on beaches suggests that tourism operators are fully aware of the attendant hazard risks, such as sea erosion but have chosen to absorb or transfer all of part of the risk to insurers. However, this high level of exposure has several repercussions. It increases the overall vulnerability and risk profile of the country which drives the cost of insurance premiums for the average citizen and reduces the country's economic resilience. With Saint Lucia so heavily dependent on the foreign exchange earnings from tourism, the country can ill-afford to have hotels out of commission for any extended period.

3.2.3.15 Waste Management Services

The indiscriminate disposal of solid waste has been shown to be a major factor in accelerated flooding which now results from even the slightest rainfall events. In light of this, the DCA now requires that a waste management plan be submitted as part of the supporting documentation for planning approval. However, at the post-development stage, enforcement of this plan is weak. The Saint Lucia Solid Waste Management Authority (SLSWMA) has proposed a waste recycling initiative to deal with the indiscriminate disposal of plastic bottles which clog rivers and drains, already impaired by heavy sedimentation. In this regard, The Management of Containers Bill has been prepared, but at the time of preparing this report, it had not been enacted.

3.2.3.16 Telecommunication Services

Telecommunications plays a critical role in post-disaster recovery and rehabilitation as well as in DRR. The two major providers of telecommunications services, Cable and Wireless/LIME and Digicel conduct post-disaster damage assessments and present to NEMO preliminary reports on the damage to their infrastructure. Also, the companies use the findings of their preliminary assessments as a basis for setting priorities, assigning tasks and making other decisions relating to the immediate restoration of services. These companies are usually not faced with the type of resource constraints experienced by publicly-owned utilities because of their ability to mobilize support from other regional business units of the company or the international head office.

The critical role that telecommunications companies can play in DRR such as in the design and management of EWS and GIS has not been fully exploited. At a basic level, the GIS-referenced consumer databases of these companies can provide useful inputs into the forward planning activities

of the Ministry of Physical Development. Both companies as well as the Saint Lucia Electricity Services Limited (LUCELEC) now use data from the DCA in terms of approved applications to guide their own planning.

3.2.3.17 Energy Services

As has already been noted, a robust economy is a sine qua non for effective DRR. In its absence, the government is unable to finance the requisite investments in DRR. The reverse is also true. Without effective DRR, economic resilience cannot be attained nor sustained. The high cost of imported energy and Saint Lucia's over-dependence on fossil fuel are inimical to the creation of a resilient economy. The Government has committed itself to the implementation of a renewable energy programme involving an analysis and development of the island's geothermal resource and support for the Saint Lucia Electricity Services (LUCELEC) implementation of a wind and solar energy programme. Mindful of the inherent vulnerability of many forms of renewable energy such as wind and photovoltaic systems, caution is required to ensure that a diversified mix of energy resources is developed in a manner that ensure system continuity and reliability during and after hazard events.

LUCELEC is represented on NEMAC and the designated company official attends all meetings convened by the committee. The company has a Disaster Management Plan which it updates periodically or as needed. The plan was last updated in 2013. Company officials are consulted by NEMO on all relevant national policy initiatives relating to disaster management and the senior management team conducts annual reviews of the company's disaster management performance.

4.0 REVIEW OF KEY POLICY TOOLS

4.1 The National Land Policy: The Revision Process and the Integrated Land Use Plan

The current National Land Policy (2007) was the culmination of a process that started in 2000. The document was intended to provide policy guidance for the use and management of Saint Lucia's limited land resources well into the future.[29] The process which was led by the then Ministry of Physical Development, Environment and Housing (now MPDHUR) involved broad-based participation through the activities of sector sub-committees and extensive national consultation.

Under the Improving Land Policies and Land Management (ILPM) project, the MPDHUR in collaboration with other Ministries and with support from the Secretariat of the OECS, the University of the West Indies (UWI) and UN-Habitat has initiated a process to revise the National Land Policy "...to ensure that land remains a primary asset for human, social, and economic development, meeting the needs of this generation without compromising those of future generations and providing the space within which all Saint Lucians have equitable access to work, shelter and recreate and find the opportunity to nourish themselves. The Ministry has set up a National Land Policy Committee (NLPC) to inter alia, provide a mechanism for feedback among participating agencies and interests; constitute a forum to discuss and report on activities of the process; and review and validate the information presented in the various versions of the draft revised NLP submitted by the consultant.

The review is driven by the expectation that an updated national land use policy will better position the government of Saint Lucia to provide direction in the area of land management and development. Moreover, it will ensure that policy responses are consistent with national commitments under the various bilateral and Multilateral Environmental Agreements (MEAs) that are directly or indirectly relevant to land management and to which the country is party. Additionally, the revised NLP will give greater emphasis to the linkages between land policy and food security, and between land policy and fiscal and economic policy; trends in land speculation and an appropriate policy response; the potential impacts of climate change; and the governance and management of marine space. The revision will also include guidelines for legal reform and for the harmonisation and strengthening of the legal framework for land management and administration; work plans for NLP communications and for the improvement of governance arrangements; and a set of concept notes to describe a small number of priority projects and initiatives.

In their mid-term progress report to the MPDHUR, the consultants undertaking the revision concluded that there is very little knowledge of the NLP outside of the agencies directly concerned with land management and administration. While the NLP is still relevant, some of the actions envisaged for it have not been implemented. The policy is not used in the routine activities of agencies, and a strategic action plan is required to make it effective.

[29] Government of Saint Lucia, Ministry of Physical Development, Environment and Housing - National Land Policy, Castries, 2008.

The draft of the revised is guided by the following principles of Equity; Accountability, Fairness and transparency; Protection of common property; Effective management of State assets; Precaution; Knowledge; Participation and shared responsibility; Good neighbour principle; and Regional and global commitments.

Of relevance to the Capacity Needs Assessment is the recognition in the draft revised policy that:

- Land management, land use and development planning must be based on sound scientific research and information and relevant local and popular knowledge, with an effective national system for data collection and management, accessible by individuals and agencies when appropriate, with the consistent monitoring of issues and new developments;
- Sustainable land management contributes directly to building resilience, and all measures and actions under this policy should work towards that objective;
- Land management is not an isolated discipline, it touches on, contributes to and is impacted by policies and actions in practically all domains of development;
- An integrated approach, using and applying relevant methodologies such as those of integrated development planning, ecosystem-based management and landscape planning is critical to the effective management and administration of the many complex systems and processes that are involved in the use of land;
- Successful policy implementation will rely on the availability of suitable skills, effective organisations and adequate investments, and this policy aims at reinforcing these elements;
- Capacity building is central to the implementation of land policy, both as an objective and as a result of the process, with the modernisation of the existing legal and institutional framework and instruments and with the use of state-of-the-art methodologies, instruments and technologies; and
- Land management and administration must be supported by adequate information management and decision support systems that include: the establishment and use, whenever possible and appropriate, of common electronic data platforms; the establishment of appropriate protocols to govern the collection, storage and access of data relevant to land management and administration; and the efficient sharing of data among land management and administration agencies within MPDHUR and between that Ministry and other agencies.

Against this background, the draft revised policy proposes to achieve the following four strategic outcomes:

1. Conserving and managing land resources while reducing risk and vulnerability;
2. Optimising the contribution of land to economic development and livelihoods;
3. Optimising the contribution of land to social development and cultural identity; and
4. Rationalising and optimising land use and settlements.

The strategic approaches to be utilized in the implementation of the policy include: promoting cultural change; building resilience; mainstreaming; promoting integration; building capacity; and making full use of available instruments in the most appropriate way.

Encouragingly, these proposed outcomes and strategic approaches are consistent with new approaches to DRR being advocated by the OAS, UNISDR and other international agencies. Governments and their social partners are urged to address the underlying conditions of inequality that fuel disasters such as unequal access to land, marginalization of vulnerable groups such as women, children and the disabled, income poverty and poverty of opportunity.

Among the proposed strategic actions in the draft revised policy that hold significance for the capacity needs assessment are:

- Effective protection and management of forests and watersheds;
- Integrated implementation of the revised System of Protected Areas (SPA);
- Community-level vulnerability mapping to inform forward-planning and development control processes;
- Implementation of a regime for integrated coastal zone management;
- Mainstreaming the use of DRR in planning and development control including through enhancing the legal and administrative capacity to enforce decisions, including resettlement and eviction when required;
- Institute and enforcing zoning regimes in environmentally-fragile areas; and
- Design and implementation of restoration projects in selected degraded areas, areas of high risk and areas rendered vulnerable by storms and other natural or man-made phenomena.

Information management also supports public participation and transparency, for example with the availability of information related to compulsory land acquisition processes and planned public investments and developments.

The vision of the revised policy is to ensure that land remains a primary asset for human, social, and economic development, meeting the needs of this generation without compromising those of future generations and providing the space within which all Saint Lucians have equitable access to work, shelter and recreate and find the opportunity to nourish themselves.

The draft identifies the following critical requirements for the realization of the national vision. These included:

1. A national vision for land enshrined in the Constitution;
2. A national commitment to action and change;
3. A cultural shift acknowledging both the rights and responsibilities of land ownership; and
4. A coherent policy environment.

4.2 The National Vision Plan and Local Area Plans

The National Vision Plan developed by IDEA has a lot of merit. It is actually a regional strategic proposals map that proposes the spreading of development across the country, built around tourism as an overall opportunity, and the availability of infrastructure as an economic driver. For each region,

IDEA examined available community assets and identified the type of development best suited to that community. Each region was branded accordingly. The exercise was informed by existing publications, community consultations and interviews with key people. Its utility lies in the possibility to use it to present possibilities for development at a local level.

Land use plans were prepared for many communities across St Lucia (Castries, Vieux Fort, Gros Islet, Anse-la-Raye, Canaries and the northwest corridor) with UNDP support over 1986 to1990. These were never approved or adopted by Cabinet. Local area plans were developed with SFA support within the last five years for Micoud, Laborie, Choiseul, Dennery and Anse-la-Raye, using an approach of consensus building on the IDEA National Vision Plan. The IDEA Plan and relevant community data were presented to the communities, and community feedback informed the development of the local area plans. Numerous consultations were convened, to obtain both information and community buy-in.

5.0 THE WAY FORWARD: CONCLUSIONS AND RECOMMENDATIONS

From the interactions with Government officials and stakeholders which informed this study, it is clear that there is now a stronger, whole-of-government appreciation of the opportunity-cost of not reducing disaster risk in all spheres of development. There is a strong acknowledgement at all levels of society that the country can ill afford another disaster on the scale of Hurricane Tomas. However, it is also clear that a significant amount of work is needed to build a strong ethic of disaster risk management across agencies responsible for planning and land management. The framework, albeit fragmented, exists. There are tools, strategic planning processes, policies, and opportunities designed to bring the country closer to the ideal of risk management. The challenge now is to bring all of these initiatives within one, coherent, integrated and functional, architecture to serve the varying needs of public and private sector as well as citizens. In such an arrangement, close and continuous collaboration between key planning agencies is of paramount importance.

The recommendations made in this section are influenced by the following key principles:

- DRR is most effective when: (a) it is approached in an integrated development planning context; (b) it involves at the earliest possible stage, a multi-stakeholder approach based on mutual respect and responsibility; and (c) it is sustained by public education and awareness programmes;
- Stakeholder involvement and participation must be effectively coordinated so as to minimise duplication of effort and conflict and ensure efficient use of resources and the creation of positive synergies;
- An effective institutional, administrative and legislative environment is a sine qua non to the successful and timely implementation of disaster risk reduction activities;
- Disaster risk reduction is an investment in sustainable development;
- Investment in proactive measures to limit the impact of hazards can significantly reduce disaster losses and the future cost of recovery as well as speed up disaster recovery;
- A reduction in post-disaster rehabilitation and reconstruction leads to the long-term social, economic and financial development, environmental conservation, as well as recurring benefits to future generations;
- An integrated approach is important in minimising the use and cost of limited technical administrative and financial resources; in reducing any potential conflicts in policy development; and in promoting coordination among all stakeholders groups in disaster risk reduction;
- An enabling environment for the adoption of appropriate technologies and practices is necessary to ensure that national, regional and international commitments with respect to the causes and effects of natural hazards are fulfilled;
- Effective collaboration with other regional and international State actors and organisations must be an integral part of risk management;
- Reducing the number and effects of natural disasters requires that the development challenges that lead to the accumulation of hazard and human vulnerability be addressed; and
- A strong and diversified economy helps to build economic resilience to natural disasters.

5.1 Design and Implement an Integrated Disaster Risk Management Policy and Strategy

Recognizing that disaster risk is built through development processes, there is an urgent need to deconstruct risk and integrate risk assessments and disaster prevention and mitigation within development strategies and plans. As climate-related disasters are expected to increase, adapting to climate change and increasing resilience to cope with the adverse impacts of hydro-meteorological extreme events should become a key focus of any disaster risk reduction policy and plan.

It should be emphasized that vulnerability is not solely a function of physical conditions and the environment, but also the characteristics and circumstances that render a community or system susceptible to the damaging effects of a hazard. The social construction that defines relationships between men and women, children, adults and the elderly is perhaps one of the most critical aspects of that social system and determines the relative vulnerability of each segment of the system. And while legislation can help to regulate relationships and social conduct to reduce vulnerability, it must be accompanied by decent job programs for young men and women, educational programs for children and youth within a gender-based approach, as well as programs for the full inclusion of all segments of the society. Social inclusion is not only an imperative to reduce vulnerability, but a necessity to increase the effectiveness of any disaster risk management policy and programs

Recognizing that many of the predicted impacts associated with GCC are likely to exacerbate existing risks associated with extreme climate events and climatic variability, it is recommended that the Government of Saint Lucia consider the adoption of an integrated, holistic policy legislative and institutional framework will facilitate a more effective approach to risk assessment, planning and forecasting of all risks and enable sustained coordination and collaboration among the relevant actors involved in hazard risk identification, reduction and transfer at the sub-national, national, regional and international levels. The evidence is that these actors (including planning agencies, line Ministries, emergency management agencies, development assistance agencies, NGOs and the private sector have tended to pursue their own interests and approach. Thus, it is believed that an integrated and coordinated instrument that sets out the enabling environment within which disaster risk reduction initiatives can be implemented with positive results. The integrated policy should also inform the broader development decisions and activities of these entities as such decisions cannot be undertaken without considering the potential impact of natural disasters. An integrated policy will help to guide the work of all entities which are involved or which may become involved in addressing natural hazard issues as they affect Saint Lucia.

An integrated hazard risk management policy and strategy can be driven by the following objectives:

1. Build the capacity of the relevant institutions and agencies to develop effective and integrated hazard risk management processes, plans, strategies and approaches;
2. Encourage the incorporation of natural hazard risk reduction in all public and private sector planning initiatives and programme budgets;
3. Foster the establishment of an appropriate decision-support system based on systematic research and observation of natural hazard risks;
4. Improve the public's knowledge and understanding of natural hazard issues in order to obtain broad-based public support for and participation in the mitigation of natural hazard risks;

5. Foster the development and application of appropriate legal and institutional systems and mechanisms that support natural hazard mitigation;
6. Encourage private sector involvement in natural hazard mitigation and adaptation measures;
7. Empower local community groups to undertake natural hazard mitigation measures;
8. Foster a collaborative approach to natural hazard risk reduction among all stakeholders.

5.2 Design and implement a National Development Vision and Plan

It is generally agreed that Saint Lucia desperately needs a national integrated development vision, and an accompanying policy and strategy that addresses social, environmental, cultural and economic dimensions. Important efforts have begun in this regard at the national level. However, this does not preclude planning at a sectoral or local level. Indeed, the national vision should be informed by sectoral strategies, and *vice versa*. Both national and sectoral strategies and plans should be developed iteratively and collaboratively, to arrive at a coordinated vision of the development path to be followed. Improved data collection and planning at a sectoral level are therefore required to better inform the national vision, and to ensure that the interests of the various sectors are properly represented. These plans require an understanding of hazard risks, and policies should be explicitly designed to mitigate rather than exacerbate them.

5.3 Address the Imperative of Effective Coordination

A number of Committees and Councils have been established over the years e.g. the National Economic and Social Council, and the National Economic Council, with the primary intention of fostering inter-agency collaboration and planning, but these have typically not delivered on their mandate, or have not been sustained. Some such as the Climate Change Committee) have only functioned when supported by an active project, or when requested by an external financing agency. These and other reasons for the non-performance of coordination committees need to be explored if the recently launched National Vision Commission is to avoid a similar fate. Consideration should be given to reducing and streamlining the numerous Committees that now exist. Inter-Ministerial coordination should also be addressed. In this regard, the coordinating roles of the Cabinet of Ministers and the Committee of Permanent Secretaries should be strengthened. Both bodies have critical "gate-keeping" roles in the context of DRR, including ensuring that the relevant DRR considerations are incorporated in approved policies, laws and projects. The Committee of Permanent Secretaries meets often but has no legal mandate. This will be established under the proposed Public Service Act. However, as has been noted throughout this document, the mere legalization of an entity does not guarantee its effectiveness.

The functions of the following entities which bear on land management and DRR should be rationalized, streamlined and possibly merged:

- National Environmental Commission;
- Development Control Authority;
- National Biodiversity Committee (to be set up);
- National Climate Change Committee;

- Hazard Mitigation Council (proposed to change to a National Disaster Committee under NEMO);
- Flood and Drought Mitigation Committee;
- Land Conservation Board (never established);
- Pesticides Control Board;
- Coastal Zone Management Advisory Committee (CZMAC);
- Inter-sectoral Water Advisory Committee (soon to come into effect); and
- Water and Sewerage Commission (legislation is being amended), to become the National Utilities Regulatory Commission.

Often, the same persons are required to sit on multiple committees. There is need to identify the functions to be fulfilled and determine how best to address these, recognizing that while not all can be subsumed within one body, it should be possible to reduce the number of Committees.

5.4 Strengthen the Policy and Legislative Framework

There is an absence of public policy, perhaps stemming from the absence of a national development vision. In the instances when policy is developed, it is often without consideration of the possible implications for other sectors, or of the attendant disaster risks. Policy performance is usually not evaluated.

Without strong policy, legislation is likely to be ineffective. Legislation is typically written in the absence of policy, and without adequate consideration of the prevailing circumstances, institutional frameworks and opportunities for synergies. There is a plethora of agencies with similar responsibilities for land and natural resource land management under the various pieces of prevailing legislation. There is legislation on the books that is not enforced by public agencies. Some of this legislation is antiquated. In most instances, regulations have not been made, and the responsible institutions are left without the tools necessary to properly enforce the legislation. In other instances there are legislative conflicts. For example, MIPST projects proceed without compliance with the planning legislation regarding quarrying, as their Roads and Works Act of 1945 permits quarrying activity for certain works.

The revision of the National Land Policy should aim to coalesce all the issues. At the core is the need for resolving conflicts among competing uses for land and water. GIS is an opportunity to overlay all the competing interests and develop a multi-objective land application approach. All the sectoral needs have to be identified in the context of a national development plan that defines clear targets to 2050 in the first analysis. Criteria such as allowable level of hazard risk, proximity to settlements, acceptable slope, land capability, etc. should be defined, and land allocated on this basis. In the absence of a development plan, the land policy can only provide general guidance.

There is need to develop coherent integrated policy, review and rationalize institutional functions, harmonise legislation, and develop and implement accompanying regulations. A number of policies are presently under preparation/review:

- The revision of the National Land Policy (substantially completed);
- A Parks and Protected Areas Policy (under preparation);
- The revision of the National Water Policy (expected to be completed by December, 2014);
- A draft National Policy for Urban Renewal (before Cabinet);
- A National Vision (under preparation);
- The revised draft Systems Plan for Protected Areas (SPPA) (under preparation); and
- The Biodiversity Strategy and Action Plan (NBSAP) is being revised.

There exists considerable scope for harmonizing these instruments. For example, the Systems Plan, the Parks and Protected Areas Policy and the NBSAP could be treated as elements of a National Land Policy. Ideally, the National Vision should set out the broad parameters to guide all the others. However, the sequence in which these policies are being prepared precludes that possibility. Policy development is dynamic, and the formulation of any one policy should take account of the others. Practically, this requires participation of key agencies and sectors in the development, review and/or finalization of any one. All policy revisions should infuse DRR considerations as appropriate. There has been an effort at the sub-regional OECS level to harmonise certain policies and legislation for adoption by member states, and these should be considered as part of the review process.

The planning legislation will need to be substantially revised and strengthened, to among other things ensure that DRR considerations are taken into account in designing development plans.

The Ministry of Sustainable Development is finalizing its strategic plan. The Ministry of Physical Development is also working on such a plan. These need to be consistent and integrated.

5.5 Strengthen Planning Functions Processes and Procedures

The mandate for carrying out important planning functions is shared among separate public service agencies. The MPDHUR is responsible for setting building standards, evaluating designs against these standards and granting approval of both public and private sector development initiatives and monitoring the growth of human settlements to ensure quality assurance and quality control. The MIPST is responsible for the provision of roads, drainage and other infrastructural services. The MSDEST is responsible for the environment portfolio, and is the focal point for the majority of international environmental Conventions to which Saint Lucia is a party. The Ministry with responsibility for Economic Planning and National Development is responsible for coordinating implementation of approved national development goals. Within the Economic Planning portfolio, there is a need for greater emphasis to be placed on development economics, alongside the fiscal economics that presently predominates. There was a view expressed in a Focus Group meeting that Finance/Economic Planning and National Development should not be located within the same agency, and that the Ministry of Finance needs to better understand the development needs of the country.

The clear evidence is that the approach to development planning and disaster mitigation is not sufficiently integrated as not all agencies with a mandate to carry out key planning functions are adequately consulted and involved. There is need to inculcate a culture of sharing of information and expertise across agencies. The prevailing institutional arrangements limit the extent of collaboration between these key agencies, and make it unnecessarily cumbersome and costly. There is no formal requirement for cooperation among or between them and other sectoral agencies, and the responsibility for functional cooperation is not part of any job description. The result is that government agencies plan and develop projects in a vacuum.

The approach to public sector investment is too fragmented, with agencies unilaterally submitting their sectoral development priorities. These priorities are reviewed mainly through the budget preparation process where national priorities are identified from among the agency submissions, and the Public Sector Investment Programme (PSIP)[30] is developed. The approval of components of the final PSIP is unduly influenced by the strength of project proponents, and their ability to make a case for implementation of their projects. Public projects are often poorly designed, increasing their hazard risk, for a number of reasons:

- inadequate budgetary allocation
- Lack of data to support decision making
- Lack of inter-sectoral consultation
- Lack of community consultation
- Lack of compliance with best practice for projects that are funded with national resources

Ideally, a Planning Institute, one that is informed by the Planning Institute of Jamaica model and that centralizes the planning functions, should be explored. Fiscal constraints likely preclude the adoption of this that option at this time. However, in the interim, administrative procedures need to be engineered to achieve the goal of improved integrated planning. Options include convening regular inter-agency planning fora; and identifying personnel at appropriate levels within the agencies to spearhead functional cooperation activities.

Under the SPCR/DVRP project, coordinators and other support staff and resources are provided to the Project Coordination Unit (PCU) in the Ministry of Finance, the Ministry of Sustainable Development and the Ministry of infrastructure. These will be required to coordinate implementation of sub-projects, and report to and support the operations of Climate Change Resilience Sub-Committee. As such, the inter-agency collaboration envisaged as required at an agency level will be achieved at a project level.

5.5.1 Strengthen forward planning capacities in key Ministries

Within the physical planning portfolio, a dedicated forward planning unit is required, separate and distinct from the development control function. Planners within this unit must learn by practice to develop physical plans, with progressively less external support going forward.

[30] https://www.finance.gov.lc/departments/view/41.

Development is most often driven by road and other infrastructural development, and more strategic infrastructural planning is required. Infrastructure planners should therefore be at the forefront in the application of hazard risk assessments for planning purposes. Development of infrastructure which is led by the State must recognize that provision of hazard resilient infrastructure is not enough. The potential for further economic development in high-risk areas must also be considered. Communities will develop around areas of employment, and planners must take this into account. It is noted that successive governments have been unable to satisfy the shelter needs of people. Without access to suitable lands, citizens will occupy unsafe lands, placing themselves at risk.

5.5.2 Design and implement physical planning and land use plans

Local area plans have been developed for a number of communities (such as Castries, Vieux Fort, Gros Islet, Anse-la-Raye, Canaries, Dennery, Micoud, Laborie, Choiseul, the northwest corridor) since the late 1980's and as recently as 2010, but never adopted by Cabinet. It is not clear whether they were submitted for approval, or whether there was political apathy in relation to their submissions. In any case, there needs to be community buy-in in such plans, as communities are then likely to pressure the political directorate to approve them to guide community development. It is expected that the majority of these existing plans, in particular those most recently completed, can be reviewed by the Physical Planning Department with a view to submitting to Cabinet for approval. A judgment will have to be made as to whether the others should be taken back to the communities for consultation, or whether the IDEA Vision Plan should be used in those communities for presentation purposes, as a point of departure. The financial cost to the State of re-zoning privately owned lands must be assessed as part of this process.

The role of physical planning and development control in sustainable development and DRR is inarguable. The approved and enforceable land use plan is a critical tool in this regard. A coherent set of policy principles is required at the national level, to give direction to physical planning. Once these are agreed and approved, Development Control must be allowed to apply the law without fear or favour. In the view of some, development control has been emasculated by political interference. Government agencies are often the worst offenders.

The agencies and other critical stakeholders need to be represented on the DCA Board.

5.5.3 Give EIA its rightful place in the decision-making process

EIAs are effective planning tools if they properly scoped, well prepared, and their recommendations monitored and enforced. EIAs are often perceived by private developers and the political directorate as stumbling blocks to development, and the Physical Planning Department is pressured to facilitate their completion and review speedily. All Government projects are not subject to the same conditions, screening and EIA. Typically, these requirements are only complied with when projects are externally funded and the requirements are imposed. Moreover, the quality of EIAs is weakened by the low availability of base-line data and reference material. They are often based on guesstimates and emotion.

The MSDEST, with World Bank assistance is proposing the revision and enactment of draft EIA regulations under the planning legislation. This should be undertaken in close collaboration with the MPDHUR. Capacity within Physical Planning and referral agencies will need to be strengthened to ensure that the public sector responsibilities can be properly met.

5.6 Manage commitments made under Multilateral Environmental Agreements (MEAs)

One participant at a focus group meeting spoke of the management of MEAs as "policy in reverse." Developing countries such as Saint Lucia are motivated to ratify conventions as a means of accessing financing before having fully considered national implications and national interest. Awareness of a Convention and the associated national commitments tends to be limited to the National Focal Point for that Convention, notwithstanding the implications for other agencies, such as physical planning. Moreover, the implementation of MEAs tends to be project driven, and with few exceptions, efforts at mainstreaming conventions through, for example, sustained consultation and exchange of information among relevant agencies, through the development of legislation, continuous public education and awareness, circulation of data and documentation generated. As a result, the impact at a national level of the knowledge that may be generated has been limited.

It is strongly recommended that Saint Lucia review its approach to negotiating and ratifying MEAs. At the very least, there is need for greater collaboration between officers responsible for the various Conventions to ensure synergy and consistency in their respective provisions and a coordinated approach to their implementation. Further, there should be greater, across-the-board knowledge, especially in Cabinet and in Parliament of national and regional positions being adopted in international negotiating fora as well the legal, financial and policy implications for these MEAs within a national and regional context. The perennial challenge, even at an agency level is that the resources needed to effectively implement these MEAs are not available locally and generally are made available at the time the MEAs are approved or thereafter. Invariably, these MEAs carry implications for key regional instruments such as the Revised Treaty of Chaguaramas and the Revised Treaty of Basseterre and so the CARICOM Secretariat and the OECS Commission should take a stronger coordinating and collaborative role in international negotiating processes.

Critically, a number of Conventions are not reflected in national law and this limits the ability of regulators to enforce their underlying policies.

5.7 Strengthen marine spatial planning

This is an area that needs greater attention. Saint Lucia exclusive economic zone (EEZ) is extensive, and is critical to the sustainability of the fisheries, tourism sectors and marine transportation sector. The impacts of land based sources of marine pollution need to be better monitored and controlled, and greater clarity brought to the roles of those agencies with responsibility for addressing threats including from oil spills, and the movement of hazardous wastes. There is increasing interest in physical development within the coastal zone, and such development is at particular risk of storm surge, compounded by sea level rise. The MOPDHUR, MSDEST, the Ministry of Agriculture, the Saint Lucia National Trust, all have important roles to play in this area. These need to be defined and better coordinated.

5.8 Improve the management of natural resources

Management of State-owned natural resources is not the exclusive responsibility of the public sector. The clear evidence from other jurisdictions around the world indicates that when communities are given greater responsibility with appropriate regulation, natural resources are often better protected. Consideration should be given to entrusting communities with the management of key community assets based on the successful model of the Sulphur Springs.

5.9 Improve DANAs

National capacity to undertake Damage and Needs Assessment (DANA) needs to be enhanced, as these assessments are the basis for identifying priority disaster response and recovery interventions, and need to be properly and quickly done. Although there are within the National DANA plan, timeframes for delivery of various DANA by District Disaster Committees, sectoral agencies and the National DANA Committee are not strictly complied with. Needs assessments also need to be expanded to incorporate recommended mitigation measures for improved disaster risk reduction. This will require building capacity of persons undertaking DANA, and improving the tools at their disposal to efficiently deliver DANA requirements.

The post-trough report contained much information of value to sustainable development and planning. It should be ensured that such reports are disseminated and form the basis for recovery planning across agencies.

5.10 Build an effective integrated GIS framework

The GIS Consultant recently contracted to work within the MOPDHUR will make an immense difference to the utility and development of GIS capabilities across agencies. GIS data can significantly accelerate the planning and appraisal process. This alone is justification for providing the required resources to increase GIS capacity across agencies. With a common platform in use by all the users, and with compatible, shared data, many of the agency planning processes can be made more efficient. Protocols on sharing and access to information are important. A number of agencies in addition to MOPDHUR which will be the repository of much of this information, will require enhanced capacity if this effort is to succeed.

More data needs to feed into the GIS. Examples include bio-physical modeling which can predict land capabilities. Data on wild fires has value in assessing impact on water temporally and spatially.

5.11 Improve data availability and management

There is insufficient historical data to properly inform hazard risk assessments, and measure impacts of climate change. A culture of monitoring, data collection and analysis, and research needs to be inculcated among professionals in the various agencies. Critically, following analysis, information needs to be transmitted to decision-makers in a form that is easily understood.

5.12 Improve hazard mapping and vulnerability assessments

For disaster risk reduction, hazard risk and climate change considerations need to be integrated into the planning exercises of all sectors. A number of hazard maps are already available for a variety of hazards in several communities, but there are gaps in availability and application, compounded by scale issues. The following deficiencies should be addressed to better utilize what is available, and to ensure that opportunities for development of additional mapping are optimised:

- Use of available hazard mapping should be a requirement in the development of all plans (national vision, land use maps, zoning, sectoral development strategies, vulnerability assessments to inform mitigation plans, siting of critical facilities, private investments and developments, EIAs, etc.) and for development application appraisals;

- The public should be made more aware of their hazard vulnerabilities;
- Gaps in availability of hazard maps should be identified;
- Mapping of disaster occurrences should be routine. This does not require any modeling skills, and there is sufficient capacity in the public sector;
- Protocols should be established for identification of responsibility for development and management of hazard maps. A number of agencies have commissioned the preparation of hazard maps in the past, including Ministry of Infrastructure, NEMO, and WRMA. Greater collaboration is needed in identifying priorities and developing TOR to ensure that the utility of outputs can be optimized;
- The national capacity to develop hazard maps needs to be strengthened; and
- Clear responsibility needs to be assigned for the development and maintenance of these tools. It may be that the inter and intra Governmental GIS User Group proposed to be established with the support of the GIS Consultant in the Ministry of Physical Development would be best placed to determine needs and responsibilities, and make recommendations accordingly.

Table 5 below provides a summary of a summary of key disaster risk management strategies by sector.

Table 5: Natural Hazard Risk Management Strategies by Sector.

Sector	Strategy
Settlements and Infrastructure	▪ Encourage the incorporation of disaster risk reduction measures in all corporate and development planning initiatives and program budgets disaster recovery and reconstruction programs ▪ Introduce fiscal measures to promote the use of climate risk reduction technologies and practices ▪ Ensure that national infrastructure standards are adequate to withstand the impacts of climate and other natural hazards ▪ Integrate climate and other natural hazard considerations in the physical planning process ▪ Ensure the adoption of physical planning standards and tools that facilitate adaptation, retreat and/or relocation of human settlements from vulnerable areas ▪ Strengthen early warning systems
Human Health	▪ Ensure that appropriate short, medium and long-term measures to address Climate Change and other climate hazard issues are incorporated into national health and disaster management plans ▪ Sensitize and educate health and disaster management personnel and the public about climate hazard-related health matters

Sector	Strategy
Agriculture, Forestry and Fisheries	▪ Adopt on-field practices which decrease vulnerability to short and long term hazard risk (i.e., identify drought-resistant crop varieties that yield more mass per unit of water consumed; improve irrigation management through better timing of water supplies to help reduce stress at critical crop growth periods ▪ Encourage improved farming practices that reduce land degradation ▪ Develop a hazard risk reduction strategy for the agricultural sector to address impacts over the short, medium and long term and incorporate these strategies into the national physical and spatial planning process ▪ Ensure the inclusion of climate-hazard considerations during the implementation of strategies and plans including national action plans developed in response to the international conventions (on Biodiversity, Climate Change, and Desertification
Tourism	▪ Ensure that appropriate physical planning guidelines are enforced for new tourism developments ▪ Work with stakeholders in the tourism sector to develop a strategic development plan which incorporates climate hazard considerations and appropriate measures such as water conservation programs and general sustainability concerns ▪ Ensure that corporate disaster plans are integrated into national disaster plans ▪ Protect coastal assets including beach vegetation, mangroves and coral reefs
Financial Services	▪ Ensure the adoption and implementation of building codes and other standards in order to minimize risk from climate and other natural hazards ▪ Develop appropriate hazard risk management measures to address the impacts of natural hazards including the development of lending mechanisms for ensuring adequate financial support for rehabilitation and reconstruction activities ▪ Explore opportunities for pooled insurance and reinsurance arrangements among regional Governments ▪ Encourage insurance companies to develop appropriate capacity to identify and forecast risk and to share data from these initiatives with other actors in natural hazard risk management ▪ Encourage the financial sector to develop mechanisms to assist human settlements affected by natural hazards

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Appendix 1: Representatives of key stakeholder institutions interviewed

- Hon. Philip J. Pierre, Minister of Infrastructure, Port Services and Transportation (MIPST)
- Mr. Ivor Daniel, Deputy Permanent Secretary, MIPST
- Mr. Len Robertson Leon, Deputy Chief Engineer, MIPST
- Senator the Hon. Dr. James Fletcher, Minister of Sustainable Development Energy, Science Technology (MSDEST)
- Mr. Sylvester Clauzel, Permanent Secretary, MSDEST
- Mr. Crispin d'Auvergne, Senior Sustainable Development Officer, MSDEST
- Mrs. Joanna-Raynold Arthurton, Permanent Secretary of the Ministry of Physical Development, Housing and Urban Renewal (MPDHUR)
- Mr. Hildreth Lewis, Deputy Permanent Secretary, MPDHUR
- Ms. Dawn French, Director National Emergency Management Organization (NEMO)
- Mrs. Patricia Aquing, Former Manager, Environment Unit, Caribbean Public Health Agency
- Mr. Jerome Jules, Chief Executive Officer, National Insurance Property Development and Management Company (NIPRO)

Appendix 2: Participants at Focus Group Meeting

- Ms. Joanna Raynold-Arthurton, P/S MPDHUR
- Mr. Sylvester Clauzel, P/S MSDEST
- Ms. Valerie Leon
- Mr. Terrance Guillard
- Mr. Ken Alonso, Energy Officer
- Mr. Michael Bobb, Chief Forest Officer
- Ms. Berthia Daniel Thomas, Energy Science and Technology Officer
- Mr. Barry Felicien, Chief Public Utilities Officer
- Ms. Anita James, Project Officer, Revision of Biodiversity Strategy and Action Plan
- Ms. Sally-Ann Cotter, Legal Officer
- Mr. Augustin Dominique, responsible for the Piton Management Authority

Appendix 3: Policy/institutional capacity and structure for DRR

Strengths and weaknesses of competences and jurisdictions across ministries and government agencies; institutional arrangements for implementing decisions

No.	Functional Activity and Capacity Need	Action Required
1	***Governing Legislation***	
	Some provisions of Disaster Management Act 2006 are outdated	Provisions of the Disaster Management Act 2006 have been reviewed to ensure that they are consistent with the CDEMA draft legislation, and address other deficiencies identified (a draft bill is ready)
2	***Accompanying Regulations***	
	Regulations as per Section 27 (1) of the Disaster Management Act 2006 have not been introduced by the Minister	Introduce regulations to give effect to the Disaster Management Act 2006 and the Emergency Powers Act 1995
3	***Institutional Mandate***	
	There appears to be overlap in the disaster management responsibilities of ministries, departments and public agencies	Review the mandates of ministries, departments and public agencies involved in disaster management to identify and remove areas of overlap
4	***Organizational Structures***	
	Some ministries, departments and public agencies are not configured to perform their disaster management functions	Review and enhance the structures of key ministries, departments and public agencies to increase capacity to perform assigned disaster management functions
5	***Bilateral/Multilateral Agreements***	
	Based on the bilateral and multilateral agreements signed or ratified, Saint Lucia has not been able to fulfill all its regional and international obligations	NEMO should update NEMAC regularly on actions required/taken by Saint Lucia to fulfill its regional and international obligations in keeping with bilateral and multilateral agreements signed or ratified
6	***Management of Emergency Operations Centres***	
	Low commitment and participation of senior government officials in NEOC operations Low compliance with protocols for management of information in a disaster situation at the district level by political interests	Enshrine requirements of senior public officers in job descriptions and stipulate DM obligations in the proposed Public Service Act
7	***Emergency Shelter Management***	
	Ministry of Infrastructure does not conduct the annual inspections and certification of designated Emergency Shelters and as a result NEMO is unable to publish the list of designated shelters on a timely basis	Ministry of Infrastructure should assign Inspectors to conduct annual inspections and certification of designated Emergency Shelters early while NEMO should publish the national list of designated shelters widely and on a timely basis

No.	Functional Activity and Capacity Need	Action Required
8	***Storage Facilities Management***	
	Security and conditions of storage facilities maintained by NEMO, the Red Cross and public agencies for holding relief supplies, basic tools and equipment and other disaster management are often inadequate	NEMO, the Red Cross and public agencies should take steps to improve security and the condition other disaster management agencies to ensure that storage facilities are maintained in a proper condition

Decision-making Support Information System for DRR:*geo-referenced databases with analytical capabilities-tools and applications that are critical for implementing a risk reduction policy from within physical planning and development processes; and integration of data through cloud-based platforms.*

9	***Disaster Information***	
	The existing national disaster management information systems for data sharing and information dissemination are inadequate	NEMO must upgrade national disaster management information systems to expedite data sharing and information dissemination
10	***Technological Tools***	
	The country lacks technological tools such as an Early Warning System, computerized databases of contact persons, and trained disaster management personnel to make full use of modern technological tools	NEMO needs to install modern technological tools such as Early Warning Systems, maintain an updated computerized database of contact persons and train disaster management personnel to utilize modern technological tools
11	**Progress Reporting**	
	NEMO should ensure that key disaster management personnel have the required knowledge and skills to prepare and submit Progress Reports to Council on a timely basis	NEMO should ensure that key disaster management personnel have the required knowledge and skills to prepare and submit Progress Reports to Council on a timely basis

Land Use Policy and Planning: *recommendations regarding land tenure; rationalization of unplanned settlements; and location of critical infrastructure, settlements and productive systems.*

12	***Disaster Management Planning***	
	NEMO, National Disaster Committees, District Disaster Committees and Agency Disaster Committees have all developed Disaster Management Plans	There is need to conduct periodic reviews of these plans with a view to updating components as required and securing adequate human and financial resources to implement the changes
13	***Disaster Management Policy***	
	NEMO has a number of approved national disaster management policies that are listed as separate documents	NEMO should consolidate and publish a compendium of approved national disaster management policies

14	***Disaster Preparedness***	
	Resources allocated to NEMO, National Disaster Committees, District Disaster Committees and Agency Disaster Committees to organize disaster preparedness activities are in adequate	Ministry of Finance needs to conduct a comprehensive assessment of the cost involved in organizing disaster preparedness activities and use the findings of the study to arrive at a more realistic annual budgetary allocation
15	***Human Resources Management***	
	NEMO does not have a sufficient number of public officers and volunteers who are available to efficiently and effectively carry out disaster management functions	Compile a list of disaster management personnel required such as Planners, Hazard Inspectors, Civil and Structural Engineers and Shelter Managers and arrange orientation and training for them
16	***Financial Resources Allocation***	
	Annual budgetary allocation made by Ministry of Finance for the implementation of approved disaster management plans, programmes and projects is inadequate	Ministry of Finance needs to use an activity-based costing approach to arrive at the annual budgetary allocation for the implementation of approved disaster management plans, programmes and projects
17	***Damage Assessment***	
	NEMO lacks an up-to-date register of experts and resource mobilization for post-disaster damage assessments is slow and the presentation of reports is often delayed	NEMO should maintain an up-to-date register of experts, improve the mobilization of resources for post disaster damage assessments and ensure that reports are presented on a more timely basis
18	***Execution of Restoration Works***	
	There is usually a long delay in mobilizing resources for the Ministry of Infrastructure and utility companies to undertake prompt restoration works	Establish a National Disaster Restoration Fund which the Ministry of Infrastructure and utility companies can be accessed in quick time to undertake timely post-disaster restoration works

Education, public participation and outreach: *recommendations for communicating, educating and involving the public in DRR.*

19	***Public Education***	
	NEMO's public education programme does not cover all hazards i.e earthquakes, fires, floods, hurricanes, landslides or slope failures, storm surges, tsunami or tidal waves, volcanic	NEMO's public education programme should be ongoing and cover all potential hazards such as earthquakes, fires, floods, hurricanes, landslides or slope failures, storm surges, tsunami or tidal waves, volcanic eruptions
20	***Governance Responsibilities***	
	Citizens lack awareness of the oversight responsibilities of NEMAC, National Disaster Committees, District Disaster Committees and Agency Disaster Committees	Develop and implement a programme of public education to create greater awareness of the oversight responsibilities of NEMAC, National Disaster Committees, District Disaster Committees and Agency Disaster Committees