Climate Investment Funds

PPCR/SC.8/5
June 9, 2011

Meeting of the PPCR Sub-Committee
Cape Town, South Africa
June 28 and 29, 2011

Agenda Item 6

STRATEGIC PROGRAM FOR CLIMATE RESILIENCE
ST. LUCIA

Proposed Decision by PPCR Sub-Committee

The PPCR Sub-Committee, having reviewed the *Strategic Program for Climate Resilience for St. Lucia*, (document PPCR/SC.8/5), a country participating in the Caribbean Regional Program,

a) endorses the SPCR as a basis for the further development of the projects foreseen in the strategic program and takes note of the requested funding of USD5-7million in grant funding and USD7-15million in other concessional resources. The Sub-Committee reconfirms its decision on the allocation of resources, adopted at its meeting in June 2010, that a range of funding for the regional program, consisting of strategic programs for the participating countries and a regional component, should be used as a planning tool in the further development of project and program proposals in participating countries to be submitted to the PPCR Sub-Committee for PPCR funding approval, recognizing that the minimum amount of the range is more likely and that the upper limit of the range will depend on availability of funding.

   The range of funding agreed for a regional pilot program is USD 60-75 million in grant resources, and USD 40-55 million in other concessional resources. The Sub-Committee also recognizes that the quality of the proposed activities will be a significant factor in the funding to be approved by the Sub-Committee when the project proposal is submitted for approval of PPCR funding.

   Recognizing that the Caribbean regional program is comprised of six country pilots and a regional track of activities, the Sub-Committee invites the pilot countries and the MDBs to agree, once all country pilots and the regional track of the regional program have been endorsed, to confirm the allocation of resources to each pilot and the regional track, bearing in mind the above range of resources that may be available for the regional program.

b) approves a total of USD376,000 in PPCR funding as a preparation grant for the proposed program "*Building National Climate Resilience, One Person, One Household, One Enterprise, One Community, One Sector at a Time"*, to be developed under the SPCR;

c) takes note of the estimated budget for project preparation and supervision services for the program referenced above and approves a first tranche of funding for MDB preparation and supervision services as follows:

   i. USD237,500 for the program "*Building National Climate Resilience, One Person, One Household, One Enterprise, One Community, One Sector at a Time"*(World Bank)

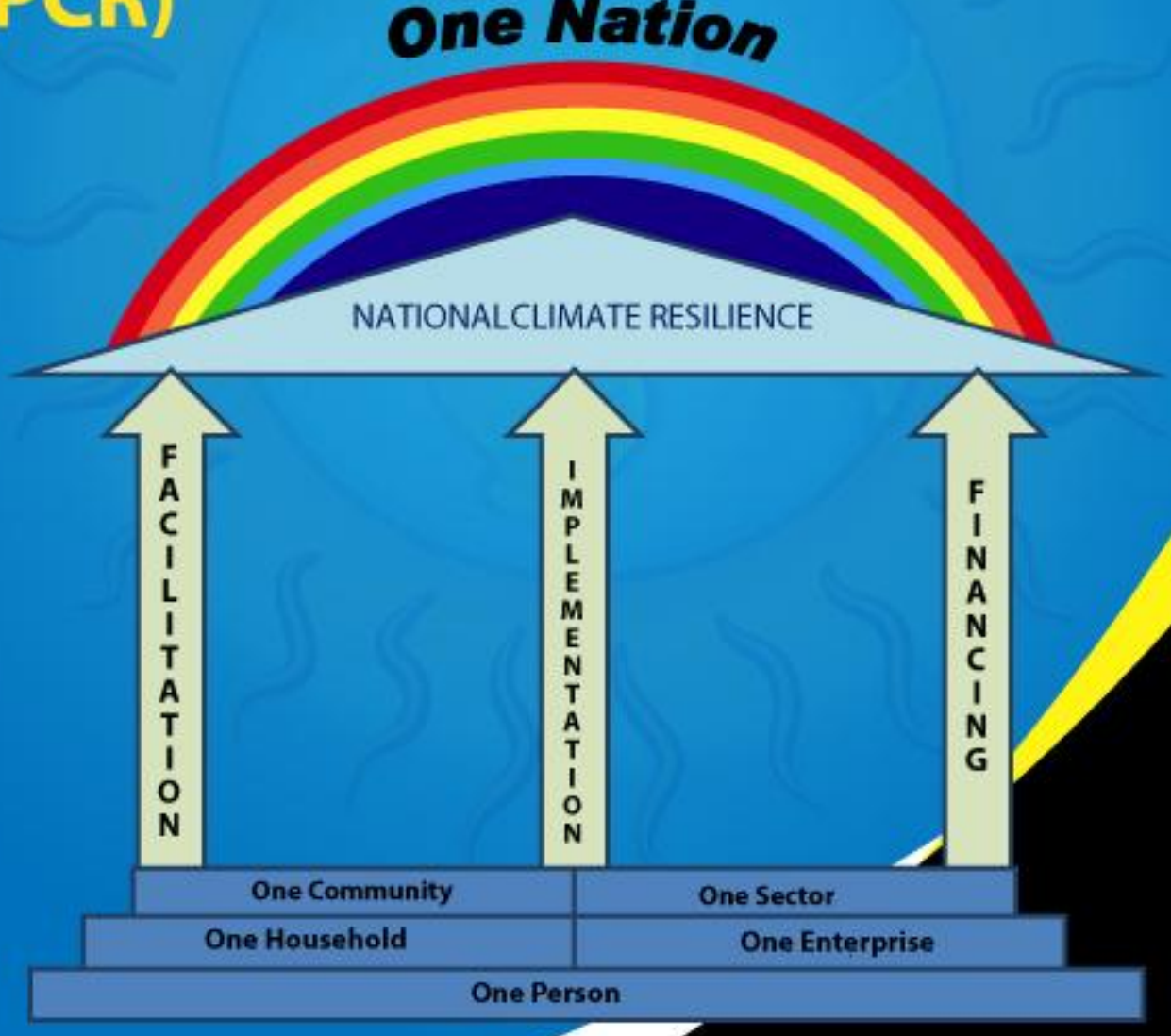
d) requests the Government of St. Lucia and the MDBs to take into account all written comments submitted by Sub-Committee members by July 15, 2011 in the further development of the program.

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)



June 1st 2011

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)

Part One: Background & Rationale

June 1st 2011

NOTE TO READER:

Saint Lucia's Strategic Programme for Climate Resilience is divided into five (5) Parts:

PART 1: BACKGROUND AND RATIONALE

PART 2: PROPOSED INVESTMENT PROGRAMME COMPONENTS FOR PPCR FUNDING

PART 3: REQUEST FOR PROJECT PREPARATION FUNDING

PART 4: APPENDIX

PART 5: BIBLIOGRAPHY

SUMMARY OF SAINT LUCIA'S SPCR[1]

SAINT LUCIA PILOT PROGRAMME FOR CLIMATE RESILIENCE **Summary of Strategic Programme for Climate Resilience**		
1. **Country/Region**:	*Saint Lucia, Caribbean Region*	
2. **PPCR Funding Request (in US$Million):**:	*Grant:US$7.0 Million*	*Loan/Concessional:US$10.0 Million*[2]
3. **National PPCR Focal Point**:	• *Isaac Anthony, Permanent Secretary, Ministry of Finance, Economic Affairs and National Development* …	
4. **National Implementing Agency** (Coordination of Strategic Program)**:**	• *Sustainable Development & Environment Division in the Ministry of Physical Development & the Environment in collaboration with the Project Coordination Unit of the Ministry of Finance, Economic Affairs and National Development*	
5. **Involved MDB**	*The World Bank*	
6. **MDB PPCR Focal Point and Project/Program Task Team Leader (TTL)**:	*Headquarters-PPCR Focal Point: Kanta Kumari Rigaud*	*TTL: Niels B. Holm-Nielsen*

7. **Description of SPCR:**

(a) Key challenges related to vulnerability to climate change/variability:

- Vulnerability of economic systems, social processes and ecosystems to climate change/variability singly and collectively compromise the attainment of sustainable development goals
- The existence of demographic groups and areas considered to be particularly threatened by climate change, but not adequately defined in geographical extent, or analysed
- Policy, legislative and fiscal instruments, and institutional framework for climate change resilience-building inadequate and fragmented
- Various publics not sufficiently aware of potential impacts of climate change and the measures that they can take to build climate resilience, nor are they provided with the enabling environment/mechanisms to effect the necessary change;
- Business and other economic sectors challenged to maintain productivity and continuity of operations
- Inadequate capacity at the community and sector level to respond to climate change.
- Climate-relevant data and information inadequate, often discontinuous or sporadic, fragmented among agencies, poorly managed and inadequately shared or exchanged;
- Critical buildings and other structures, as well as water infrastructure, vulnerable to extreme weather events such as floods and hurricanes
- Coastal management capacity inadequate and coastal management planning and development does not properly take into account climate-related risks
- Climate financing generally inadequate and project-driven, and thus, discontinuous

[1] To be submitted together with the full strategy document for endorsement by the PPCR Sub-Committee.

[2] Saint Lucia is making a request for 10 million, but is interested in the uppermost available limit of concessional funding (from an indicative range US$7-15 million), with the understanding that the lower range will apply if the concessional envelope is at the lower end, which, for the Caribbean, is US$40M

SAINT LUCIA PILOT PROGRAMME FOR CLIMATE RESILIENCE
Summary of Strategic Programme for Climate Resilience

(b) Areas of Intervention – sectors and themes

THEME: BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME

STRATEGIC PROGRAMME AREAS

1 Human Welfare and Livelihood Protection

2 Integrated Natural Resource Protection, Conservation and Management to Promote Sustainable Development

3 Building Resilience through Business Development, Innovation and Productivity Enhancement

4 Capacity Development/Building and Institutional/ Organisational Strengthening

5 Reducing Risk to Climate Related Disasters

Component 1:Adaptation Facilitation	**Component 2:Adaptation Implementation**	**Component 3: Adaptation Financing**
Strengthening National Level Policy, Legislative and Institutional Framework for Climate Resilience and Enhancing PPCR Implementation	Implementation of Climate Resilience Measures in Critical Buildings	Climate Change Adaptation Financing Facility
Public Education and Outreach for Climate Change Resilience Building	Coastal Zone Management for Climate Resilience	
Research and Systematic Observation and Data and Information Acquisition and Management for Climate Change Adaptation	Supporting Community-Level Interventions in Water Resource Conservation and Management	
Research and Systematic Observation and Data and Information Acquisition and Management for Climate Change Adaptation		

Expected Outcomes from the Implementation of the SPCR

- *A robust and effective policy, legislative and fiscal framework for the building of climate resilience established;*
- *Public, private and civil society actors more informed, educated and empowered to contribute to national climate resilience-building;*
- *National Capacity for climate-relevant research and systematic observation, data acquisition, management, analysis and sharing enhanced;*
- *Coastal management capacity enhanced and coastal planning guided by, and demonstrates, incorporation of climate change considerations*
- *Critical buildings and community-level water supply systems made more climate-resilient*
- *Blueprint for Sustainable Climate Change Financing facility developed*
- *Public Private Partnerships for investments in climate adaptation interventions*
- *A gender disaggregated information source on specific aspects of vulnerable groups*
- *Targeted programming for different types of vulnerable groups*
- *Best practices and lessons learned shared nationally and regionally*

8. **A**

Result	**Success Indicator(s)**

SAINT LUCIA PILOT PROGRAMME FOR CLIMATE RESILIENCE Summary of Strategic Programme for Climate Resilience	
1. *Strengthened Climate Resilience of Communities and Critical Infrastructure*	• Reduced incidence of losses of buildings , communities and livelihoods located in coastal and other vulnerable areas • Reduced economic costs of coastal, critical and community infrastructure • Reduced downtime in economic activities in vulnerable sectors, e.g. tourism • Number of lives lost/injuries annually from climate extreme and variability events (as % of population) • Number of private/public buildings damaged in extreme weather events • Number of critical buildings retrofitted or climate-improved • Decrease in the number of days without access to potable water
2. *Improved Public Sector Capacity*	▪ Climate-resilient policy, legal, fiscal measures adopted and implemented/enforced. • National budgetary processes and allocations reflect capital costs for climate change adaptation. ▪ Functioning institutional mechanism for collaboration and coordination of climate resilience building ▪ Increased integration of climate change considerations in sectoral work programmes and plans ▪ Increased data and information management systems and expertise in government ministries/departments and agencies ▪ Increased retrieval and use of climate related data in decision making
3. *Strengthened Knowledge and Awareness of Climate Risk Management*	• Increased use of climate resilient technologies by households, communities, businesses and the public sector • Number of private sector enterprises undertaking vulnerability assessment to prepare adaptation plans • Number of communities trained in and using vulnerability assessments to reduce climate related risks
4. Enhanced integration of Learning and Knowledge Management in Climate Resilience Building	• Meetings/workshops, shared databases and electronic documentation, and other information sharing mechanisms
5. *Increased Civil Society and Private Sector Participation*	• Number of Public Private Partnerships in climate adaptation investments • Climate Adaptation Loan Facility created and capitalised • Uptake of concessional loan funding X% of which should be by vulnerable groups
6. *Increased Integration of Social Vulnerability*	• Risk maps and profiles of vulnerable groups • Increased number of targeted programmes

9. **Project and Program Concepts under the SPCR:**

Project/Program Concept Title	**MDB**	**Requested PPCR Amount ($)[3]**			**Expected co-financing [4](US$M)**	**Preparation grant request ($)**	**Total PPCR request**	**MDB Fee[5]**
		TOTAL (US$M)	**Grant (US$M)**	**Loan/Concessional (US$M)**				

[3] Includes preparation grant and project/program amount.
[4] The DVRP is currently in design phase, with the potential for accessing IDA funding of USD 10-15 million. Discussions with the proponents have confirmed complementarity with the activities outlined in the SPCR and that these will help to form the basis for further elaboration of the DVRP. In this regard, it is envisaged that the SPCR will be able to leverage up to USD 10 million

SAINT LUCIA PILOT PROGRAMME FOR CLIMATE RESILIENCE Summary of Strategic Programme for Climate Resilience								
Component 1: Adaptation Facilitation	WB	2.65	1.85	0.0	0.8			
Component 1: Adaptation Implementation	WB	7.9	4.25	0.0	3.65			
Component 1: Adaptation Financing	WB	10.3	0.3	10.0				
Disaster Risk Reductions Activities under the DVRP	WB	4.55	0.0	0.0	4.55			
Project Management	WB	1.6	0.6	1.0	1.0			
TOTAL		**27.0**	**7.0**	**10.0**	**10.0**			

10. **Timeframe** (tentative) – Approval[6] Milestones

Component 1: December 2011
Component 2: December 2011
Component 3: December 2011

11. **Key National Stakeholder Groups involved in SPCR design**[7]:

- Ministry of Physical Development & the Environment
- Ministry of Finance, Economic Affairs and National Development
- Ministry of Health, Wellness, Family Affairs, National Mobilization and Gender Relations
- Ministry of Agriculture., Lands, Forestry and Fisheries
- Ministry of Tourism and Civil Aviation
- Ministry of Communications, Works, Transport and Public Utilities
- Ministry of Social Transformation, Youth and Sports
- National Emergency Management Organization, Office of the Prime Minister
- National Conservation Authority
- Saint Lucia Electricity Services Limited
- Saint Lucia Hotel & Tourism Association
- Saint Lucia National Trust
- Saint Lucia Air & Sea Ports Authority
- Saint Lucia Solid Waste Management Authority

through the financing framework of the DVRP and RDVRP which will therefore provide a means of supplemental funding to enable upscaling of the SPCR implementation activities to realise larger, blended projects.
The national executing agencies continue bilateral dialogue with key entities for co-financing. This is expected to progress over the next few weeks/months. As such, it would be premature for Saint Lucia to indicate commitment of these organisations at this time. Progress on these commitments will be provided, to the PPCR Sub-Committee at the CIF Partnership Forum in South Africa.

[5] To be filled by MDB submitting the project.
[6] Expected signature of loan/grant agreement between government and MDB.
[7] See Annex x for full contingent of Key Stakeholder Groups Involved in SPCR and Investment Plan Design.

SAINT LUCIA PILOT PROGRAMME FOR CLIMATE RESILIENCE
Summary of Strategic Programme for Climate Resilience

- Saint Lucia Development Bank
- Sir Arthur Lewis Community College
- Civil Society Organizations
- Office of Private Sector Relations
- Organisation of Eastern Caribbean States-Environment and Sustainable Development Unit
- National consultant team
- Development Partners with national and regional presence

12. **Other Partners involved in SPCR:** Inter-American Development Bank, International Finance Corporation, Organisation of Eastern Caribbean States-Environment and Sustainable Development Unit, UK Department for International Development

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF BOXES

LIST OF ACRONYMS AND ABBREVIATIONS[8]

ACCC	Adapting to Climate Change in the Caribbean
BIT	Banana Industry Trust
BPoA	Barbados Programme of Action
CALF	Climate Adaptation Loan Facility
CARICOM	Caribbean Community
CAT	Climate Adaptation Trust (Fund)
CCA	Climate Change Adaptation
CCAP	Climate Change Adaptation Policy
CCCCC	(5 Cs) Caribbean Community Climate Change Centre
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CEP	Caribbean Environment Programme
CIDA	Canadian International Development Agency
CIF	Climate Investment Fund
CPA	Country Poverty Assessment
CPACC	Caribbean Planning for Adaptation to Climate Change

[8] *This list serves Parts 1, 2 and 3 of Saint Lucia's SPCR and Investment Plan and will be repeated in each Part for ease of reference.*

CRSC	Climate Resilience Sub-Committee
CSG	Climate Studies Group
CSOs	Civil Society Organisations
CSR	Corporate Social Responsibility
CYEN	Caribbean Youth Environmental Network
CZM	Coastal Zone Management
CZMAC	Coastal Zone Management Advisory Committee
CZMU	Coastal Zone Management Unit
DCA	Development Control Authority
DFID	Department for International Development
DMP	Disaster Management Project
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DVRP	Disaster and Vulnerability Reduction Project
EAW	Energy Awareness Week
EBF	Ecosystems-Based Framework
EIA	Environmental Impact Assessment
EMB	Environmental Management Bill
ENSO	El Nino Southern Oscillation
EOC	Emergency Operations Centre
ERP	Emergency Recovery Project
ESA	Electricity Supply Act
ESDU	Environment and Sustainable Development Unit

ETF	Environmental Trust Fund
EU-SFA	European Union Special Framework for Assistance
GCM	Global/General Circulation Model
GCC	Global Climate Change
GDP	Gross Domestic Product
GEF	Global Environment Facility
GCMs	Global Climate Models
GHG	Greenhouse Gas
GIS	Geographic Information System
GNP	Gross National Product
GOSL	Government of Saint Lucia
GPS	Global Positioning System
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IP	Investment Plan
IPCC	Intergovernmental Panel on Climate Change
IWCAM	Integrated Watershed and Coastal Areas Management
KAP	Knowledge, Attitude and Practices
LDF	Laborie Development Foundation
MACC	Mainstreaming Adaptation to Climate Change
MALFF	Ministry of Agriculture, Lands, Forestry and Fisheries
MDBs	Multilateral Development Banks
MEAs	Multilateral Environmental Agreements

MPDE	Ministry of Physical Development and the Environment
MSI	The Mauritius Strategy for Implementation
MTESP	Medium Term Economic Strategy Paper
NBSAP	National Biodiversity Strategy and Action Plan
NCCC	National Climate Change Committee
NCCPAP	National Climate Change Policy and Adaptation Plan
NEAs	National Executing Agencies
NEC	National Environmental Commission
NEMS	National Environmental Strategy
NEMO	National Emergency Management Organisation
NEOC	National Emergency Operations Centre
NEP	National Environmental Policy
NHMP	National Hazard Mitigation Plan
NGO	Non-Governmental Organization
NLP	National Land Policy
OAS	Organization of American States
OECS	Organisation of Eastern Caribbean States
OPSR	Office of Private Sector Relations
ORI	Other Relevant Information
PAHO	Pan American Health Organization
PCU	Project Coordination Unit
PDAs	Personal Data Assistants
PEA	Public Education and Awareness

PEO	Public Education and Outreach
PPCR	Pilot Programme for Climate Resilience
PPCR-SC	Pilot Programme for Climate Resilience Sub-Committee
R&D	Research and Development
RCM	Regional Climate Model
RECC	Review of the Economics of Climate Change
RSO	Research and Systematic Observation
SALCC	Sir Arthur Lewis Community College
SCF	Strategic Climate Fund
SDED	Sustainable Development and Environment Division
SEDU	Saint. Lucia Small Enterprise Development Unit
SEP	Sustainable Energy Plan
SFA	(EU) Special Framework of Assistance
SIDS	Small Island Developing States
SLBS	Saint Lucia Bureau of Standards
SLHTA	Saint Lucia Heritage Tourism Association
SLM	Sustainable Land Management
SLNT	Saint Lucia National Trust
SLR	Sea Level Rise
SNC	Second National Communication
SME	Small and Medium Enterprises
SPACC	Special Programme on Adaptation to Climate Change
SPCR	Strategic Programme for Climate Resilience

SRDF	Soufriere Regional Development Foundation
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
USAID	United States Agency for International Development
UK	United Kingdom
USA	United States of America
USD	United States Dollar
UWI	University of the West Indies
V&A	Vulnerability and Adaptation
VCA	Vulnerability and Capacity Assessment
WASCO	Water and Sewerage Company
WHO	World Health Organization
WINFRESH	Windward Islands (Banana) Exporting Company Limited
WRMA	Water Resources Management Agency
WTO	World Trade Organization

1.0 PART 1: BACKGROUND AND RATIONALE

Saint Lucia's vulnerability to climate change is very high and increasing. Increases in the frequency and intensity of extreme weather and climate events, such as heavy rainfall, strong winds, drought and high sea temperatures and levels, are already occurring. These and other events have claimed lives, caused severe damage to infrastructure and other economic assets and caused adverse effects on livelihoods. Importantly, these changes and their adverse consequences are projected to escalate in the near and longer terms.

Saint Lucia, like the other Small Island Developing States (SIDS), is highly prone to devastating natural disasters. Its vulnerability can be attributed to (a) its small geographical area, which accounts for the fact that disasters take country-wide proportions; (b) its location in some of the highest risk areas of the planet, such as mid-ocean ridges with strong volcanic and seismic activity, tropical cyclone belts, and direct exposure to the forces of the oceans; and (c) the fact that it is dependent on few sources of income, in the agricultural sector or in tourism, for a substantial part of its gross national product (GNP). These sources of income have been severely reduced for months by a single catastrophic event. Another critical factor which highlights Saint Lucia's vulnerability is its limited capacity to reactivate the development process. The fragility of ecosystems, coupled with limited human resources, often preclude any possibility of developing and implementing meaningful disaster-mitigation programmes.

It is against the background described above, that Saint Lucia is honoured to participate in the Pilot Programme for Climate Resilience (PPCR). The PPCR is designed to provide programmatic finance for climate resilient national development plans. The PPCR aims to provide transformational, catalytic and scaled-up support for both the development and implementation of such climate-related plans. Furthermore, its purpose is to provide lessons over the next few years that might be incorporated and replicated by countries, the development community and the future climate change regime, including the United Nations Framework Convention on Climate Change (UNFCCC) Adaptation Fund, and any other climate trust funds established by countries. This experience will be gained through scaled-up interventions covering the full range of sectors and sources of financing, and with sufficient resources to move quickly from planning to action. The PPCR will also create a platform to complement other ongoing development activities in other PPCR-pilot and non-pilot countries in the Caribbean region.

The PPCR in Saint Lucia is led by the Ministry of Physical Development and the Environment, in collaboration with the Ministry of Finance, Economic Affairs and National Development. Implementation in Phase 2 will enable Saint Lucia to comprehensively address climate risks and vulnerabilities, and to reduce climate vulnerabilities in many sectors of the economy.

The PPCR is structured in two phases. During Phase 1, a number of enabling activities were undertaken. These activities included: updating the Climate Change Adaptation Policy (CCAP); assessing legislative instruments that are already existing or which will be necessary to give effect to climate change adaptation; assessing the incentives framework that is currently in place

and /or which will be necessary to stimulate climate change adaptation interventions by the private sector and civil society; undertaking second climate change Knowledge Attitude and Perception (KAP) Study, and assessing the Data and Information Systems necessary for the design, implementation, and monitoring of adaptation initiatives in Saint Lucia. Complementary activities included facilitating cross-sectoral dialogue across the island, to arrive at a common vision of climate resilience in the medium and long-term; and the formulation of a strategic approach to climate resilience. As a component of Phase 1, the Strategic Programme for Climate Resilience (SPCR) which outlines an underlying Investment Plan (IP) has been prepared. Endorsement of the SPCR by the PPCR Sub- Committee (PPCR-SC) of the Climate Investment Fund (CIF) and the approval of the Investment Plan[9] will mark the transition to Phase 2. Phase 2 will focus on implementing the SPCR through transformative actions such as support to legislative reform and strengthening institutional and technical capacity and catalytic replication actions, such as scaling-up resilience building investments in key sectors and for vulnerable groups.

It should be noted that the Phase 1 investigations revealed some critical areas for incorporation into investment initiatives under the SPCR. The key outputs of the Phase 1 process, outside of the preparation and submission of an SPCR and Investment Plan are highlighted in **Box 1**.

Box 1. Key Outputs of PPCR Phase 1 Process
(Outside of the preparation and submission of an SPCR and Investment Plan)

1. Updated Climate Change Adaptation Policy (from the 2002 policy);
2. Climate Change KAP Study to build on the survey conducted in 2005;
3. Drafting Instructions for an Environmental Management Bill, Environmental Impact Assessment (EIA) and Physical Planning regulations to incorporate the climate change element;
4. Climate Change Public Education and Outreach Strategy and Implementation Plan (with a focus on special and vulnerable groups);
5. Recommendations for data procedures/protocols and for enhanced data management;
6. Basket of incentives to be implemented within and beyond PPCR to address climate change; and
7. The establishment of an open access platform for access, management and publication of geospatial data for informed decision making, namely, a GeoNode Pilot.

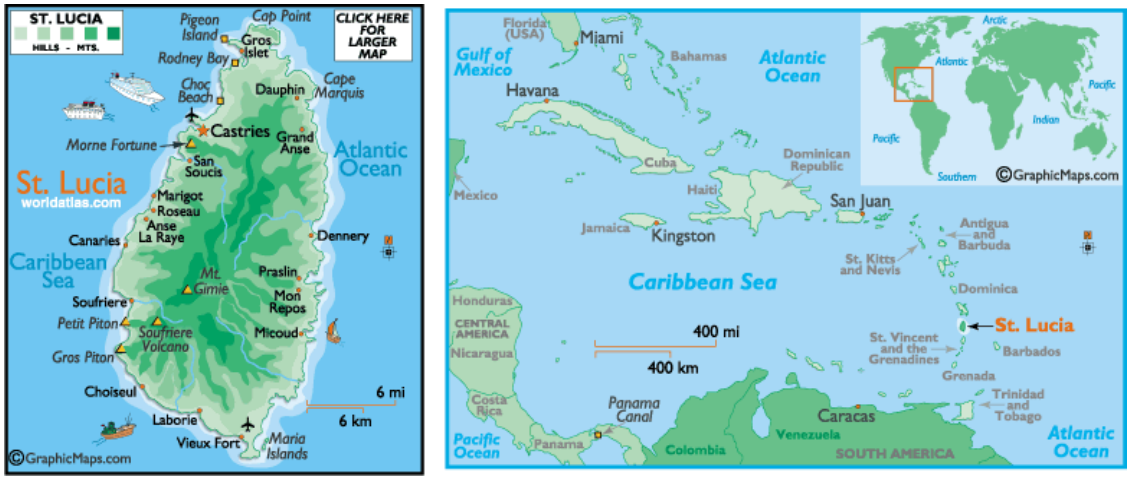
The Government of Saint Lucia (GOSL) is committed to building climate resilience and using the PPCR as a platform. Mainstreaming and integration of climate change will be reflected in, among others, the national budget as appropriate, written and unwritten policies, fiscal incentives and regimes, development programmes, plans, strategies, codes, procedures and processes, legislation and enforcement, and investment initiatives/ interventions, in order to achieve a more meaningful and sustained response.

[9] Approval of the Investment Plan is further contingent on the availability of funds in the envelope at the time

1.1 COUNTRY CIRCUMSTANCES

1.1.1. Physical Environment

Saint Lucia is situated in the Lesser Antillean Arc of the Caribbean Archipelago at latitude 13° 53' north and longitude 60° 68' west (**Figure 1**). The island is 42 km long, 22 km wide, and has a land area of 616 km^2. It is volcanic in origin and mountainous and rugged in topography, with steep slopes cut by fast-flowing rivers.



Source: Google Earth
Figure 1: Saint Lucia Map and location in the Caribbean Archipelago

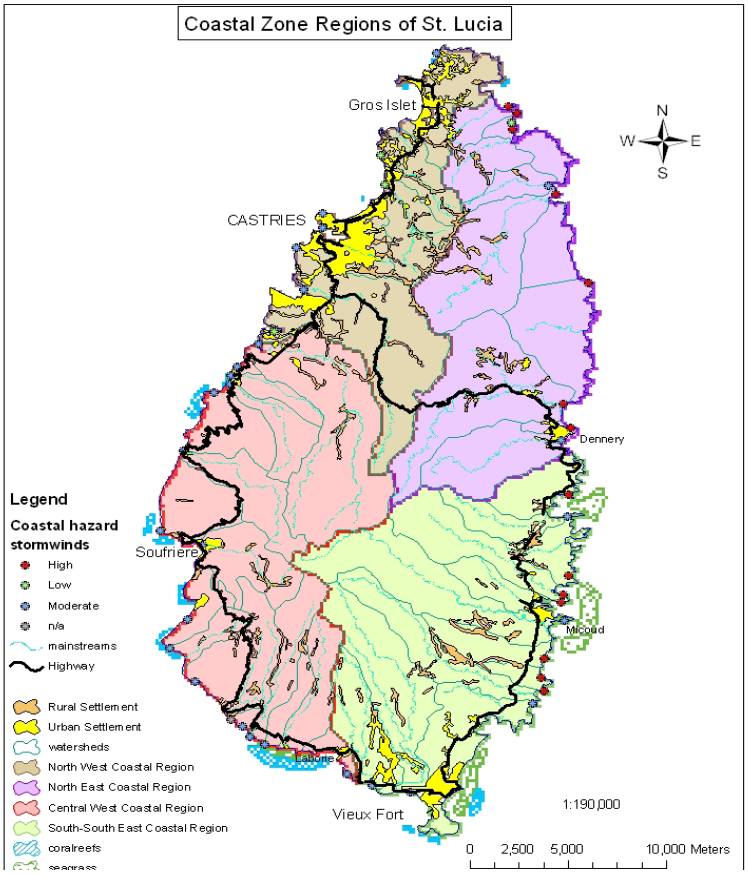
The island is characterised by a central ridge running from north to south, with numerous steep off-shoot ridges extending towards the coasts and with less than 10% of the total land area occurring on slopes of less than five (5) degrees[10]. As a result, the application of some type of soil conservation measure is necessary on more than 90% of the land area for any type of use[11]. Approximately 30% of Saint Lucia's land area is pastoral and arable land.

An estimated 15% of the island's landmass is under forest cover, with 18% dedicated to agriculture[12]. Agriculture contributes to less than 5 % of the Gross Domestic Product (GDP)[13].

[10] Most of the flat or gently-sloping land is found along the narrow coastal belt
[11] GOSL. 1979. **Watershed and Environmental management Project**. Hunting Technical Services for Ministry of Planning and Development,
[12] GOSL. 2010. 4th **National Biodiversity Report for Saint Lucia**. Prepared by the Ministry of Agriculture, Land, Forestry and Fisheries.
[13] GOSL. 2010. **Economic and Social Review.** Prepared by the Division of Economic Affairs, Ministry of Finance, International Financial Services & Economic Affairs.
.

It is estimated that between 1990 and 2000, the island lost 36% of its forest cover as a result of the clearing of natural vegetation for agriculture, construction and other development purposes[14]. Current efforts are focused at increasing this cover within the Government Forest Reserve (protected forests), in an attempt to redress this loss.

The island is circumscribed by a narrow coastal strip, which has been characterised by haphazard and unplanned development - posing a growing threat to the sustainability of the fragile coastal and marine ecosystems. In addition, the coastline, particularly the east coast, is deeply indented by near-vertical cliffs, with a number of narrow sandy beaches



Source: Ministry of Physical Development and the Environment
Figure 2: Coastal Zone Regions of Saint Lucia

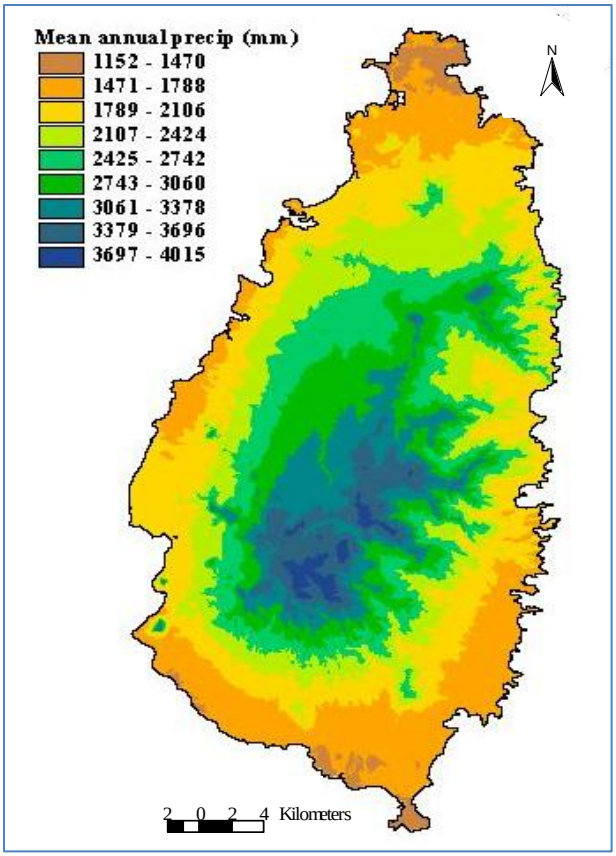
Figure 2 highlights the location of fringing reefs along the southeast (Anse de Sables), central west (off the districts of Anse-la-Raye, Soufrière and Laborie) and the northwest coast (Choc Bay).[15] Reefs in Saint Lucia are under threat from high levels of sedimentation and other land-based pollutants. This further amplifies the negative impacts of climate change, such as coral bleaching, and reduces the ability of the reefs to be resilient in the face of climate related events. For example, in late 2005, elevated seawater temperatures resulted in an extensive Caribbean bleaching event, including Saint Lucia. As a consequence, nearshore reef fisheries and water based tourism were threatened.

1.1.2. Climate

Saint Lucia lies within the north-east Trade Wind belt and has a tropical maritime climate, characterised by warm air temperature averaging near 28° C, but rarely rising above 33° C or falling below 20° C. The island's weather is influenced by synoptic weather systems, including the Atlantic High Pressure system (Bermuda Azores), the Inter-Tropical Convergence Zone,

[14] ibid
[15] Coral reef systems along the west coast are more diverse than those on the east coast. The healthiest and most diverse reefs are found along the central west coast, off Soufrière.

surface, mid and upper level low pressure systems, tropical waves and cyclones and the occasional frontal system.



Source: Isaac and Bourque, 2001[16].

Figure 3: Distribution of Mean Annual Precipitation for Saint Lucia

The island has two climatic seasons based on rainfall. The wet season extends from June to November, while the dry season runs from December to May. The volume of rainfall in the wet season is determined mainly by the frequency and intensity of tropical disturbances (waves, depressions, storms, hurricanes). These disturbances account for the greater amount of the recorded rainfall during that season. Local convectional showers and other weather systems account for the remainder.

Saint Lucia's topography influences the island's rainfall patterns; there is high rainfall in the mountainous interior, while lands at the extreme north and south of the island get less than half as much rainfall. Thus, the geographic influence of rainfall is quite pronounced, with amounts varying from approximately 1265 mm in the relatively flat coastal regions, to approximately 3420 mm in the elevated interior region (**Figure 3**).

Saint Lucia has 37 main watersheds[17]; ten of these are small multiple drainage basin complexes[18] (**Figure 4**). They all radiate from the central mountain ranges of the interior towards the coast. Of the 37 watersheds, only ten have rivers, with a significant portion located in zone of highest rainfall, while 11 have their headwater in drier zones (<2,000mm). Within these watersheds, 25 water catchments are tapped for domestic water supply[19].

As a result of the rugged topography and the absence of intermediate collection points for surface water, such as lakes and ponds, the majority of rainfall flows to the sea, with very little

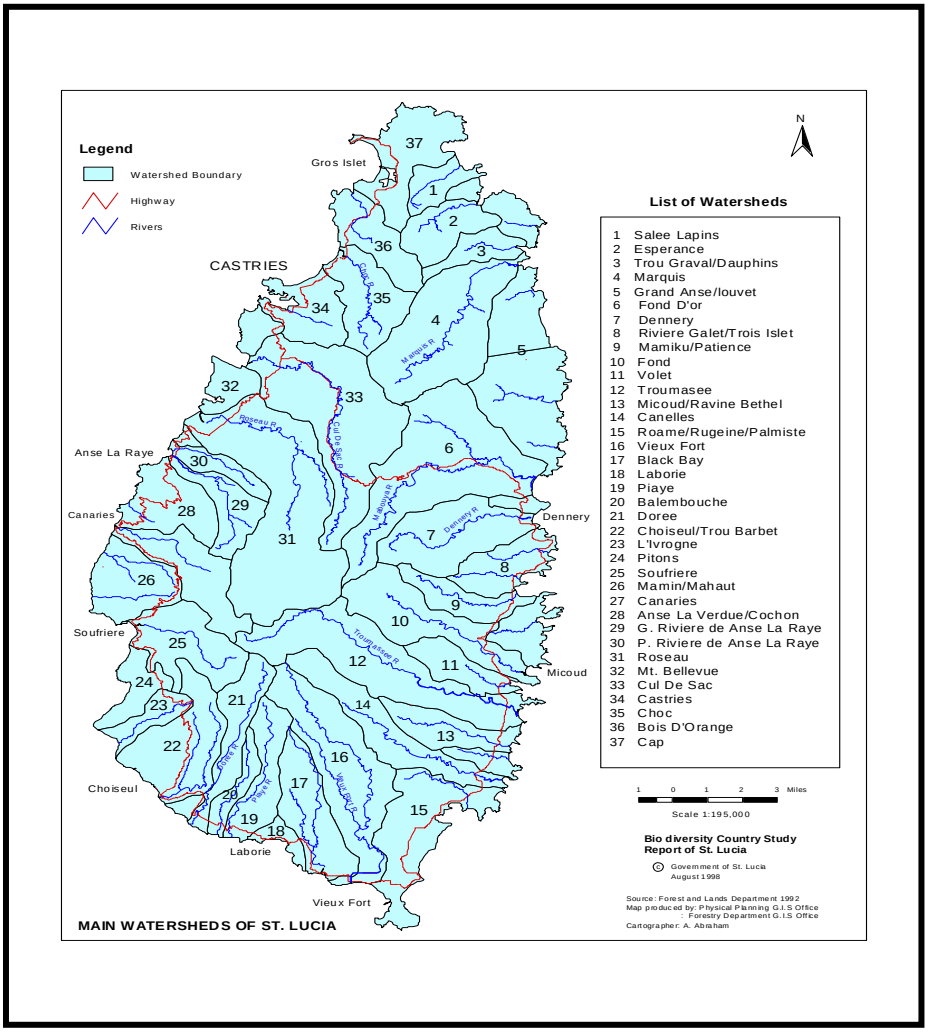
[16] Isaac C. and C.P.A. Bourke. 2001. **Ecological Life Zones of Saint Lucia**. Global Ecology and Biogeography. Vol, 10. Issue 5

[17] GOSL. 1986. **Saint Lucia Water Resources: Preliminary Assessment.** Vols. 1&2. Prepared by Migeot, J and Hawden, P. for Ministry of Agriculture.

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

[19] GOSL. 2001. **Saint Lucia National Water Situation and Assessment of National Water Profile**. Prepared by AGRICO Ltd. for Ministry of Agriculture, Lands, Forestry and Fisheries (MALFF) under OAS/CSC/CCST Project Entitled "Cooperative Strengthening of National Institutions to Enhance Integrated Water Resources Management"

opportunity for ground water storage. Hence, most of the water consumed or used on the island comes from runoff from catchment areas in the upper reaches of seven major river basins/ catchments, with headwaters mainly in the mountainous south-central area of the island. Loss in natural forested areas has resulted in unsustained base flows in the river systems beyond the rainy periods.



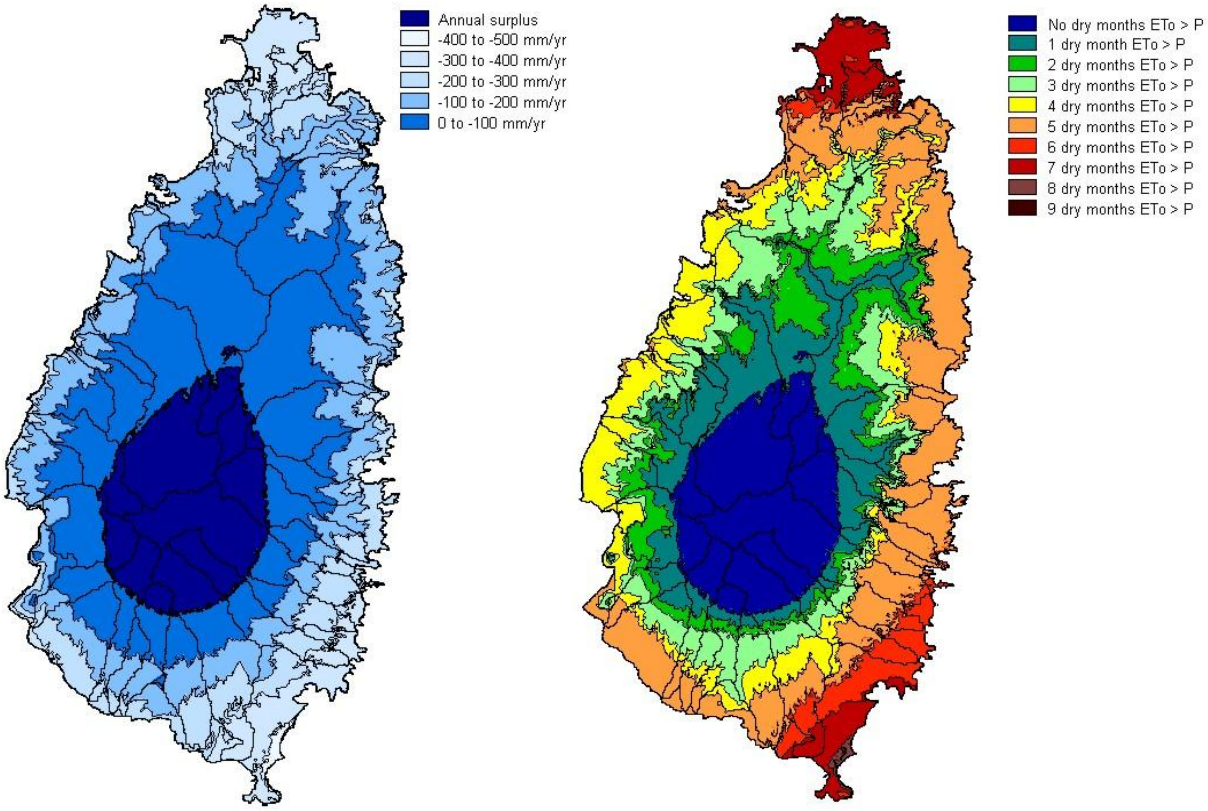
Source: Biodiversity Country Study Report, 1998

Figure 4: Watersheds and Rivers in Saint Lucia

Figure 5 shows spatial distribution of areas with high annual cumulative moisture deficit and number of dry months. These scenarios, against the backdrop of un-sustained river base flows, have serious implications for the island's water supply, in terms of water availability at both the community and national level. A further aggravation with regard to the national water supply are the various kinds of activities[20] taking place in upper watershed areas, which continue to rapidly impact on lower watershed and coastal areas, and have negative environmental impacts on

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

surrounding ecosystems, in particular, the quality of surface water.



(a) Annual cumulative moisture deficit (b) Number of dry months (ET_o > P)

Source; Cox, Christopher, A. 2003. [21]
Figure 5: Estimated Annual Water Deficit Distribution

See **Part 2:** Section 2.4.2.3 and **Table 4:** Component 2.3 for Support Community Level Intervention in Water Resources Conservation and Management.

1.1.3. Socio-Economic Context

1.1.3.1. Population and Demographics

Saint Lucia has an estimated population (2009) of 175, 000, with 24.1% under 14 years and 33% between 14 and 34 years. Large segments of the island's population are located along the coastal

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

belt, where low land agriculture, coastal resources, reefs, fisheries and tourism are the main sources of livelihood. Approximately 60 % of the population resides along the north-west corridor. The island's population is rapidly becoming urbanised, with approximately 41% of the total population residing in the city of Castries and 55% of the population residing in the Castries-Gros-Islet corridor. A further 28% reside within the regions/districts of the Southern Quadrant, with the North-East and West-Central Quadrants being the least populated regions of the island, each having less than 10% of the total population.

Table 1, Saint Lucia at a Glance, shows good social indicators (including low levels of maternal and infant mortality, universal primary education, low fertility, and increasing life expectancy) existing alongside high and increasing levels of poverty – 25.1% in 1995 and 28.8% in 2005/06.

Table 1. Saint Lucia at a Glance

Population	**165,595**		
Area	616km2	**Habitable Area**	539.1 km2
Basic Demographics	**Population**	**Urban Population**	41%
Birth Rate (per 1000) 13.1	**Density** Per sq.		
Death Rate (per 1000) 7.7	km - 839.2		
Infant Mortality Rate 13.43			
Structure of Economy	**Age Structure**		
%GDP (2009 est.)	0-14 years: 24.4% (male 20,035/female 19,021)		
Agriculture 4.9	15-64 years: 66.4% (male 51,593/female 54,843)		
Industry 18.2	65 years and over:9.2% (male 6,668/female 8,107)		
Manufacturing 6.4			
Services 76.9			

Prices and Employment (2010)		**Poverty Statistics (2005/2006 vs 1995)**	
Inflation Rate (period average) 1.9%		05/06	1995
Unemployment Rate (average) 20.6 %	% poor	28.8	25.1
	% indigent	1.6	7.1
	Rural Poverty	29.6%	
	Urban Poor	16.3%	
	Vulnerability	40.3%	

School Enrollment (2010)		
Primary School Enrollment 18,594	**Central Government Fiscal Operations (MXCD) FY10/11**	
Secondary School Enrollment 15,655	Total Revenue and Grants	858.3
Tertiary 2,929	Current Revenue	789.5
	Total Expenditure	1,032.7

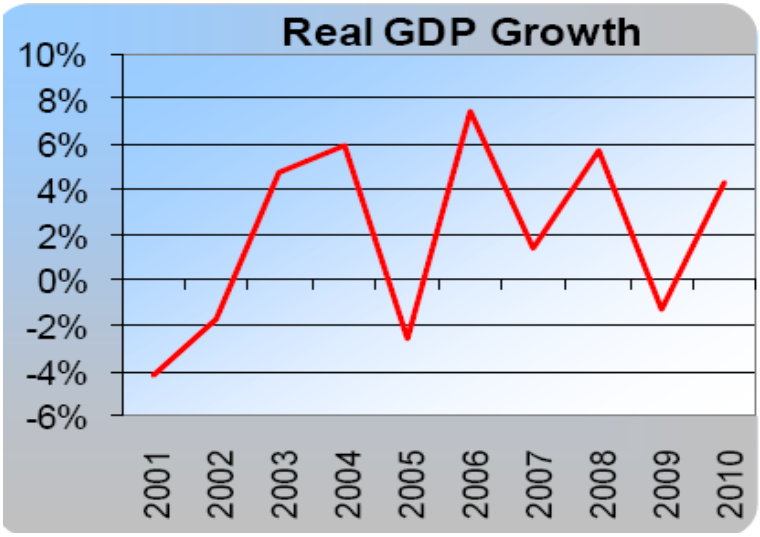
Source: Adapted from World Bank, Saint Lucia at a Glance[22]

1.1.3.2. The Economy

Saint Lucia's economy showed clear signs of recovery in 2010, despite the lagged effects of the global crisis, a severe drought in the earlier part of the year and the devastating effects of

[22] Assembled from World Bank, 2008, Saint Lucia at a Glance; GOSL, 2010, Economic and Social Review; Country Poverty Assessment Report, Saint Lucia, Kairi Consultants, 2005/2006

Hurricane Tomas in the last quarter. Preliminary estimates, based on a rebased GDP series, indicate real growth of 4.4 percent in 2010 compared with a decline of 1.3 percent in 2009 (**Figure 6).** This performance was influenced by growth in the tourism and construction sectors and supported by developments in the distributive trade services and real estate sectors.[23]



Source: GOSL, 2010, Economic and Social Review
Figure 6: Saint Lucia Real GDP Growth- 2001 to 2010

While the country's economic fundamentals remain solid, at the global level, there are a number of externalities that impact the island's economy, such as rising fuel prices, the international financial crisis, and changing trading regimes. The combined impact of these has contributed to a slowdown in economic activity in Saint Lucia over the last three years, evidenced in the contraction in the real GDP in the medium term, as a result of declines in tourism receipts and foreign direct investment. The challenging debt to GDP ratio has also placed severe limitations on government's ability to adopt counter cyclical policies to mitigate the impact of these socio-economic crises, as well as, caused due concern over the ability to undertake recovery in the wake of other crises, such as natural and manmade disasters.

There is also a huge drain on the country's economic resources as a result of extreme climatic events, as evidenced by colossal losses related to loss of lives and property, human injury, destroyed infrastructure, crops and livestock, and household and commercial and industrial assets following the passage of Hurricane Tomas in October 2010.[24] Saint Lucia has identified the need to assist its people with coping with such loss as a result of Climate Change. See **Appendix 13:** Project Concepts Developed for Climate Change Adaptation and Reducing Risk to Climate Related Disasters, for which funding is to be confirmed and further identified.

Historically, Saint Lucia's economy has been based primarily on mono-crop agriculture (most recently bananas). However, over the last decade-and-a-half, tourism has emerged as the main

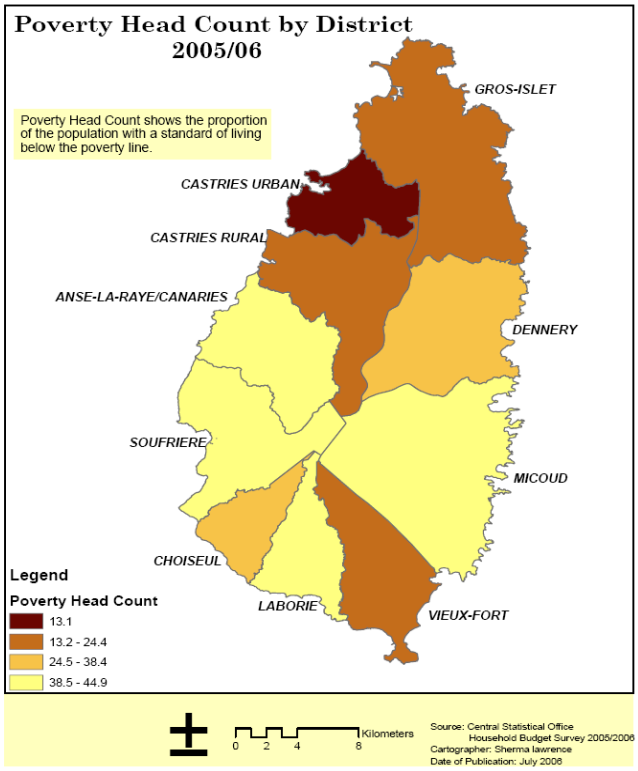
[23] GOSL. 2010. **Economic and Social Review**. Prepared by the Division of Economic Affairs, Ministry of Finance, International Financial Services & Economic Affairs
[24] Damage and loss assessed at over USD$500 Million for Hurricane Tomas, 2010.

revenue earner of the economy, with services, manufacturing and industry being the other important productive sectors. Nevertheless, despite the fact that agriculture, including fisheries, now plays a diminishing role, with a contribution to GDP of 4.9%, the sector remains an important source of livelihood for about 20% of the population (about 32 000 people)[25], as well as a key role in employment generation, foreign exchange earnings and contributing towards economic growth and food and nutrition security.

Saint Lucia, like most Caribbean countries, experienced an increase in inflation in the first half of 2008, mainly because of rising food prices in the global economy. Saint Lucia is a net importer of food, the international price of which continues to rise. This high dependence on imports reveals that Saint Lucia is highly vulnerable to the escalation in world food prices, thus raising the issue of food security. It is also of grave concern that food security is being threatened by climate change. Saint Lucia has identified under its SPCR that measures to contribute to food security vis-à-vis climate change will be implemented using co-financing from the Disaster Vulnerability Reduction Project (DVRP). See Part 2: Section 2.7.

1.1.3.3. Poverty and Unemployment

The country enjoys a relatively high index of human development as reflected by social indicators which are relatively good. 98 % of the population has access to safe water, and life expectancy is estimated to be 74 years. According to the 2008 United Nations Development Programme (UNDP) Human Development Report, Saint Lucia was ranked 66 out of 179 countries. However, there are also considerable social gaps and deficiencies, one of the most important being a high level of poverty, primarily in rural areas (**Figure 7**), linked to high unemployment and under-employment rates. Declines in the key economic sectors, such as agriculture, have also exacerbated the effects of unemployment and poverty.



Source:Saint Lucia Country Poverty Assessment Report 2005/2006
Figure 7: Geographic distribution of poverty in Saint Lucia

The most recent Country Poverty Assessment (CPA) Report[26] reported that over 28% of the population is below the poverty line (with 7.1% considered as indigent). Poverty levels in the rural areas are invariably higher than those in the urban areas due to the decline in earnings from the banana industry that have affected small farmers in particular. As is common in most countries around the world, children

[25] MALFF, 2006 Agriculture Census Report
[26] GOSLSaint Lucia Country Poverty Assessment Report, Kairi Consultants, 2005/2006

bear the brunt of poverty. According to the CPA, over 50% of the poor are under the age of 20 and the incidence of poverty is higher among children than among adults. The incidence of poverty is slightly higher among men than among women, 29% and 25% respectively. The incidence of poverty among female headed households (21.2%) is about the same as among male headed households (22%). This vulnerability is further exacerbated by poor living conditions in hazard prone areas. Hence, vulnerability of the poor to climate change and climate variability is pronounced.

Saint Lucia has identified the need for an assessment and analysis of vulnerable groups to inform interventions for building climate resilience (see **Part 2:** Section 2.4.3.5 and **Table 4:** sub-Component 1.3.5).

1.1.3.4. Gender, Youth and Children

Gender, youth, and children are addressed in various national policy and legislative instruments. While a strong nexus has not been forged between these issues and the climate change phenomenon, there is clear recognition of the need to ensure that these issues are infused in a meaningful way, into the national climate change response.

Box 2: Gender Sensitivity and Climate Change

To date, climate change initiatives undertaken in Saint Lucia have been both gender-inclusive and gender-equitable. Nevertheless, as measures to address climate change continue to be planned and implemented, there will be a need to ensure that all sectors of society are considered, both in terms of how they are affected by climate change and in terms of how they can participate meaningfully in designing and implementing the necessary response measures. In this context, every effort must be made to ensure that both genders can participate equitably".

Source: Other Relevant Information (ORI) of the Second National Communication (SNC), 2010

The 2005/2006 Survey of Living Conditions[27] points to the vulnerability of some specific groups including, female headed households, children under the age of 14 years and the elderly). However, within the gender rubric in Saint Lucia, a more startling emerging trend is that of a diminishing role of young males in society, compared to females of the same age group. Preliminary national census data[28] show a progressive falling out of males at the different levels in the education system. This highlights a link between level of education and vulnerability and presents a case for full engagement of this vulnerable group in the design of climate change adaptation strategies and programmes. At the present time in Saint Lucia, there is little analytical basis for targeted policy and programme development for populations most economically and socially at risk to climate change. There is a definite need though for a deeper examination of this phenomenon in this regard. Hence, as a proposed intervention in Part2, mapping the social dimensions of vulnerable groups will help to profile these groups and identify hotpots of high

[27] GOSL, 2005/2006, **Saint Lucia Country Poverty Assessment**. Survey of Living Conditions and Household Budgets.

[28] GOSL, 2010. **Population and Housing Census**, Preliminary Report, updated April, 2011. Central Statistics Office

vulnerability in Saint Lucia. This will allow for better decision making regarding options for climate change adaptation and more targeted programming in areas such as public education and outreach for climate change resilience building.

1.1.4. Natural Disasters

A range of natural disasters has impacted Saint Lucia over the years, some of which may have been exacerbated by unsustainable and poor development practices. Since Hurricane Allen in 1980, Saint Lucia has been affected by:

- At least six (6) hurricanes and tropical storms, three of them occurring during the 2002 –2007 period;
- About eight (8) major land slippages, which have resulted in the destruction of homes, dislocation of approximately 145 families, loss of biodiversity particularly from landslides at La Sorcière, and costs totalling over two million Eastern Caribbean Dollars (US$0.74 million);
- Tropical storm Debbie, which caused major flooding, landslides and damage to bridges, homes and road infrastructure in 1994; and
- A series of earthquakes in 1990 and, in November 2007, an earthquake of magnitude 7.3 on the Richter scale, followed by a number of aftershocks.

According to the United Nations' Economic Commission for Latin America and the Caribbean (ECLAC) Macro Socio-Economic Damage Assessment report (December 2010), the total impact from Hurricane Tomas represents 43.4% of Saint Lucia's GDP - nine times its agricultural GDP, three times its tourism GDP, 62% of exports of goods and services, 19% of its gross domestic investment and 47% of its public external debt.

In many instances, the Saint Lucia Government has had to bear the majority of the rehabilitation costs, since most persons affected did not have insurance coverage or adequate financial means to undertake restoration works and recovery of livelihoods. Given the likelihood of increased climate related disasters, these rehabilitation costs are going to increase. It is however, recognized that adverse effects of natural disasters can be reduced if appropriate adaptation measures are implemented.

Saint Lucia has identified under its SPCR that measures that contribute to sustainable land management (SLM)/ slope stabilisation, vis-à-vis climate change adaptation and Disaster Risk Reduction (DRR) will be implemented using co-financing from the DVRP (See Part 2: Section 2.7). The SPCR has also identified the need for fiscal incentives and regimes to encourage the adoption of climate change adaptation/resilience building measures (See **Part 2: Table 4**, sub-Component 1.1.3; also Part 2: Section 2.4.1.1.3 for project to be implemented). Adaptation financing for tangible resilience-building measures at the community and national level such as retrofitting of buildings with climate- appropriate designs and re-design and modification of critical infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise (Refer to **Part 2:** Section 2.1.2.3 and Sections 2.4.3 and **Table 4**, Component 3.1.).

1.1.5. Institutional and Legislative Framework

1.1.5.1. Institutional and Technical Capacity

As is the case for environmental management in general, existing barriers to climate change adaptation are compounded by the critical gaps and overlaps in institutional responsibilities, insufficient collaboration among public sector agencies, and a high degree of fragmentation of authority and roles among the wide range of environmental management agencies. The sectoral agencies with responsibility for climate change adaptation have shown considerable willingness, and through consultations undertaken during Phase 1, further commitment to work collaboratively to implement climate-resilience-building activities. The GOSL recognises that the policy and legal frameworks, institutional structures and capacity for implementing climate-compatible development measures are currently inadequate. The SPCR will seek to develop new capacities and ways of working as many aspects of climate-compatible development require coordination and collaboration of existing institutions. Recent initiatives by the GOSL, including the development of an Environmental Management Act (Draft, April 2008) and the establishment of the National Environmental Commission (NEC) as an overarching agency for environmental management, to create the platform for the kind of institutional framework required to resolve the problems of coordination and collaboration among agencies, on environmental management, particularly important for climate resilience building, can also be built on.

Issues of custody, accountability and authority also need to be rationalised. As well, arrangements to foster co-management and participatory approaches in various partnerships, including private-public, private-private and private-community partnerships need to be clearly defined.

Further, the implementing agencies for the various multilateral environmental agreements (MEAs), including the United Nations Framework Convention on Climate Change (UNFCCC), tend to be overtaxed by the competing demands of their own work programmes, including the reporting and other obligatory activities required for implementation of these agreements. Case in point is the Sustainable Development and Environment Division (SDED) of the Ministry of Physical Development and the Environment, which has responsibility for climate change among many other areas. There is need to provide administrative and technical support for the SDED, as co-executing Agency , the Project Coordination Unit (PCU) of the Ministry of Finance to implement the SPCR/PPCR (**Part 2:** Section 2.4.4 and **Table 4:** Component 4.1 refers).

Building capacity and the knowledge base at all levels (systemic, institutional and individual) of the society is a key requirement for climate change resilience building. In particular, agency capacity with regard to a science base of information for validating, monitoring and linking climate change with indicators of climate change requires strengthening. Accurate climate detection instruments, data management, including development or expansion of computerised databases, and capacity to undertake predictive analysis also needs to be addressed.

Human capacity is currently inadequate, both in terms of numbers and skills required to guide the process of adaptation. Recognising that the successful implementation of the SPCR and other climate change adaptation initiatives will require the availability of a wide range of skills[29], supported by adequate technology resources, the project sub-component will seek to increase the available technical capacity at the national and sectoral level, focusing on the development of training and educational programmes for targeted groups of actors responsible for key elements in climate resilience building. Further, the SPCR will build on other areas under the PPCR where hard interventions are being deployed, with the aim of transferring knowledge that will allow for adaptive replication.

1.1.5.2. Policy, Legislation and Regulatory Framework

Despite extensive legislation, national-level action and enforcement appear to be inadequate with regard to undertaking climate change adaptation. Saint Lucia developed its National Climate Change Policy and Plan (NCCPAP) in 2002.

Since then, climate change elements have also been incorporated in several national policy and information documents are specific to climate change, while others incorporate or make specific reference to climate change (**Appendix 4 and 5**). The National Land Policy (NLP), for instance, incorporates climate change considerations, specifically in relation to environment and natural resource management, including hazard mitigation and disaster management. The MPDE, which is responsible for Land Administration, is taking various steps to implement the NLP. Similarly The National Water Policy makes specific reference to climate change in the context of natural disaster management, the ability of resource managers to respond to climate change and support of regional and international initiatives. A Water Resources Management Agency (WRMA) has been established within the Ministry of Agriculture, Lands, Forestry and Fisheries (MALFF) to, inter alia, spearhead implementation of the Policy. Saint Lucia's Coastal Zone Management (CZM) in Saint Lucia: Policy, Guidelines and Selected Projects (200438), with concurrent guidelines, strategies and actions, are aimed at fostering an integrated approach to coastal zone planning, management and development. A number of sectoral policies that were developed and approved after the adoption of the NCCPAP have also articulated adaptation strategies. There are however, many policies, plans strategies codes, procedures and processes which have not addressed climate change.

The outcomes of the review of the Policy, Legislative and Fiscal Regimes undertaken in Phase 1 of the PPCR have identified the various gaps and constraints in the policy, legislative and regulatory framework, required for building and sustaining climate resilience. The review revealed that whilst climate change adaptation is possible through the use of many pieces of legislation that already exist in Saint Lucia, there are legal instruments which must be reviewed with a view to ensuring that adaptation to climate change is effectively pursued. Further, it is not necessary to provide for climate change in specific legislation as climate change considerations can be incorporated into existing legislation and proposed draft legislation. For example, climate change considerations can be incorporated into the Disaster Management Act, No. 30 of 2006

[29] These include key technical skills such as climate modelling, mapping capability using Geographic Information Systems (GIS), software, satellite imagery and Global Positioning Systems (GPS) among others

and the Disaster Management Bill particularly with regard to the assessment of human settlements and related infrastructure risk, and the provision of prescriptions regarding future settlements and urban development to be included in disaster management plans. Further, some significant pieces of legislation such as the Physical Planning and Development Act; draft Physical Planning Regulations; draft Environmental Impact Assessment (EIA) Regulations, among others,) need to be revised with urgency to adequately incorporate climate-change-related issues for building climate resilience.

To this end, the GOSL plans under Phase 2 of the PPCR, to create the necessary legislative mandate, to facilitate and coordinate the implementation of adaptation measure across sectors and agencies and at all levels of society, and provide for the protection of vulnerable groups, such as the elderly and young. Drafting instructions in this regard are in progress under Phase 1 of the PPCR.

The GOSL also recognises the need for climate change elements to be mainstreamed into all development control protocols such as building codes and standards, and/or adopted and enforced with a measure of urgency. Issues of capacity and authority of agencies responsible for climate change and the environment, including that of insufficient resources, will need to be addressed for monitoring and regulating compliance by publics/civil society with regard to protocols aimed at building and sustaining climate resilience.

1.1.5.3. Governance

Saint Lucia has a well established parliamentary democracy, with elections held every five years, in a free and fair manner. The constitution guarantees human rights and civil liberties. The country has a multi-party structure, dominated by two political parties. There has been a move to undergo local government reform, with the aim to reintroduce an elected system of local government. This would empower communities, allowing for popular participation. However, there has been little real movement in this regard. This has not hampered the growth of independent **Civil Society Organisations** (CSOs), with executives elected by their members, and which exercise considerable influence in the geographic areas in which they operate. The Soufriere Regional Development Foundation (SRDF) and the Laborie Development Foundation (LDF) are two such examples of strong CSOs. Civil Society Organisations are represented on the Climate Resilience Sub-Committee. Projects for community resilience building have also been developed for implementation under the SPCR by some CSOs such as LDF (**See Appendix 13**).

The **Private Sector** is also an important actor in the economic life of the country, and comprises domestic and foreign interests and a wide range of small and medium sized enterprises. The Government is committed to free operation of market forces. An Office of Private Sector Relations (OPSR) was set up by the previous administration to provided assistance to the private sector, and the mechanism through which to maintain close relations with it. This agency is part of the Climate Resilience Sub-Committee referred to in Part 2: Section 2.5.

Worthy of note, is the existing governance structure for **Disaster Management**. There are 10 National Disaster Committees in Saint Lucia operating under the jurisdiction of the National Emergency Management Organisation (NEMO), involved in the planning and response against

disasters. At the community level, there are 18 District Disaster Committees. During an emergency, NEMO transforms into the National Emergency Operations Centre (NEOC), the centre from which all commands are issued and to which all demands are made. Located in the EOC are all heads of essential services. Ministries or sectors are also represented in the National EOC but at the same time co-ordinate several organisations/areas within the ministry/sector. A similar structure is established at the district level with every district having a distinct EOC.

The GOSL Natural Hazard Mitigation Plan (NHMP)[30] defines substantial links with climate change adaptation, particularly with regard to similarities in hazard mitigation measures and climate change adaptation measures for sea level rise and severe hurricane events. While the implementation mechanism for the NHMP has not been fully elaborated, it is envisaged that the best practices demonstrated within the existing disaster management framework will be built on, and congruence sought in the mechanism for facilitating implementation of the SPCR.

1.1.6. Knowledge and Information Management

The current status of knowledge and information in Saint Lucia is characterised as follows:

- In most sectors, current datasets are not developed for the specific purpose of assessing and monitoring climate change and assessment of the effectiveness of adaptation measures;
- The absence or discontinuous nature of some critical Climate Change and Detection Attribution data (meteorological and hydrological), including sea level rise measurements, is a notable gap;
- There is limited baseline data and data is inadequate to support the deployment of appropriate climate change adaptation measures;
- The inadequacy of decision support systems pertaining to research and systematic observation, monitoring and evaluation, and dissemination of data and information must be addressed;
- Research and monitoring (systematic observation) and concomitant data management are areas requiring specific attention. While more data and information is now available for a few thematic areas, many of these databases and information sources are not consistently updated; and
- Data management systems that are operational for key indicators and priority regions/ ecosystems, including useful and efficient data sharing tools and platforms, need to be established.

The GOSL wants to improve its information management systems or establish new systems to take into account relevant emerging issues, including climate change. Strengthening Research and Systematic Observation (RSO) and Data and Information Acquisition and Knowledge Management for climate change adaptation/resilience building are key and are addressed in **Part 2:** Section 2.4.1.3 and **Table 4**, Component 1.3. Efforts will therefore need to be increased to obtain requisite equipment and skills for data collection and overall data management. The rugged topography of the island, coupled with existing personnel constraints, will necessitate the

[30] GOSL, 2006. **Natural Hazard Mitigation Plan**. Document of the NEMO.

use of automated equipment and data collection tools, such as automatic rain gauges, stream flow gauges and other hydrometric monitors, marine stations, and for data recording, Personal Data Assistants (PDAs) and Global Positioning System (GPS). Research and monitoring in Saint Lucia can also be greatly enhanced through promoting the use of an open access platform for access, management and publication of geospatial data for informed decision making, namely, a GeoNode Pilot, as well as other data sharing tool and other information management systems at the OECS and CARICOM levels.

Identification of knowledge and information gaps goes hand in hand with the need to build human capacity as has been articulated in **Part 2**: Sections 2.4.14 and 2.4.1.4 and **Table 4**: Component 1.4.

1.1.7. Public Education and Awareness

The GOSL recognises that an optimal level of understanding of climate change in Saint Lucian communities can only be fruitfully and effectively realised if the stakeholders are adequately educated to understand the values underpinning sustainable development and to participate in relevant and appropriate action on climate change. Even more so, public education and awareness are prerequisites for behavioural change and for gaining support among the general public for actions to implement climate change action for sustainable development.

There have been several efforts on many undertaken in Saint Lucia on many fronts to increase awareness and understanding of climate change amongst the wider public, as well as amongst specific target audiences. To date, despite the existence of financial, human and other constraints, progress has clearly been made in enhancing awareness of climate change issues in Saint Lucia.

A key output of Phase 1 of the PPCR was the second KAP study (which built on the first KAP, 2005) study and the development of a Public Education and Outreach (PEO) Strategy. The PEO strategy will be implemented in Phase 2 (Refer to **Part 2:** Section 2.4.12 and 2.4.1.2.1 and **Table 4:** Component 2. The GOSL recognises the importance of focusing the PEA at three levels to address: (i) lack of awareness of the effect of climate change on livelihoods; (ii) lack of recognition of what the public can do to combat climate change; and (iii) lack of information/knowledge about the enabling environment mechanisms that exist to address the impact of climate change. The GOSL further recognises that while broad public awareness is useful there is need to target specific groups, including the vulnerable, to make them more knowledgeable about climate change and, importantly, empowering them (through knowledge and mechanisms) to take meaningful action to build resilience at all levels.

In addition specific communication tools will be developed and utilised to attract private investments under the concessional loan facility, as well as address behavioural change overall. The CC Resilience message will be well aligned with Phase 2 project activities, but with particular focus on the target group to support the transformational thrust of the SPCR.

The SPCR will continue a significant and sustained effort at enhancing climate change education

and awareness. Hence the need to ensure: the availability, on a sustained basis, of adequate human and financial resources; improved inter-agency collaboration, based on a common understanding of goals and objectives, integrating climate change issues and information/educational products into school curricula, where feasible; a sustained, integrated and programmatic approach to public education, awareness and training, including the training of teachers; and, the increased involvement and participation of civil society and private sector.

1.2. DEVELOPMENT CONTEXT AND CLIMATE RISKS

1.2.1 Development Context

Saint Lucia's development agenda is guided by a number of national, regional and international policy imperatives and instruments. At the international level, Saint Lucia is committed to achieving the Millennium Development Goals (MDGs) agreed upon by the international community at the UN Millennium Summit in 2000[31]. Saint Lucia is also committed to the implementation of the Barbados Programme of Action (BPoA) and the Mauritius Strategy for Implementation (MSI) of Agenda 21. [32]As such, Saint Lucia, in 2009, submitted its progress to date on the implementation of the MSI further to the BPoA. The BPoA and the MSI underscore the particular vulnerability of SIDS in the face of climate change and outline specific response measures to be taken at national, regional and global levels. The regional (CARICOM) development agenda is based on sustainable development, which encompasses economic, social, environmental and governance dimensions, while the sub-regional agenda of the Organisation of Eastern Caribbean States (OECS) is anchored in the dimension of human development.

The country's strategic development objectives are outlined in its five-year Medium Term Strategic Plans (MTSP). The period of the last MTSP was 2001-2006. Interventions described in the 2006 to 2010 Medium Term Economic Strategy (MTES) are aimed at removing bottlenecks that are endemic to the socio-economic and environmental conditions that provide the context of national sustainable development.[33] The key areas of the economic growth are tourism, agriculture and manufacturing, with a view to making the necessary changes that could lead to:

- Greater output and performance
- Productivity and business enhancements
- Development of niches
- Diversification within the existing sectors in areas of comparative advantage

In pursuance of overall development, the focus areas are:

- Education: provision of better education outcomes, particularly at the tertiary and early childhood level, to achieve a higher per capita level

[31] MDG Goal 7, which seeks to ensure environmental sustainability, seeks, in its first target, to "integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources."

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

[33] Personal communication from senior personnel in the Economic Planning Department

- Environment: in terms of adaptation of vulnerable persons to cushion global and economic shocks[34], such as surge in energy costs. A key new area being pursued in the attainment of economic growth is that of copyright industries, including music, arts, craftwork etc.

Prior to Hurricane Tomas (2010)[35], the implementation of development objectives in the context of the MTES was focused largely on advancing the implementation of the National Vision Plan. The Plan is primarily a physical plan, focused largely on undertaking spatial development changes for enhanced economic growth and development. Under this National Vision Plan, the country has been divided into regions and quadrants. The Plan has highlighted the development objectives for these areas, including specific infrastructural developments. This development plan proposes a two-pronged approach to the economic growth of the country. It first builds on the government's 'live local – work local' initiative and ensures that future investment is distributed throughout the island – providing benefits to local communities, through the creation of local jobs and the circulation of wealth at the local level. Second, by facilitating tourism development at a regional level, the pressures on the North-West Quadrant would be relieved; the pattern of workforce migration experienced over the past few years would be reduced; and additional business opportunities created.

The suite of measures and initiatives identified under the policy framework of the National Vision Plan cover a range of areas including sustainable development, tourism, agriculture, private sector, infrastructure, environment, energy and social issues. The key measures and initiatives in each of these areas are outlined in **Appendix 1**.

Some of the achievements to date of relevance to the climate change policy dialogue include the establishment of the National Environmental Commission (NEC) in 2009 and a National Climate Change Committee since 1998; the preparation of climate change Policy in 2002 and revised one in 2011 (Draft); duty concessions on renewable energy technologies and energy efficient devices). Other planned developments of interest include preparation of a 10-year national sustainable development strategy, investments in the water sector[36], construction/redevelopment of air and sea ports[37], and private sector development[38].

The development priorities of Saint Lucia provide opportunities for widening the scope of adaptation policies. In addition to climate change, the future vulnerability of Saint Lucia will also depend on its development path. The integration of mainstreaming of development policies, plans and programmes will improve policy coherence, enhance the efficiency and effectiveness of resources, minimise duplication and contradictory policies, deal with tradeoffs, and reduce the

[34] Refer to Appendix 13: Project Profile Number 3 – Mitigating the Mental Health Impacts of Climate Change and Climate Variability in Saint Lucia
[35] Hurricane Tomas struck the island in 2010
[36] This is linked with Part 2: Section 2.4.2.3 and 2.4.2.3.1 and Table4: Component 2.3
[37] This is linked to Appendix 13. Project Profile Number 7 – Climate Change and Ports
[38] This is linked to the Adaptation Financing outcome in Part 2: Section 2.4.3 and its subsections and Table 4: Component 3.1

sensitivity of development activities to current and future climate change.[39]

1.2.2 Climate Risks and Vulnerability

Like most SIDS, Saint Lucia is characterised by unique circumstances that pose serious challenges to sustainable development. Among these are relatively small size; an open economy with a negative balance of trade; a limited natural resource base; fragile ecosystems; limited human capacity and resources; and limited technological capability. Like many other Caribbean SIDS, the island is also susceptible to the vagaries of international trade, exogenous economic and financial shocks. Saint Lucia is a country also highly exposed to natural hazards, such as hurricanes and climate related extreme events, which affect population, the economy and the environment. The overall effect of climate change will ultimately depend on the balance of the effects of both climatic variables and non-climatic drivers. Hence, the onset of the climate change phenomenon imposes new hazards on Saint Lucia and exacerbates existing ones.

1.2.2.1 Climate Baseline Trends

The 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) makes reference to a number of direct observations of recent changes in climate which are likely, to very likely[40], attributable to human influence. These include, among others, changes in wind patterns, rainfall distribution and air temperature. **Figures 8 to 10** display the climate baseline for Saint Lucia, which provides the platform for determining how the parameters thereof are influenced by climate change.

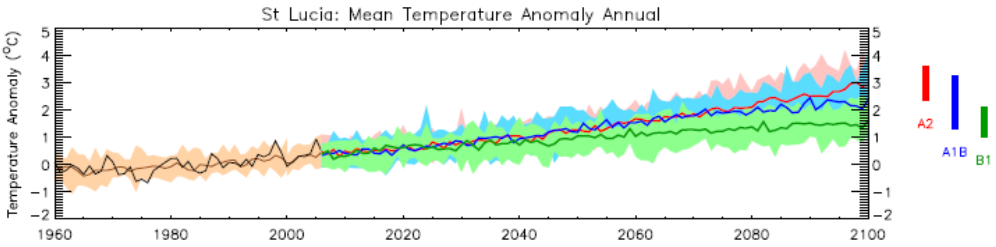


Figure 8: Annual Mean Temperature Anomaly 1960-1990. (Units are OC. Black line: Average of observational datasets for current climate. Brown line and brown shading: Ensemble median and range for model projections of recent climate. Coloured lines and shading: Ensemble median and range of projections under 3 emissions scenarios. Bars at the far right demonstrate the change by 2080-2100 under each emissions scenario. All values are given as an anomaly from 1971-2000 mean climate.

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

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

With reference to **Figure 8**, regardless of scenario or model, mean temperatures in Saint Lucia are expected to increase markedly over the next century[41]. Global Climate Models (GCMs) project changes of between 1 ^{o}C and 4^{o}C by the end of the century, dependent on scenario, with mean annual increase of up to 1.2 ^{o}C by the 2030s, 2.1 ^{o}C by the 2060s, and 3.6 ^{o}C by the 2090s. Similarly, the RCM shows an increase in mean annual temperature of 1.9 - 2.4 ^{o}C by the end of the century.

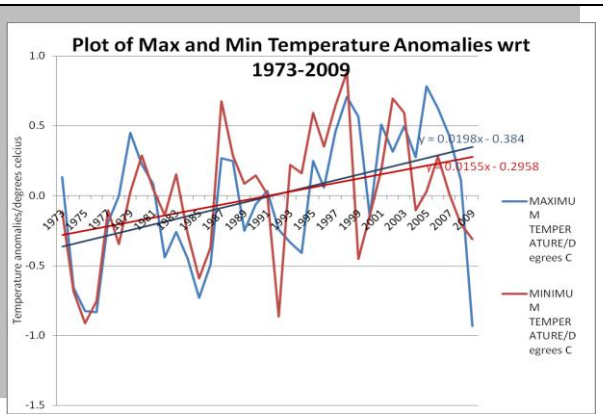


Figure 9: Annual Maximum and Minimum Temperature Anomalies for Saint Lucia (Hewanorra International Airport 1973 - 2009). Anomalies are with respect to a 1973-2009 baseline period. Trend lines added.

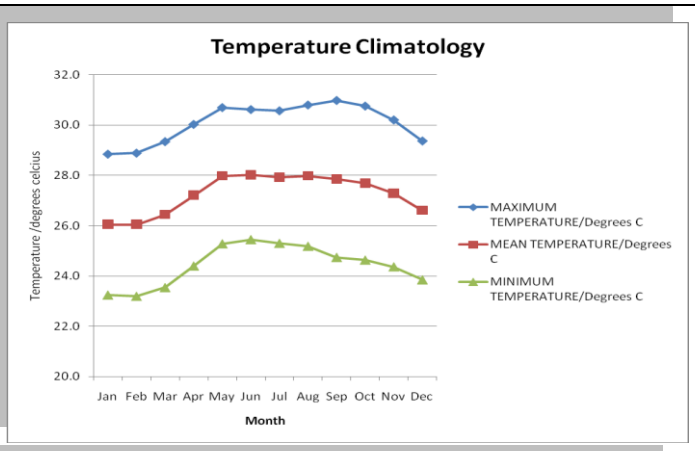


Figure 10: The Climatology of Minimum, Maximum, and Mean Temperature for Saint Lucia (Hewanorra International Airport 1973 -2009). Units are ^{O}C.

Analysis of date collected at the Hewanorra International Airport meteorological station shows minimum temperatures warming at a slightly slower rate (0.16^{o}C per decade) than maximum temperatures (0.20^{o}C per decade), as seen in Figure 9. These magnitudes and trends are similar to that seen in other islands of the Eastern Caribbean. Mean temperatures are relatively steady throughout the year with an approximate range of 2^{o}C. Highest temperatures occur between May and October and lowest between January and March. Maximum temperatures can reach a high of 32^{o}C in summer months, and minimum temperatures a low of around 20^{o}C in winter months (**Figure 10**).

[41] This will require Saint Lucia to adjust its building designs, using natural ventilation or energy efficient cooling systems. See Part 2: Section 2.4.2.1 and 2.4.2.1.1 and Table 4: Component 2.1. See also Appendix13: Project Profile 7

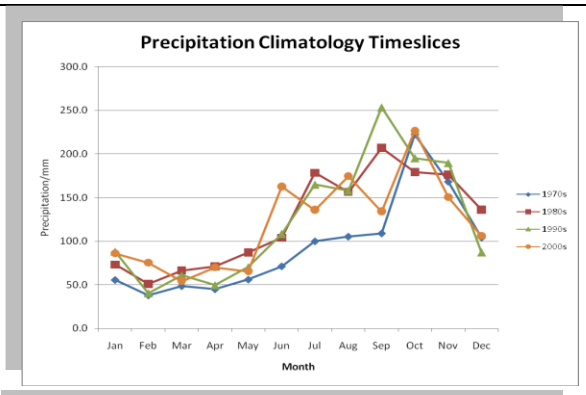


Figure 11: Climatology of mean annual monthly rainfall for Saint Lucia by decade (Hewanorra International Airport 1973 - 2008). Units are mm/month.

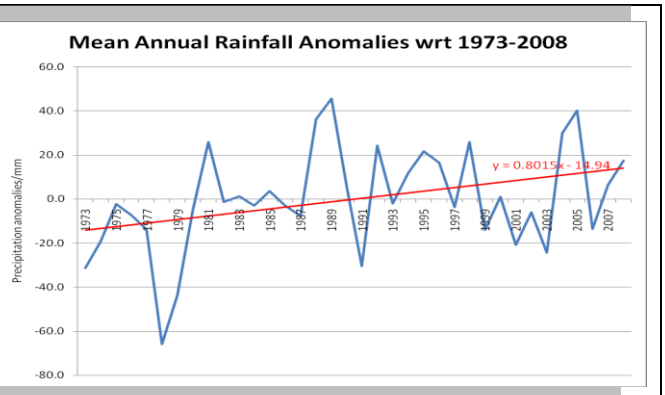


Figure 12: Annual precipitation anomalies for Saint Lucia (Hewanorra International Airport 1973 -2009). Anomalies are with respect to a 1973-2008 baseline period. Trend lines added.

In recent years, there has been a discernible shift in the precipitation climatology, as seen in **Figure 11**. There has been a general lengthening of the wet season with rains beginning earlier and ending later. The island has also experienced more peaks in the wet season i.e. whereas the earlier decade (1970) had one rainfall peak, the climatology of the most recent period (2000s) reveals three maxima. Saint Lucia will do well to capitalise on this through capture and storage of rainfall.[42]

The rainfall record reveals significant inter-annual variability. In recent times, 1989 has been among the years of highest precipitation, while 1979 was among the driest. As for other parts of the Caribbean, rainfall is influenced by the El Niño Southern Oscillation (ENSO) and fluctuations in other large scale climate systems. An El Niño episode generally brings with it warmer and drier conditions, while La Niña brings colder wetter conditions. Annual rainfall anomalies (with respect to a 1973-2008 baseline) also show a slight (but not statistically significant) upward trend from the 1970s (**Figure 12**).

1.2.2.2 Climate Change Projections for Saint Lucia

Under the Second National Communications (SNC) process, Saint Lucia engaged the services of the Climate Studies Group (CSG) of the University of the West Indies (UWI), Mona Campus, to assist in the development of climate change projections for Saint Lucia. Two of the outputs generated for the island are included in **Boxes 3 and 4**.

[42] See Part 2: Sector 2.4.2.3 and Table 4: Component 2.3

Further, the IPCC suggests that future hurricanes of the north tropical Atlantic will *likely*[43] become more intense, with larger peak wind speeds and heavier near storm precipitation. The stronger hurricanes result from ongoing and projected increases in tropical ocean temperatures (from surface through 450 m) and atmospheric water vapor content. Increases in both variables can be linked to warmer air temperatures. The warmer ocean temperatures would satisfy the warm sea surface temperature criterion for hurricane intensification, and would also likely limit a natural 'braking' process of hurricanes.

Box 3: Climate Change Summary – Saint Lucia

(Projections are based on UNDP Climate Change Country Profile reports available at http://country-profiles.geog.ox.ac.uk and IPCC Fourth Assessment Report)

Hurricanes

Hurricanes are likely to intensify in the north Atlantic with larger peak wind speeds and more heavy precipitation due to an expected increase in sea surface temperatures. (IPCC 2007)

Sea Level Rise

- Values are for 2090s compared to 1980-1999 values.
- Caribbean should closely follow global projections
- Rise will be dependent on oceanic circulation patterns and density within the region

Mean Annual Change

A2	0.13 to 0.43 m
A1B	0.16 to 0.53 m
B1	0.18 to 0.56 m

Rainfall

- Most models and scenarios show drying trend. Negative median values.
- Largest changes in JJA then SON. Drying in these seasons.
- Proportion of heavy rainfall events, maximum 1 day and maximum 5 day rainfall all show decreasing trends to end of century.

Mean Annual Change

Range	Median
2030's	-25% - +18% -2%
2060's	-40% - +10% -6%
2090's	-56% - +15% -12%

Temperature

- All GCMs show that temperature is expected to increase markedly over the next century.
- A little more rapid warming in the colder seasons DJF and SON.
- Substantial increase in the frequency of hot days and nights
- Cold days and nights practically non-existent by the 2060s.

Source: Climate Studies Group (CSG) of the University of the West Indies (UWI), 2009, Saint Lucia Current Climate and Future Projections

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

Box 4: Summary Future and Current Climate for Saint Lucia

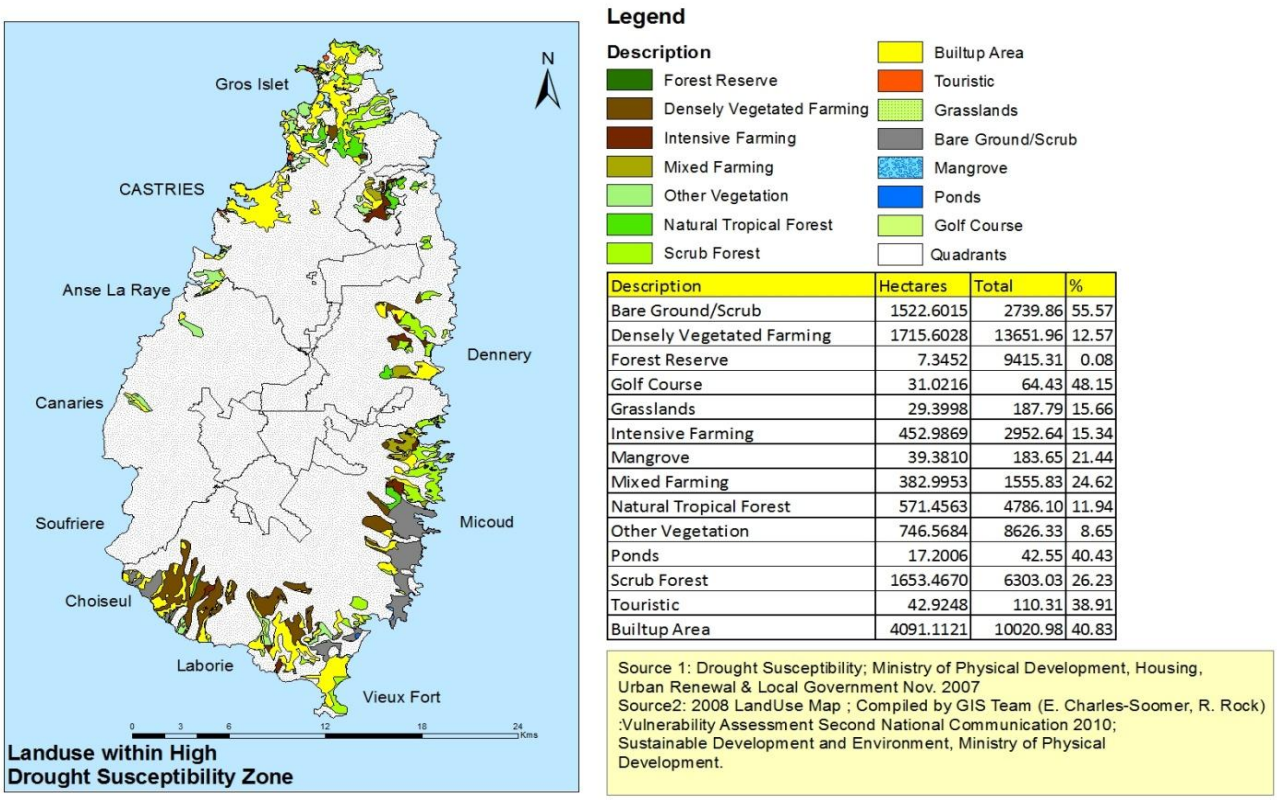
- There is evidence to suggest that the climate of Saint Lucia is changing.
- Minimum temperatures have increased at a rate of ~0.16°C per decade, and maximum temperatures at ~0.20°C per decade.
- There is no statistically significant trend in historical rainfall which shows considerable inter-annual variability.
- The warming trend is expected to continue. The country is projected to be warmer by up to 1.2°C by the 2030s, 2.1°C by the 2060s and 3.6°C by the end of the century.
- The projected rate of warming is marginally more rapid for December, January, February (DJF) and September, October, November (SON).
- The frequency of very hot days and nights will increase, while very cool days and nights will decrease.
- There is a likelihood that the country will be drier (in the mean) by the end of the century. Global Climate Models (GCMs) show a median decrease of up to 22% for annual rainfall while the Regional Climate Models (RCMs) suggests a decrease of up to 57% by the end of the century.
- Median GCM decrease in rainfall is 4-6% by the 2030s, 5-10% by the 2050s and 10-23% by the 2080s.
- The proportion of total rainfall that falls in heavy3 events also decreases in most GCM projections, changing by -56 to +15% by the 2090s.
- Climate change will likely make the dry period early in the year and June-July drier.
- Hurricane intensity is likely to increase (as indicated by stronger peak winds and more rainfall) but not necessarily hurricane frequency.
- Caribbean Sea levels are projected to rise by up to 0.24 m by mid century.
- Sea surface temperatures in the Caribbean are projected to warm, perhaps up to 2°C by the end of the century.

Source: Climate Studies Group (CSG) of the University of the West Indies (UWI), 2009, Saint Lucia Current Climate and Future Projections

1.2.2.3 Vulnerable Regions

Vulnerability mapping data are available, and used to illustrate vulnerable zones in Saint Lucia. This is done through an interaction of land use and vulnerability to climate variability and long term climate change impacts. This has been done with respect to precipitation change (drought), extreme events (flooding), and landslides. **Figures 13** is one such illustration depicting drought vulnerable regions. While these maps are very useful, their resolution is not sufficiently high to allow for careful targeting of adaptation interventions in the highly vulnerable regions. This is particularly critical since current and future climate predictions for Saint Lucia indicate increased frequencies of climate events.

Drought vulnerable regions are indicated in the north, south east and southern parts of the island and in areas of land use, ranging from forest to agriculture to residential/commercial.



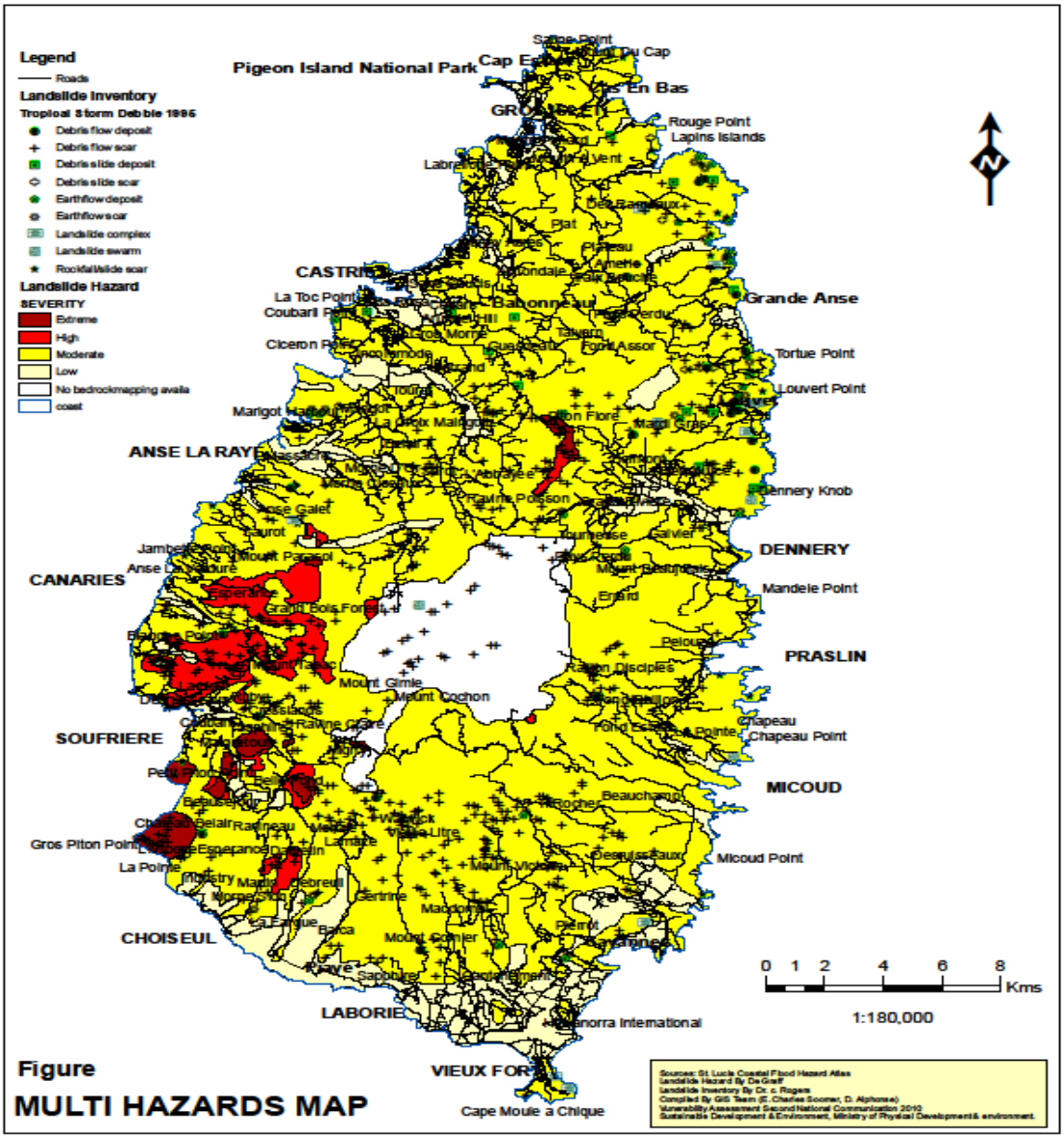
Description	Hectares	Total	%
Bare Ground/Scrub	1522.6015	2739.86	55.57
Densely Vegetated Farming	1715.6028	13651.96	12.57
Forest Reserve	7.3452	9415.31	0.08
Golf Course	31.0216	64.43	48.15
Grasslands	29.3998	187.79	15.66
Intensive Farming	452.9869	2952.64	15.34
Mangrove	39.3810	183.65	21.44
Mixed Farming	382.9953	1555.83	24.62
Natural Tropical Forest	571.4563	4786.10	11.94
Other Vegetation	746.5684	8626.33	8.65
Ponds	17.2006	42.55	40.43
Scrub Forest	1653.4670	6303.03	26.23
Touristic	42.9248	110.31	38.91
Builtup Area	4091.1121	10020.98	40.83

Source 1: Drought Susceptibility; Ministry of Physical Development, Housing, Urban Renewal & Local Government Nov. 2007
Source2: 2008 LandUse Map ; Compiled by GIS Team (E. Charles-Soomer, R. Rock) :Vulnerability Assessment Second National Communication 2010; Sustainable Development and Environment, Ministry of Physical Development.

Figure 13: Vulnerability Zones in Saint Lucia: Drought

Landslide hazard is mapped in **Figure 14**. Much of the island is subject to at least moderate landslide hazard[44], with only a strip of land from Choiseul to Vieux-Fort and small pockets of flat land around the remainder of the island subject to low landslide hazard. Much of the islands road infrastructure traverses areas of high or extreme landslide hazard. Communities with limited road access are particularly vulnerable to isolation. Isolation in itself is a risk and an inherent vulnerability – it is the multiple effects of that isolation that are the true risks (i.e. water, food shortages) as was clearly observable during Hurricane Tomas when the most affected communities in Soufrière were completely cut off by the massive landslides.

[44] Hurricane Tomas, 2010, was a landslide event with significant land slippage occurring in the community of Soufriere, causing significant loss to life, property and infrastructure. The SPCR recognizes the need for interventions in this area as identified in Part2: Section 2.7.



Source: GIS Team Vulnerability Assessment, SNC, 2010
Figure 14: Landslide Hazard Map

1.2.2.4 Vulnerable Sectors

The Vulnerability and Adaptation (V&A) assessments conducted during the process of compiling Saint Lucia's SNC, highlighted the vulnerabilities of several sectors including; water resources; land resources; agriculture; coastal sector; marine resources; forest terrestrial resources; health; financial services; and critical infrastructure. **Table 2** summarises the impacts of different climate hazards on various sectors.

Table 2: Summary of Impacts of Climate Hazards on Different Sectors

Anticipated Climate Change Impacts	Sectors										
	Agriculture	Coastal Zone	Critical Infrastructure	Disasters	Financial Services	Forest Biodiversity	Health	Human Settlements	Marine Biodiversity	Tourism	Water
Sea Level Rise	L	H	H	H	H			H	H	H	L
Increased Storm Intensity	H	H	H	H	H	H	H	H	H	H	H
Increased Temperatures	H	H		H		H	H	H	H	H	H
High Rainfall Intensity	H	H	H	H	H	H	H	H	H	H	H
Drought Conditions	H		M	H	M	H	H	M		M	H

Source: Saint Lucia V&A Synthesis Report, 2011
Key: H- high, M- medium, L-Low

The table indicates that all the sectors of interest to this assessment have some measure of vulnerability to the key anticipated climate change impacts, some of which are already being felt. For example, Saint Lucia has already recorded severe drought conditions, increased insurance claims for storm-related damage to the built environment and agricultural interests, shoreline erosion[45], increases in sea surface temperatures and higher average temperatures

A more detailed compilation of the effects – present and predicted – of climate change on the more vulnerable sectors is provided in **Appendix 2**.

As can be deduced from **Table 2**, agriculture and tourism, the key economic sectors, human settlements and the cross-cutting water sector, are expected to be affected by all the anticipated impacts of climate change. The anticipated negative impacts on social and economic infrastructure such as housing, water, agriculture, ports, schools, hospitals, tourism plants, health services, communications, etc., are likely to cause major social and economic stresses which can

[45] Coastal erosion is amplified by storm surge and SLR. This area is important to Saint Lucia, especially as much of the country's economic, social and ecological resources are concentrated along the coast. See Part 2:Section 2.4.2.2 and Table4: Component 2.1

be alleviated by appropriate and timely adaptation measures. The nature-based sectors, namely, coastal resources, marine biodiversity and forest biodiversity are not expected to fare well, either. All of the anticipated impacts are likely to trigger some form of disaster. These include: coastal erosion with loss of near shore housing and coastal infrastructure[46]; damage to properties and threat to life and livelihoods associated due to more intense storms; climate related health impacts[47]; landslides; loss of ecosystem services including loss of agricultural production and biodiversity and water and food security; forest fires[48]; and damage to forest ecosystems due to wind damage. Any response measure to be implemented will have cross cutting, multi-sectoral impacts.

1.2.2.5 Vulnerable Groups

Due cognisance has been given to the importance of economic and social vulnerability[49] and of considerations for gender, youth children and other vulnerable groups in the design and implementation of adaptation responses. However, while the existence of demographic groups and areas considered to be particularly threatened by climate change, these are not adequately defined in geographical extent, or analysed. In addition, most of the national climate change initiatives undertaken at the community level, have integrated gender sensitivity and vulnerable groups, but not in terms of concrete adaptation interventions. The emphasis to date has been on workshops and limited levels of awareness building.

At the present time in Saint Lucia there is little analytical basis for targeted policy and programme development for populations most economically and socially at risk to climate change. Risk mapping of vulnerable groups will help to profile each of these groups within the context of the vulnerable situations in which they live and to identify their coping and adaptive capacities. The mapping will also help to identify hotpots of high vulnerability in Saint Lucia (See Part 2).

[46] Coastal infrastructure is vulnerable to the impacts of climate change including storm surge and SLR. Assessments to determine the expected degree of impact are critical for deriving cost-effective adaptation interventions

[47] Enhancement of Public Health Data Management Systems for Monitoring Vector and Waterborne Diseases which are expected to become more prevalent with climate change. See Part 2: 2.4.4.1.3.3 and Table 4: sub-Component 1.3.3

[48] In the dry season the Fire Department responds to increase occurrences of forest and bush fires in dry life zones around the island. The GOSL has recognised the need to enhance the capacity of the Fire Department to address climate induced fires. See Part 2: Appendix 13: Project Profile 14 – Improved Locational Information on Fires

[49] The concept of social vulnerability focuses attention on susceptibility of households in the face of weak social capital, sub-standard housing, and residence in disaster prone areas.

1.2.3 Climate Change and Disaster Risk Reduction

Poor land use planning and associated squatter developments, deforestation and developments in disaster prone areas have exacerbated vulnerabilities, while the absence of approved building codes and standards has resulted in a housing stock prone to damage by floods, landslides and high winds. The island already suffers from a water deficit in some areas and the number of proposed golf courses and other large tourism and other developments will exacerbate this situation. Plans to develop large hotel plants close to the sea and marinas along the rough east (Atlantic) coast will, if realised, add to the economic vulnerability of the island as a whole and the tourism industry in particular. These developments will also threaten important marine and terrestrial ecosystems and will erode the resilience of natural systems to the impacts of climate change.

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

Agriculture and tourism, which are the key economic sectors, are expected to be affected by all the anticipated impacts of climate change. The nature-based sectors, *viz*. coastal resources, marine biodiversity and forest biodiversity are not expected to fare well, either. In addition, the anticipated negative impacts on social and economic infrastructure such as housing, water, agriculture, ports, schools, hospitals, tourism plants, health services and communications, are likely to cause major social and economic stresses which can be alleviated by appropriate and timely adaptation measures. Another noteworthy conclusion to be drawn is that all the anticipated impacts are likely to trigger some form of disaster. These include coastal erosion; loss of near shore housing and critical infrastructure; damage to property and threat to life and livelihoods associated with increases in storm intensity; heat related health impacts; landslides; loss of agricultural production and biodiversity; forest fires; and damage to forest ecosystems due to wind damage. A further conclusion is that any response measure to be implemented will have cross cutting, multi-sectoral impacts.

Another critical feature of Saint Lucia's vulnerability is its limited capacity to reactivate the development process due to a number of causes discussed earlier, not the least of which is ready financing. The PPCR will go a long way to enabling the private sector and civil society to increase their adaptive capacity to better prepare for and respond to climate change. The fragility of ecosystems, coupled with limited human resources often precludes any possibility of developing and implementing meaningful disaster-mitigation programmes which tends to converge with climate change adaptation, more so at the community level. Hence community adaptation responses are critical for disaster risk reduction.

1.3 LINKAGES TO DEVELOPMENT PLANS, PROGRAMMES/PROJECTS

Saint Lucia recognises the imperative for its SPCR process in its consideration of relevant projects, programmes and activities which have been and are being conducted on the island and at the regional level. Due consideration of these has allowed for a carefully structured programme, which builds upon or scales up climate resilient investments, where necessary and feasible, in keeping with the objectives of the PPCR.

1.3.1 Regional Initiatives

From 1997 to 2001, Saint Lucia participated in the regional Caribbean Planning for Adaptation to Climate Change (CPACC) Project, designed to build capacity in the Caribbean Region for adaptation to climate change impacts, especially sea level rise. From 2001-2004, Saint Lucia was part of the Adapting to Climate Change in the Caribbean (ACCC) Project, to sustain activities instituted under CPACC and to address issues of adaptation and capacity building not undertaken under CPACC. This was followed by the Mainstreaming Adaptation to Climate Change (MACC) Project (2004-2009), which sought to mainstream adaptation strategies into the sustainable development agendas of Small Island and low-lying states of CARICOM and to further strengthen institutional capacity and knowledge base.

Saint Lucia also benefited under the Global Environmental Facility (GEF)-World Bank-funded Special Programme on Adaptation to Climate Change (SPACC) Project (2007-11), executed regionally by the Caribbean Community Climate Change Centre (CCCCC). This project is discussed later as one of the national initiatives to build climate resilience.

Reference is also be made to the UNDP-implemented Climate Change Vulnerability and Capacity Assessment (VCA) Project undertaken in 2005-2006 to test a practical approach to vulnerability and adaptive capacity assessment, capturing community-based issues and approaches in the context of changing climatic conditions.

The outputs and results of the foregoing projects and initiatives have informed and will be built on in the PPCR – Caribbean Region.

1.3.1.1 Pilot Programme for Climate Resilience – Caribbean Region

The main focus of the PPCR Regional Tract is to support[50] national level actions for climate resilience in the islands in the region. It aims to pilot and demonstrate approaches for integration of climate risk and resilience into development policies and planning, consistent with poverty reduction and sustainable development goals; to strengthen capacities and scale-up and leverage climate resilient investments; and to enable learning-by-doing an sharing of lessons at country, regional and global levels, as part of knowledge management.

[50] The Regional approach addresses i) country investments in six vulnerable nations, and ii) region-wide activities addressing climate risks and vulnerabilities common to all Caribbean countries. See Appendix 10 and 11.

The Phase 1 proposal for the PPCR Regional Track is being overseen by the IDB and is still being elaborated. In a presentation by the PPCR Regional Coordinator at a Global Climate Change Alliance Conference in Belize in March 2011, the select/potential areas of focus for the regional tract were identified as per **Table 3**, below.

There are clearly a number of **areas for synergy and complementarity between the National SPCR, and the Regional PPCR**. These include, but are not limited to the following:

Table 3 : Areas of Synergy and Complementarity between the National PPCR and PPCR Regional Track

Saint Lucia Country-Specific Initiative	Regional Tract Priority Areas as at May 2011
1.3.1. Expansion and provision of institutional support for GeoNode[51] further to and building on outputs of Phase 1 and implementation of Disaster Risk Modelling Pilot 1.3.2 Conduct of advanced assessment, validation and enhancement of outputs of local Sea Level Rise (SLR) Model developed under the SNC project to guide development policy, land use, risk assessment, adaptation and resilience building measures especially for critical infrastructure, including strengthening of database 1.3.3 Enhancement of public health data management systems for monitoring vector and waterborne diseases which are expected to become more prevalent with climate change 1.3.4. Enhancement/ upgrading of national and community-based Meteorological and Hydrological Monitoring Networks 1.3.5 Assessment and analysis of vulnerable groups to inform interventions for building climate resilience.	**Module 1:** Capacity Development and Information Sharing • Support for Strengthening of Data Management Capacity; • Identification of Data Needs; • Information Sharing and Exchange of Best Practices.
1.1.1 Review/development of national legislation and policies, strategies and development guidelines/codes to incorporate climate change considerations further to, and building on outputs of, Phase 1. 1.1.2 Review of methodology for determining coastal setbacks and facilitation of the implementation of these new setbacks into the development planning process in the context of sea level rise	**Module 2:** Advocacy and Policy Development • Regional Policy Dialogue. • Stakeholder consultations. • Development and piloting of climate risk screening toolkit

[51] GeoNode is an open source platform for access, management and publication of geospatial data. The process of establishment of t-his system in Saint Lucia has begun as one of the outputs under Phase 1 of the PPCR.

Saint Lucia Country-Specific Initiative	Regional Tract Priority Areas as at May 2011
1.1.3 Formulation, adoption and implementation of fiscal incentives and regimes to encourage the adoption of climate adaptation/resilience measures.	
Source: **Part 2:Table 4:** Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding	Source: Taken from Presentation by PPCR Regional Tract Consultant: Update on PPCR Caribbean Regional Tract : Caribbean Regional Conference on Adaptation: Global Climate Change Alliance: March 28-29, 2011

1.3.1.2 Other Complementary Projects and Initiatives

Worthy of mention for their potential expansion or complementary funding under the PPCR Project are the USAID-OECS Project on Climate Variability, Change and Adaptation and the Enhanced Comprehensive Disaster Management Strategy and Programming Framework.

The objectives of the **USAID-OECS Project on Climate Variability, Change and Adaptation** are to:

1. Build the enabling environment in support of policies and laws to reduce vulnerability;
2. Address information gaps that constrain addressing vulnerabilities;
3. Make interventions in freshwater and coastal management to build resilience and demonstrate results; and
4. Increase awareness on issues related to climate change and improve capacities for climate change adaptation.

The project is to be implemented in the OECS with grant funding of US $2.5 million in the first year with US $2 Million per annum for the next four years, contingent on congressional approval. Proponents of this Project have, through the process of consultation, committed to collaborative implementation of these projects with the SPCR in areas of complementarity.

The Caribbean Community Climate Change Centre has developed a **Regional Framework for Achieving Development Resilient to Climate Change: 2009-2015** that provides a roadmap for action over the period 2009-2015. The objectives of this document are to establish direction for the continued building of resilience to the impacts of Global Climate Change (GCC) by CARICOM states. The framework document focuses on the identification and consolidation of a set of complementary activities that utilise the CCCCC and other regional institutions' current capacity and experience in addressing adaptation to climate change. This framework is comprised of four key strategies and associated goals designed to significantly increase the resilience of the CARICOM economies:

1. Mainstreaming climate change adaptation strategies into the sustainable development agendas of CARICOM states.
2. Promote the implementation of specific adaptation measures to address key vulnerabilities in the region.
3. Promoting actions to reduce greenhouse gas emissions through energy efficiency, conservation, and switching to renewable energy sources.

4. Encouraging action to reduce the vulnerability of natural and human systems in CARICOM countries to the impacts of a changing climate.
5. Promoting action to derive social, economic, and environmental benefits through the prudent management of standing forests in CARICOM countries.

At the instance of the CARICOM Heads of Government, the CCCCC is in the process of preparing an **Implementation Plan for the CARICOM Regional Framework for Achieving Development Resilient to Climate Change: 2011-21**[52], to take forward and deliver the strategic elements and goals identified in the Regional Framework. The implementation plan offers synergies with Saint Lucia's PPCR in all the areas, namely:

- Institutional and governance building blocks
- Cross-cutting challenges including gender, public outreach, disaster risk reduction, information/knowledge management, private sector mobilisation, human capacity building and financing.
- Technical and Physical Impacts

The **Caribbean Disaster Emergency Management Agency (CDEMA) Comprehensive Disaster Management Framework** aims to strengthen regional, national and community level capacity for mitigation, management, and coordinated response to natural and technological hazards, and the effects of climate change. It has five outcomes namely, which offer areas of complementarity with Saint Lucia's PPCR, including knowledge management and community resilience.

The overall objective of the **Integrating Watershed and Coastal Area Management (IWCAM)** Project is to strengthen the commitment and capacity of the participating countries to implement an integrated approach to the management of watersheds and coastal areas. The long-term goal is to enhance the capacity of the countries to plan and manage their aquatic resources and ecosystems on a sustainable basis. In particular, project activities have been focused focusing on improvements in integrated freshwater basin-coastal area management on each island of the regional groupings of Caribbean SIDS.

These initiatives present real opportunities for knowledge sharing to support successful implementation of Saint Lucia's SPCR.

1.3.2 National Initiatives

Fully cognizant of the threats posed by climate change, Saint Lucia has, over the last two decades, undertaken a number of initiatives at the national and community level to respond thereto.

Following participation in the discussions that culminated in the UNFCCC, Saint Lucia ratified the Convention in 1993 and the Kyoto Protocol in 2003. The country has had a functioning, Cabinet-appointed National Climate Change Committee (NCCC) since 1998, comprising

[52] See Appendix 12

governmental and non-governmental organisations that meet periodically to discuss climate change matters. In addition, since 1999, conferences, workshops and other forums have been organised, at both the national and sectoral levels to exchange information on, and to formulate responses to, climate change (**Appendix 3**).

Over the past decade, many policy documents have been developed and/or approved by the Cabinet of Ministers that are specific to climate change or that incorporate or specifically mention climate change. Similarly, there have been a number of reports and other documents prepared, under various initiatives that specifically address climate change (**Appendix 4 and 5**). More recently, there have been more deliberate steps taken to integrate climate change considerations into aspects of national development formulation. For example, climate change has been incorporated into, *inter alia,* Saint Lucia's National Emergency Management Plan; the Coastal Zone Management Policy and the Draft Saint Lucia Forest Policy. These are important in the integration of climate change issues and concerns into the national processes.

1.3.2.1 Disaster Vulnerability Reduction Project (DVRP)

The Disaster Vulnerability Reduction Project which is currently in design phase aims to measurably reduce vulnerability to natural hazards and the adverse impacts of climate change in Saint Lucia. Major Outcomes Expected from the Project include:

1. Capacity built to identify and monitor climate risk at the national level;
2. Reduced vulnerability of key sectors, assets and people to natural disasters, which will have sub-regional benefits for the economic union member states.

The SPCR can potentially obtain co-financing from IDA funding of USD 10-15 million. Discussions with the proponents have confirmed complementarity with the activities outlined in the SPCR and that these will help to form the basis for further elaboration of the DVRP. In this regard, it is envisaged that the SPCR will be able to leverage up to USD 10 million through the financing framework of the DVRP and RDVRP which will therefore provide a means of supplemental funding to enable up scaling of the SPCR implementation activities to realise larger, blended projects.

1.3.2.2 Saint Lucia Hurricane Tomas Emergency Recovery Project

The Hurricane Tomas Emergency Recovery Project (ERP), to be implemented over the period March 2011 – March 2014, is a loan funded project to support the recovery and reconstruction of the country in the aftermath of Hurricane Tomas. The proposed IDA loan of US$15 million equivalent is to help finance post-hurricane reconstruction and recovery in the transportation, health, and education sectors throughout the island and strengthen disaster risk management capacity to lay the foundation for the longer-term sustainable strategy to improve the resilience, preparedness and response capacity of Saint Lucia to natural hazards.

The project has four components namely:

1. **Component 1**: Support for Early Recovery.

2. **Component 2:** Institutional Strengthening and Hazard and Risk Analysis.
3. **Component 3**: Reconstruction and Rehabilitation of Damaged Critical Public Infrastructure.
4. **Component 4**: Project Management and Monitoring Support.

The project is expected to finance the following activities:

1. Support the early recovery of the Government's key economic sectors from the impact of Hurricane Tomas through the provision of goods, technical advisory services and emergency operating costs;
2. Technical assistance and purchase of equipment to improve national capacity to evaluate and integrate natural hazard and climate change risk reduction into national development policy and decision-making processes;
3. Reconstruction and rehabilitation of selected education, health and transportation facilities and services damaged by the Hurricane; and
4. Strengthening and developing the institutional capacity of the Project Coordination Unit for Project management and execution.

Some level of complementarity is expected with Saint Lucia's SPCR, particularly in Components 2 and 3 of the Tomas ERP.

1.3.2.3 Other Complementary Projects and Initiatives

North West Coastal Conservation Project[53]

This programme was undertaken by the GOSL with funding support from the Canadian International Development Agency (CIDA). Objective was to measure the impact of continued pressure from residential, commercial and industrial development on the environment of the Choc Watershed and Coastal shed and establish an environmental Management System approach to achieve environmentally sustainable development. Data were collected on aspects, impacts, objectives targets and environmental performance indicators within the Choc system. These data and indicators provide a platform on which Saint Lucia's SPCR interventions can be built in particular methodologies for determining coastal setbacks and work related to sea level rise.

The **Water Resources Management Agency (WRMA)** has the mandate to manage the water resources of Saint Lucia. The Agency's functions also include the development of watershed plans and a water master plan for the country. Hence, data and information management systems are critical to the operations of the Agency. The Agency's hydrological data collection network currently comprises 21 rainfall stations spanning the 37 watersheds on the island. Consequently, data generated is inadequate for sound decision making. The Agency has been able to garner some support under the EU funded Banana Industry Trust (BIT) programme to acquire some instrumentation for enhancing the network. However, there is still need to acquire additional instrumentation and data management systems to complete the network. Thus opportunities exist

[53] Refer to Part 2: Section 2.4.1.1.2 and 2.4.1.3.2 and Table 4: sub-Component 1.1.2 and 1.3.2

under PPCR Part 2 to support national and community based meteorological and hydrological monitoring networks.

Worthy of mention for its potential for expansion under the PPCR and beyond, is a Coastal Habitat Mapping Project undertaken in Saint Lucia under the European Union-Special Framework for Assistance Project (EU-SFA 2003. The outcome of efforts has been to produce a digital database of coastal habitats and resources *"to establish the basis for better informed planning, development and management decision making in respect of Saint Lucia's coastline."* The data have been integrated into a flexible spatial database that can adapt to changing information technology requirements. The resultant database is compliant with other GIS systems, Saint Lucia's national GIS and/or future Spatial Database Infrastructure or information management systems on the island. The Project also included training components and was guided through a participatory process involving the Cabinet-authorized Coastal Zone Management Advisory Committee (CZMAC).

The GEF-World Bank-funded **SPACC** Project (2007-11), executed regionally by the Caribbean Community Climate Change Centre (CCCCC), also provide substantial outputs for replication and upscaling at the national level. The Project has demonstrated success in the implementation of select adaptation measures designed to address climate change impacts on biodiversity and land degradation. The Strengthened Critical Coastal Infrastructure sub-component of the Project demonstrated the design and implementation of appropriate interventions to reinforce critical infrastructure to the effects of intensified hurricanes; while the second sub-component on the Sustainability of Water Resources and Supply successfully demonstrated the adaptation in respect of complementing the national water supply programme by establishing adaptation measures that would result in increased resilience of surrounding coastal ecosystems to the impacts of climate change and variability. Both aspects of the SPACC project will be scaled up in Part 2 of the PPCR.

The country is also part of the **United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) Project on the Review of the Economics of Climate Change (RECC).** This Project seeks to build on past and current initiatives directed towards estimating the cost of adapting and mitigating key elements of climate change, based on climate change scenarios for the next 20-50 years or more, and to identify and assess the expected economic impacts that may result from the projections. It is expected that at the end of this Project, key decision-making stakeholders in the Caribbean will be aware of the projected impacts on the economies of their countries and therefore be empowered to take collective action in planning for these impacts. Areas of focus for Saint Lucia are water, agriculture and health, which are in keeping with key areas for building climate resilience under Saint Lucia's SPCR.

Importantly, Saint Lucia is presently engaged in completing its Second National Communication (SNC) to the UNFCCC on Climate Change. The main components are integrated vulnerability and adaptation assessments; identification of national circumstances that affect the assessments; conduct of green house inventory; mitigation exercises; and identification of challenges experienced by various sectors, and lessons learned. The findings of the various reports under the SNC have provided substantive input to the formulation of the PPCR process and the formulation of this SPCR.

The PPCR is expected to build on and to seek synergies with all these initiatives for building climate resilience in Saint Lucia.

1.4 PLAN DEVELOPMENT AND PARTICIPATORY PROCESS-TOWARDS PROJECT PRIORITISATION

Saint Lucia has undertaken extensive consultations over the last decade (**Appendix 3 refers**) that inform climate change adaptation and disaster risk reduction. Key documents have been produced that help inform decision making, pertinent to climate change (**Appendices 4 and 5**).

Under the PPCR, a comprehensive process was undertaken, including: national consultations, small focus group and one-on-one meetings, with key national stakeholders, policy makers and prospective beneficiaries, about the pilot programme, to confirm the strategic focus of the SPCR. The PPCR team, comprising the National Executing Agencies (NEAs), local PPCR consultants[54], met regularly to report on progress and plan the way forward. This local interaction is represented in **Figure 15**.

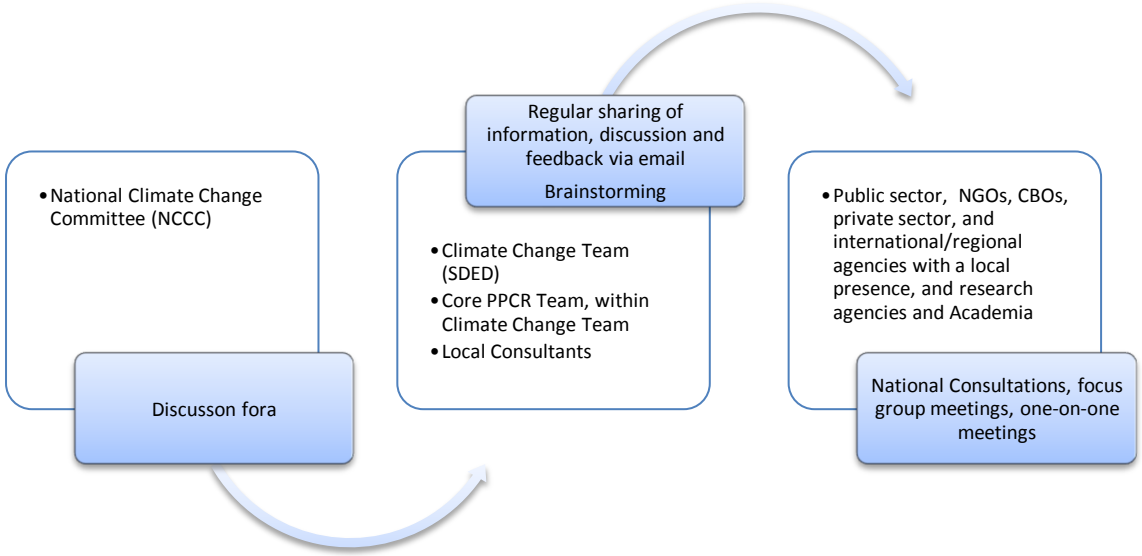


Figure 16: Framework for Consultation with Stakeholders and Modes of Engagement

The broader PPCR team members driving Saint Lucia's PPCR process are listed in first table of **Appendix 9.** A complete list of contributors to Saint Lucia's SPCR and Investment Plan are contained therein.

[54] Local consultants were used, working in collaboration with national executing agencies in order to ensure capacity building along the way. To date, all consultants hired under the PPCR are Saint Lucian nationals, which provided the opportunity for application of skills and further skills building.

1.4.1 The PPCR Process to Date

The PPCR process for Saint Lucia commenced, in 2009, when Saint Lucia became a participant within the PPCR Caribbean Regional Track. A **Scoping Mission** for PPCR, led by the Ministry of Physical Development and the Environment, with the World Bank, IDB, and the Canadian International Development Agency (CIDA), took place between December 2 and the 4, 2009. The main purpose of the mission was to: briefly introduce the objectives, structure, and phases of the PPCR to the lead government agencies and ministries; discuss and agree on the institutional arrangements necessary for the preparation and eventual implementation of the PPCR in Saint Lucia; and assist the government with the overall preparation work for the development of the programme.

Saint Lucia's **First Joint Mission** was held from August 9 to 11, 2010. A Joint Mission Team comprising the World Bank, IDB and the United Kingdom Department for International Development (DFID) assisted Saint Lucia during this First Joint Mission. The main activities included: Mission Team meetings with the national executing agency, namely, the Sustainable Development and Environment Division, in collaboration with the OECS-ESDU; a broad based consultation involving the NCCC and other public and private entities; and, focused meetings with key agencies on GIS and data management. The sessions included country stocktaking on climate change; discussion of Phase 1 activities, including a work programme and a funding proposal to develop the SPCR; and discussion of potential Phase 2 activities.

The outcomes of this First Joint Mission included: a finalised proposal for the release of Phase I funds; an Aide Memoire on activities undertaken, with details of consultations held prepared jointly by the World Bank, IDB and the Government of Saint Lucia; technical input for the development of the SPCR and Investment Plan and enhanced awareness and understanding of the PPCR Project.

The national consultations targeted the following groups:

1. Regional agencies, academia and research institutions with a local presence
2. Civil society island wide (two were held)
3. Private Sector
4. Public Sector

The public sector consultation was viewed as the project prioritisation/validation session, during which all of the adaptation/resilience building strategies compiled to date were presented. Participants also had the opportunity to include any other key interventions or to suggest modifications to those already identified. The selection criteria utilised for the process are contained in **Appendix 7**. A rating was used to prioritise projects/interventions according to broad categories. From the results of the exercise conducted, Saint Lucia presented the projects in a "blueprint" (**Appendix 8),** where they were further categorised under five strategic programme areas, namely:

1 Human Welfare and Livelihood Protection

2 Integrated Natural Resource Protection, Conservation and Management to Promote Sustainable Development
3 Building Resilience through Business Development, Innovation and Productivity Enhancement
4 Capacity Development/Building and Institutional/ Organisational Strengthening
5 Reducing Risk to Climate Related Disasters.

Further, based on a parallel process for the revision of the 2002 Climate Change Policy, three modalities were identified for implementation:

1. Adaptation Facilitation
2. Adaptation Implementation and
3. Adaptation Financing.

This was all presented during the Second Joint Mission held over the period May 10-11, 2011. The Mission team comprised the World Bank, the International Finance Corporation (IFC); the Inter-American Development Bank (IDB), and the PPCR Consultant for the Regional Tract. Other partners represented were the Japanese International Cooperation Agency (JICA), the OECS-ESDU and NEMO.

During day two of Mission, private sector participants from local banks, financial institutions, the Saint Lucia Development Bank (SLDB) and several players in the hotel and tourism sector were also provided with an overview of potential modalities for engaging in the PPCR.

The following objectives were achieved:

1 Technical input towards the advancement of the draft SPCR and Investment Plan, in preparation for submission prior to and presentation at, the PPCR Sub-Committee meeting to be held in Cape Town, South Africa in June 2011;

2 A clear way forward and options for concessional financing for the private sector;

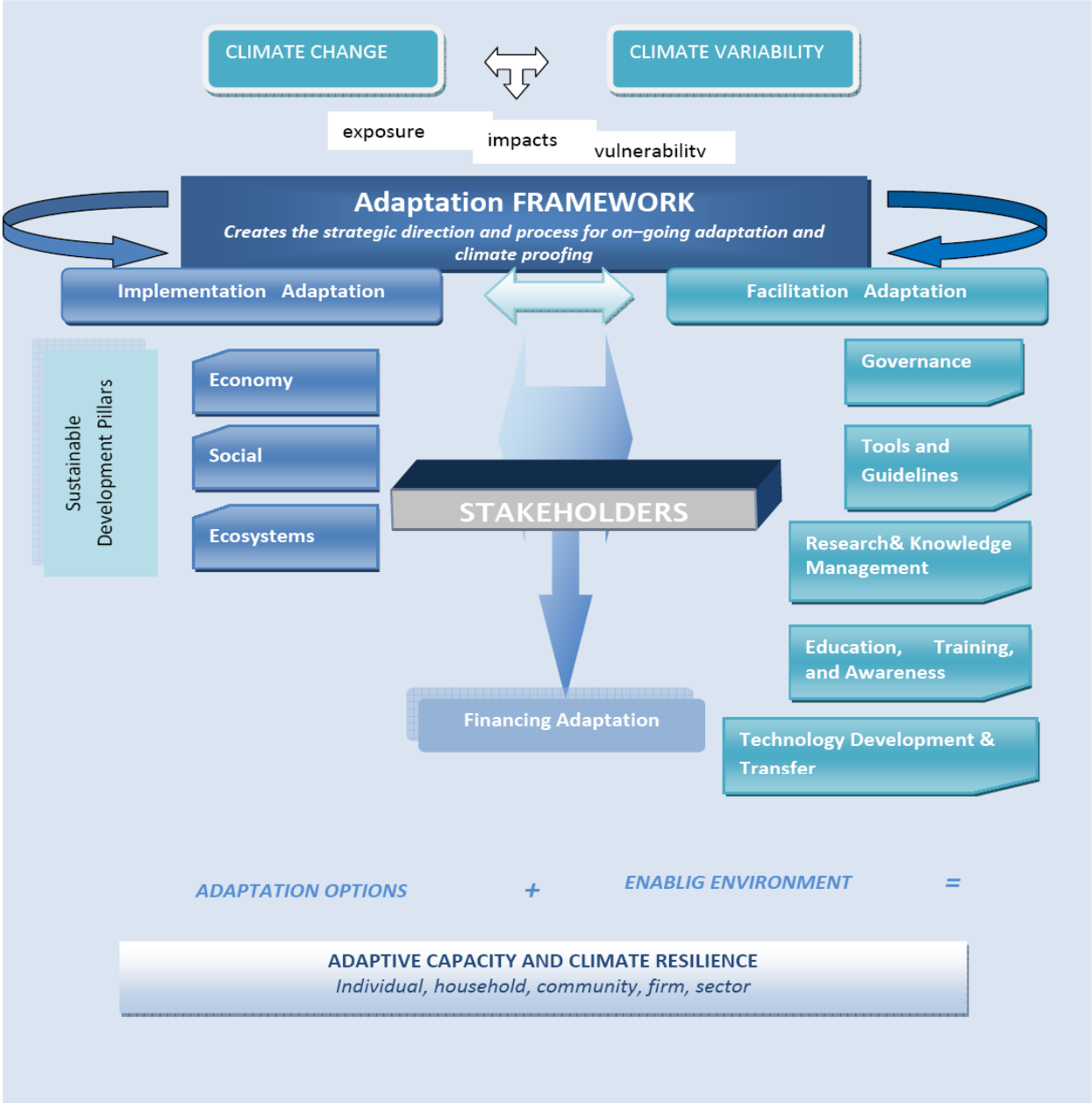
3 Agreement in principle on the component and priorities of the Investment Plan; and

4 Guidance on the enabling environment required for effective and timely implementation during Phase 2.

Throughout the consultation process, there were recurring themes, projects and interventions that facilitated the selection of the final suite of projects outlined in Saint Lucia's Investment Plan (See **Part 2:Table 4**). As the impacts of climate change become increasingly evident, Saint Lucia will be confronted with the need to implement adaptation strategies with greater urgency. However, for these strategies to be effective, they have to reflect the fact that natural and human systems in Saint Lucia are being simultaneously subjected to other non-climate stresses including population growth, competition for limited resources, ecosystem degradation, and the dynamics of social change and economic transformation. Therefore, the GOSL seek to ensure that

responses to climate change are properly coordinated and integrated with socio-economic development policies and environmental conservation.

The enhancement of resilience at various levels of society, through tangible interventions, capacity building, education and awareness, research and knowledge management, efficient resource allocation and the mainstreaming of climate risk management into development policies at the national and local scale, will constitute key elements of the Saint Lucia adaptation framework. (**Figure 16).**



Source: National Climate Change Adaptation Policy, Unpublished
Figure 17: The Saint Lucia Adaptation Framework

1.5 RATIONALE FOR PPCR SUPPORT

It is well recognized that the special characteristics of small islands[55], like Saint Lucia make them inherently prone to a large range of potential impacts from climate change. The main impacts of climate change in Saint Lucia include shifts in precipitation patterns manifested in longer dry spells (droughts), excessive rainfall (flooding, landslides), more intense storms, increased hurricane intensity, excessive heat and storm surge, especially due to hurricane activity, with surges expected to exacerbate with sea level rise. These unavoidable consequences of climate change are coupled with the fact that the majority of the country's human settlements and centres of economic activity are located in the coastal lowlands[56], and over 28% of the population is economically and socially vulnerable - under the poverty line.[57]

The extent of Saint Lucia's vulnerability to climate change and variability is also largely influenced by several non-climatic drivers. These drivers are largely socio-economic and ecological in nature. They include *inter alia*: global economic stresses, such as changing trade regimes, financial downturn, rising commodity and fuel prices, as well as stresses at the local level, including, demographics of people, poverty and unemployment. These are further exacerbated by the negative impacts of climate change.

For a climate vulnerable country like Saint Lucia, adaptation to climate change is a fundamental imperative and development priority. Key challenges in enhancing resilience to climate change in Saint Lucia are: managing the overall disaster risks to ensure social protection and minimise environmental degradation, protecting climate sensitive and critical infrastructure, promoting sustainable land use planning and reforestation, ensuring security of water supply through proper management of its limited potable water resources, and collecting and analyzing climate change related data and information in a comprehensive and sustainable fashion in order to be able to respond to the challenges posed by climate change and climate variability.

The recent vulnerability and adaptation (V&A) assessments conducted for Saint Lucia for the Second National Communication (2010) indicate vulnerabilities to climate hazards across all sectors, including water resources, coastal systems and resources, agriculture, fisheries and food security, tourism, natural ecosystems and biodiversity, human health, infrastructure and financial services. The Saint Lucia SNC V&A exercise also proposed adaptation strategies and measures for critical sectors of the economy (see **Appendix 6).** The overall cost of these adaptation measures will constitute a significant portion of Saint Lucia's GNP.

The major costs of adaptation in Saint Lucia are associated with upgrading of critical

[55] Physical size, proneness to natural disasters and climate extremes, extreme openness of economies, low adaptive capacity;
[56] The high vulnerability of coastal communities to global climate change and sea level rise leads to increased inundation of coastal areas; loss of land, habitat, and ecosystems, as well as ecosystem services and consequently economic losses; reduction of access to communities; threats to sanitation and health; abandonment of community infrastructure; reduced investment on coastal areas; loss of life and livelihoods; and, loss of traditional values and resources, from climate induced disasters.
57 GOSL, 2005/6, Saint. Lucia Poverty Assessment Report, Prepared by Kairi Consultants

infrastructure and public sector assets such as health care centres, hospitals government offices, to mention a few . Roads, bridges, culverts, embankment stabilization, coastal and river defences and relocation of buildings and infrastructure are the hard costs. The softer costs are what will contribute most significantly to building and sustaining climate resilience. This includes the development of awareness, knowledge and understanding amongst businesses, families and communities living and working in vulnerable areas. Knowledge management is probably the investment that will provide the greatest return as will capacity building and institutional strengthening.

While Saint Lucia is a small island with a small population, its financing needs for climate change adaptation are quite substantial. Mobilizing and effectively utilizing the necessary financing is vital to addressing the looming challenges. The current financial allocation for climate change adaptation in Saint Lucia is inadequate, considering the extent of its vulnerabilities. Hurricane Tomas in 2010 and Dean in 2007 caused extensive damages with losses estimated at about US$336 million[58] from Tomas and US$ 18.8 million from Dean[59]. It is highly unlikely that the Government of Saint Lucia will be able to rehabilitate all the damages from Tomas with its own resources alone and external support of the kind provided by the PPCR will complement development finance to accelerate the government's efforts in restoring and maintaining some of the critical infrastructure.

The GOSL is committed to building climate resilience. A key ingredient for doing so successfully is the availability of appropriate institutions with adequate policies, procedures and guidelines. National institutions must also be properly empowered and enabled to carry out their roles comprehensively and on a sustainable basis. Saint Lucia has taken a number of steps to address climate change related issues over the years and has updated policies that will contribute to successful implementation of climate related adaptation and mitigation programmes, coupled with hard core interventions. With the assistance provided under the PPCR the GOSL is dedicated to strengthening institutions and building capacity to handle the climate change issues effectively and decisively to facilitate Saint Lucia's move towards a climate resilient development path.

1.6 INSTITUTIONAL ANALYSIS

1.6.1 **The Role of Government**

From an institutional standpoint, climate change matters fall under the purview of the Ministry of Physical Development (MPDE) and Environment and the Meteorological Services Department. Nevertheless, the participation of other public sector agencies, such as the Ministries of Finance, Economic Affairs and National Development and Social Transformation, Youth and Sports,

[58] UNECLAC (2010) Saint Lucia - Macro socio-economic assessment of the damage and losses caused by Hurricane Tomas
[59] ibid

along with financial institutions, is to be intensified to adequately harness capacities for effective climate resilience building.

The Permanent Secretary of the Ministry of Physical Development serves as the UNFCCC and the IPCC focal point. However, the Permanents Secretary of the Ministry of Finance, Economic Affairs and National Development is the designated national PPCR focal point.

The Chief Sustainable Development & Environment Officer in the Sustainable Development & Environment Division of the MPDE is the national technical focal point for climate changes and heads both the Division's *de facto* Climate Change Unit and the SDED-PPCR Team. On the other hand, the Project Coordination Unit (PCU) housed within the Ministry of Finance, Economic Affairs and National Development has been assigned the responsibility of handling all fiduciary and safeguards aspects of the PPCR.

Advice and guidance for all PPCR-related activities will be provided by the broad-based, multi-sectoral National Climate Change Committee (NCCC) which comprises representatives of the public and privates sectors, civil society and academia. To provide more focused technical guidance, a working group of the NCCC, known as the Climate Resilience Sub-Committee (CRSC), has been established. The CRSC is composed of line ministries, non-governmental organisations, and representatives from the private sector and is chaired by the MPDE. The CRSC has an open membership and draws upon different areas of expertise as and when needed. It will convene at regular intervals to receive updates on the PPCR process and to provide required direction. Once Phase 2 activities have started, the CRSC will continue to play an advisory role in the implementation of PPCR activities.

The Disaster Preparedness and Response Act # 13 of 2000 gives particular focus to disaster risk reduction, by addressing specifically the issue of Specially Vulnerable Areas. This requires that the NEMO, the National Hazard Mitigation Council (NHMC) and particularly the Ministry of Physical Development and the Environment, work together to establish where these vulnerable areas exist in Saint Lucia and delimit them considering the different types of hazards. Special Enforcement Areas have also been declared under the Physical Planning and Development Act, Section 43, which makes provision for the Minister to prevent squatting or other unauthorized development. Knowledge of these areas will allow for better development planning that considers risk and vulnerability in order to implement adequate mitigation measures.

1.6.2 The Role of the Private Sector

The private sector provides employment, goods and services that maintain communities and, indeed, is part of the community. This sense of belonging is often manifested by actions that demonstrate corporate social responsibility.

Adaptation and climate resilience building are also important for the private sector which, in Saint Lucia, as elsewhere, is not a single homogenous community. The Saint Lucia private sector comprises a few large firms and transnational corporations and several micro, small and

medium enterprises. Climate change superimposes another challenge for business and economic sectors in maintaining productivity and ensuring continuity of operations.

Given, therefore, that the private sector plays a critical role in the economic development of a country and that it will also be affected by climate change, its participation is therefore essential to the successful implementation of the PPCR in Saint Lucia. For this reason, private sector entities (businesses, banks, insurance companies, professional associations), were actively engaged in the SPCR formulation process. Deliberations focused primarily on the impacts of climate change.

The Saint Lucia Framework for climate change adaptation proposes strong partnerships between the private and public sectors on climate change adaptation. The country is to promote a Private Sector Adaptation Initiative that will allow for:

1. Rigorous engagement of the private sector in climate change decision-making at all levels of society, and
2. Strengthening of the capacity of the private sector to respond to climate change and climate variability.

Table 4, describes some of the proposed areas to be pursued for private sector involvement in climate change adaptation.

The private sector, which has been singled out for particular mention in the UNFCCC, is recognised as a key player in climate change adaptation in Saint Lucia. Key considerations for the private sector include insurance and financing, institutional and human resources capacity building, research, information and monitoring, continuity of operations and incentive provision. Moreover, businesses are the ones that are expected to find the niche markets and exploit the opportunities presented by climate change.

Table 4: Examples of Involvement of the Saint Lucian Private Sector in the Climate Change Adaptation

Role	Involvement
Planning	Include more private sector representation in NCCC
	Design Private Sector Adaptation Strategy to be facilitated and coordinated by a consortium of private sector umbrella organisations.
	Consult private sector bodies in planning and implementing implementation and facilitation adaptation measures.
Capacity Building	Build capacity of private sector to design and implement adaptation measures.
	Larger firms to provide technical assistance to MSMES in designing Business Continuity Plans

Role	Involvement
Mainstreaming	Private sector to undertake vulnerability assessment of sector and sub-sector and to provide recommendations for mainstreaming public sector activities in adaptation implementation and facilitation measures.
	Establish partnerships with communities, schools, and vulnerable groups in order to undertake implementation and facilitation measures.
Implementation Plan	Identify and provide details on specific priorities for the private sector Undertake investments in climate change adaptation

1.6.3 The Role of Civil Society and Community Groups

Communities are often the level at which environmental change is first detected and from which the first response often emanates. Farmers and fishers, for example, are the ones most directly affected by changes in weather patterns and fish migrations, respectively. In the aftermath of Hurricane Tomas, it was, in many instances, community-based and non-governmental organization that first sought to bring relief to affected populations ahead of the arrival of governmental and external interventions.

Civil society organizations often bring innovative or context-specific approaches to, for example, public education and awareness. Community development groups have also displayed the capacity to provide specific focus on such concerns as gender and vulnerable groups in the delivery of social services. The NEMO Community Disaster Preparedness Committees model is one case in point, with demonstrated success in gender-sensitive shelter programmes. Community development groups such as LDF and SSDF have often been the vehicle for interventions aimed at vulnerable groups at the community level.

The PPCR will build on the existing strengths of these mechanisms at the community level to deliver more targeting programming that are inclusive of gender and vulnerable groups.

Table 5 summarizes the institutional roles and relationships that currently obtain in respect of climate change responses in Saint Lucia, as well as regionally.

Table 5: Organizations (Selected) with Responsibilities and Roles linked to Climate Change Issues and Responses in Saint Lucia.

Agency	Responsibility/Role	Scope
National/State		
Ministry of Physical Development and the Environment	Key agencies include the Survey and Mapping Section,; the Physical Planning Division and the Crown Lands Section that all play a key role in the management of land resources. The Permanent Secretary is the UNFCCC and IPCC Focal Point.	National/Government

Agency	Responsibility/Role	Scope
Sustainable Development and Environment Division of the Ministry of Physical Development and the Environment	This Division coordinates activities for the implementation of many of the environmental conventions to which Saint Lucia is party, including the UNFCCC. It bears institutional responsibility for the management of climate change concerns in Saint Lucia. Among its ongoing activities in relation to climate change re: efforts aimed at sensitisation of principal stakeholders, public awareness, the provision of policy and technical guidance and capacity building on matters relating to sustainable development. In terms of the UNFCCC, the main activities at this stage revolve around fulfilment of the responsibilities relating to the reporting and other requirements of the convention, policy development and mainstreaming climate change into national development programmes, and other measures to promote capacity building, and public awareness. The Chief Sustainable Development and Environment Officer is the Technical Focal Point for Climate Change.	National/Government
Ministry of Finance, Economic Planning and National Development	Responsible for core development planning and management of national budget. Permanent Secretary is the national PPCR Focal Point. Ministry playing an increasing role in water resource management, disaster reconstruction and related areas.	National/Government
Project Coordinating Unit (PCU) of the Ministry of Finance, Economic Planning and National Development	The PCU is a specialized project management unit with appropriate fiduciary, and safeguards, handling capacity built from a long experience in managing World Bank-financed projects. An organizational chart describing the PCU can be found in **Figure 2 of Part 2.** PCU manages all project-related procurement activities including contracting activity: bidding, contractor selection, and execution supervision, with the technical assistance of the participating line ministries. Now working closely with the SDED to implement the PPCR	National/Government
National Climate Change Committee (NCCC)	A multi-sectoral steering committee comprising various public and private sector agencies provides technical input on climate change to the Sustainable Development and Environment Division In the Phase 1 PPCR Proposal, a Climate Resilience Steering Committee of the NCCC is proposed to oversee the implementation of Phase II.	National/State/Non-State
Ministry of Agriculture	Agencies/Departments include the Department of Forestry, Department of Fisheries, Agriculture Division, Water resource management agency. These agencies all manage natural resources and work with clientele (farmers, fishers) that will all be directly affected by climate change	National/Government
National Emergency Management Office (NEMO)	national planning and preparation for, response to and short-term post-event recovery, after emergencies and disasters. Coordinates the disaster/emergency efforts of various state, private sector and community entities and has built a strong network of localized/district disaster response committees.	National/Government
The Physical Planning and Development Division	Land use planning and development control. In this context it is responsible for the administration of the Physical Planning and Development Act (2001). The Division	National/Government

Agency	Responsibility/Role	Scope
	contributes to management of Protected Areas (PAs), Special Enforcement Areas (SEAs) through the management of the EIA process. It also provides technical support to the protected areas management agencies in the preparation of maps and the hosting of spatial databases for protected areas.	
Meteorological Services Department	The collection and analysis of meteorological data engaged in an ongoing drought monitoring exercise drawing in data generated at Hewanorra and George Charles Airports and other points. It is anticipated that data from the flood monitoring network will be used in this exercise to pinpoint areas prone to floods as regards duration and intensity.	National/Government
Private Sector		
Insurance Council of Saint Lucia	Addresses the interests of the insurance sector. Is concerned, inter alia about the implications of the effects of climate change (such as increased intensity of hurricanes) on the sector and on its clientele. The Council is represented on the NCCC	National/Private
Saint Lucia Hotel & Tourism Association	The sector has been affected by hurricane winds storm surges and is concerned about sea level rise and its implication for the extensive investment in tourism plant along the coastline. SLHTA members also stand to be affected by, inter alia, loss of coral loss due to bleaching. Association works increasingly closely with Government and other partners on climate and environmental issues.	National/Private
Saint Lucia Chamber of Commerce	Members include a wide range of providers of goods and services (supermarkets chains, dry goods suppliers, manufacturers, etc.). Operations of these business concerns stand to be/have been by climate-related events both through direct disruption and interruption of the supply chain (e.g. food shortages in supermarkets due to crop loss suffered by farmers.	National/Private
Saint Lucia Air & Sea Ports Authority	Operates and manages air and sea ports around the island. In addition to sea ports, both airports are located at sea level and are susceptible to flooding, storm surge and sea level rise. SLASPA is keen to reduce the vulnerability of its infrastructure and works closely with Government.	National/Private-Statutory
Civil Society		
Saint Lucia National Trust	Management of sites and other assets of historical and cultural significance. Owns or entrusted to manage (via vesting) several properties, some of which are vulnerable to climate change. For example, Pigeon Island National Landmark, the flagship site, is vulnerable to coastal erosion aggravated by sea level rise and storm surge. Active in environmental advocacy. Works closely with Government, Private Sector and Civil Society	National/Civil Society
Laborie Development Foundation	Promotion of the sustainable development Laborie Village and environs. Has successfully sought funding for a range of sustainable development projects in the community. Is concerned about the impact of climate change on ecosystems and livelihoods. Works closely with Government, Private Sector and International Development Agencies	Local, Civil Society
	Regional	
Caribbean Community Climate	The Caribbean Community Climate Change Centre coordinates the Caribbean region's response to climate	Regional (CARICOM,

Agency	Responsibility/Role	Scope
Change Centre (CCCCC)	change. Officially opened in August 2005, the Centre is the key node for information on climate change issues and on the region's response to managing and adapting to climate change. It is the official repository and clearing house for regional climate change data, providing climate change-related policy advice and guidelines to the Caribbean Community (CARICOM) member states through the CARICOM Secretariat. In this role, the Centre is recognised by the UNFCCC, the United Nations Environment Programme (UNEP), and other international agencies as the focal point for climate change issues in the Caribbean. It has also been recognised by the United Nations Institute for Training and Research (UNITAR) as a Centre of excellence. The CCCCC has developed a Regional Framework for Achieving Development Resilient To Climate Change (2009-2015) and is currently engaged in the development of an associated Implementation Plan.	United Kingdom Overseas Territories, Cuba)
OECS-ESDU	The Environment and Sustainable Development Unit of the OECS (OECS-ESDU) is the entity within the OECS Secretariat that is responsible for the provision of natural resources and environmental management services to the member states of the OECS. The mandate of the OECS-ESDU is to assist member states in all matters pertaining to the sustainable use of natural resources to ensure the sustainability of livelihoods of the peoples of the OECS. The OECS-ESDU has been an integral part of Saint Lucia's PPCR process. The Saint George's Declaration, signed by the OECS Ministers of the Environment in 2001 and revised in 2006, was established with the overall aim of fostering *"equitable and sustainable improvement in the quality of life of the OECS Region"* It contains principles that specifically address climate change.	Regional (OECS)

Source: Adapted from UNECLAC Country Profiles (2010) and review of other documents

1.7 STRATEGIC CLIMATE ADAPTATION STRATEGY AND COMPONENT DESCRIPTIONS

1.7.1 The Strategy

Saint Lucia has prepared a suite of projects representing various sectors, themes, levels and areas of society, involving the public, private sectors and civil society – its "blueprint" (Appendix 8). It is expected to allow for identification with and ownership by all the citizenry, serving as an overarching guide of national significance for addressing climate change, to which all organisations can refer, in their preparation of project proposals/programmes for building climate resilience. Saint Lucia has articulated that its SPCR is "PPCR and beyond". This means that it provides the broad project / programme areas for all sectors, themes and areas, in pursuit of enhanced climate resilience, well beyond the timeframe of, or funding available under, the PPCR.

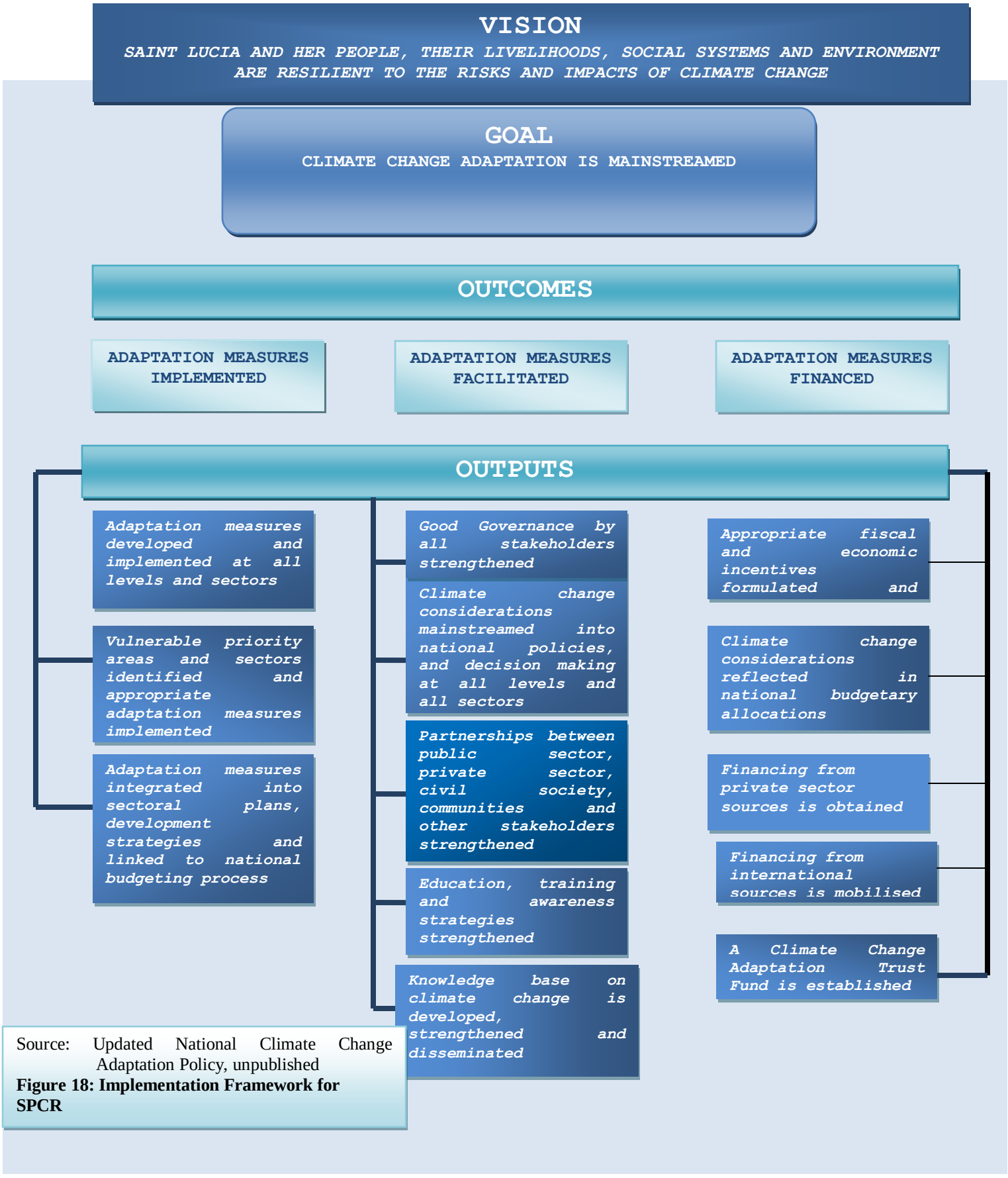
Saint Lucia's "blueprint is further sub-divided into five broad strategic areas encompassing activities under the three pillars of sustainable development, that is economic, social and environment. The five strategic areas are to be implemented under the three modalities:

1. Adaptation Facilitation
2. Adaptation Implementation
3. Adaptation Financing

The overarching theme under which Saint Lucia's SPCR is based is "***one person, one household, one enterprise, one community, one sector at a time*".** This translates to climate resilience building activities being targeted from the individual unit to the broad sectoral level, resulting in catalytic and transformational change at the national level. Interventions include:

- Concrete resilience-building measures/interventions which meaningfully demonstrate adaptation in action;
- Mechanisms for implementation of a combination of "soft" and "hard" initiatives that, *inter alia*, build capacity, facilitate knowledge sharing and management and increase awareness;
- Modalities that are gender inclusive, target the public sector, private sector and civil society including vulnerable groups, communities and households.
- Activities that are consistent with either/both Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) in nature.

The implementation framework for the SPCR is represented in Figure 17, below.



Source: Updated National Climate Change Adaptation Policy, unpublished

Figure 18: Implementation Framework for SPCR

1.7.2 Component Descriptions

The Investment Plan in **Part 2: Table 4** comprises components and sub-components arranged under the three modalities, adaptation facilitation; adaptation implementation and adaptation financing.

Adaptation Facilitation encompasses activities that provide the enabling environment and enhance adaptive capacity (e.g., awareness generation, capacity building, institutional and governance structures, policies and legislative frameworks, fiscal and economic incentives, knowledge management and dissemination, etc), thereby improving conditions for the implementation of adaptation measures.

Adaptation Implementation involves the execution of activities that actually assist in alleviating and/or avoiding adverse impacts of climate change. For example, investments in interventions related to water, renewable energy, coastal zone management and critical infrastructure.

Adaptation Financing involves mobilisation from the local, regional and international private sector to support implementation and facilitation actions.

Transformational change will result from interventions in all three outcome areas, while catalytic change and replication will be derived through financing and implementation of the adaptation measures.

1.8 LESSONS LEARNED AND BEST PRACTICE

The SPCR has been prepared to ensure:

1. Long-term sustainability of the initiatives;
2. Building on knowledge and understanding;
3. Providing extensive learning opportunities;
4. Increasing awareness of public sector, private sector and civil society; and,
5. Learning by doing-Unchartered territory/trailblazing

The PPCR process has, to date, facilitated knowledge sharing in the following ways:

1. Exhaustive consultations with wide range of stakeholders and specific target groups that facilitate the acquisition of knowledge, transfer and exchange of information

2. Experienced gained through the PPCR process has built human capacity to be better prepare for and respond to climate change

3. The Regional Tract of the PPCR allows participating countries to share experiences and lessons learned and to coordinate actions at the regional level for greater transformational change (OECS islands and data management)

4. Exchanges at the international level, for example Climate Investment Forum, allow for knowledge acquisition and transfer from a diverse range of countries, for example Pacific, African and Caribbean

5. Great care is being taken to properly document the steps throughout the process and to:

    - Allow for timely corrective action
    - Ensure proper analysis of discussions, options/recommendations
    - Support preparation of a robust SPCR
    - Lay a strong foundation for future (post-PPCR) initiatives

6. Pilots allow for adaptive replication through scaled up action; for example, retrofitting of one school for enhanced climate resilience can be reproduced in others

7. Assessments inform hard core interventions, and influence policy that in turn, leads to more structured, enhanced and informed replication; for example; assessments of coastal engineering structures would inform the modification of air and sea ports; the guidelines document resulting from the assessment can be instituted to inform similar interventions

8. Interplay between climate change adaptation and DRM has important lessons for SIDS in the face of climate change, especially with regard to efficient use of limited resources

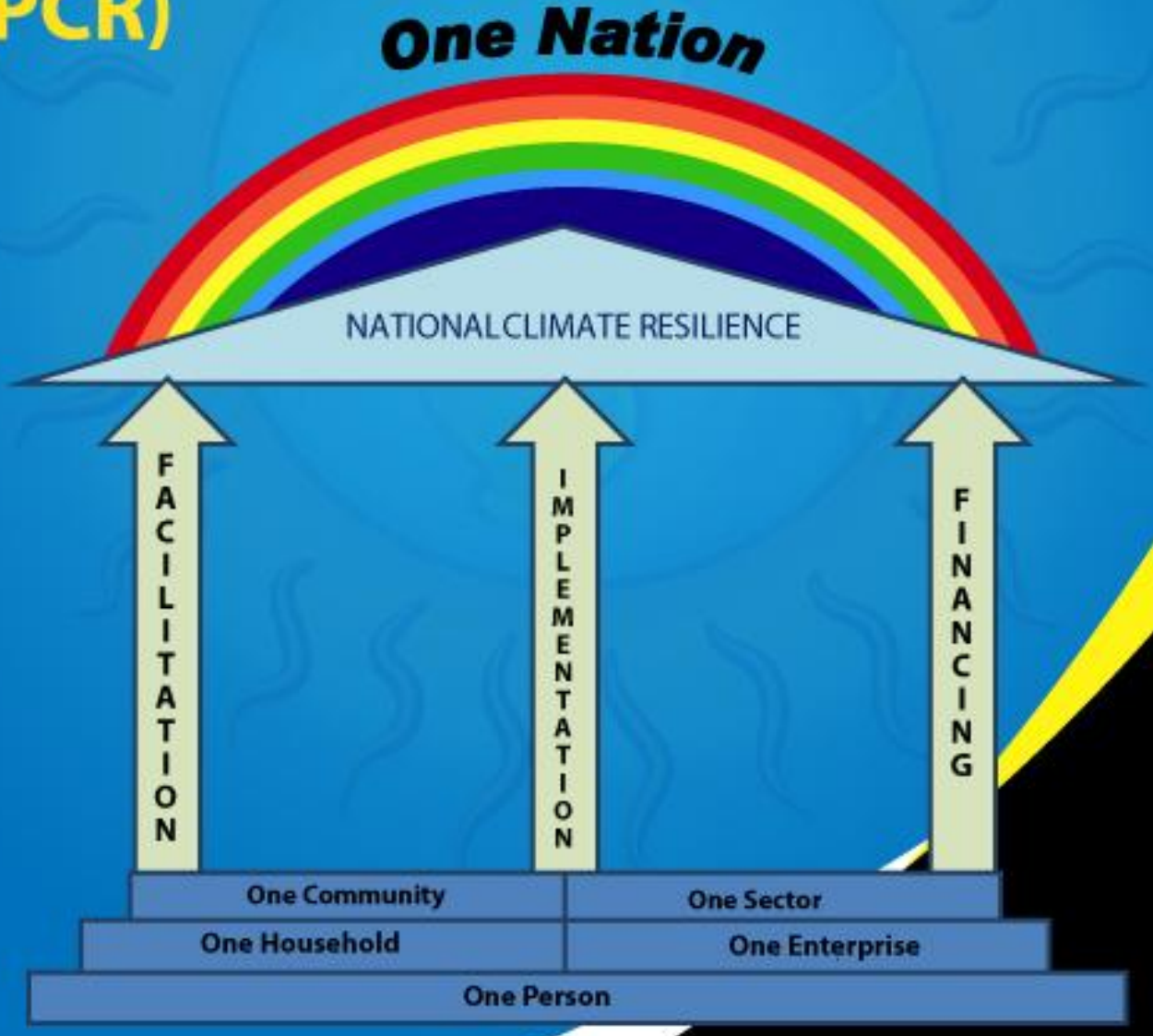
For Saint Lucia, the road to preparation, and subsequent implementation, of SPCR is still unfolding. The approach being taken to date appears to be yielding the desired outcomes. However, significant effort will have to go into prioritizing activities to be undertaken during the lifetime of the PPCR.

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)



June 1st 2011

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)

Part Two:

Proposed Investment Programme Components For PPCR Funding

June 1st 2011

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

LIST OF ACRONYMS AND ABBREVIATIONS[1]

ACCC	Adapting to Climate Change in the Caribbean
BIT	Banana Industry Trust
BPoA	Barbados Programme of Action
CALF	Climate Adaptation Loan Facility
CARICOM	Caribbean Community
CAT	Climate Adaptation Trust (Fund)
CCA	Climate Change Adaptation
CCAP	Climate Change Adaptation Policies
CCCCC	(5 Cs) Caribbean Community Climate Change Centre
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CEP	Caribbean Environment Programme
CIDA	Canadian International Development Agency
CIF	Climate Investment Fund
CPA	Country Poverty Assessment
CPACC	Caribbean Planning for Adaptation to Climate Change
CRSC	Climate Resilience Sub-Committee
CSG	Climate Studies Group
CSOs	Civil Society Organisations
CSR	Corporate Social Responsibility

[1] *This list serves Parts 1, 2 and 3 of Saint Lucia's SPCR and will be repeated in each Part for ease of reference.*

CYEN	Caribbean Youth Environmental Network
CZM	Coastal Zone Management
CZMAC	Coastal Zone Management Advisory Committee
CZMU	Coastal Zone Management Unit
DCA	Development Control Authority
DFID	Department for International Development
DMP	Disaster Management Project
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DVRP	Disaster and Vulnerability Reduction Project
EAW	Energy Awareness Week
EBF	Ecosystems-Based Framework
EIA	Environmental Impact Assessment
EMB	Environmental Management Bill
ENSO	El Nino Southern Oscillation
EOC	Emergency Operations Centre
ERP	Emergency Recovery Project
ESA	Electricity Supply Act
ESDU	Environment and Sustainable Development Unit
ETF	Environmental Trust Fund
EU-SFA	European Union Special Framework for Assistance
GCM	Global/General Circulation Model
GCC	Global Climate Change

GDP	Gross Domestic Product
GEF	Global Environment Facility
GCMs	Global Climate Models
GHG	Greenhouse Gas
GIS	Geographic Information System
GNP	Gross National Product
GOSL	Government of Saint Lucia
GPS	Global Positioning System
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IP	Investment Plan
IPCC	Intergovernmental Panel on Climate Change
IWCAM	Integrated Watershed and Coastal Areas Management
KAP	Knowledge, Attitude and Practices
LDF	Laborie Development Foundation
MACC	Mainstreaming Adaptation to Climate Change
MALFF	Ministry of Agriculture, Lands, Forestry and Fisheries
MDBs	Multilateral Development Banks
MEAs	Multilateral Environmental Agreements
MPDE	Ministry of Physical Development and the Environment
MSI	The Mauritius Strategy for Implementation
MTESP	Medium Term Economic Strategy Paper
NBSAP	National Biodiversity Strategy and Action Plan

NCCC	National Climate Change Committee
NCCPAP	National Climate Change Policy and Adaptation Plan
NEA's	National Executing Agencies
NEC	National Environmental Commission
NEMS	National Environmental Strategy
NEMO	National Emergency Management Organisation
NEOC	National Emergency Operations Centre
NEP	National Environmental Policy
NHMP	National Hazard Mitigation Plan
NGO	Non-Governmental Organization
NLP	National Land Policy
OAS	Organization of American States
OECS	Organisation of Eastern Caribbean States
OPSR	Office of Private Sector Relations
ORI	Other Relevant Information
PAHO	Pan American Health Organization
PCU	Project Coordination Unit
PDAs	Personal Data Assistants
PEA	Public Education and Awareness
PEO	Public Education and Outreach
PPCR	Pilot Programme for Climate Resilience
PPCR-SC	Pilot Programme for Climate Resilience Sub-Committee
R&D	Research and Development

RCM	Regional Climate Model
RECC	Review of the Economics of Climate Change
RSO	Research and Systematic Observation
SALCC	Sir Arthur Lewis Community College
SCF	Strategic Climate Fund
SDED	Sustainable Development and Environment Division
SEDU	Saint. Lucia Small Enterprise Development Unit
SEP	Sustainable Energy Plan
SFA	(EU) Special Framework of Assistance
SIDS	Small Island Developing States
SLBS	Saint Lucia Bureau of Standards
SLHTA	Saint Lucia Heritage Tourism Association
SLM	Sustainable Land Management
SLNT	Saint Lucia National Trust
SLR	Sea Level Rise
SNC	Second National Communication
SME	Small and Medium Enterprises
SPACC	Special Programme on Adaptation to Climate Change
SPCR	Strategic Programme for Climate Resilience
SRDF	Soufriere Regional Development Foundation
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean

UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
USAID	United States Agency for International Development
UK	United Kingdom
USA	United States of America
USD	United States Dollar
UWI	University of the West Indies
V&A	Vulnerability and Adaptation
VCA	Vulnerability and Capacity Assessment
WASCO	Water and Sewerage Company
WHO	World Health Organization
WINFRESH	Windward Islands (Banana) Exporting Company Limited
WRMA	Water Resources Management Agency
WTO	World Trade Organization

2.0 PROPOSED INVESTMENT PROGRAMME COMPONENTS FOR PPCR FUNDING

2.1 BACKGROUND

2.1.1 Introduction

Saint Lucia, as a Small Island Developing State (SIDS), faces many of the development challenges typically confronted by such states. These include limited geographic space, open, vulnerable economy, fragile ecosystems, limited human and institutional capacity and vulnerability to natural phenomena such as extreme weather events. The onset of climate change poses another, major, threat to Saint Lucia's development and will impact on every major economic sector and social group.

Key challenges include, but are by no means limited to, preserving human life and sustaining livelihoods, ensuring adequacy and quality of water and food supply, effectively managing coastal space and resources, protecting human settlements and infrastructure and ensuring the existence and adequacy of governance and management systems to meet these challenges.

The current level of funding for responding to climate change is inadequate. Confronting and successfully adapting to the multiplicity of challenges posed by climate change will require significant new, additional, adequate and sustained financing.

Over the last several years, a number of climate change studies and assessments have been undertaken in Saint Lucia. These have provided guidance on steps to be taken in responding to the climate change phenomenon both in terms of providing the enabling environment and practical measures to directly build resilience, while recognising the need for adequate financing to this end.

The Pilot Programme for Climate Resilience (PPCR) is designed to pilot and demonstrate ways to integrate climate risk and resilience into the core development planning of developing countries and provides incentives for scaled-up action and transformational change. It is therefore intended to use the funding made available under the PPCR to help to catalyse support for civil society and upscale private and public sector investments intended to build climate resilience in Saint Lucia.

2.1.2 Rationale

The interventions to be made through the Strategic Programme for Climate Resilience (SPCR) fall under five strategic programme areas, namely:

1 Human Welfare and Livelihood Protection
2 Integrated Natural Resource Protection, Conservation and Management to Promote Sustainable Development
3 Building Resilience through Business Development, Innovation and Productivity Enhancement

4 Capacity Development/Building and Institutional/ Organisational Strengthening
5 Reducing Risk to Climate Related Disasters.

These strategic progamme areas (especially 5) are closely interwoven with the broader fabric of disaster risk reduction (DRR). For reasons of synergy, therefore, the SPCR activities are being blended with those to be implemented under the Disaster Vulnerability Reduction Programme (DVRP).

Given the cross-cutting nature of many of the interventions to be undertaken, the strategic programme areas, activities will be implemented under the following three components: Adaptation Financing, Adaptation Implementation and Adaptation Financing. Further, provision has also been made, as outlined in a subsequent Section 2.4.4 on Project Management and Support.

2.1.2.1 Component 1: Adaptation Facilitation

Component 1 seeks to create a sufficiently enabling environment for building climate resilience at all levels by strengthening the existing policy, legislative institutional and fiscal framework. This will entail the review and enhancement of relevant legislation, policies, guidelines, strategies, plans and incentives regimes. This will also include, among others, undertaking a review of the methodologies used to guide coastal planning and development in the context of sea level rise and storm surge.

Measures will be implemented to build on existing institutional capacity for research and systematic observation and for data and information acquisition, management, sharing and analysis. At the community and sector level, targeted capacity building activities will be conducted for specific groups such as the construction sector, with a view to empowering these groups with climate-relevant knowledge and skills.

Another critical activity will be the assessment and analysis of vulnerable groups. This will be undertaken with a view to informing interventions for building climate resilience among these groups.

Special emphasis will be placed on Public Education and Outreach with the objective of making the general public and specific groups, including the vulnerable, more knowledgeable about climate change and, importantly, empowering them (through knowledge and mechanisms) to take meaningful action to build resilience at all levels.

2.1.2.2 Component 2: Adaptation Implementation

Component 2 focuses on the implementation of tangible resilience-building measures at the community and national level. This component will promote and utilise investment in proven and innovative measures to demonstrate results in the catalytic and replication dimension of the PPCR.
One sub-component will entail the retrofitting of public and key community buildings for climate change resilience and for demonstration and replication of climate-appropriate design.

Another sub-component will involve the re-design and modification of critical infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise following assessment of existing coastal engineering structures and formulation of design guidelines/standards in the context of storm surge, coastal flooding and sea level rise.

The final sub-component will involve pilot or supporting water conservation and interventions. These could include measures such as communal rainwater harvesting and the construction of micro-dams.

2.1.2.3 Component 3: Adaptation Financing

Climate resilience building is the business of the entire citizenry of a country. In order to become climate resilient, the private sector, civil society and individuals will require access to funds with affordable interest rates. The scale and/or efficiency of many adaptation interventions typically undertaken by the Government of Saint Lucia (GOSL) could also be enhanced through engagement with the private sector.

Given the high level of investment required for adaptation, and the limited resources of the GOSL, the country will be pursuing all opportunities for public-private partnerships, as well as other private sector partnerships with communities and vulnerable groups.

To this end and informed by the recommendations from the various private sector and civil society consultations that were held during Phase 1 of the PPCR I, the GOSL is desirous of creating a funding mechanism to assist *local* banks with building loan portfolios in climate change adaptation, which are affordable, equitable and will provide incentives for pre-emptive vulnerability reduction. The purpose of the funding mechanism is to help target groups (including communities, the private sector and individuals) to address or adjust to a public "bad" (climate change), which they may hitherto have paid insufficient attention to, but which will impact their welfare and livelihoods in significant way. The mechanism is not being set up with the purpose of generating private sector profit-motivated development, but rather, a social funds-type of mechanism or a community-driven development funding mechanism that will help promote a competitive market for climate adaptation technologies by strengthening the demand side.

The proposed funding mechanism will provide an initial interest subsidy[2] to potential customers wishing to buy and sell adaptation technologies for the benefit of building climate resilience in households, enterprises, sectors and critical assets. Most importantly, the financing mechanism will encourage increased lending by local banks by reducing the risk in entering a new market segment; and support the development of partnerships between banks and adaptation technology suppliers on the island. It is also envisaged that this proposed adaptation financing mechanism will help shift the market from a cash market to a credit-based market, thereby increasing the access to adaptation technologies to a larger segment of vulnerable groups who normally would not have access to subsidised interest rates for purchasing such technologies.

[2] The PPCR offers concessional finance to support private sector and civil society projects and programmes that have the potential of being replicated in the future **without further subsidies**.

Overall, Component 3 will focus on developing modalities for securing more sustainable financing for climate resilience-building measures. In this respect, modalities will be developed for a Climate Adaptation Trust (CAT) Fund. In addition, using concessional financing, a Climate Adaptation Loan Facility (CALF) will be established to allow the private sector and civil society to undertake resilience-building measures.

2.2 DEVELOPMENT OBJECTIVES

Every Saint Lucian, in every walk of life, will be affected by climate change, and consequently, must play a part in the national response to it. Government, the private sector and civil society will need to work in partnership to this end. For this reason, Saint Lucia's SPCR will be implemented under the under strap-line: "*One person, one household, one enterprise, one community, one sector at a time*" (**Figure 1**) The objective is to demonstrate results in transformational change and catalytic replication at several levels, including that of the individual, the household, properties/businesses, communities and sectors; including opportunities for new products and services and effecting private sector corporate and social responsibility in communities.

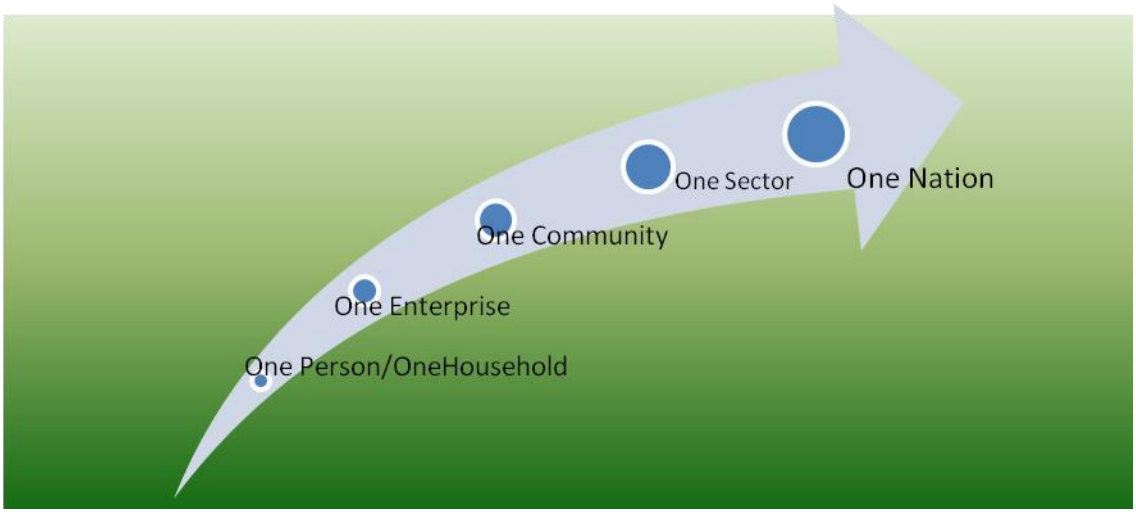


Figure 1: Levels of Building Resilience in Saint Lucia

Because the PPCR will have a finite lifetime, the SPCR is seen as a critical component of a larger blueprint[3] for the "PPCR and Beyond" that extends beyond the lifetime of the PPCR and that is intended to guide investments in climate resilience-building well into the future.

While all of the activities identified are not strictly climate change adaptation in nature, with some having a stronger DRR link, the GOSL recognises the need for conjoined implementation of these activities for the establishment of a holistic and cohesive framework for effecting change in the country's approach to dealing with the impacts of climate change and the achievement of

[3] **Appendix 8:** *Summary of Actions Deemed to be of National Significance for Addressing Climate Change*

significant transformational change. It is expected that the collective impact of these interventions, centred on vulnerability reduction and resilience building at the individual/household, enterprise, community, enterprise/business and sector level, will lead to significant changes on the ground and facilitate tackling of the significant current and future challenges posed by the climate change phenomenon; and the attainment of national sustainable development

2.3 KEY INDICATORS AND BASELINE

Pursuant to the foregoing and the need to deliver results across the five strategic programme areas of the SPCR and key actions identified under these, the Project will further integrate these areas to deliver results in three modalities, as mentioned earlier – adaptation implementation; adaptation facilitation and adaptation financing. Transformational change will result from interventions in the area of adaptation facilitation and financing, while catalytic change and replication will be derived through implementation of the adaptation measures.

The following performance indicators, baselines and targets (**Table 1**) are proposed for Saint Lucia, to be used in measuring expected results using the PPCR Results Framework. The performance indicators, together with the baseline and targets set within the Results Framework are what the programme will use to measure expected results. Given the unavailability of requisite data for developing appropriate indicators, a mix between qualitative and quantitative indicators, has been used, with more of the former used. The targets and baseline status is also qualitative in nature, as it is expected that the implementation of the project component on: *Research and Systematic Observation and Data and Information Acquisition and Knowledge Management* (Component 1.3 of **Table 4**) be established in the medium-term (1-3 years) and a true impact reporting is probably not possible for a significant time span (10-15 years).

Table 1: Key Indicators and Baseline

Key Component of Programme/SPCR	Results	Key Performance Indicators	Baseline Status	Means of Verification
1. Human Welfare and Livelihood Protection	**Improved human welfare and development**[4]	Human Development Index – UN National MDG goals Damage / economic losses ($) from extreme climatic events Number of dwellings/buildings constructed or retrofitted to "established" standards Percentage increase in livelihood opportunities Incidence of public health and environmental related diseases	Not all information is reliable or easily accessible. Some of the information is anecdotal.	Annual UN Human Development Reports National MDG Reports Damage Assessment Reports Building Permits Reports from the Development Control Authority Reports from the Environmental Health Division CEHI Reports
2. Promoting Sustainable Development through Integrated Natural Resource Protection, Conservation and Development	**Upscaled integrated natural resource protection, conservation and management**[5]	Number and value of climate-resilient investments in critical infrastructure, coastal areas and water Extent of land area degraded from extreme climate events - drought and floods, landslides;	Data from Banks is available under special permission from the Government Figures on land degradation are not readily available ; may have to revert to approximations based on land use	Bank Loan Records Records from the Climate Adaptation Loan Facility Macro-socio economic Assessments after a hazard event Maps from hazard events

[4] Improvement of the lives of people who are most affected by climate variability and climate change
[5] Ecosystems to sustainably withstand and adapt to the effects of climate variability and climate change, while still providing increased social and economic benefits

		Land use changes - Extent of areas under different land use ;	maps	
3. Building Resilience through Business Development, Innovation and Productivity Enhancement	**Scaled up investments in climate resilience**[6]	Climate Change Adaptation Loan Facility (CALF) established using funds available under concessional loan facility CALF scaled up to Climate Change Trust Fund or other appropriate Fund by end of year 3 Access to credit to transform business practices as a result of increasing climate risks; diversifying income sources; etc) Number and value of investments in $ by type of climate resilient investments (e.g., building retrofitting, strengthening coastal infrastructure Number of CSOs and private sector organisations involved in adaptation activities in collaboration with implementing agencies	No data is available yet. Data generated during the first year of operations will be used as the baseline.	Loans Operational Manual Annual Reports from the CALF Facility Number of loans provided specifically for climate adaptation by type of group (private or civil society) and income level Annual reports from implementing agencies Operational Manual and Guidelines on the establishment of the Climate Adaptation Trust (CAT) Fund. Level of capitalisation of CALF Number of grants issued through the CALF by sector
4. Capacity Development/Building and Institutional/ Organisational Strengthening:		Number of policy documents and sectoral initiatives which	Some information is available – policy documents and plans.	Relevant Policy Documents and national reports

[6] Scaled up investments from existing with resources leveraged and catalysed by the PPCR and replicated from successful pilots, building on PPCR learning

1. Strengthening National Level Policy, Legislative and Institutional Framework for Climate Resilience and Enhancing PPCR Implementation 2. Public Education and Outreach for Climate Change Resilience Building 3. Research and Systematic Observation and Data and Information Acquisition and Management for Climate Change Adaptation 4. Human Resource Capacity Building		incorporate climate resilience Number of communities incorporating climate resilience measures into local development plans Extent of use of country specific climate change adaptation 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	The KAP that was conducted during PPCR 1 will be used as the baseline.	Local development plans Awareness and sensitisation products on climate change issues Report on types and spatial location of groups targeted in awareness and sensitisation programmes. Agency reports on information uploaded and/or downloaded on to the GeoNode platform Reports from the private sector on the sale of new technologies

		change and climate variability		
5. Reducing Risk to Climate-Related Disasters	**Enhanced adaptive capacity of communities to climate change impacts**	Number of climate vulnerable households in project area with income lower than the poverty line reduced by more than 25% Quantum of total investment in climate change community resilience building: more than 25% of funds designated for climate resilience building (e.g. concessional loan facility) utilised annually	The baseline data is to be generated through the risk mapping and profiling.	Report on risk mapping of vulnerable areas. Hazard maps Number of loans issued through the CALF/CAT

2.4 COMPONENT DESCRIPTIONS AND ACTIVITIES

Based on the 'blueprint' of projects in **Appendix 8** entitled: *Summary of Actions Deemed to be of National Significance for Addressing Climate Change*; in accordance with the five strategic programme areas of the SPCR and the three modalities of operation previously outlined in Section 2.1.2; the following project components and sub-components (see **Boxes 1-9**) to be implemented using PPCR grant and concessional financing, supplemented by co-financing, are briefly described. A section on SPCR Project Management and Support is also included.

2.4.1 Project Component 1: Adaptation Facilitation

Four components are outlined under Adaptation Facilitation, each with sub-components, linked to **Table 4** in Section 2.7 on *Investment Costing*.

1. Strengthening National Level Policy, Legislative and Institutional Framework for Climate Resilience and Enhancing PPCR Implementation
2. Public Education and Outreach for Climate Change Resilience Building
3. Research and Systematic Observation and Data and Information Acquisition and Knowledge Management for Climate Change Adaptation
4. Human Resource Capacity Building for Climate Resilience

Each of the sub-components is further elaborated below:

2.4.1.1 Strengthening National Level Policy, Legislative and Institutional Framework for Climate Resilience and Enhancing PPCR Implementation

Box 1 below summarises the sub-components of National Level Policy, Legislative and Institutional Framework and each sub-component is discussed separately.

Box 1: Component 1.1 in Table 4: Components of Saint Lucia's Investment plan under the PPCR-Grant Funding

1.1.1 Review/key national legislation and policies, strategies, plans and development guidelines/codes to incorporate climate change considerations further to, and building on outputs of, Phase 1

1.1.2 Review of methodology for determining coastal setbacks and facilitation of the implementation of these new setbacks into the development planning process in the context of sea level rise

1.1.3 Formulation, adoption and implementation of fiscal incentives and regimes to encourage the adoption of climate adaptation/resilience measures.

2.4.1.1.1 Review/Development of National Legislation and Policies, Strategies, Plans and Development Guidelines/Codes to Incorporate Climate Change Considerations Further to, and Building on Outputs of, Phase 1

Historically, there has been little attention paid to integrating climate risk concerns into national and sectoral planning and budgetary processes or into the design of individual projects. Given the present macro-economic situation, there is limited financing to meet even current priority development needs, let alone the cost of adaptation to climate change. There is also limited understanding of climate risks and a lack of technical capacity to integrate climate risk management into planning processes. Further, there is no evidence of significant training at the national, sectoral, or community levels to provide this capacity, although the consultations revealed a strong desire for the PPCR to support such efforts.

Further, the policy and legislative framework governing climate change includes several national ordinances, policies, strategies and plans containing components that are of relevance to climate change. These cover a wide range of sectors, including fisheries, forestry, water resources, land management, land use planning, biodiversity and ecosystem conservation and protection, environmental management and disaster management (**Appendix 4 and 5**). These inevitably vary with the degree of socio-economic development, natural and human adaptive capacity, health services and disaster surveillance mechanisms. Hence, the climate change enabling framework has to operate at several levels of governance, as well as be intertwined into the three pillars of sustainable development: economy, social organisation and environment/ecosystems.

The sectoral agencies with responsibility for climate change adaptation have shown considerable willingness, through consultations undertaken during Phase 1, to work collaboratively to implement climate-resilience-building activities. The GOSL recognises that the policy and legal frameworks, institutional structures and capacity for implementing climate-compatible development measures are currently inadequate. Many aspects of climate-compatible development require existing institutions to develop new capacities and ways of working. Further research and analysis will be required on issues where scientific understanding is limited. Effective action on climate change will depend on broad understanding and buy-in across the public sector, among communities and within the private sector. In this regard, support will be provided for strengthening civil society, private and public sector engagement in building climate resilience through training and pilot projects under the various components of the project.

This sub-component of the project will support the adoption and implementation of the draft Environmental Impact Assessment (EIA) Regulations, Physical Planning Regulations and Environmental Management Bill (EMB), for which drafting instructions incorporating climate change were prepared under Phase 1 of the PPCR. It is anticipated that the actual drafting of these legislative instruments to incorporate climate change will be conducted in the remaining part of Phase 1, failing which, this be will be realised under this sub-component in Phase 2 of the PPCR.

This sub-component will also involve the substantial revisions of select/key policies legislation, development standards/codes and guidelines (manuals, processes and procedures) to facilitate

climate change integration. It is worth noting that Saint Lucia's Climate Change Policy of 2002 (called the National Climate Change Policy and Adaptation Plan) was revised under Phase 1 of the PPCR. In Phase 2, steps will be taken to finalise and adopt this revised Policy.

Lessons learnt will be used as part of the knowledge management process to define best practice for further enhancement of enabling environment for building climate change resilience. Accordingly, outcomes of the foregoing will serve to identify the deficiencies in other existing instruments that require further revision and strengthening and also to make recommendations for a new and more appropriate legislative and regulatory framework. The new regulatory framework will give authority to the broad systemic and institutional framework. Further, measures for the enforcement of these laws and regulations will be developed through a participatory process to facilitate "buy-in" by all stakeholders.

It is also worth noting that this sub-component is linked to the *Advocacy and Policy Development* module of the PPCR Regional tract (**Appendix 10**).

2.4.1.1.2 Review of Methodology for Determining Coastal Setbacks and Facilitation of the Implementation of these New Setbacks into the Development Planning Process in the Context of Sea Level Rise

There is a very high degree of scientific consensus that the changes brought by climate change are already occurring and will intensify in the future, likely resulting in significant alteration of coastal ecosystems, coastal hazards, and lifestyle changes for fishers, coastal resource users, waterfront property owners and coastal communities. These have far-reaching implications for a range of challenges for coastal resources and coastal resource managers in Saint Lucia. Dramatically stepped-up efforts are needed to guide proactive adaptation actions that benefit human and natural ecosystems for present and future generations. Putting a coastal climate "lens" onto coastal management activities is a key aspect of mainstreaming climate change adaptation in small islands like Saint Lucia. Applying a climate lens means that adaptation measures are viewed in terms of how they reduce impacts and/or improve the resilience of communities and ecosystems in the face of climate change and variability.

Recently, the Saint Lucian coastline has witnessed extreme storms, bringing issues such as coastal erosion and shoreline retreat into sharp focus. The impacts of rising sea levels and extreme events have devastating implications for development, especially since most of the tourism plants, human settlements and the nation's businesses enterprises are located in the narrow coastal zone. Therefore, coastal erosion, increased intensity and frequency of flooding and wind-generated storm surges must be planned for as a matter of urgency. Part of the solution to these unpredictable events is the proactive determination and implementation of realistic development setback lines. Setbacks are used as a means to regulate and prevent insensitive, inappropriate and non-sustainable development in sensitive coastal environments and to reduce the risks posed by climate change.

The purpose of this intervention is to identify coastal risk areas and to develop guidelines on how sea level rise (SLR):

1. Should be incorporated into coastal risk assessment;
2. Impacts can be factored into strategic and statutory land use planning;
3. Should be incorporated in the determination of setback lines; and
4. Should be considered in the preparation and assessment of development applications in coastal areas.

Once the guidelines have been developed, these will be incorporated into the appropriate administrative and regulatory framework to ensure that land use and planning in coastal areas in Saint Lucia follow international codes of best practice and that all development applications in coastal areas follow prescribed guidelines or face prescribed penalties. As part of knowledge management, the project will also provide training on the use of the guidelines to persons in appropriate agencies and to persons and associations in the private sector that are involved in developing and in constructing in coastal areas.

This sub-component is linked to the *Advocacy and Policy Development* module of the PPCR Regional tract (**Appendix 10**).

2.4.1.1.3 Formulation, Adoption and Implementation of Fiscal Incentives and Regimes to Encourage the Adoption of Climate Adaptation/Resilience Measures.

Incentives are usually informed by a broader development policy plan and should always seek to introduce industrial and economic activities, as well as introduce new investment. The development of recommended incentive/disincentive regimes must take into consideration the sustainable development of Saint Lucia, with the aim of ensuring a better quality of life for Saint Lucians, now and for generations to come.

Some of the risks associated with climate change adaptation can be opportunities for the private sector and as an entity, businesses will have to engage their workforce and influence customers in order to be a catalyst for change. Businesses thrive on opportunity and the climate change challenge that Saint Lucia faces must be sold to the private sector, as an opportunity for new markets, strengthening supplier relations, water-saving expertise, development of information technology, pooling of risks, as well as increase in brand loyalty. Opportunity, in turn, leads to innovation and the private sector will therefore be best placed to both lead and capitalise on new and innovative technologies, with the GOSL providing the necessary fiscal incentives to initiate action.

However, in providing incentives, there must be adequate balance, so as to ensure that the market is not distorted and that the vulnerable groups are adequately protected.

As part of Phase 1 of the PPCR process, Saint Lucia undertook a review of incentives that were deemed necessary to stimulate action in climate-resilience-building and climate adaptation, specifically pertinent to the private sector and civil society. This included the formulation of fiscal incentives for climate change adaptation and ways and means of legislating the recommended incentives, as well as monitoring and evaluation of fiscal incentives.

During Phase 2 of the PPCR, this sub-component will support the further validation of this suite

of incentives and regimes, as well as seek to incorporate them into appropriate incentives packages and requisite supporting legislation. Further, as part of knowledge management, this work will form one of the platforms for the proposed CALF and the CAT Fund (see Section 2.4.3).

This sub-component is also linked to the *Advocacy and Policy Development* module of the PPCR Regional tract (**Appendix 10**).

2.4.1.2 Public Education and Outreach for Climate Change Resilience Building

Box 2 below summarises the sub-components of Public Education and Outreach and each sub-component is discussed separately.

Box 2: Component 1.2 in Table 4: Components of Saint Lucia's Investment Plan under the Grant PPCR-Funding

1.2.1 Implementation of two-year Climate Change Public Education and Awareness (PEA) Strategy and Plan designed as an output of Phase 1 - well aligned with project activities under Phase 2 and with particular focus on targeted groups

- Vulnerable groups – children, single women/mothers, marginalised males, elderly, farmers/fishers, the poor
- Policy makers
- Private sector organisations
- Community groups

2.4.1.2.1 Implementation of Two-Year Climate Change Public Education and Awareness Strategy and Plan Designed as an Output of Phase 1

The results of the Second Knowledge, Attitude and Practice (KAP) study undertaken in Phase 1 indicate that while climate change is accepted as real, it is still seen as esoteric and distant. Persons accept that climate change is occurring, but generally do not feel connected to it. In order to effect behavioural change, climate change will be made to resonate with persons and the messages will be made to reach the hearts and minds of people. The key challenges and gaps which will be addressed among stakeholder groups and the general public are:

1. Stakeholder Groups
    - Lack of organisational capacity among key stakeholders to implement climate change public education programmes;
    - Lack of knowledge, sensitivity and will;

- Climate change still seen as an esoteric issue/apathy;
- Limited resources, including finance and time.

2. General Public
   - Lack of awareness of the effect of climate change on livelihoods;
   - Lack of recognition of what the public can do to combat climate change;
   - Lack of information/knowledge about the enabling environment mechanisms that exist to address the impact of climate change.

The Public Education Strategic Plan will define the target audiences (including, *inter alia*, women, marginalised young males[7], community-based organisations, the private sector, farmers, fishermen and the poor) and determine the most appropriate messages (tangible and relatable examples), tools and communication strategies to achieve behavioural change. In addition, specific communication tools will be developed and utilised to attract private sector investments under the concessional loan facility (the CALF-See Section 2.4.3). The climate change resilience message will be well aligned with Phase 2 project activities, but with particular focus on specific target groups to support the transformational thrust of the SPCR.

Activities will include, *inter alia*:

1. Production and testing of sample public awareness tools;
2. Production of all finalised public awareness tools, including, *inter alia* – jingle, calypso competitions, think tank seminars, website, radio and television programmes, brochures, posters, media kits, billboards, Establishment of umbrella coordinating body and local coordinating committees;
3. Training of all implementers;
4. Purchase of media and place public education materials;
5. Undertaking of activities/events, including road shows, seminars, competitions;
6. Development of school climate change curricula, including teacher training;
7. Undertaking of monitoring and evaluation to measure the success of the incentive scheme.

The GOSL television and radio stations will be utilised, where applicable, to incorporate sustainability into televised programmes. The opportunity for integration of the programme into the public awareness activities of various public-, private sector- and civil society organisations will be seized, through the process underway for the adoption and integration of an Environmental Education Policy and Strategy for Saint Lucia.

[7] There is a seeming growing trend in Saint Lucia for young males to play less of a meaningful role in society than females of the same group. Indeed, it is quite common to see the number of male to females drop as one advances towards tertiary level education. Pending the assessment and analysis of vulnerable groups proposed under the SPCR (sub-component 1.3.5 of **Table 4**), efforts may be made to reach out to these 'marginalised' young males as part of Saint Lucia's plan to build climate resilience.

2.4.1.3 Research and Systematic Observation and Data and Information Acquisition and Knowledge Management for Climate Change Adaptation

Box 3 below summarises the sub-components of Research and Systematic Observation and each sub-component is discussed separately

Box 3: Component 1.3 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

1.3.1. Expansion and provision of institutional support for GeoNode[1] further to and building on outputs of Phase 1 and implementation of Disaster Risk Modelling Pilot

1.3.2 Conduct of advanced assessment, validation and enhancement of outputs of local SLR Model developed under the Second National Communication (SNC) project to guide development policy, land use, risk assessment, adaptation and resilience building measures, especially for critical infrastructure, including strengthening of database

1.3.3 Enhancement of public health data management systems for monitoring vector and waterborne diseases which are expected to become more prevalent with climate change

1.3.4. Enhancement/ upgrading of national and community-based meteorological and hydrological monitoring networks

1.3.5 Assessment and analysis of vulnerable groups to inform interventions for building climate resilience.

2.4.1.3.1 Expansion and Provision of Institutional Support for Geonode[1] further to and Building on Outputs of Phase 1 and Implementation of Disaster Risk Modelling Pilot

GeoNode[8] is an open-source platform for access, management, and publication of geospatial data. Its attributes allow for enhancing the sharing and management of climate relevant data for informed decision making. GeoNode was set up and established as an output under Phase 1 of the PPCR, using the Ministry of Physical Development and the Environment as a pilot.

A number of locally based Information Technology personnel have been/will be trained in the administration of the GeoNode network. Activities earmarked under Phase 1, but to be continued and enhanced under Phase 2, include:

[8] For further information on GeoNode go to: http://geonode.org and to view a demo GeoNode go to: Website: http://demo.geonode.org

1. Training of relevant network administrators in GeoNode setup, network administration, troubling shooting;
2. Support for Data and Network Administrator within the Ministry of Physical Development and the Environment ;
3. Support services from Computer Centre Limited for hosting and management of the network;
4. Support services from the software developers for troubleshooting and upgrades.

To sustain the GeoNode system established under Phase 1 of the PPCR, the system needs to be extended to include other critical agencies with an important role in climate resilience building, but which are without spatial information systems and the internal capacity to use them. To expand the user base of GeoNode, the capacities of these other agencies need to be built or enhanced in areas of data collection, spatial data management (Geographic Information System (GIS) and associated technologies), modelling and predictive analysis.

The GIS is one such geo-data management system for the capture, storage, retrieval and analysis of geo or spatially referenced data. To be effective, however, six critical components are required:-

1. Suitable GIS software and training in the use of GIS software;
2. Dedicated staff to collect, manage and analyse the data to support decisions;
3. Necessary hardware – computers, peripheral devices and support technologies e.g. Global Positioning System (GPS);
4. Current and high-quality data;
5. Improved data interpretation, analytical skills; and
6. National database management framework, including a suitable data sharing platform (networks, servers and internet etc) to facilitate the development, timely update and efficient exchange of information.

Activities under this sub-component for Phase 2 include, *inter alia*:

Supporting/establishing of the mapping capability in selected agencies; provision of training in the use of GIS software, satellite imagery and GPS; decentralisation of the GIS within the Ministry of Agriculture, Lands, Forestry and Fisheries to individualised systems within the Department of Fisheries and Water Resources Management Agency (WRMA).

This sub-component will facilitate regional level programmes for data sharing and promote knowledge management through workshops and seminars. Further, hazard and events mapping can be considered for regional application, though the island will seek to address, in the first instance, the immediate need in the context of Saint Lucia.

This sub-component is also linked to the Regional Tract of the PPCR, specifically, the *Capacity Development and Information Sharing module, particularly the regional activities on strengthening capacity for data management; Improved data availability for climate monitoring and modelling: Design for the collection of baseline data to be linked to monitoring and*

monitoring programmes; and the *Information Clearing House* (**Appendix 10**).

2.4.1.3.2 Conduct of Advanced Assessment, Validation and Enhancement of Outputs of Local SLR Model Developed under the SNC Project to Guide Development Policy, Land Use, Risk Assessment, Adaptation and Resilience Building Measures, Especially for Critical Infrastructure, including Strengthening of Database

Modelling SLR for SIDS is critical to building a sound knowledge base to scientifically measure and monitor sea level rise and to evaluate and project the impacts of climate change on the environment, physical infrastructure and human and economic activity. It is also necessary for effective guidance for national policy and planning aimed at building resilience.

At present, there is no standard available or applicable model for small island states, though several coarse models exist globally. In an attempt to practically assess the impacts of sea level rise, at least two countries in the region – Saint Lucia and the Bahamas have devised local models using GIS and related technologies.

In Saint Lucia, coastline retreat resulting from natural sea level rise was calculated for 82 existing beaches by Cambers (UNESCO[9] in 1997). The key model parameters included recorded physical shifts in Saint Lucia's coastline between 1966 and 1995 from aerial map comparisons, projected beach changes due to hurricanes (pre and post hurricane profiles), beach morphology and human factors (sand mining). The natural SLR projections of this model were adapted using the General Circulation Model (GCM) scenarios and a useful output from this adapted model was produced as part of the Vulnerability and Adaptation Assessment of Saint Lucia's SNC to the United Nations Framework Convention on Climate Change (UNFCCC).

The outputs of the local Saint Lucia model, however, need to be further assessed, validated and enhanced as their use in guiding development policy, land use, risk assessment, adaptation and resilience building measures could have far-reaching implications for national development. In addition, the databases on which the model is based should be strengthened to include coastline changes between 1995 and current, the development of comprehensive beach profile information and updating of natural and human factors – e.g. coastal protection works, absence or presence of sand mining.

This grant funded/co-financed activity will provide for the procurement of service experts who are sufficiently skilled in oceanography and beach/coastal dynamics to further advance the work undertaken. The project will also work closely with relevant public, financial and private sector and tourism stakeholders, to pave the way for hard interventions that apply modelling results into operational risks.
Activities under this sub-component would include, *inter alia*, the following:

[9] Cambers G. 1997. Environment an d Development in Coastal Regions and in Small CSI Islands; COSALC Coast Beach Stability in the Caribbean Islands

1. Assessing the adapted model and the scenario calculations;
2. Cross-referencing with Coastal Setback Model (UNESCO, 1997-Cambers);
3. Strengthening the databases on which the model is based to include coastline changes between 1995 and the present, the development of comprehensive beach profile information and updating of natural and human factors – e.g. coastal protection works and absence or presence of sand mining;.
4. Assessing existing aerial photography (2009) against 1995 data for Saint Lucia to build changing coastline profile.

Further, there are synergies between the data acquisition component of the Regional PPCR framework and Saint Lucia's national sub-component that will allow the country to expand its knowledge base towards enhanced decision making and being more proactive in the face of climate change. Specifically, this sub-component is linked to the *Capacity Development and information Sharing Module*, particularly the regional activities on *Strengthening capacity for data management; Improved data availability for climate monitoring and modelling: Design for the collection of baseline data to be linked to monitoring and monitoring programmes;* and the *Information Clearing House* (**Appendix 10**).

2.4.1.3.3 Enhancement of Public Health Data Management Systems for Monitoring Vector and Waterborne Diseases Which are Expected to Become More Prevalent with Climate Change

A key identified impact of climate change on the health sector is the increase in the occurrence of vector-borne diseases (dengue, malaria and yellow fever), respiratory illness and heatstroke. Most of these diseases are recorded at individual health clinics and hospitals nationally. The increased incidence and spatial occurrence of such impacts is a critical aspect of climate change impact measurement on the sector.

While the central Ministry of Health and some of its departments possess computerised databases, most of this data regarding the incidence of vector-borne and other diseases are recorded manually in record books. Much of the information is not routinely analysed and historical records are sometimes discarded due to space constraints within the record archives.

Activities under this sub-component include, *inter alia*:

1. The establishment of computerised databases within the individual health centres;
2. Conversion of paper records to digital format and geo-referencing of the same;
3. Establishment of a central GIS system within the Department responsible for Health statistics;
4. Development of internal processes and protocols for the updating and collection of information;
5. Assessment and provision of enabling hardware –;
6. Establishment of a GIS within the Department of Environmental Health;
7. Training in the use of GPS technology to enable the field spatial referencing of data (on vector borne and other illnesses);

8 A comprehensive training programme in GIS and database management for the Statistical and Environmental Health Departments;

This sub-component is also linked to the Regional Tract of the PPCR, specifically, the *Capacity Development and Information Sharing* module, particularly the regional activities on *Strengthening capacity for data management; Improved data availability for climate monitoring and modelling: Design for the collection of baseline data to be linked to monitoring and monitoring programmes; and the Information Clearing House* (**Appendix 10**)

2.4.1.3.4 Enhancement/ Upgrading of National and Community-Based Meteorological and Hydrological Monitoring Networks

The Saint Lucia Meteorological Department is responsible for the collection and the reporting of climate change and detection and attribution information. Its role is thus central to the science base of information for validating, monitoring and linking climate change to identified indicators within all sectors. To provide this important information efficiently and effectively, the Meteorological Department requires accurate climate detection instruments, data management, and capacity to undertake predictive analysis

Activities in this sub-component include, *inter alia*:

1 Establishing marine stations at four cardinal points –Re-establishing Stream Gauges on the major streams to improve the Early Flood Warning System;
2 Establishing Automatic Rainfall Stations with data loggers to remotely transmit readings to a central office;
3 Identification and acquisition of appropriate predictive rainfall and flood (coastal and inland) models;
4 Training of staff in GIS, Satellite Image analysis, met data analysis, predictive analysis, and use of satellite and remote sensed data and systems

Likewise, to effectively manage water resources and issue licenses for sustainable abstraction, critical information about the resource is required. The WRMA collects agro meteorological data, including rainfall and stream flow information (spot checks). The Unit is in the process of organising its operations to undertake water quality tests (turbidity, chemical and micro biological) at select points with the reestablishment of a laboratory. As a licensing agency responsible for issuing water abstraction licences, a clear measure of water supply, demand and volumes abstracted are required to guide decisions and policy.

There are several issues associated with the information base of the agency: - stream flow data, for example, is not collected continuously, but is done on an as needed basis, usually project-led. Many stream gauges were washed away with past storms including Tropical Storm Debbie (1994) and Hurricane Tomas. Stream flow data is important for early warning systems (with links to the Meteorological Department), riverbank rehabilitation, stream engineering, estimation of dam potential etc.

Rain gauges are required in every watershed to ensure the flow of continuous and reliable real time data. Many automatic stations were affected by Hurricane Tomas and human interference. Activities in this sub-component include, *inter alia*:

1. Procuring Rainfall Stations and stream gauges with field data upload capability,
2. Capacity Building for Water Quality Monitoring:- Training and support to re-establish the Water Testing Laboratory;
3. Hydrological modelling for forecasting and 'what if' (scenario) analysis, as well as training in the use of the same;

Specifically, this sub-component is also linked to the Regional Tract of the PPCR, specifically, the *Capacity Development and Information Sharing Module*, particularly the regional activities on *Strengthening capacity for data management; Improved data availability for climate monitoring and modelling: Design for the collection of baseline data to be linked to monitoring and monitoring programmes;* and the *Information Clearing House* (**Appendix 10**).

2.4.1.3.5 Assessment and Analysis of Vulnerable Groups to Inform Interventions for Building Climate Resilience.

At the present time in Saint Lucia, there is little analytical basis for targeted policy and programme development for populations most economically and socially at risk to climate change. While the spatial dimensions of some hazards have been mapped (flooding, drought, landslides) and the GOSL 2005/2006 Survey of Living Conditions[10] points to locations of various vulnerable groups (female-headed households, children under the age of 14 years and the elderly), mapping the social dimensions of these vulnerable groups will reinforce better decision making and more targeted programming. Risk mapping of vulnerable groups will help to profile each of these groups within the context of the vulnerable situations in which they live and to identify their coping and adaptive capacities. The mapping will also help to identify hotpots of high vulnerability in Saint Lucia

The maps will be complemented by gender- and age-disaggregated information collected through participatory approaches in order to understand the key challenges faced by these vulnerable groups. This, in turn, will assist the PPCR process in targeting vulnerable populations, and assist in building their resilience and adaptive capacities. It will also empower disadvantaged groups to reduce their vulnerability to the impact of climate change and climate variability.

The purpose of this assessment and mapping exercise is to build a gender-disaggregated information source on specific aspects of vulnerability of groups most economically and socially at risk to climate change and to analyse how these specific vulnerability contexts can be addressed with planned adaptation measures.

Various vulnerability and adaptation assessment tools will be used to generate gender disaggregated data on the profile of the specifically identified vulnerable groups. The 2005/2006 Survey of Living Standards will be used to undertake the preliminary spatial identification of the

[10] GOSL. Saint Lucia Country Poverty Assessment, 2005/2006; Survey of Living Conditions and Household Budgets

vulnerable groups. This information will be substantiated with additional information collected through participatory techniques. The groups and their individual profiles, including the prioritised types of hazards that they are prone to will be mapped using GIS tools. The risk mapping of vulnerable groups will be used for targeting programmes aimed at building the resilience of vulnerable groups, each of which has its own contextual peculiarities. This will inform interventions related to climate change during the lifetime of the PPCR and beyond.

2.4.1.4 Human Resource Capacity Building for Building Climate Resilience

Box 4 below summarises the sub-components of Human Resource Capacity Building and each sub-component is discussed separately.

Box 4: Component 1.4 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

1.4.1 Support of community-based and sector-level training for target groups :

- Construction industry - contractors, architects engineers professionals e.g. building codes and guidelines; climate change climate resilient buildings and environmental designs
- Climate change skills related training and knowledge management: e.g. methods and techniques - rain water ; greening home and buildings;
- Climate change community resilience - Leadership and Training of Trainers
- Training in GIS and database management
- Insurance and Banking Sector action-oriented sensitisation vis-à-vis climate change

2.4.1.4.1 Support of Community-Based and Sector-Level Training for Target Groups

To strengthen climate resilience, building capacity and the knowledge base at all levels (systemic, institutional and individual) of the society is required. Human capacity is currently inadequate, both in terms of numbers and skills required to guide the process of adaptation. Recognising that the successful implementation of the SPCR and other climate change adaptation initiatives will require the availability of a wide range of skills, supported by adequate technology resources, the project sub-component will seek to increase the available technical capacity at the national and sectoral level.

This activity will focus on the development of training and educational programmes for targeted groups of actors responsible for key elements in climate resilience building to ensure a structured and systematic approach to capacity building; to foster ownership and effect action where a specific change is desired or a precise action needs to be promoted (such as adjusting the design of buildings in the construction sector to compensate for increased intensity of hurricanes). This sub-component will build on others under the PPCR where hard interventions are being deployed, with the aim of transferring knowledge that will allow for adaptive replication (e.g. the construction of climate-adapted buildings).

2.4.2 Project Component 2: Adaptation Implementation

Three components are outlined under Adaptation Implementation, each with sub-components, linked to **Table 4** in Section 2.7 on *Investment Costing*.

1. Implementation of Climate Resilience Measures in Critical Buildings
2. Coastal Zone Management for Climate Resilience
3. Support Community-Level Interventions in Water Resource Conservation and Management

Each sub-component is further elaborated below:

2.4.2.1 Implementation of Climate Resilience Measures in Critical Buildings

Box 5 below summarises the sub-components of Climate Resilience Measures in Critical Buildings and each sub-component is discussed separately.

Box 5: Component 2.1 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

2.1.1 Retrofitting of public and key community buildings for climate change resilience and for demonstration/replication of climate-appropriate design re – rain water harvesting, hurricane resilience, renewable energy, including those used by/housing vulnerable groups (e.g. elderly, women at risk, children at risk, sick)

2.4.2.1.1 Retrofitting of Public and Key Community Buildings for Climate Change Resilience and for Demonstration/Replication of Climate-Appropriate Design

This sub-component of the project will build on the outcomes of the Special Programme on Adaptation to Climate Change (SPACC) Project (see Part 1) for up scaling the application of engineering guidelines in the design and retrofitting of selected public buildings and other key buildings in vulnerable areas/regions to establish wider scale demonstration of these adaptation measures, in order to promote expansion island wide and elsewhere in the Caribbean.

In this regard, ongoing initiatives will be supported at the national level with regard to retrofitting of public buildings for climate resilience and for demonstration/replication of climate-appropriate design re – rain water harvesting, hurricane resilience, renewable energy, including those used by or housing vulnerable groups[11]. The retrofitting of an emblematic building[12] will also be funded under this activity, to demonstrate measures that can be taken to make buildings climate-resilient. A key output of this activity will be enhanced knowledge

[11] This is inclusive of orphanages, homes for the elderly or women and health facilities.

[12] A critical building which houses vital operations/services that needs to be accessed by the populace; includes, among others, health centres, police stations and hospitals.

management, that is, building on and furthering the building design guidelines developed under the SPACC Project, for climate-friendly design, to which the Development Control Authority (DCA) could refer developers, to allow for promulgation/replication/sustainability.

While renewable energy and energy efficiency projects are generally considered to fall into the domain of climate change mitigation[13], a view often held of reforestation activities as well, and which is broadly acceptable, there are several instances where such projects may actually generate significant adaptation benefits. For these reasons, this project sub-component will provide support for the implementation of retrofitting measures that provide meaningful adaptation, as well as mitigation benefits, thereby increasing resilience in the face of existing and emerging climate change impacts including:

1 The use of solar water heaters and photovoltaic systems on public and private buildings. Such systems have been shown to provide vital hot water and electricity (for example, in hospitals) in the aftermath of hurricane damage to main power grids;

2 Initiatives to influence the construction of buildings (use of roofing insulation, improved ventilation) that realise not only result in energy savings, but which also make these buildings more habitable (cooler) in the face of increasing temperatures.

2.4.2.2 Coastal Zone Management for Climate Resilience

Box 6 below summarises the sub-components of Coastal Zone Management and each sub-component is discussed separately.

Box 6: Component 2.2 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

2.2.1 Re-design and modification (pilot) of critical infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise following assessment of existing coastal engineering structures and formulation of design guidelines/standards in the context of storm surge, coastal flooding and sea level rise, using inter alia, the services of a coastal engineer.[1]

2.4.2.2.1 Re-Design and Modification (Pilot) of Critical Infrastructure, such as Ports, to Adapt to Storm Surge, Coastal Flooding and Sea Level Rise, following Assessment of Existing Coastal Engineering Structures and Formulation of Design Guidelines/Standards in the Context of Storm Surge, Coastal Flooding and Sea Level Rise, using inter alia, the Services of a Coastal Engineer

Past interventions for climate change adaptation in Saint Lucia have largely been focused on adjustments to sea-level rise and storm surges associated with hurricanes. Very early measures

[13] This refers to the reduced generation, or enhanced sequestration of greenhouse gases.

placed emphasis on protecting land, in particular coastal lands, through 'hard' shore-protection measures. The costs of such overall infrastructure and settlement protection have been a significant proportion of Gross Domestic Product (GDP). Further, plans to develop large hotel plants close to the sea and marinas along the rough east (Atlantic) coast will, if realised, add to the economic vulnerability of the island as a whole and the tourism industry in particular.
Some efforts to mitigate natural and climate related hazards impacts can, in turn, have negative impacts on the natural environment and may, in specific areas, negatively impact coastal settlements, or inadvertently cause destruction in the coastal environment.

This activity will inventory and assess existing coastal engineering structures towards validation of the various coastal engineering solutions and for up-scaling best practice in other locations around the island and at the regional level. Design guidelines and standards will also be an output that will inform the coastal engineering process in Saint Lucia, through the authority of the DCA.

At least one hard-core pilot intervention is also proposed under this sub-component, involving the re-design and modification (pilot) of critical infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise.

This sub-component is inextricably linked with the sub-component on SLR discussed in section 2.4.1.3.2. The two sub-components are expected to inform each other and enhance the knowledge management process at the national and regional level.

It is also worth noting that this sub-component is linked to the *Advocacy and Policy Development* module of the PPCR Regional tract (**Appendix 10**).

2.4.2.3 Support Community-Level Interventions in Water Resource Conservation and Management

Box 7 below summarises the sub-components of Water Resource Conservation and Management and each sub-component is discussed separately.

Box 7: Component 2.3 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

2.3.1 Pilot or Support Interventions such as Communal Rainwater Harvesting, Micro-Dams and Establishment of Satellite Water Storage Tanks within the Forest Reserve to Feed Rural Communities

2.4.2.3.1 Pilot or Support Interventions such as Communal Rainwater Harvesting, Micro-Dams and Establishment of Satellite Water Storage Tanks within the Forest Reserve to Feed Rural Communities

Water is a particularly climate sensitive sector in Saint Lucia and the experiences of the 2009/2010 drought and Hurricane Tomas of October 2011 are still uppermost in the minds of Saint Lucians. Increased precipitation variability, more concentrated rainfalls over shorter periods, excessive run-off, and a higher frequency of dry spells during the rainfall season have reduced the availability of surface water. This, in turn, has resulted in additional risks to the health of communities, which, during Hurricane Tomas, for instance, turned to water from unsafe springs and other untreated water sources. The decline in water availability has also impacted on livelihoods that are dependent on agricultural systems.

There is also increasing evidence of catchment and riparian degradation, which in turn, is affecting the quantity of water available for domestic and economic purposes. During the consultative process under Phase 1, participants in all the consultations identified interventions in water resource conservation and management as being one of the priorities for climate change adaptation. Saint Lucia therefore realises that adaptive management involving increased use of water management measures that are robust enough to withstand uncertainty have to be designed and implemented with much haste.

There are a number of initiatives that have taken place in Saint Lucia and which now provide excellent opportunities for scaling up. These include the Integrated Waster and Coastal Areas Management (IWCAM) project (see Part 1) on the installation of rainwater harvesting systems for domestic use and for use in a Health Centre; and the SPACC Project which is building a rainwater harvesting and sewage treatment and recycling facility through a public-private relationship with a private sector hotel.

The purpose of the project is to:

1 Increase the availability of water through communal rainwater harvesting and storage;
2 Improve water management in order to increase water use efficiency;
3 Reduce water demand in agricultural production through climate sensitive production processes and through appropriate water harvesting and conservation methods;
4 Support investigative work on technologies for enhancing water availability, such as micro-dams and the establishment of satellite waters storage tanks within the forest reserve to feed rural communities

The project will demonstrate climate-resilient rainwater harvesting techniques at both the household and village level. In addition, by diversifying the sources of water used for different purposes (agriculture, sanitation and consumption), overall access to water resources in changing climatic conditions will be improved, as will conditions for human health.

2.4.3 Project Component 3: Adaptation Financing

One component is outlined under Adaptation Financing, with two sub-components, linked to **Table 4** in Section 2.7 on *Investment Costing*.

- Climate Change Adaptation Financing Facility

Each sub-component is further elaborated below:

2.4.3.1 Climate Change Adaptation Financing Facility

Box 8 below summarises the sub-components of the Adaptation Financing Facility and each sub-component is discussed separately.

Box 8: Component 3.1 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

3.1.1 Creation of CALF: Support for CALF including: Operations Manual; PEA for CALF; other support

3.1.2 Feasibility study for: the CAT Fund within context of the Environmental Trust Fund (ETF) / Transition of the CALF to the CAT

2.4.3.1.1 Creation of CALF: Support for CALF including: Operations Manual; PEA for CALF; other support

Sustainable financing to generate investment in adaptation and to build resilience to climate change is critical to the success of climate change adaptation in Saint Lucia. Financial issues under a future climate change regime, with increased effectiveness, will, however, require shifts in investment and financial flows to more climate-friendly and climate-resilient investments. Sustainable financing is an effective mechanism for fostering good climate adaptation practices and technologies.

A number of barriers were identified during PPCR 1 consultations held with the private sector and civil society. The primary barrier is the high costs of early entrants (the additional costs associated with being among the first players to implement a project in a given sector, under new regulations or working through unprecedented systems); or higher input costs because economies of scale have not been achieved for the technology. Participants at the consultations expressed the view that concessional pricing and repayment structures can offset these costs and make early stage projects with cash flow uncertainty bankable. In addition, the point was made that the integration of climate risk and resilience activities and technologies tend to have higher initial capital costs. This makes the cost of climate resilient development activities more dependent on the cost of capital than conventional development activities. Private sector representatives also

expressed concern over their lack of access to capital to invest in technologies and activities that had high risks and uncertainties associated with climate change and variability.

The PPCR offers concessional finance to support private sector and civil society projects and programmes that have the potential of being replicated in the future without further subsidies. In light of the strong private sector interest and involvement[14],the GOSL proposes to use this concessional finance to design and deploy modalities for removing financial and institutional barriers to the more active and sustained participation of the private sector and civil society, particularly vulnerable groups, in building climate resilience.

The creation of the CALF to provide readily accessible financing options for increased investment in the implementation of adaptation strategies is to be advanced under this project sub-component. Under this area, private firms and individuals, as well as established civil society organisations will be targeted to access concessional financing from an established envelope, to conduct resilience building projects on their properties, in communities and at the household level. The modalities for on-lending via local lending institution (s) to support CCA investments will be developed, and it is expected that grant funding may play a role to support uptake in this strategic area.

A suite of possible adaptation strategies and interventions, as well as mitigation interventions[15] with adaptation benefits, for which concessional loan funding can be accessed, has been elaborated as one of the outputs of Phase 1 (see consolidated strategies in **Table 5** under Investment Costing) and will be further refined. The list is indicative and randomly presented at this time. Clear and transparent criteria[16] for project selection will be developed and applied.

Further, this sub-component will facilitate the development of operations manual for managing the CALF with respect to:

1. Efficient and effective management of the loan facility;
2. Effective evaluation process for climate resilience loans;
3. Adequate monitoring procedures;
4. Reduced delinquency of loans.

Grant Funding is also sought for the formulation of an awareness and marketing strategy to inform various clients of the availability of subsidised loans for climate adaptation actions and technologies; and the operations of the CALF. Finally, these funds will also be applied against training and capacity building provided to the staff of the lending institution(s), who will be responsible for administering the CALF and for sensitising clients to the vagaries of climate

[14] **Appendix 9** shows the private sector engagement during the PPCR National Consultation (March 15), Day 2 of the Second Joint Mission (May 11) and during Small Focus Group and One-On-One Meetings with various national consultants.

[15] While renewable energy and energy efficiency projects are generally considered to fall into the domain of climate change mitigation, there are several instances where such projects may actually generate significant adaptation benefits.

[16] **Appendix 7** contains the Draft Criteria for Project Prioritisation and Selection which were used at the PPCR Public Sector Validation consultation held on April 07, 2011.

change and climate variability. The sensitisation effort will also be built into the implementation of the PEA Strategy and Implementation Plan (in Phase 2), developed as an output of Phase 1.

The CALF will utilise Corporate Social Responsibility (CSR) as a pivot to demonstrate that enhanced climate resilience is the business of all, and not just that of governments. The private sector, such as stakeholders in the tourism industry who have existing CSR programmes, such as "adopt-a-school", "greening and the environment", will be induced, through the use of, among other means, incentives and fiscal regimes, to pursue expansion of their current programmes in the development of partnerships with civil society for climate adaptation investments. The proposed bundling of the CALF with CSR principles will encourage a heightened corporate image and social responsibility towards building climate resilience.

It is also worth noting that time sensitive modalities/arrangements for the CALF need to be completed before project effectiveness. As such, under Part 3 of the PPCR: *Request for Project/Programme Preparation Grant* , Saint Lucia has requested an advance on its allocation of grant funding to enable the advancement/refinement of modalities prior to project effectiveness.

2.4.3.1.2 Feasibility Study for: the CAT Fund within Context of the (ETF[17]) / Transition of CALF to CAT

There is an increasing recognition that the current situation of financial support for climate change action in Saint Lucia —characterised by a large number of international funds with complex administrative processes, minimal transparency or accountability, and conflicting mandates that do not always address or respond to Saint Lucia's concerns or priorities—is untenable. It is against this background that the CAT Fund is proposed.

By supporting the establishment of a Trust Fund, the PPCR will assist with enhancing the GOSL's capacity to meet its fiduciary responsibility to oversee the large climate-related investments being proposed for Saint Lucia. These are likely to grow substantially in the coming years, highlighting the need to manage the funds in a comprehensive, coordinated and responsible manner within the broader context of sustainable development and poverty. The PPCR also represents an opportunity to undertake a programmatic approach to the planning, implementation and financing of climate change adaptation in Saint Lucia, not only with respect to planning and implementation, but also with regard to financing. The assistance related to establishing a sustainable financing mechanism for adaptation will be an important and timely initiative made possible by the PPCR.

In terms of complementarity and fostering synergy, the CAT Fund will be aligned with the proposed ETF under the EMB. It is worth noting that drafting instructions for the existing EMB were prepared to more comprehensively incorporate climate change, as an output of Phase 1.

Activities under this sub-component include:

[17] It has been proposed to establish an Environmental Trust Fund (under the draft Environmental Management Bill. for which drafting instructions for climate change were prepared as an output of Phase 1) to provide stable, adequate, secure and sustainable funding to finance the management of the environment in Saint Lucia.

1. Reviewing experience of other jurisdictions in establishing and operating environmental trust funds intended to serve a similar purpose to Saint Lucia's Adaptation Trust Fund, and identify lessons learned and good practices;
2. Reviewing the adequacy of the trust fund mechanism for the business needs of Saint Lucia and compare with other options for achieving sustainable financing of climate change adaptation;
3. Reviewing the relevant domestic legislation and international agreements of relevance to the proposed trust fund;
4. Preparing documentation concerning, inter alia, the type (i.e. legal entity), required legal agreements and their subsequent amendments, proposed objectives, costs, and administrative arrangements and agreements for the Trust Fund; legal agreements should cover such matters as the governance and the purposes and activities for which the trust funds may be used as well as the respective rights and obligations of the parties to such agreements.

The feasibility study will also include a review of the opportunities and challenges for the transition of the CALF into the CAT Fund.

This activity will also be pursued taking due consideration of the accreditation process of the Adaptation Fund under the UNFCCC. There will also be collaboration with trust fund operators from Multi-lateral Development Banks (MDBs).

2.4.4 SPCR Project Management and Support

One component is outlined under Project Management and Support, also with one sub-component, linked to **Table 4** in Section 2.7 on *Investment Costing*. This sub-component is further elaborated below:

Box 9 below summarises the sub-components of the Project Management and Support and each sub-component is discussed separately.

Box 9: Component 4.1 in Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

4.1.1 Project Management Support for Sustainable Development and Environment Division of the Ministry of Physical Development and the Environment and the Project Coordination Unit of the Ministry of Finance, Economic Affairs and National Development

- Financial Management
- Project Coordination/Management

2.4.4.1 SPCR Project Management Support for Sustainable Development and Environment Division of the Ministry of Physical Development and the Environment and the Project Coordination Unit of the Ministry of Finance, Economic Affairs and National Development

Under this sub-component, Saint Lucia will require support to manage the implementation of the SPCR. This will entail providing support to the two National Executing Agencies, that is, the Sustainable Development and Environment Division of the Ministry of Physical Development and the Environment (SDED-MPDE) and the Project Coordination Unit (PCU) of the Ministry of Finance, Economic Affairs and National Development. The institutional structure for the operation of the SPCR is outlined in the following Section 2.5, entitled *Institutional and Implementation Arrangements.*

For effective implementation of the SPCR, resources will be required to cover project staffing for the SDED and the PCU[18] ; office supplies, equipment and related goods; and short-term support for Project/Programme Preparation and other associated tasks[19] .

2.5 INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

An institutional analysis vis-à-vis climate change has been presented in Part 1. Institutional arrangements for the administration and implementation of the SPCR were agreed upon with the government counterparts during the Scoping Mission and the First Joint Mission. Given that the responsibility for climate resilience building is shared, it is expected that elements of the SPCR will be "mainstreamed" into implementation by the different sectoral ministries, agencies /organisations, communities and enterprises.

Notwithstanding, a coordination arrangement for administrative and technical support, knowledge sharing and monitoring and evaluation is outlined below, sub-divided, only for simplification purposes, in accordance with the two National Executing Agencies (**Figure 2**). Due consideration is given to the role of the private sector[20]. The temporary staff support under Part 3 of the PPCR: *Request for Project/Programme Preparation Grant* is also included as part of the institutional and implementation arrangements.

[18] This will include a Project Manager/Assistant, Procurement and Accounting personnel
[19] See Section 2.5 of Part 2: *Institutional Arrangements and Implementation* and Part 3 of the SPCR: *Request for Project/Programme Preparation Grant.*
[20] The Climate Resiliency Committee is a Sub-Committee of the Cabinet-appointed National Climate Change Committee. The NCCC may appoint members on an 'as needed' basis. As such, the Office of the Private Sector Relations and the Chamber of Commerce will be members of the Permanent Climate Resiliency Committee.

2.5.1 Project Management Unit

2.5.1.1 National Executing Agency 1: Ministry of Finance, Economic Affairs and National Development

1. The **Ministry of Finance, Economic Affairs and National Development** is responsible for ***overall* fiduciary activities**, mobilising of additional resources and liaising with multilateral agencies, as appropriate. This Ministry is **one of two National Executing Agencies for the PCCR Project.**

2. The **Minister** of Finance, Economic Affairs and National Development is **responsible for policy decisions pertinent to building climate resilience and effecting transformational change.**

3. The **Permanent Secretary** of the Ministry of Finance, Economic Affairs and National Development is the **PPCR Focal Point.**

4. The **Project Coordination Unit** under the Ministry of Finance, Economic Affairs and National Development is responsible for coordinating/managing the Project Preparation Grant/Appraisal Process, in collaboration with the executing Multi-lateral Development Bank and will have ***day-to-day* responsibility for fiduciary aspects**.

5. The Project Coordination Unit will be supported by **Procurement and Accounting Personnel.**

2.5.1.2 National Executing Agency 2: Ministry of Physical Development and the Environment

1. The **Ministry of Physical Development and the Environment** is **one of two National Executing Agencies** responsible for ***overall* coordination of the PPCR/SPCR.**

2. The **Minister** of Physical Development and the Environment is responsible for **policy decisions pertinent to building climate resilience and effecting transformational change.**

3. The **Permanent Secretary** of the Ministry of Physical Development and the Environment is the **Climate Change Focal Point**.

4. The **Sustainable Development and the Environment Division** leads the ***day-to-day* coordination of the PPCR and the implementation of the SPCR[21], including the provision of technical and administrative support**. This includes engaging with key

[21] A Project Manager and Assistant will be procured to assist with this role.

national stakeholders, co-opting line ministries when needed and interfacing with regional and international organisations, as appropriate.

5. The Sustainable Development and Environment Division comprises, among others, a **Climate Change Unit** and a **PPCR Team** within this Unit.

6. The **Chief Sustainable Development and Environment Officer** is the **Technical Climate Change Focal Point.**

7. The multi-sectoral **National Climate Change Committee (NCCC**) established by the Cabinet of Ministers in 1998 provides an **advisory role** and mechanism that **facilitates inter-agency coordination** pertaining to climate change. The members are listed in **Table 2**.

Table 2: Composition of Saint Lucia's National Climate Change Committee

Organisation	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 Organisation
National Insurance Council of Saint Lucia	-
Saint Lucia Bankers Association	-
National Conservation Authority	-
Saint Lucia Electricity Services Limited	-
Saint Lucia Solid Waste Management Authority	-

Organisation	Department/Unit/Section
Saint Lucia Air and Sea Ports Authority	-
Water & Sewerage Company	-

8. A **Climate Resilience Committee (CRSC)** for the PPCR/SPCR is in the process of being established as a sub-committee of the Cabinet-appointed NCCC and will function as the **decision-making body** of the PPCR/SPCR. This sub-committee will be expected to meet *at least* once every two months to discuss progress, issues and solutions and plan the way forward. The proposed members of the sub-committee are listed in **Box 10**. The modalities for the operation of the sub-committee will be defined and refined as per one of the tasks in the Terms of Reference of the consultant under Part 3 *Request for Project/Programme Preparation Grant.*

Box 10: Proposed Members of the Climate Resilience Sub-Committee

- Ministry of Finance, Economic Affairs and National Development
  - Project Coordination Unit
- Ministry of Physical Development and the Environment
  - Sustainable Development and Environment Division
  - Physical Planning Section
- Ministry of Communications, Works and Public Utilities
- Office of the Prime Minister
  - National Emergency Management Organisation
- Saint Lucia Chamber of Commerce
- Office of Private Sector Relations
- The Saint Lucia National Trust
- Community Development Organisation
- Other members on an 'as needed' basis

It is worth noting that the NCCC may appoint members on an 'as needed' basis. As such, in cognisance of the key role of the **private sector** in building climate resilience, and Saint Lucia's plans for their active engagement in the implementation of the SPCR, the Office of Private Sector Relations and the Chamber of Commerce will be represented on the Permanent CRSC.

Likewise, **civil society** is represented by the Saint Lucia National Trust, inclusive of its youth arm and a Community Development Foundation.[22]

The composition of both the NCCC and CRSC is purposed to engender equitable participation of the various sectors and societal groups in the climate change dialogue and thereby facilitating more effective mainstreaming of climate change issues at the sectoral

[22]It is proposed that this member be alternated among communities

level. More so, it provides a platform to facilitate knowledge management and, with the option to co-opt other members, further extends the reach of knowledge sharing. Such members to be co-opted on the CRSC include the Ministry of Education[23], for information transfer and integration into the education system; the Ministry of Health, Wellness and **Gender** Relations[24], in relation to the issues on gender and the Ministry of **Social Transformation, Youth** and Sports.

9. A **Project Manager, supported by a Project Assistant** will provide **technical and administrative** support to the Sustainable Development and Environment Division on a day-to-day basis. The Project Manager's role will include, among others[25], **monitoring and evaluation** of and **reporting** on the PPCR/SPCR and **continual interfacing on a bilateral level, with key entities on investment and co-financing support** on behalf of the Government of Saint Lucia. He/she will report to the Chief Sustainable Development and Environment Officer. The Project Manager and Project Assistant will also provide support to the Climate Resilience Committee of the PPCR.

2.5.1.3 Temporary Support Staff

Under Part 3 of the PPCR: *Request for Project/Programme Preparation Grant*, **temporary support consultants** will be procured for the necessary coordination of **Project Preparation Grant/Appraisal Process[26].** These persons will report to, and liaise with, the Chief Sustainable Development and Environment Officer and the Coordinator of the Project Coordination Unit, as appropriate.

[23] This entity is currently represented on the NCCC.

[24] This entity is currently represented on the NCCC. There is a seeming growing trend in Saint Lucia for young males to play less of a meaningful role in society than females of the same group. Indeed, it is quite common to see the number of male to females drop as one advances towards tertiary level education. Pending the results of the assessment and analysis of vulnerable groups (**Table 4**, sub-component 1.3.5), efforts will be made to reach out to these 'marginalised' young males as part of Saint Lucia's plan to build climate resilience.

[25] The Terms of Reference for the Project Manager and Assistant will be prepared by the temporary support consultant in 2.5.1.3, in collaboration with the National Executing Agencies.

[26] The DVRP is currently in design phase, with the potential for accessing Inter-American Development Bank (IDA) funding of USD 10-15 million. Discussions with the proponents have confirmed complementarity with the activities outlined in the SPCR and that these will help to form the basis for further elaboration of the DVRP. As such, Saint Lucia's Investment Plan (**Table 4**) reflects PPCR funding and DVRP co-financing and will be managed accordingly.

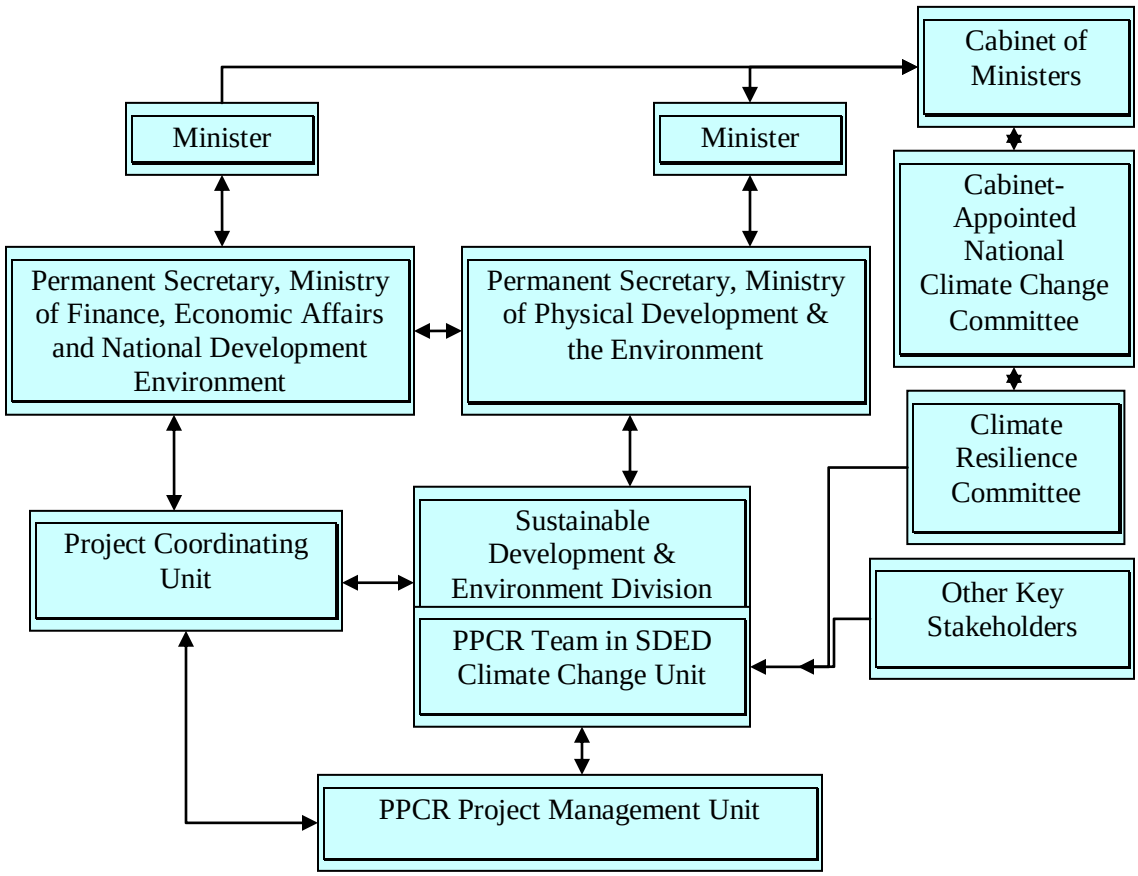


Figure 2: Institutional Arrangements for the Implementation of Saint Lucia's SPCR[27]

[27] This is to encompass PPCR and beyond.

2.6 RISKS

OPERATIONAL RISK ASSESSMENT FRAMEWORK PART TWO: INVESTMENT PROGRAMME OF THE SPCR			
Risk Category	**Risk Rating**	**Risk Description**	**Proposed Mitigation Measure**
Project Stakeholder Risks	Medium	Implementing agencies/ Ministries do not provide adequate support to project activities due to capacity gaps.; capacity of the agencies inadequate or compromised by staff movements or absence of personnel.	Relevant expertise will be outsourced to supplement capacities of implementing agencies and capacity and commitment of stakeholders will be developed throughout the process, using the participatory approach, sensitisation and awareness and training in order for the measures to be sustainable. Use of "counterpart" training for locals with all consultant deployment, to build local capacity.
		Absorptive capacity of private sector and civil society and mechanisms to attract uptake of concessional loan funding may either limit or accelerate the rate of use of concessional loan funding under the CALF.	A PEA component has been built into the CALF in accordance with the Climate Change PEA Strategy and Implementation Plan developed as one of the outputs of Phase 1, and this will assist in mobilisation, in collaboration with the efforts of the lending institution(s). The proposed bundling of the CALF with CSR principles will encourage a heightened corporate image and social responsibility towards building climate resilience. The Saint Lucia Chamber of Commerce and the Office of the Private Sector Relations (private sector) are also part of the Climate Resilience Sub-Committee; as are the Saint Lucia National Trust and alternate member Development

OPERATIONAL RISK ASSESSMENT FRAMEWORK PART TWO: INVESTMENT PROGRAMME OF THE SPCR			
			Foundation (civil society); also,sp the Ministry of Social Transformation (community development and mobilisation role). Further, as per Section 2.4.3 on *Adaptation Financing* and **Table 4**: *Saint Lucia's Investment Plan under the PPCR-Grant Funding,* a component of grant funding will be used as an incentive to encourage concessional funding mobilisation.
Risks Relating to Project Management Structure/Institutional Arrangements for Implementation	Medium	The proposed project is a complex project for the SDED, requires extensive collaboration for implementation and assumes an increase in technical and managerial capacity of the Division. The PPCR substantially increases the tasks associated with the climate change programme portfolio handled by the SDED and could overwhelm the Division's capacity for project implementation. The PCU will also have an additional role, further to its existing tasks, for which inadequate support staff will compromise effectiveness. Time-sensitive modalities/arrangements that need to be completed before project effectiveness (for example, modalities for the CALF, among others) may be compromised without the requisite support staff being procured (though timely release of advance grant funding) to enable effective functioning.	Project management responsibility will be shared among the SDED and PCU and the project will also cater for the needed increase in project management capacity in the SDED and the PCU. Management of fiduciary aspects of project by PCU will ensure, adherence to World Bank safeguard policies, while management of technical and administrative aspects of project will be the responsibility of the SDED. Regular World Bank supervision will also ensure adherence to World Bank safeguard policies. Guidance on project implementation will be provided by a Climate Resilience Committee in the process of being established as a sub-committee of the Cabinet-appointed NCCC Provision has also been made for the procurement of temporary support consultant under Part 3 of the PPCR: *Request for Project/Programme Preparation Grant* (see section 2.5 for *Institutional and Implementation Arrangements*)
Project Risks:			

OPERATIONAL RISK ASSESSMENT FRAMEWORK PART TWO: INVESTMENT PROGRAMME OF THE SPCR			
Design	Low	Potential for delays in works and services critical to the implementation of some key activities of the project. This is the case, for example, in the coastal zone management component, where assessment studies and demonstration sites are required prior to the implementation of the tangible sub-component(s). This is also the case for the CALF, for which all modalities have to be defined prior to fund mobilisation and access by the private sector and civil society. Verification of some indicators may be cumbersome, which may compromise the monitoring ad evaluation (M&E) requirements under the PPCR	GoSL, through the PCU has previously managed numerous Bank projects and has demonstrated institutional capacity for the enforcement of safeguards. Targeted "refresher" training in safeguards application will further strengthen safeguards capacity within the other implementing agency, the SDED. Under Part 3, *Request for Project/Programme Preparation Grant*, an advance is being requested to, among others, conduct work on the operationalisation of the CALF The Project experience of the PCU is expected to auger well re M&E. Further, the Project Manager, with M&E responsibilities being key among his/her duties, will seek to do due diligence in this regard.
Social and Environmental	Mediumen	Occurrence of catastrophic events may cause decline in economic, social and environmental conditions thereby reversing baseline status of project, resulting in escalation of project cost due to inflation of deferred investment. The country is expected to have a political election process during the timeframe of the PPCR	The DVRP is currently in design phase, with the potential for accessing IDA funding of USD 10-15 million. Discussions with the proponents have confirmed complementarity with the activities outlined in the SPCR and that these will help to form the basis for further elaboration of the DVRP. As such, Saint Lucia's Investment Plan (**Table 4**) reflects PPCR funding and DVRP co-financing and will be managed accordingly. This 'blend' should assist in compensating, to some degree, for catastrophic events. Technical and high-order administrative staffs of the public sector have a key role to play in facilitating the adoption of policies, strategies, plans and programmes (including the SPCR). The

OPERATIONAL RISK ASSESSMENT FRAMEWORK PART TWO: INVESTMENT PROGRAMME OF THE SPCR			
			significant involvement of the public sector (**see Appendix 9**), including the Permanent Secretaries of both National Implementing Agencies (non-political posts) is expected to compensate for any changes in political leadership that may occur. Should the current administration remain, there has been demonstrated commitment by the Prime Minister at the national, regional[28] and international levels, who has had ongoing involvement in the climate change dialogue. The Ministers associated with the National Implementing Agencies and the full Cabinet of Ministers have also been sensitised on the PPCR/SPCR and once approved/endorsed by the PPCR Committee, the SPCR is expected to receive the full endorsement of the Cabinet via a formal Conclusion[29]. Further, once approved/endorsed, by the PPCR Sub-Committee, a presentation towards the approval of the SPCR is expected to be made at the national political level to the Parliament as a whole, that is, the current government and the opposition.
Programme and Donor Funding	Medium	Lack of or delays in provision of requisite support and level of contributions towards co-financing from regional and international agencies may compromise	Project establishes mechanism for aggressive sourcing of additional funding (see section 2.5 for *Institutional and Implementation Arrangements*)

[28] The Prime Minister of Saint Lucia is the lead Head for Sustainable Development for the Caribbean Community (CARICOM), which includes climate change.
[29] Because the PPCR will have a finite lifetime, the SPCR is seen as a critical component of a larger Blueprint[29] for the "PPCR and Beyond" that extends beyond the lifetime of the PPCR and that is intended to guide investments in climate resilience-building well into the future. See **Appendix 8**: *Summary of Actions Deemed to be of National Significance for Addressing Climate Change*

OPERATIONAL RISK ASSESSMENT FRAMEWORK PART TWO: INVESTMENT PROGRAMME OF THE SPCR			
		outputs. Delays in disbursement of funds and therefore, in commencement of the assignment on schedule, may lengthen implementation time frame	While there is recognition of 'learning by doing', the Climate Investment Funds (CIF) coordinating mechanism/MDBs are expected to create the enabling environment/mechanisms that will facilitate timely and effective implementation.
Programme and MDBs	High	Possible differences in perceived needs between pilot country and MDBs and limitations and restrictions in modalities of operation of MDBs may prevent/limit the ability of the country to take actions deemed necessary to support the building of climate resilience in the private sector and civil society ' Shifting goalposts' on the part of the MDBs, as 'rules' and conditions evolve, may result in delays and compromising of project components	Saint Lucia has made every effort to communicate its needs and will be willing to engage in further discussions with the MDBs in this regard. Further, the definition of clear modalities of operation for Saint Lucia's project components, through financial support granted for the proposed institutional structure and associated tasks (Section 2.5) will greatly assist in achieving desired results. The CIF/MDBs are expected to adhere to the fundamental principle of country-driveness that underscores the PPCR. While there is recognition of 'learning by doing', the CIF and MDBs are expected to communicate in a timely and transparent manner with the country and to create the enabling environment/mechanisms that will facilitate adherence/compliance to the 'rules' and conditions

Risk Rating: Low - low impact and low likelihood of occurring; Medium - low impact and high likelihood of occurring or high impact and low likelihood of occurring; high – high impact and high likelihood of occurring

2.7 INVESTMENT COSTING

Saint Lucia's Investment Plan under the PPCR is presented under the theme: **Building National Climate Resilience, One Person, One Household, One Enterprise, One Community, One Sector at a Time**[30]**.** The Investment Plan is presented as part of the SPCR, for a range of US$5-7 million[31] in grant funding (**Table 3**), based on an agreed PPCR envelope for the Caribbean Pilot. The GOSL will also seek to access concessional loans under the PPCR to complement the grant allocation. The concessional loan request will be based on the confirmed concessional loan envelope available to Saint Lucia, for an amount in the range of US$ 7-15 million (**Table 3**)[32]. The grant allocation will support the GOSL's efforts to promote climate resilience in core development planning, through an integrated cross-sectoral approach. The concessional loan allocation will support and promote private sector and civil society involvement in building climate resilience and fostering ownership for necessary action (Section 2.4).

Co-financing will be achieved through a synergistic blend with financial resources, made available under the national[33] and regional components of the DVRP, currently in design phase, and this will allow for the upscaling of the SPCR implementation activities.

A number of parallel projects are also expected to provide complementary funding. Proponents of the Hurricane Tomas Emergency Recovery Project (ERP) and the Organisation of Eastern Caribbean States-(OECS)-USAID Climate Change Project have, through the process of consultation, committed to collaborative implementation of these projects with the SPCR in areas of complementarity.

Key projects of regional significance are included for their complementarity with Saint Lucia's SPCR, not the least of which are the PPCR-Regional component (**Appendix 11**) and the Implementation Plan for the CARICOM *'Regional Framework for Achieving Development Resilient to Climate Change'* (2011-21-see **Appendix 12**). Others are indicated in **Table 4**.

Specific project concepts have been elaborated, with the inclusion of PPCR and co-financing from the DVRP, for implementation during the lifespan of the PPCR. All costing is indicative only. Further, since there is agreement among key national proponents that the SPCR is to inform the DVRP, the currently SPCR-un-allocated

[30] Component descriptions and activities are presented in Section 2.4 of Part 2.
[31] Saint Lucia has planned for a range and presented its SPCR and Investment Plan with a proposed project for funding that would request US$5-7 million in grant - stating an understanding that the lower range will apply if the grant envelope is at the lower end – US$60 million.
[32] Saint Lucia planned for a range and presented its SPCR and Investment Plan with a proposed project for funding that would request US$7-15 million in concessional financing - stating its understanding that the lower range will apply if the concessional envelope is at the lower end – US$40 million.
[33] It is anticipated that the Saint Lucia (National) DVRP shall be funded to the amount of US$10 million

DVRP funds are expected to be utilised in accordance with Saint Lucia's blueprint' *Summary of Actions Deemed to be of National Significance for Addressing Climate Change* (**Appendix 8**). It is anticipated that measures to contribute to food security and sustainable land management/slope stabilisation vis-à-vis climate change, among others, will be implemented.

Saint Lucia's 'blueprint' further recognises the need to plan for the 'PPCR and Beyond', (**Appendix 8**); for this reason, **Appendix 13, Project Profiles 1-15,** contains a number of: *Project Concepts Developed for Climate Change Adaptation and Reducing Risk to Climate-Related Disasters, for which Funding is Unidentified or to be Confirmed.* Funding will be identified for these activities beyond PPCR financing. This will entail the aggressive exploration for investment, for example, as one of the tasks of the Project Manager to be deployed as part of the SPCR (see Section 2.5).

Table 3: Summary of Investment Plan Funding Request

SPCR Grant Funding Request	**US$7 million**
SPCR Concessional Loan Funding Request	US$10million
SPCR Co-Financing (DVRP)	US$10 million
Total Programme	**US$27 million**

Proposed project components and activities under the PPCR grant component, inclusive of investment costing, are summarised in **Table 4**, while **Table 5** provides a summary of the PPCR concessional financing component.

Table 4: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding[34]

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME					
COMPONENT	**SUB-COMPONENT**	**PPCR FINANCING US$**	**PROPOSED DVRP CO-FINANCING[35] (US$)**	**OTHER EXPECTED CO-FINANCING (US$)**	**COMPLEMENTARY INITIATIVES**
Component 1: Adaptation Facilitation					
Component 1.1 – Strengthening National Level Policy, Legislative and Institutional Framework for Climate Resilience and Enhancing PPCR Implementation	1.1.1 Review/development of national legislation and policies, strategies and development guidelines/codes to incorporate climate change considerations further to, and building on outputs of, Phase 1. 1.1.2 Review of methodology for determining coastal setbacks and facilitation of the implementation of these new setbacks into the development planning process in the context of	**350,000**		The national executing agencies continue bilateral discussions with key entities for co-financing. These discussions are expected to progress over the next few weeks-months. As such, it would be premature for Saint Lucia to indicate the	- **USAID-OECS Project on Climate Variability, Change and Adaptation[36]** - **Component 2 of the Saint Lucia Hurricane Tomas Emergency Recovery Project [37]** - **Enhanced Comprehensive Disaster Management Strategy and Programming Framework 2007-**

[34] These are activities for which funding has already been identified. In addition, see Appendix 8for the 'blueprint' of projects, entitled: *Summary of Actions Deemed to be of National Significance for Addressing Climate Change*; and **Appendix 13** entitled: *Project Concepts Developed for Climate Change Adaptation and Reducing Risk to Climate-Related Disasters, for which Funding is Unidentified or to be Confirmed.* All costing is indicative only.

[35] The DVRP is currently in design phase, with the potential for accessing IDA funding of USD 10-15 million. Discussions with the proponents have confirmed complementarity with the activities outlined in the SPCR and that these will help to form the basis for further elaboration of the DVRP. In this regard, it is envisaged that the SPCR will be able to leverage up to USD 10 million through the financing framework of the DVRP and RDVRP which will therefore provide a means of supplemental funding to enable upscaling of the SPCR implementation activities to realise larger, blended projects.

[36] This project is to be implemented in the OECS. The stated **grant in the project document is for US 2.5 million in the first year with US 2 Million per annum for the next four years, contingent on congressional approval.** Proponents of the Project have, through the process of consultation, committed to collaborative implementation of these projects with the SPCR in areas of complementarity.

[37] This Project is for a total of US 15 million. Proponents of the Hurricane Tomas Emergency Recovery Project, have, through the process of consultation, committed to collaborative implementation of these projects with the SPCR in areas of complementarity. Areas of complementarity (from the Recovery Project) include: **Component 2**: Institutional Strengthening and Hazard and Risk Analysis (US$1.5); **Component 3**: Reconstruction and Rehabilitation of Damaged Critical Public Infrastructure (US$11 million).

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME					
	sea level rise 1.1.3 Formulation, adoption and implementation of fiscal incentives and regimes to encourage the adoption of climate adaptation/resilience measures.			commitment of these organisations at this time. Progress on these commitments will be communicated to the PPCR Sub-Committee in South Africa. Please refer to **Appendix 14**: Tentative Co-Financing for Building Climate Resilience and Reducing Risk to Climate – Related Disasters under PPCR and Beyond	**2012 (CDEMA)-(see Appendix 15)** **-PPCR Regional[38]-(see Appendix 11)** **-The Implementation Plan for the CARICOM 'Regional Framework for Achieving Development Resilient to Climate Change' (2011-21)-see Appendix 12** **-North West Coastal Conservation Project[39]**
Component 1..2 –Public Education and Outreach for Climate Change Resilience Building	1.2.1 Implementation of 2-year Climate Change Public Education and Awareness Strategy and Plan designed in Phase I - well aligned with project activities under Phase 2 and with particular focus on targeted groups • Vulnerable groups – children, single women/mothers, marginalized males, elderly, farmers/fishers, the poor • Policy makers	**600,000***	400,000		**- USAID-OECS Project on Climate Variability, Change and Adaptation** **- Enhanced Comprehensive Disaster Management Strategy and Programming Framework 2007-2012 (CDEMA)** **-The Implementation Plan for the**

[38] In a presentation by the PPCR Regional Coordinator at a Global Climate Change Alliance Conference in Belize in March 2011, the select/potential areas of focus for the regional tract were identified as: **Module 1:**Capacity Development and Information Sharing: *Activity 1*:Strengthening Capacity for Data Management;; *Activity 2*: Improved data availability for climate monitoring and modeling: Design for the collection of baseline data to be linked to monitoring and monitoring programmes; *Activity 3*: Information Clearing House. **Module 2:** Advocacy and Policy Development: *Activity 1:* Development of Framework policy and model legislation for Climate Adaptation. Please note that activities will be further defined and refined in a meeting planned for June 6-7 for the regional tract.

[39] See Part 1

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME					
	• Private sector organisations • Community groups				**CARICOM 'Regional Framework for Achieving Development Resilient to Climate Change' (2011-21)**
Component 1.3 – Research and Systematic Observation and Data and Information Acquisition and Knowledge Management for Climate Change Adaptation	1.3.1. Expansion and provision of institutional support for GeoNode[40] further to and building on outputs of Phase 1 and implementation of Disaster Risk Modelling Pilot 1.3.2 Conduct of advanced assessment, validation and enhancement of outputs of local Sea Level Rise (SLR) Model developed under the SNC project to guide development policy, land use, risk assessment, adaptation and resilience building measures especially for critical infrastructure, including strengthening of database 1.3.3 Enhancement of public health data management systems for monitoring vector and waterborne diseases which are expected to become more prevalent with climate change 1.3.4. Enhancement/ upgrading of national and community-based Meteorological and Hydrological Monitoring Networks	**750,000**	250,000		**- USAID-OECS Project on Climate Variability, Change and Adaptation** **- PPCR Regional** **- Component 2 of the Saint Lucia Hurricane Tomas Emergency Recovery Project** **-North West Coastal Conservation Project** **- Enhanced Comprehensive Disaster Management Strategy and Programming Framework 2007-2012 (CDEMA)** **-The Implementation Plan for the CARICOM 'Regional Framework for Achieving Development Resilient to Climate Change' (2011-21)** **-Saint Lucia Banana Industry**

[40] GeoNode is an open source platform for access, management and publication of geospatial data. The process of establishment of t-his system in Saint Lucia has begun as one of the outputs under Phase 1 of the PPCR.

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME					
	1.3.5 Assessment and analysis of vulnerable groups to inform interventions for building climate resilience.				**Trust (BIT)-WRMA Initiative**[41]
Component 1.4 – Human Resource Capacity Building for Climate Resilience	1.4.1 Support of community-based and sector-level training for target groups : • Construction industry contractors, architects engineers professionals e.g. building codes and guidelines; climate change climate resilient buildings and environmental designs • Climate change skills related training: e.g. methods and techniques - rain water ; greening home and buildings; • Climate change community resilience Leadership and Training of Trainers • Training in GIS and database management • Insurance and Banking Sector action-oriented sensitisation vis-à-vis climate change	**150,000**	**150,000**		**- USAID-OECS Project on Climate Variability, Change and Adaptation** **- Component 2 of the Saint Lucia Hurricane Tomas Emergency Recovery Project**
	Sub-total	**1,850,000**	**800,000**		
Component 2: Adaptation Implementation					
Component 2.1- Implementation of Climate Resilience Measures in Critical Buildings	2.1.1 Retrofitting of public and key community buildings for climate change resilience and for demonstration/replication of climate-appropriate design re – Rain Water Harvesting , Hurricane resilience, Renewable	**2,700,000***	**1,300,000**		**- IWCAM Project**[42] **- SPACC Project**[43] **- Component 3 of the Saint Lucia Hurricane Tomas Emergency Recovery Project**

[41] See Part 1
[42] See Part 1
[43] See Part 1

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME					
	Energy, including those used by/housing vulnerable groups (e.g. elderly; women at risk, children at risk, sick)				
Component 2.2– Coastal Zone Management for Climate Resilience	2.2.1 Re-design and modification (pilot) of critical infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise following assessment of existing coastal engineering structures and formulation of design guidelines/standards in the context of storm surge, coastal flooding and sea level rise, using inter alia, the services of a coastal engineer.[44]	**1,150,000***	**1,500,000**		**- USAID-OECS Project on Climate Variability, Change and Adaptation** **-PPCR Regional** **-North West Coastal Conservation Project**
Component 2.3- Support Community-Level Interventions in Water Resource Conservation and management	2.3.1 Pilot or support interventions such as communal rainwater harvesting, micro-dams and establishment of satellite water storage tanks within the forest reserve to feed rural communities	**400,000***	**850,000**		**- USAID-OECS Project on Climate Variability, Change and Adaptation** **- IWCAM Project** **-SPACC Project** **- Component 3 of the Saint Lucia Hurricane Tomas Emergency Recovery Project**
	Sub-total	**$4,250,000**	**3,650,000**		
Component 3: Adaptation Financing					
Component 3.1 –Climate Change Adaptation Financing Facility	3.1.1 Creation of CALF :- Support for CALF, including: Operations Manual; PEA for CALF; other support	**300,000**			**-The Implementation Plan for the CARICOM 'Regional Framework for Achieving**

[44] The Coastal Engineer shall be attached to the Coastal Zone Management Unit of the SDED for a period of three years with the understanding that this position will subsequently be absorbed by the Government of Saint Lucia.

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME					
	3.1.2 Feasibility study for: the CAT Fund within context of the EMB/Transition of the CALF to the CAT				**Development Resilient to Climate Change' (2011-21)** **-Environmental Trust Fund**[45] **- UNFCCC Adaptation Fund**[46]
	Sub-total	**300,000**			
Disaster Risk Reduction Activities Under DVRP[47]					
			4,550,000		
	Sub-total		**4,550,000**		
Component 4. Project Management & Support[48]					
Component 4.1–SPCR Project Management	4.1.1 Project Management Support PCU/SDED - Financial Management - Project Coordination/Management	**600,000***	**1,000,000**		
	Sub-total	**600,000**	**1,000,000**		
	TOTAL[49]	**7,000,000**	**10,000,000**		

[45] It has been proposed to establish an Environmental Trust Fund (under the Environmental Management Bill for which drafting instructions to incorporate climate change were prepared as an output of Phase 1) to provide stable, adequate, secure and sustainable funding to finance the management of the environment in Saint Lucia

[46] The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol, particularly vulnerable to the adverse effects of climate change and is financed through share of proceeds on the Clean Development Mechanism (CDM) project activities and other sources of funding

[47] This suite of activities is expected to include, among others, initiatives under two areas identified in the blueprint for "PPCR and Beyond", namely, measures to help to ensure food security and sustainable land management/slope stabilisation vis-à-vis climate change.

[48] Under this Component, resources will be provided to cover project staffing for the SDED and the PCU (Project Manager/Assistant, Procurement and Accounting personnel); office supplies and equipment and related goods; short-term support for preparation of Grant Request and other tasks.

[49] Saint Lucia has planned for a range and presented its SPCR and Investment Plan with a proposed project (s) for funding that would require US$5-7 million in grant funding, with the understanding that the lower range would apply if the grant envelope is at the lower end – US$60 million. Saint Lucia is concerned that budgetary constraints will severely impinge on its ability to implement the critical needs identified in its SPCR. Saint Lucia is therefore anticipating that the requested funding will be allocated in full consistent, in keeping with the kevels of funding approved for other OECS islands, with similar needs and characteristics. Notwithstanding, while recognising that any reductions in requested funding will severely compromise efforts to realise catalytic and transformational change, Saint Lucia has tentatively identified the potential areas where such adjustments may be made.

Table 5: Saint Lucia's Investment Plan under the PPCR-Concessional Funding[50]:

BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME	
Request for 10 Million US for Climate Adaptation Loan Facility[51]	
List of possible strategies for which loan funding can be accessed by the private sector[52] **and civil society for building climate resilience**[53]	
• Retrofitting of homes/buildings to include, *inter alia*: rain water harvesting and other water conservation mechanisms/systems, increased hurricane resilience, renewable energy/energy conservation mechanisms/systems	• Fishing equipment for alternative livelihoods to target non-traditional species ('new' source of fish protein) and/or species that are especially affected by climate change
• Water and energy conservation devices/mechanisms/systems	• Interventions on properties to address storm surge, coastal flooding, flooding from excessive rainfall and sea level rise
• Farm level interventions pertaining to, *inter alia,* drought-	• Development of business continuity plans

[50] The GOSL has undertaken an exhaustive consultative process, with four (4) national sessions focussing on the private sector and civil society, in addition to several small focus group and one-on-one sessions (see Appendix 9). This is in an effort to go beyond simply informing about climate change and what persons can do, to providing the enabling environment and mechanism to **s**upport and promote private sector and civil society involvement in building climate resilience and fostering ownership for necessary action. The GOSL is pursuing concessional financing targeted at the private sector and civil society (and some grant funding-see Section 2.4 of Part 2 on Components and Activities) flowing through local lending institution (s), with support from the World Bank.

[51] Saint Lucia is making a request for 10 million, but is interested in the uppermost available limit of concessional funding (from an indicative range US$7-15 million), with the understanding that the lower range will apply if the concessional envelope is at the lower end, which, for the Caribbean, is US$40M

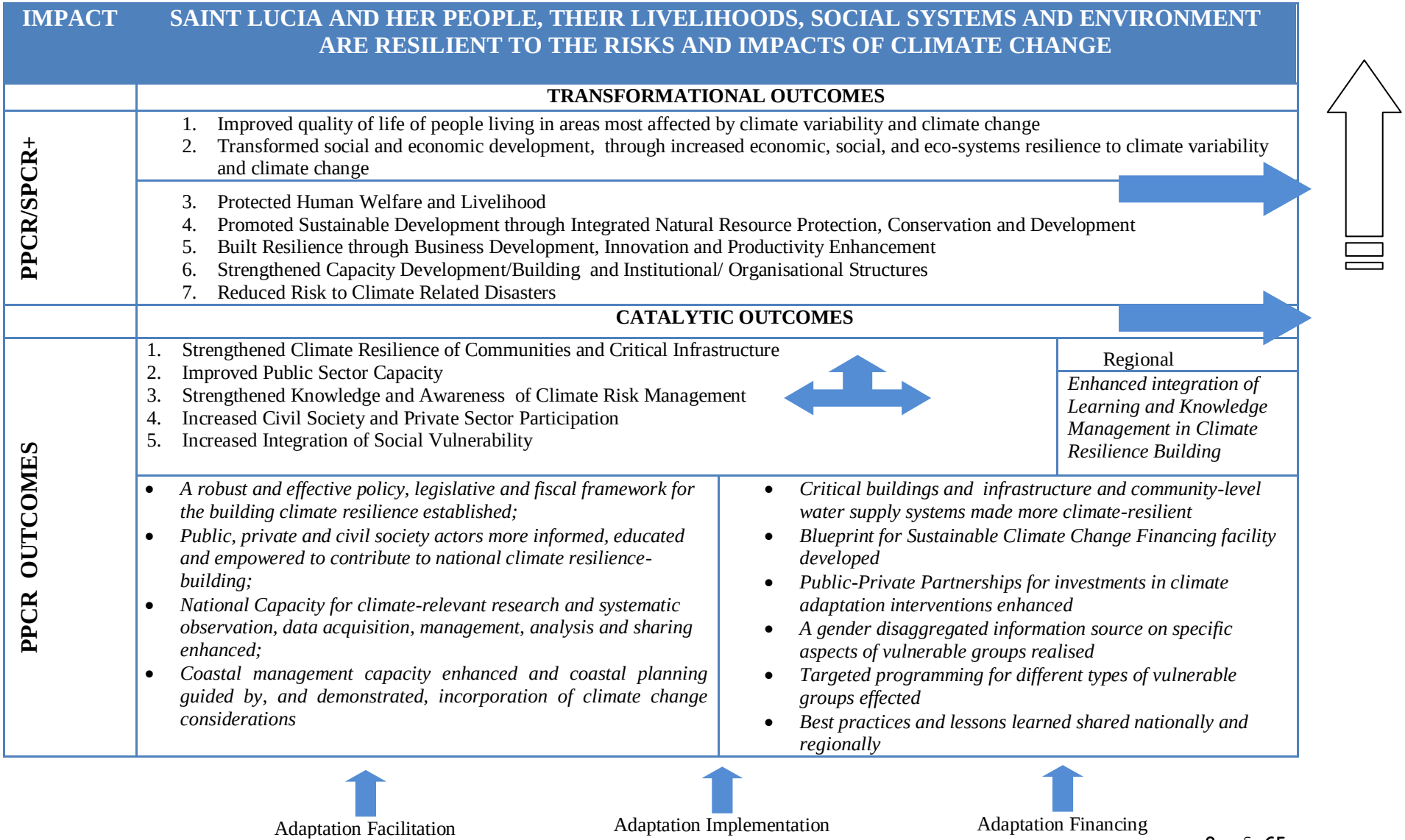
[52] The private sector is a vital component of the Saint Lucia economy and its success enables small businesses and local communities to thrive. It is therefore intended to develop ways to partner with private firms that may have climate-related vulnerabilities, in order to enable them to become more climate-resilient. This may include, for example, collaborating in identifying climate resilience projects that are beneficial both to the private firm and to the community, or coupling public research with the private sectors expertise in providing goods and services to provide climate adaptation solutions. This will ensure that key private sector-oriented economic activities will continue to benefit Saint Lucia's local communities, even in the face of climate change.

[53] Discussions on some key modalities of the fund have already been defined at the level of the World Bank and are in progress at the national level. Grant funding has also been allocated to advance modalities at the national level (see component 3.1 of **Table 4** above). The list indicated is indicative and randomly presented at this time. Clear and transparent criteria for project selection will be developed and applied.
The International Finance Corporation (IFC) modalities for concessional funding under the PPCR are just beginning to be investigated. This reduces the ability of the government to commit to IFC operation of concessional funding at this time. Notwithstanding, given the effort to 'introduce' the private sector in Saint Lucia to the IFC during Saint Lucia's Second Joint Mission, and the interest shown by the sector, the GOSL anticipates that it will continue discussions with IFC and further hopes that for monitoring, evaluation and reporting purposes, the IFC will cooperate in alerting the government of any projects being funded through a direct relationship between IFC and private sector entities in Saint Lucia that are related to climate change adaptation and climate-related disasters.

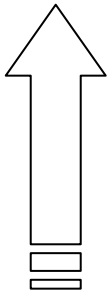
BUILDING NATIONAL CLIMATE RESILIENCE, ONE PERSON, ONE HOUSEHOLD, ONE ENTERPRISE, ONE COMMUNITY, ONE SECTOR AT A TIME	
flood- or salt- tolerant crops, land slippage following excessive rainfall, irrigation systems due to drought conditions, greenhouses due to unfavourable climatic conditions , seed and fertilizer storage for sustainability beyond disaster;	in preparation for dealing with the impacts of climate change and awareness, education and certification schemes for business that have implemented business continuity measures
• Small to medium-sized activities by the public sector/ quasi-governmental, Local Government entities, such as strengthening of community jetties; reforestation and water storage and distribution at the school and community level[54].	Risk assessment studies for telecommunication and other infrastructure.
• Market assessments for new products such as new insurance products	
NOTE: Initiatives with similar themes are also being implemented under grant funding (see Table 4 above). Further to the complementary activities outlined in Table 4 above, it is worth noting that private sector mobilization is a key area of action under *The Implementation Plan for the CARICOM Regional Framework for Achieving Development Resilient to Climate Change' (2011-21)*	

[54] A ceiling will be set for public sector and quasi-governmental entities to avoid "crowding out" of the private sector, civil society and private individuals.

2.8 RESULTS FRAMEWORK



IMPACT	SAINT LUCIA AND HER PEOPLE, THEIR LIVELIHOODS, SOCIAL SYSTEMS AND ENVIRONMENT ARE RESILIENT TO THE RISKS AND IMPACTS OF CLIMATE CHANGE		
PPCR ACTIVITIES	1. Strengthening National Level Policy, Legislative and Institutional Framework for Climate Resilience and Enhancing PPCR Implementation 2. Public Education and Outreach for Climate Change Resilience Building 3. Research and Systematic Observation and Data and Information Acquisition and Management for Climate Change Adaptation 4. Human Resource Capacity Building for Climate Resilience	1. Implementation of Climate Resilience Measures in Critical Buildings 2. Coastal Zone Management for Climate Resilience 3. Supporting Community-Level Interventions in Water Resource Conservation and Management	1. Climate Change Adaptation Financing Facility

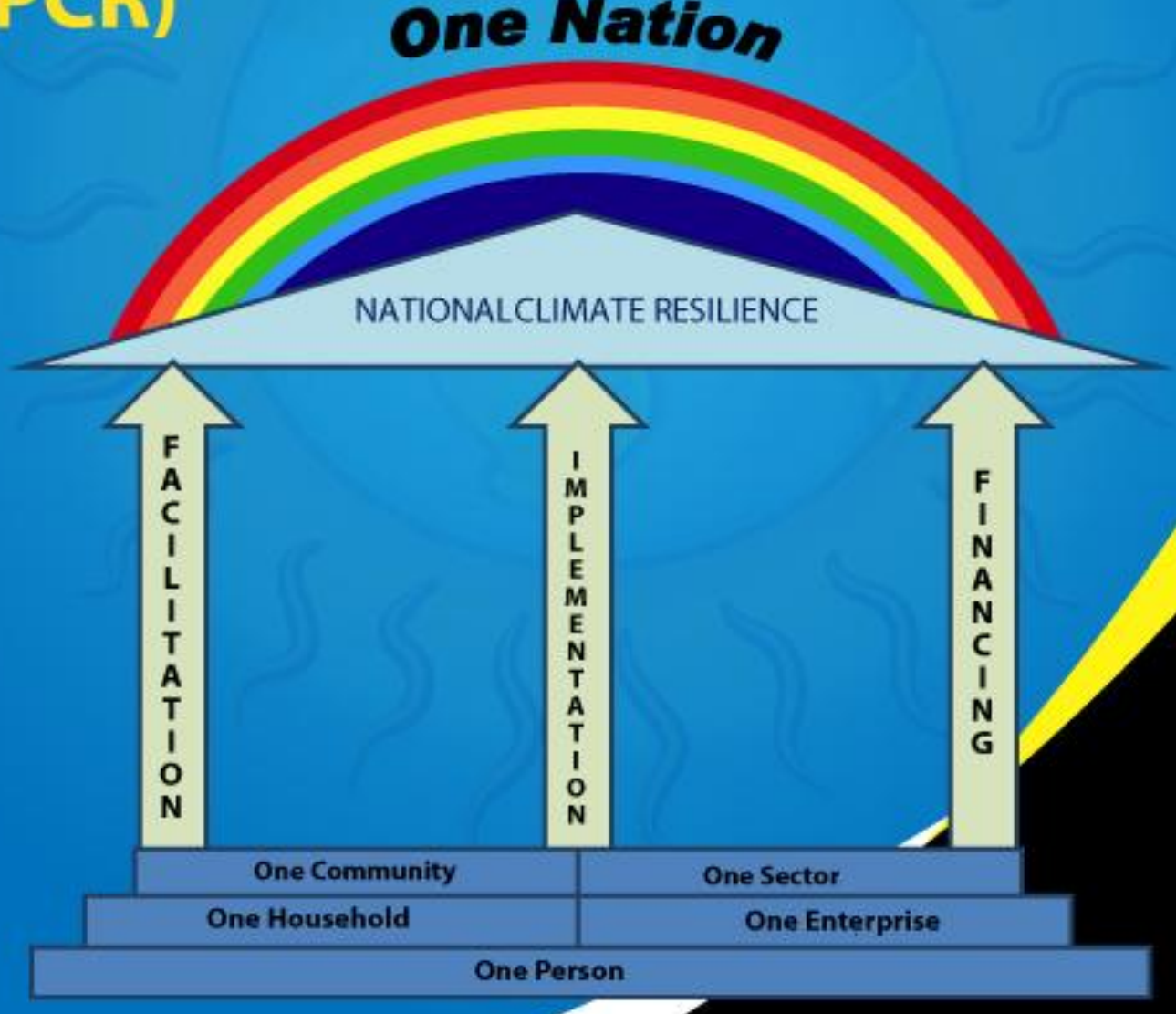


Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)



June 1st 2011

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)

Part Three:

Project /Programme Preparation Grant Request

June 1st 2011

TABLE OF CONTENTS

3.0 PART 3: REQUEST FOR PROJECT PREPARATION FUNDING

3.1 OVERVIEW

The Government of Saint Lucia is requesting US$ 7 million of Pilot Programme for Climate Resilience (PPCR) grant financing. This includes US$ 0.376 million for project preparation.

As part of project preparation under the Investment Project, Technical Assistance will be provided to undertake the following:

1. Conduct of **Assessments and Studies** to be undertaken during the project preparation period

2. A feasibility study for the establishment of a **Climate Adaptation Loan Facility (CALF) and a Climate Adaptation Trust (CAT) Fund**

3. a. Preparation of detailed **Terms of Reference** for assessments and studies and related activities to be undertaken during the project preparation period and in the early stages of actual project implementation.

   b. Preliminary **Project Management, Oversight and Implementation** support in the form of short-term technical personnel.

Terms of Reference (TOR) for the above technical assistance packages are provided in Section 3.2 below to illustrate the scope of work planned.

3.2 SPECIFIC REQUEST FOR INVESTMENT PROJECT

Table 1: Specific Request: for Investment Project

<table>
<tr><td colspan="5">Pilot Programme for Climate Resilience

Project/Programme Preparation Grant Request[1]</td></tr>
<tr><td>1. Country/Region:</td><td>Saint Lucia, Caribbean Region</td><td>2. CIF Project ID#:</td><td colspan="2">(Trustee will assign ID)</td></tr>
<tr><td>3. Project Name:</td><td colspan="4">Saint Lucia Pilot Programme for Climate Resilience – Phase 2</td></tr>
<tr><td>4. Tentative Funding Request (in USD million total) for Project[2] at the time of SPCR submission (concept stage):</td><td colspan="2">Loan: US$ 10 million</td><td colspan="2">Grant: US$ 7 million</td></tr>
<tr><td>5. Preparation Grant Request (in USD million):</td><td colspan="2">0.376 million</td><td colspan="2">MDB: The World Bank</td></tr>
<tr><td>6. National Project Focal Point:</td><td colspan="4">• Isaac Anthony, Permanent Secretary, Ministry of Finance, Economic Affairs and National Development</td></tr>
<tr><td>7. National Implementing Agency (project/program):</td><td colspan="4">• Sustainable Development & Environment Division in the Ministry of Physical Development & the Environment in collaboration with the Project Coordination Unit of the Ministry of Finance, Economic Affairs and National Development</td></tr>
<tr><td>8. MDB PPCR Focal Point and Project/Program Task Team Leader (TTL):</td><td colspan="2">Headquarters-PPCR Focal Point: Kanta Kumari Rigaud</td><td colspan="2">Niels B. Holm-Nielsen</td></tr>
<tr><td colspan="5">9. Description of activities covered by the preparation grant:
The preparation grant will finance technical assistance and incremental costs required to inform the design of activities under the three project components. This TA for short-term support for Project/Programme Preparation is aimed at:
1. a. Undertaking social and environmental assessments (SEAs) to meet the preparation standards and safeguards requirement of the World Bank, including relevant consultations; b. conducting technical studies for preparation of civil works investments
2. Conducting feasibility study, for detailed design and costing of establishment of Climate Adaptation Loan Facility (CALF) and Climate Adaptation Fund (CAT); and
3. Securing short-term technical support for project preparation and implementation readiness including, but not limited to a. preparation of detailed TORs for activities outlined in (i) and (ii) above; and for activities to be undertaken early in implementation phase; b . Oversight and management of activities undertaken in project preparation phase.</td></tr>
</table>

[1] A separate template needs to be presented for each project and programme preparation grant request listed in the SPCR.
[2] Including the preparation grant request.

Pilot Programme for Climate Resilience

Project/Programme Preparation Grant Request[1]

As part of the TA packages financed under the Preparation grant, the purchase of some equipment workshops and travel may be required, in addition to consultancy services

10. **Outputs**:

Deliverable	Timeline
(a) Environmental and Social Impact Assessment and relevant Management Plans	4 months from start of TA
(b) Technical reports and relevant plans.	4 months from start of TA
(c) Feasibility and Design report for Climate Adaptation Loan Facility (CALF) and Climate Adaptation Trust (CAT) Fund	6 months from start of TA
(d) Short-term project support personnel contracted Detailed TORs	Upon start of TA Throughout TA

11. **Budget (indicative):**

Expenditures[3]	Amount (USD) - estimates
Project Support Staff – SDED/PCU	21,600
Consultants	290,000
Equipment	15,000
Travel/transportation	5,000
Others (admin costs/operational costs)	10,000
Contingencies (max. 10%)	34160
Total Cost	375760
Other contributions:	
• Government	20,000 (in-kind staff time)
• Multilateral Development Bank (MDB)	20,000 (in-kind staff resources under complementary project)
• Private Sector	
• Others (please specify)	

12. **Timeframe** (tentative)

Submission of pre-appraisal document for PPCR Sub-Committee Approval: *6 months from Grant signing*
Expected Board/MDB Management[4] approval date: *December 2011*

[3] These expenditure categories may be adjusted during project preparation according to emerging needs.
[4] In some cases activities will not require MDB Board approval

Pilot Programme for Climate Resilience Project/Programme Preparation Grant Request[1]
1. **Other Partners involved in project design and implementation**[5]: Inter-American Development Bank, International Finance Corporation, UK Department for International Development, Organisation of Eastern Caribbean States-Environment and Sustainable Development Unit; other Government Agencies as required for consultations; Local community based organisations (CBOs) and non-governmental organisations (NGOs); Private Sector; Academia
13. **If applicable, explanation for why the grant is MDB executed**: N/A
14. **Implementation Arrangements** (incl. procurement of goods and services): The Grant will be used by Sustainable Development and Environment Division (SDED) to prepare the project using arrangements similar to the existing arrangements used for execution of World Bank Projects, where PCU and SDED are implementing agencies. Procurement will follow standard World Bank guidelines. Financial Management and Disbursement functions will be facilitated by the Bank's office in Washington.

3.2 TERMS OF REFERENCE FOR TECHNICAL ASSISTANCE

1. a Terms of Reference for Social and Environment Assessments and other social safeguards instruments
Background Social and Environmental Assessments and other social safeguards instruments are to be conducted in keeping with World Bank procedures.
Objectives To conduct social and environmental screenings/scoping in order to identify and plan for social and environmental impacts of the project and its activities, both positive and adverse.
Scope of Work To be determined in collaboration with the World Bank
Estimate Cost USD$100,000
1. b Terms of Reference for Technical studies for preparation of civil works investments
Background Some civil works are to be implemented during Phase 2 of the PPCR. These works will be costed during the Project Preparation phase in order to expedite subsequent implementation.
Objectives To conduct detailed scoping, design and costing of civil works for their subsequent implementation.
Scope of Work Clearly define scope of civil works; Provide detailed costings for respective civil works activities

[5] Other local, national and international partners expected to be involved in design and implementation of the project.

Estimated Cost
USD$75,000

2. Terms Reference for Feasibility Study for Climate of Adaptation Loan Facility (CALF) and Climate Adaptation Trust (CAT) Fund

Background

Sustainable financing to generate investment in adaptation and to build resilience to climate change is critical to the success of climate change adaptation in Saint Lucia. Financial issues under a future climate change regime, with increased effectiveness, will, however, require shifts in investment and financial flows to more climate-friendly and climate-resilient investments. Sustainable financing is an effective mechanism for fostering good climate adaptation practices and technologies.

A number of barriers were identified during PPCR 1 consultations held with the private sector and civil society. The primary barrier is the high cost to early entrants (the additional costs associated with being among the first players to implement a project in a given sector, under new regulations or working through unprecedented systems); or higher input costs because economies of scale have not been achieved for the technology. The point was made, for example that the integration of climate risk and resilience activities and technologies tends to have higher initial capital costs. This makes the cost of climate-resilient development activities more dependent on the cost of capital than is the case with conventional development activities. Private sector representatives also expressed concern over their lack of access to capital to invest in technologies and activities that had high risks and uncertainties associated with climate change and variability.

The PPCR offers concessional finance to support private sector and civil society projects and programmes that have the potential of being replicated in the future without further subsidies. In light of the strong private sector interest and involvement[6],the Government of Saint Lucia (GOSL) proposes to use this concessional finance to design and deploy modalities for removing financial and institutional barriers to the more active and sustained participation of the private sector and civil society, particularly vulnerable groups, in building climate resilience.

The creation of the CALF to provide readily accessible financing options for increased investment in the implementation of adaptation strategies is to be advanced under this project sub-component. Under this area, private firms and individuals, as well as established civil society organisations will be targeted to access concessional financing from an established envelope, to conduct resilience building projects on their properties, in communities and at the household level. The modalities for on-lending via local lending institution (s) to support climate change adaptation (CCA) investments will be developed, and it is expected that grant funding may play a role to support uptake in this strategic area.

There is also an increasing recognition that the current situation of financial support for climate change action in Saint Lucia —characterised by a large number of international funds with complex administrative processes, minimal transparency or accountability, and conflicting mandates that do not always address or respond to Saint Lucia's concerns or priorities—is untenable. It is against this background that the CAT Fund is proposed.

By supporting the establishment of a Trust Fund, the PPCR will assist with enhancing the GOSL's capacity to meet its fiduciary responsibility to oversee the large climate-related investments being proposed for Saint Lucia. These are likely to grow substantially in the coming years, highlighting the need to manage the funds in a comprehensive, coordinated and responsible manner within the broader context of sustainable development and

[6] **Appendix 9** shows the private sector engagement during the PPCR National Consultation (March 15), Day 2 of the Second Joint Mission (May 11) and during Small Focus Group and One-On-One Meetings with various national consultants.

poverty alleviation. The PPCR also represents an opportunity to undertake a programmatic approach to the planning, implementation and financing of climate change adaptation in Saint Lucia, not only with respect to planning and implementation, but also with regard to financing. The assistance related to establishing a sustainable financing mechanism for adaptation will be an important and timely initiative made possible by the PPCR.

Objectives:

1. To create an effective mechanism for fostering the good climate adaptation practices among civil society and private sector required to establish the Trust Fund and to operate it in a successful and sustainable manner.
2. To provide comprehensive and detailed information and guidance required to establish the CAT Fund and to operate it in a successful and sustainable manner.

Scope of Work

The scope of work of the consultant would be as follows.

CALF

1. Review experience of other jurisdictions in establishing and operating environmental trust funds intended to serve a similar purpose to Saint Lucia's Adaptation Trust Fund, and identify lessons learned and good practices;
2. Review the adequacy of the trust fund mechanism for the business needs of Saint Lucia and compare with other options for achieving sustainable financing of climate change adaptation;
3. Review the relevant domestic legislation and international agreements of relevance to the proposed trust fund;
4. Review of the opportunities and challenges for the establishment of the CALF;
5. Prepare documentation concerning, inter alia, the type (i.e. legal entity), required legal agreements and their subsequent amendments, proposed objectives, costs, and administrative arrangements and agreements for the Trust Fund; legal agreements should cover such matters as the governance and the purposes and activities for which the trust funds may be used as well as the respective rights and obligations of the parties to such agreements.

Deliverables

Documentation concerning, inter alia:

1. The type of entity (i.e. legal entity) and required legal agreements and their subsequent amendments;
2. Proposed objectives;
3. Administrative arrangements and agreements for the Trust Fund; and
4. Operations Management of the Loan facility
5. Evaluation process for climate resilience loans
6. Monitoring procedures for the facility
7. Indication of Cost

Implementing Agency

Saint Lucia Development Bank and the Ministry of Physical Planning and the Environment -SDED

CAT

Scope of Work

The scope of work of the consultant would be as follows.

1. Review experience of other jurisdictions in establishing and operating environmental trust funds intended to serve a similar purpose to Saint Lucia's Adaptation Trust Fund, and identify lessons learned and good practices;
2. Review the adequacy of the trust fund mechanism for the business needs of Saint Lucia and compare with other options for achieving sustainable financing of climate change adaptation;
3. Review the relevant domestic legislation and international agreements of relevance to the proposed trust fund;
4. Review of the opportunities and challenges for the transition of the CALF into the CAT Fund.
5. Prepare documentation concerning, inter alia, the type (i.e. legal entity), required legal agreements and their subsequent amendments, proposed objectives, costs, and administrative arrangements and agreements for the Trust Fund; legal agreements should cover such matters as the governance and the purposes and activities for which the trust funds may be used as well as the respective rights and obligations of the parties to such agreements.

Deliverables

Documentation concerning, inter alia:

1. The type of entity (i.e. legal entity) and required legal agreements and their subsequent amendments;
2. Proposed objectives;
3. Administrative arrangements and agreements for the Trust Fund; and
4. Indication of Cost

Implementing Agency

Sustainable Development and Environment Division, Ministry of Physical Development and the Environment

Cost Estimate (Total): US$75, 000

3. Terms of Reference for Project Management Support

Background

The Project Preparation period will require, inter alia, establishing the modalities for the implementation of Phase 2; developing the terms of reference for project staff; procuring equipment if required; hiring any support staff required and the preparation of terms of reference for, and implementation and oversight of, any assessments/studies to be undertaken during the Project Preparation period,

The effective discharge of these tasks will require dedicated human resource capacity that lies outside of the existing capacity of either the SDED or the PCU. For this reason, it is proposed to secure the services of A. A Technical Expert who will be charged with the overall responsibility for the implementing the aforementioned A tasks and B. A Procurement/Accounting Specialist who will have direct responsibility for the procurement, accounting and financial management aspects during the Project Preparation period. The specific terms of reference (A., B.) for these two individuals are outlined below.

In addition, it will be necessary to provide the two short-term individuals with the equipment and supplies (computers, desks, chairs, software) necessary to effectively discharge their duties. It is however expected that full-time project personnel to be hired subsequently shall utilize the equipment purchased during the Project Preparation period. It is also expected that the two short-term individuals will make use of equipment such as photocopiers in the agencies where they are housed. The terms of reference for the procurement of these items (C) are provided below.

A. Procurement of Services :Technical Expert

Objective: To secure the services of a short-term Technical Expert/Consultant who will assume day-to-day responsibility for the preparation for, and execution of, the activities to be undertaken during the Project Preparation Period.

Scope of Work

The scope of work of the consultant would be as follows.

1. Prepare Terms of Reference for Project Personnel to be hired under the Project both during the Project Preparation period and the implementation phase;
2. Prepare Terms of Reference for short-term technical assistance activities (studies/ assessments) to be undertaken during the Project Preparation period and, as required, in the early stages of implementation;
3. Oversee preparations for procurement of services and goods require during the Project Preparation period and to facilitate implementation, including project staff, short-term technical expertise; office equipment and other related goods and service;

Institutional Arrangements

The Technical Expert will be housed in the offices of the SDED and will work in close collaboration with, and under the guidance of the SDED-PPCR Team Leader. The Technical Expert will also work closely with the PCU and, in particular, with the Procurement/Accounting Specialist.

Cost Estimate: 8 months x US 5,000 = US$40,000

B. Procurement of Services: Accounting Specialist

Objective: To secure the services of a short-term Procurement/Accounting Specialist

who will assume day-to-day responsibility for the procurement of goods and services and for accounting and financial management.

Scope of Work

The scope of work of the consultant would be as follows.

1. Prepare the necessary documentation/requests to facilitate the procurement of goods and services;
2. Ensure that all goods and services are procured in accordance with World Bank/GOSL fiduciary requirements and standards.
3. Record and account for all expenditures incurred under the project
4. Maintain the balance of accounts of Project and ensure that all associated records are updated and available as required.

Institutional Arrangements

The Procurement/Accounting Specialist will be housed in the offices of the PCU and will work in close collaboration with, and under the guidance of the PCU Manager. The Procurement/ Accounting Specialist will also work closely with the SDED PPCR and, in particular, with the Technical Expert.

Cost Estimate: 9 months x US 2,400 = US$21,600

C. Procurement of Goods: Office Equipment & Supplies

Objective: To procure office equipment and supplies for Technical Expert and Procurement/Accounting Specialist for the discharge of project-related duties.

Cost Estimate: US$15,000

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)

June 1st 2011

4.0 LIST OF APPENDICES

Appendix 1: Key Measures and Initiatives Identified under the National Economic Policy Framework

Economic/Policy Areas	Key Measures And Initiatives
Sustainable Development	• Preparation of a ten year National Sustainable Development Strategy • Development of a sector development Strategy
Tourism	• Branding and increased marketing • Incentives for hotel construction and upgrade
Agriculture	• Food security • Promotion of Agri-business • Upgrade of feeder roads • Livestock development and meat processing • Investments in the Fisheries sector • Investments in agricultural diversification
Private Sector	• Encouraging entrepreneurship • Promotion of ICT • Implementation of the CARICOM Single market and Economy • Buy local Campaign • Promotion of small and micro business development • Development of a National Export Strategy
Infrastructure	• Construction of hospitals and health centres • Castries re-development • Cruise Port expansion • Cargo port expansion • Airport expansion • Construction of a water reservoir in the south of the island • Improvements to road network
Environment	• Protection of wetlands and open spaces • National Environment Act to be Enacted • Creation of a National Environmental Commission • Sewage treatment system for the capital city • Investments in air quality monitoring
Energy	• Duty concessions on renewable energy technologies and energy efficient devices • Promotion of Energy Service Companies (ESCOs) • Exploitation of renewable energy
Social issues	• Universal health care • Privatization of water • Private sector engagement in home construction

Source: GOSL. Saint Lucia's National Vision Plan. 2010

Appendix 2: Types of Observed and Projected Climate Related Stresses of Critical Sectors

Sector	Types of Observed and Projected Climate Related Stresses
Water	Pollution from land based activities, such as agriculture, housing and industry Many rivers are manifesting decreased flow due to deforestation and abstraction Water company is experiencing difficulty in providing a reliable supply to some areas, especially in the dry season Increased intensity of rainfall events leads to increase in land slippage, high erosion, increased sedimentation loads in watersheds Reduced annual rainfall may lead to ecosystem shifts and increased vulnerability of endangered species Reduced water flow in watersheds
Coastal and Marine Resources and Ecosystems/Fisheries	In 2005, Saint Lucia experienced a major bleaching event, from which some reefs never recovered - the island fell several places down from its position among the top five dive destinations in the world Loss of sandy beaches due to erosion, exacerbated by sea level rise Loss of important nesting grounds for endangered turtle species such as the leatherback (*Dermochelys coriace)* Coastal ecosystems are impacted land-based sources of pollution (and in some instances sand mining of beaches), and by increased land run-off during flood events Storm activity of a higher intensity, exacerbated by sea level rise, have result in increased physical damage to coral reefs and mangroves
Human Health	Projected increase in vector-borne diseases and heat stress associated with an increase in temperature. Indirect impacts arising out of other sectoral impacts, such as declining water resources and the spread of water-borne diseases through flooding. Structural damage to health facilities arising out of effects of extreme weather events A global expansion in the spectrum of infectious diseases once thought to have been eradicated. Likelihood of greater demands on health care systems and emergency response systems, especially during major events such as flooding, fires, heat

Sector	Types of Observed and Projected Climate Related Stresses
	waves, and storms; possible infrastructure and systematic failures.
Agriculture	New vulnerabilities on the agriculture sector through a declining and increasingly unpredictable water supply, increased evapo-transpiration, increased pest infestation and temperature extremes Unusually high temperatures in 2006 caused seeds not to germinate Because most farms are rain-fed, changes in the temporal distribution of rainfall have had many farmers "caught out" and some have lost their crops when the rains have not arrived at the expected times Increase frequency of drought conditions retarding crop and livestock growth; Increase or introduction of new agricultural pests Weakened crops prone to pest and disease infestation Increase in both external and internal parasites in livestock; Predisposition to, and increase in diseases in livestock. Low fertility and reproductive rate for male and female livestock. Late maturation of offspring and increase in calf mortality
Infrastructure and Human Settlements	Most of Saint Lucia's major human settlements, and associated infrastructure (telecommunications, roads, airports and seaports), are located along the narrow coastal belt and at direct risk from increased extreme weather activity, sea level rise and storm surges Rain-induced landslides on steep slopes, flooding and inundation pose threats to livelihoods and socio-economic activity Settlements in the interior will be susceptible to hurricane winds, flooding and landslides Critical public sector assets are rendered vulnerable Poor operational performance of inundated municipal and household septic systems, contaminating drainage and water supplies
Tourism	Increased temperatures in source countries, deterioration of Saint Lucia's natural resource base and the threat of extreme events and human health risks, will combine to reduce travel to the island Tourism sector is at direct risk from hurricanes and

Sector	Types of Observed and Projected Climate Related Stresses
	storm surges, declining water supply, dying reefs and other impacts
Forestry and Biodiversity	Knock on impacts on watershed structure and catchment characteristics, are impacting indirectly on water resources Impact on biodiversity and food production Sea Level Rise leading to erosion of beaches and salt water intrusion into freshwater ecosystems Reduction in annual rainfall, especially in "wet" season leading to droughts which cause decreased quality of habitats and increased vulnerability of wildlife populations to disease and invasive alien species
Disaster Management	Floods result in destruction of roads, houses, coastal areas, etc. and the displacement of people and the activation of shelters. Some areas are subject to relatively large amounts of rain in relatively short periods of time. This together with angle of slopes and general terrain, porosity of soil, and the shape and size of the river basin, siltation, deteriorated or insufficient drainage systems and unregulated deforestation of upland areas, and the presence of obstacles in drainage ways may lead to land based flooding.
Financial Services Sector (FSS)	Increased premiums for consumers and increased payouts to clients As clients become more aware of the impacts of climate change and they attempt to reduce their vulnerability the FSS will see increased requests for insurance coverage and bank loans to address adaptation concerns. As a result of government's inclination to foster climate resilience at a national level FSS will be required to expand their portfolios into non-traditional areas. Bankers and insurers must begin to consider providing loans and coverage for property owners to include cisterns and rain water harvesting systems as part of construction costs. Farming sector must begin to source financing to conduct research for more drought resistant crops in order to ensure food security in the long run

Source: Adapted from: GOSL. Second National Communication to the UNFCCC. 2010

Appendix 3: Non-PPCR Key Consultations on Climate Change or including Climate Change, held in Saint Lucia over the Last Decade[1]

Year	Activity	Remarks
2011	UNECLAC Review of the Economics of Climate Change in the Caribbean (RECC): Workshop on Sector Specific Assessments for Saint Lucia in the areas of Health, Agriculture and Tourism	The RECC aims to assess the likely economic impacts of climate change on key sectors of the Caribbean economies, to stimulate government, regional institutions and private sector actions, to develop and implement suitable policies to mitigate and adapt to climate change.
2011	Regional Workshop on :Delivering transformational change 2011-21: Implementing the CARICOM 'Regional Framework for Achieving Development Resilient to Climate Change':	In July 2009 the Heads of Government of CARICOM approved the *'Regional Framework for Achieving Development Resilient to Climate Change*-2009-2015', which defines CARICOM's strategic approach for coping with climate change. The Heads of Government also asked the CCCCC to prepare an Implementation Plan to take forward and deliver the strategic elements and goals identified in the Regional Framework.
2010	Sensitisation Workshop in Energy Efficiency	Held as part of a wider process to develop the following: • A long term Sustainable Energy Strategy, which includes Electricity Sector Liberalization, as it relates to renewable and alternative sources of energy, as well as a Transport Sector Strategy (inclusive of a Green Policy within the Transport sector), based on the National Energy Policy (NEP) approved by the Government of Saint Lucia; • The revision and updating of the Electricity Supply Act (ESA) and other relevant concerns in accordance with the NEP-Sustainable Energy Plan (SEP) • A blueprint for the establishment of a regulatory authority and for inter-agency collaboration for energy sector improvements

[1] Saint Lucia has undertaken an exhaustive consultative process as part of PPCR Phase 1 (not listed here). See Appendix 9: Key Contributors to Saint Lucia's SPCR and Investment Plan

		• A Public Energy Education and Awareness Strategy and Plan to be developed for the short and long term
2010	Engineering for Climate Change in Saint Lucia -The Hurricane Scenario**:** *Second Workshop on Designing and Constructing for Increased Hurricane Wind Speeds from Climate Change*	Held primarily for engineers, but also included architects, planners, building officers, contractors, technicians and others persons involved in construction. Process to be pursued for the adoption of the guidelines, as part of the Development Control Authority (DCA) approval process for public and commercial buildings in Saint Lucia, in the first instance.
2010	Drought Management: *Issues, Challenges and Lessons for the Caribbean Water Utilities*	Determining the way forward, based o the recent drought experienced in the Caribbean, including the link with climate change
2009	Symposium on the theme, *Dealing with Change: Assessing Risks and Opportunities for Insurers*	Improving awareness on the impact of climate change on insurance
2009	Student Symposium (as part of Energy Awareness Week (EAW) under the theme *Combating Climate Change through Renewable Energy and Energy Efficiency)*	Exposing students to a range of sustainable energy options available to Saint Lucia, as well as energy efficient options
2009	Construction Symposia (as above, as part of EAW)	Improving awareness under the theme *Innovative Building Construction & Designs for Energy Efficiency*
2009	Workshop on *Climate Change and Water Use Efficiency in the Tourist Industry*	Improving awareness on the effects of the climate change on water and how to address this in the tourism sector
2009	Regional Workshop on Training in Disaster Management and Mitigation for Teachers	Exposing teachers to disaster management and mitigation, including climate change, to allow for incorporation into the school curriculum
2009	Vulnerability and Adaptation Climate Change Workshop (as part of the SNC Project)	Training and information about latest findings regarding global warming trends in the Caribbean in general and in Saint Lucia, in particular
2009	Mitigation Training Climate Change Workshop (as part of the SNC Project	Enhancing national capacity to collect and analyse Saint Lucia's contribution to global greenhouse gas emissions
2009	Second Conference of the CCCCC on the MACC for Sustainable Development of the Caribbean	Sharing of results of the MACC Project and determining the next steps
2009	Climate Change IFF Workshops under the theme, *Capacity development for policy makers of developing countries to address*	Assessing opportunities for improving investment and finance flows for climate change in key sectors and/or economic

	climate change concerns in key sectors	activities
2008	Training workshop of engineers, architects, planning and building officers and contractors in new engineering guidelines pertaining to hurricane wind speed designs	Trained persons involved in the designing, construction and planning and supervision aspects of buildings. Process to be pursued for the adoption of the guidelines, as part of the DCA approval process for public and commercial buildings in Saint Lucia, in the first instance
2007 & 2008	Greenhouse gas (GHG) Inventory Workshops (as part of the SNC Project)	Training in the identification of sources of greenhouse gases on the island, an assessment of quantities of these gases discharged and the identification of sinks
2007	SIDS Workshop on the Implementation of UNFCCC Article 6	Implementing Article 6 of the UNFCCC on Education, Training and Public Awareness
2007	Annual General Meeting- Insurance Council of Saint Lucia	Delivering a presentation on the implications of climate change for the insurance, and wider financial sectors
2006	Knowledge, Attitude and Practices (KAP) Survey Results Community Workshop	Sharing of climate change KAP Project results with community and other stakeholder agencies
2005 & 2006	Climate Change Vulnerability and Capacity Assessment Regional Workshop	Developing vulnerability assessment methodologies applicable to the Caribbean area
2005	National Symposium on Climate Change and Food Production	Improving awareness of the relationship between climate change and agriculture/food production
2004	Clean Development Mechanism (CDM) Workshop	Increasing the level of awareness and stimulating interest in the CDM
2004	Climate Change and Health Seminar	Increasing the level of awareness, especially of health practitioners on the relationship between climate change and climate-related diseases
2003	Climate Change and the Financial Sector Workshop	Overview of climate change and its implications for the financial sector
2001	Climate Change Enabling Activity Project Institutional Data Needs Assessment Workshop	Identifying available data and key data gaps

Source: Adapted from: GOSL.2010 Other Relevant Information for the Second National Communication to the UNFCCC.

Appendix 4: National Policy and Information Documents Specific to Climate Change[2]

Year	Name of Document
2011	UNECLAC Review of the Economics of Climate Change in the Caribbean (RECC): Sector Specific Assessments for Saint Lucia in the areas of Health, Agriculture and Tourism
2010	PPCR-Saint Lucia's Proposal for Phase 1
2010	Draft Vulnerability and Adaptation Assessment Reports under the SNC in: Agriculture; Coastal and Marine Resources; Financial Sector; Forestry; Biodiversity; Health; Human Settlement; Critical Infrastructure; Tourism; and Water (with Meteorological and Geographic Information System support services); also chapter on 'Other Relevant Information'
2010	UNECLAC RECC in the Caribbean Project: Phase I: Climate Change Profiles in Select Caribbean Countries (Saint Lucia Chapter)
2010	Saint Lucia National Energy Policy
2009	Draft Mitigation Assessment Reports under the SNC in: Energy; Industry, Solvent and Other Product Use; Waste; Agriculture; and Land Use Change and Forestry
2009	National Issues Report on Key Sector of Energy of Energy (Mitigation) for Saint Lucia
2009	Draft Chapter on National Circumstances (SNC)
2009	Sustainable Energy Development in Saint Lucia
2008	Development of a Framework for Environmental Management. Final Report
2008	Engineering Guidelines for Incorporating Climate Change into the Determination of Wind Forces.
2008	Impact of Climate Change on Design Wind Speeds in Saint Lucia
2008	National Inventory of Greenhouse Gases for Saint Lucia
2008	UNDP Climate Change Country Profiles: Saint Lucia
2007	Climate Change Teacher's Toolkit (draft)
2006	Report of the Knowledge, Attitude Practice (KAP) Survey for the Vieux Fort Region
2005	Report for Climate Change Enabling Activity Project Phase II: Institutional Data Needs Assessment
2005	Report on National Symposium on Climate Change and Food Production
2004	Climate Change and Health Seminar (Report)
2004	Climate Change Technology Needs Assessment for Saint Lucia
2002	National Climate Change Policy and Adaptation Plan
2001	Saint Lucia's Initial National Communication on Climate Change in Response to its Commitments Under the United Nations Framework Convention on Climate Change
2001	Saint Lucia Climate Change Vulnerability and Adaptation Assessment
2001	Saint Lucia Country Paper on National Climate Change Issues
2001	Saint Lucia Sustainable Energy Plan

Source: Adapted from: GOSL. 2010. Other Relevant Information for the Second National Communication to the UNFCCC.

[2] Saint Lucia has several key documents as outputs of its PPCR Phase 1 Process (not listed here). See Part 1: Background and Rationale

Appendix 5: Key National Policy-type Documents that Incorporate or make Specific Reference to Climate Change[3]

Year	Policy Document
2009	**National Emergency Management Plan**
2009	-Disaster Management Policy Framework for Saint Lucia
2009	-Comprehensive Disaster Management Strategy
	-Water Management Plan for Drought Conditions
2009	-Wildfire Management Plan
2008	-Hazard Mitigation Plan of Action (draft)
2007	-Hazard Mitigation Policy
2006	-Hazard Mitigation Programme
2006	-Flood Response Plan
2006	-Hazard Mitigation Plan
2006	-Response Plan for Extreme Heat Event
2006	-Hurricane Response Plan
2006	-Disaster Management Act
2002	Draft Coastal Zone Management (CZM) Strategy and Action Plan
2008	Draft National Environmental Education Policy
2008	Draft National Environmental Education Strategy
2008	Draft Environmental Research Policy
2008	Draft Second National Biodiversity Strategy and Action Plan
2008	Draft National Action Plan to Combat Desertification and Drought
2008	Draft Saint Lucia Forest Policy
2008	National Land Policy
2007	St. George's Declaration
2006	National Environment Policy/National Environment Management Strategy
2004	Coastal Zone Management Policy
2002	National Climate Change Policy and Adaptation Plan

Source: Adapted from: GOSL. 2010. Other Relevant Information for the Second National Communication to the UNFCCC.

[3] Saint Lucia has several key documents as outputs of its PPCR Phase 1 Process (not listed here). See Part 1: Background and Rationale

Appendix 6: List of Potential Adaptation Strategies for Vulnerable Sectors in Saint Lucia[4]

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
Sustainable Land Management										
Develop comprehensive land-use plans	√	√	√	√				√	√	√
Providing options for unregularised settlements	√	√		√					√	√
Farming in marginal lands	√			√						√
Contour planting	√									
Terracing	√									
Good Husbandry mulching	√									
River Bank Management	√	√	√	√						
Maintain vegetative buffers – mangroves, coastal vegetation, river banks - through regulations and enforcement	√	√	√	√					√	
Introduce production units to areas of suitable land capability	√									
Restore degraded habitats for agricultural purposes	√									
Changes in Farming Methods and Systems										
Introduction of changes in cropping systems and cycles	√		√				√			
Introduction of drought and salt water resistant crops	√									
Introduction of improved cultivation techniques	√									
Adoption of alternative production strategies - hydroponics	√									
Application of soil amelioration	√			√						

[4] This Appendix should be considered along with Appendix 8: Summary of Actions Deemed to be of National Significance for Addressing Climate Change

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
techniques										
Establishment germplasm banks of hardy native species for habitat restoration	√			√						
Control invasive species	√			√		√				
Adoption of technology for controlled environment production – green houses	√									
Livestock Management										
Zero grazing for livestock Cut and carry Fodder Banks	√									
Reduce stocking rates	√									
Alter stocking distribution	√									
Integrated Watershed Management										
Reforestation and aforestation	√	√	√	√						√
Acquisition of private water catchments	√	√	√	√			√			√
Protection of water catchments	√	√	√	√		√	√	√		√
Reforestation of critical watersheds	√	√	√	√			√		√	√
Water Management										
Conduct studies on economic value of water and ecosystems			√							
Rainwater harvesting	√		√		√	√	√			√
Ground water extraction	√	√	√		√	√	√			√
Desalination					√					
Introduction of Irrigation and high water conservation technologies	√									

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
Storm water management and re-use	√		√		√	√	√	√	√	√
Development and enforcement of water quality standards	√	√	√		√	√	√			√
Regulation of use of grey water and grey water products	√		√		√	√				√
Education on water-borne diseases after a disaster event			√			√	√		√	√
Education on correct use of grey water	√		√		√	√	√			√
Education on correct maintenance on private water storage	√		√		√	√	√			√
Implement dry season premium water charge for excessive use of water	√		√		√	√	√			√
Management of the Coastal Sector										
Reduce coastal water pollution										
Construction of coastal defence structures		√				√	√			√
Regulate and enforce Setbacks		√			√		√	√	√	√
Construction of groynes, breakwaters and other sediment trapping devices		√			√		√	√	√	√
Port Infrastructure										
Berthing efficiency of vessels		√						√		
Maintain integrity of berthing		√						√		

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
infrastructure										
Fisheries related infrastructure		√								
Maintain fisheries complex amenities, including fish processing plants	√							√		
Develop and implement fishing vessel construction codes	√									
Shoreline management										
Engineered wetlands and mangrove rehabilitation	√	√		√	√			√		√
Integrated Coastal Zone Management Plan		√								
Map hazard areas in coastal zone and conduct risk analysis of these areas		√								
Beach Monitoring		√								
Beach Nourishment										
Regulate against beach sand mining		√		√						
Monitoring										
Establish additional sea-level monitoring stations at selected sites; establish wave recorders at selected sites to monitor the impacts of non-tropical processes that generate strong ocean swells; and expand and upgrade the meteorological and hydrological monitoring system.		√								
Mapping and Digitised Data Sets										
Hazard Mapping – drought, wildfires, land slides	√	√	√	√			√	√	√	√
Digitized bathymetric and land contour maps indicating all features		√								

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
of land use, to facilitate the more accurate modelling of storm waves and surges										
Digitize changes in the movement of sand bodies and silting rates in shallow marine waters.		√								
Create national database for zoning	√	√	√	√	√	√	√	√	√	√
Develop maps based on risk assessment for various projected scenarios	√	√	√	√	√	√	√	√	√	√
Physical Planning										
Develop zoning legislation and regulations	*Cross sectoral activities to provide support to adaptation measures identified for the critical sectors*									
Set climate resilient standards for the public property and new property developments;										
Prohibit construction of tourism plants in high risk areas										
Upgrade EIA for tourism plants to include hazard risk assessments and vulnerability analyses										
Update EIA regulations and procedures to include CC adaptation and provide training on such										
Identification and mapping of vulnerable communities		√							√	√
Improved housing and sanitation facilities in vulnerable communities			√			√				√
Building Regulations										
Adoption and enforcement of Building Codes and the inclusion of the new design hurricane wind speed standards into the Code.	*Cross sectoral activities to provide support to adaptation measures identified for the critical sectors*									
Institution of guidelines for the installation of water conservation										

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
systems, as part of the DCA approval process										
Codes for retrofitting buildings and marinas for storm resistance										
Codes and design standards for marina piers and bulkheads										
Standards for minimum floor level heights and other flood resistant measures for tourism plants in coastal & flood plain areas										
Policy Framework for Sustainable Tourism										
Diversify the tourism product away from the beach – ecotourism, cultural tourism		√			√		√			
Fiscal Incentives and the Financial Sector										
Water conservation incentives for private and community-based water conservation programs.	√		√		√	√				√
Expand Crop Insurance coverage	√						√			
Develop and implement fiscal incentives to encourage community based tourism					√					
Review tax incentives for tourism plants constructed in high risk areas					√					
The Insurance Council to incorporate existing Cabinet-endorsed guidelines into its insurance approval processes.	*Suite of products from Financial Sector that will assist in climate proofing the various sectors*									
Identify and implement suite of products that can be offered to encourage adaptation measures										
Use risk-based pricing for insurance policies and loan approvals for projects so as to compensate developers and home owners for incorporating climate resilience into										

Adaptation Measures proposed in the SNC / Sectors Identified in the V&A for the SNC	Agriculture	Coastal and Marine Resources	Water	Forestry	Tourism	Health	Financial Services (Fiscal Incentives)	Critical Infrastructure	Disaster Management	Social Sector Vulnerable Groups, gender, youth
building design and construction. Alternatively, where approval has been obtained, attach penalties to risky properties.										
Credit Union League to impose guidelines specific to resilience and mitigating disaster risk in order to monitor the construction of homes being built by their clients.										

Source: Adapted from: GOSL. Second National Communication to the UNFCCC.2010

Appendix 7: Proposed Criteria for Project Prioritisation and Selection to Build Climate Resilience[5]

Criteria	Description
Cost	Cost of implementing and maintaining ; cost sharing possibilities
Effectiveness	Capacity to solve problems or realise opportunities derived from climate change adaptation (economic benefits, social benefits, benefits to ecosystems)
Ease of implementation	Potential, policy, legal, institutional barriers
Acceptability to stakeholders	Extent to which stakeholders have identified adaptations
Acceptability to Finance Ministry	Is the option in keeping with the funding priorities for the Ministry of Finance?
Acceptability to External Donors	Is the option in keeping with the funding priorities for External Donors?
Endorsement by experts	Is the option consistent with best practice?
Time frame	What is the degree of urgency of this initiative (Immediate (2011/12); Short term (1-3 years); Medium term (4-6 years); Long term (more than 4 years)? How does the stated time frame for implementing the option align with financing time frames?
Institutional capacity	Is there institutional capacity that exists with the institution? Can the capacity be sourced from local sources? How much additional capacity and knowledge are needed to implement the option?
Size of beneficiary group(s)	Does the adaptation option provide large benefits to a small group of persons or incremental benefits to a large group of persons?
Potential social, environmental and economic costs and benefits	How significant are the anticipated benefits? Are there possible adverse effects on the environment or people?
Synergies with other initiatives	Will the initiative build on past, current or planned initiatives? Is there an identified and guaranteed source of funding for full or partial implementation from another project, in addition to PPCR?
Sustainability	Once the option is implemented, can it be sustained over time?

[5] Pending the results of the feasibility study for the Climate Adaptation Loan Facility (CALF) and the Climate Adaptation Trust (CAT) Fund, these criteria may assist in the definition of modalities in Phase 2 under the CALF and CAT

Adaptation Options	Selected Evaluation Criteria (Low 1 to High 5)													Evaluation Score
	Cost	Effectiveness	Ease of Implemen tation	Acceptability to local stakeholders	Acceptability to Ministry of Finance	Acceptability to External Donors	Endorsement by experts	Timeframe	Institutional Capacity	Size of beneficiary group	Potential social, environmental & economic costs and benefits	Synergies with other initiatives	Sustaina bility	

Source: Developed for PPCR National Consultations, 2011

Appendix 8: Summary of Actions Deemed to be of National Significance for Addressing Climate Change[6] (BLUEPRINT)

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
Target A 1. Augmentation of national water supply in vulnerable locations and segments of the populace (public institutions – schools, health clinics, communities and households, businesses, new development areas, etc.) through water storage and conservation to improve the practice of applying resilience building with respect to development initiatives					
A.1.1 Implement measures to	Support upgrading of WRMA:	CCA/AF	2011-	Reports from WRMA:	**Ministry of Agriculture, Lands, Forestry and Fisheries (MALFF) – Water**

[6] Saint Lucia has clearly articulated that its SPCR is "PPCR and beyond". This means that it provides the broad project / programme areas for all sectors, themes and areas, in pursuit of enhanced climate resilience, well beyond the timeframe of, or funding available under, the PPCR. The SPCR is expected to further serve as an overarching guide of national significance for addressing climate change, to which all organisations can refer, in their preparation of project/programme proposals for building climate resilience. As such, the SPCR is expected to serve as the "blueprint" from which climate change projects can be developed from a national framework, rather than in an *ad hoc* manner.

This compilation emanates from previous climate change consultations, reports and assessments, including, but not limited to those held under the Second National Communication; as well as the exhaustive consultative proves undertaken under the PPCR: See Appendix 9

This Appendix should be considered along with Appendix 6**:** List of Potential Adaptation Strategies for Vulnerable Sectors in Saint Lucia

[7] Outcome Area indicates nature of intervention with respect to Disaster Risk Management (DRM) and Climate Change Adaptation (CCA). CCA further indicates modality of implementation: Adaptation Facilitation (AF); Adaptation Implementation (AI) and Adaptation Financing (AF), consistent with modalities within Saint Lucia's SPCR and IP.

For the purposes of this blueprint, a distinction is made between climate change adaptation (CCA) and Disaster Risk Management (DRM). While CCA and DRR share many similarities and the two disciplines overlap, DRR addresses the risks arising from a wider suite of geophysical hazards than that covered by CCA. In addition, while CCA considers the consequences of long-term climatic change and adjustments that may need to be made in response to such change, this has not historically been the approach of DRR. In the Saint Lucian context, it may be preferable to keep the concepts separate as if this is not done, many persons are likely to associate climate change only with extreme events such as hurricanes which are often the focus of DRR efforts.

[8] Means of verification and description of Indicator

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
rehabilitate, restore or establish water supply systems to augment national water supply	○ Facilitate the preparation of a 10 -25 yr national water resources Plan (Water Master Plan) ○ Water quality monitoring		2012	Water Master Plan Baseline data on recreational water (riverine and coastal) quality	**Resources Management Agency (WRMA),- Department of Forestry (DoF)** **Ministry of Communications, Works, Transport & Public Utilities (MCTWPU); Ministry of Physical Development and Environment (MPDE)/Sustainable Development & Environment Division (SDED); Ministry of Finance; Ministry of Health; CEHI – IWRM project; WASCO and other Water users; Water Sector Reform Project; Private Sector Agencies; CBOs, NGOs; Vulnerable groups**
	Facilitate Implementation of Water Reform Project: ○ Alternative water sources ○ Ground Water Prospecting	CCA/AF		National and Water Sector Reports	**WASCO; MCWTPU**
	Construction of Emergency Water Stores - decentralized tank farms or micro dams in strategic communities – e.g. concreted hillside landscapes for 2- 100,000 gal water storage in vulnerable communities Refurbishment/ replacement	CCA/AI		National, sector and agency reports; Number of water storage facilities in vulnerable communities	**WRMA; National Reconstruction Unit; Ministry of Physical Development and Environment (MPDE)/ SDED; -Physical Planning Division (PPD); MoH; CEHI; Private Sector Water users – households, communities, vulnerable groups; WASCO**

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
	of water abstraction, treatment and distribution system in vulnerable communities				**WASCO; Communities, CBOs; NGOs**
	Develop and implement specific rainwater harvesting interventions for targeted vulnerable households, businesses, communities, building on and complementing existing initiatives, and integrating with the broader National Reconstruction Plan and Water Master Plan	CCA/AI	2011-onwards	National, sector and agency reports; Number of rainwater harvesting systems successfully piloted adopted at a in vulnerable areas, communities and households	**MoH; WRMA; Households; Private Sector; Vulnerable groups; MPDE-PPD; CEHI; CBOs, NGOs**
A.1.2 Promote water recycling and water conservation measures in development initiatives	Collaborate with developers in the establishment of water recycling and conservation measures in new residential, tourism and commercial projects, as demonstration sites	CCA/AI	2011 onwards	Approvals granted for developments by Development Control Authority	**Private Sector; MPDE-PPD; Ministry of Trade, Industry, Commerce & Consumer Affairs; Ministry of Tourism, SLHTA; Chamber of Commerce; WASCO, Housing & Urban Development Corporation (HUDC)**
Target A 2 Improved Health and Sanitation					
A.2.1 Implement measures to safeguard health and sanitation	Facilitate design and/or upgrading and implementation of national programmes for pest and disease control	CCA/AF	2011 - onwards	National, sector and agency reports; Reporting components of National Agricultural	**MPDE-SDED; MALFF; Min. of Health (MoH); Min. of Social Transformation (MoST); Inter-American Institute for Cooperation on Agriculture (IICA); Farmers and Fishers; Community**

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
	○ Public health – monitoring of vector and water borne diseases ○ Animal and plant health – pest and disease monitoring – including introduction of ○ Alien invasive species			Health and Safety Incidence of Pest and Disease	**Groups; Private sector/business community Regional Framework; Ministry of Finance-Customs & Excise Dep't; Saint Lucia Air & Sea Ports Authority (SLASPA)**
	Facilitate design of a national programme for addressing psycho-social needs of developing coping mechanisms to respond to climate events related trauma - Build on MoH mental wellness programmes	DRM		Sector and agency reports; Faster rate of recovery after climate-related events Improved national mental wellness	**MoH; Min. of Social Transformation; NEMO; SDED;PCU**
Target A 3 Increase National Food Security, Sovereignty and Sustainability					
A.3.1 Ensure security and safeguarding of food provisioning	Identify, assess and demonstrate production enhancement and resource management measures to extend food availability: ○ Alternative/ climate resilient agricultural production technologies ○ drought/flood tolerant crops – pilot	CCA/ AI	2011-onwards	Reports on assessment studies produced Demonstration plots established	**MALFF – FAO Project; MPDE-SDED; Farmers/Fishers; CBOs; NGOs; MoST**

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
	demonstrations ○ alternative fisheries – species and production systems				
	Establishment of germplasm banks for indigenous and climate resilient crops	CCA/AI	2012 - 2015	Bank(s) established; plants distributed,	**MALFF**
	Develop and facilitate implementation of formal and informal mechanisms for value-added production: ○ Agro-processing – national or community facility; cottage industry,	CCA/AI	2011 - onwards	National and sector reports Year round food availability	**Ministry of Commerce** **MALFF; SDED; Other Government ministries and agencies with food-related responsibilities; CBOs** **NGOs; Private sector/business community** **MoST**
A.3.2 Improve food storage and availability	Support upgrading of food storage facilities or establishment of new facilities to broaden existing food distribution network Improve national emergency food stores – satellite warehousing/ (considerations for location and design re climate risks)	DRM	2011 - onwards	National and sector reports Year-round food availability	**SDED;PCU; NEMO; Private sector/ business; CBOs/NGOs; MALFF; farmers; CC Adaptation Fund**
Target A 4 Development of community vulnerability reduction interventions aimed at achieving improved social protection measures for vulnerable communities and households					

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
A.4.1 Implement measures to safeguard community and livelihood assets	Retrofitting of public and key community buildings for climate change resilience and for demonstration/replication of climate-appropriate design re – Rain Water Harvesting , Hurricane resilience, Renewable Energy, including those used by/housing vulnerable groups (e.g. elderly; women at risk, children at risk, sick)	CCA/AI	2011 - onwards	National, sector and agency reports; Reduction in amount of damage and loss from extreme climate events Number of buildings, facilities in vulnerable areas adopting best practices from SPACC project	**SDED/ CC Adaptation Fund; NEMO; Private sector/ business/ CBOs/NGOs; MPDE-PPD/Architectural Division; MoST; Other Government ministries and agencies with relevant responsibilities**
	Establish mechanisms to facilitate the relocation of housing/settlements/ building/infrastructure vulnerable to climate-induced hazard (i.e. sea level rise) Integrating climate resilience into building and development practices	CCA/AF	2012 - onwards	National, Sector and agency reports; Reduction in amount of damage and loss from extreme climate events	**PPCR-SDED; MPDE-PPD; Ministry of Housing; National Reconstruction and Development Unit; NEMO; Other Government ministries and agencies with relevant responsibilities; Private sector/ business/ CBOs/NGOs**
A.4.2 Demonstrate best practice for	Facilitate the incorporation of green/resilience concepts –	CCA/AI	2014- onwards	National, Sector and agency reports;	**PPCR/SDED; MPDE-PPD/Architectural Division; NEMO;**

Result A. Framework for Improved Human Welfare and Development Established					
Intervention	**Actions**	**Outcome Area[7]**	**Time Frame**	**Preliminary Performance Indicators[8]**	**Responsibility/ Collaboration**
scaling up of vulnerability reduction interventions	architectural; storm water storage and conservation; food production/ landscaping with indigenous drought-tolerant plants; into a new development initiative or area (southern or north/east quadrant)			Reduction in amount of damage and loss from extreme climate events	**MCWTPU; MALFF; Other Government ministries and agencies with relevant responsibilities** **Private sector/ business; CBOs/NGOs** **Regional and International Agencies,** **National Reconstruction and Development Unit**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
Target B 1. Establishment and Application of Integrated Watershed Management Framework					
B.1.1 Collaborate with relevant stakeholders to further development of enabling environment for implementation of the IDP/EMF approach to national development	Facilitate the preparation of climate-resilient integrated development plans using the watershed as a unit of analysis including: ○ National Physical Development Plan	CCA/ AF	2011 - 2015	Climate resilient Integrated Development Plans produced incorporating an integrated watershed management	**SDED-PPCR; MPDE-PPD; MALFF - DoF** **Min. of Finance; Other relevant government ministries/ national agencies;** **Local communities**

[9] Outcome Area indicates nature of intervention with respect to DRM- Disaster Risk Management and CCA – Climate Change Adaptation; For CCA further indicates modality of implementation: Adaptation Facilitation (AF); Adaptation Implementation (AI) and Adaptation Financing (AF)
[10] Means of verification and description of Indicator

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	○ Regional Development Plans ○ Watershed Management Plans ○ Local Area Development plans ○ Land Use Plans ○ Coastal Zone Management Plan			approach	
B.1.2 Enhance enabling environment for IWP and overall IWRM for Sustainable Development	Implement outputs on policy, legislative and fiscal regimes from PPCR Phase I ○ Updated National Climate Change Adaptation Policy and Plan ○ Legislative recommendations ○ Climate-sensitive fiscal regimes	CCA/AF	2011 - 2012	National, sector and agency reports; Robust policy, legislative and institutional operational framework for climate-resilient IWRM	**SDED-PPCR; MPDE; Office of the Attorney-General; Ministry of Trade, Industry, Commerce, Consumer Affairs and Investment (MTICCAI)** **Other relevant government ministries/ national agencies** **Financial services sector**
	Integrate functions of National Environment Commission (NEC) and NCCC		2011 - 2012		**MPDE- SDED, Cabinet of Ministers**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	Fast-track implementation of Revised Building Code and Standards with CC adaptation measures Revise, adopt and implement EIA regulations and Physical Planning Regulations to incorporate climate resilience measures	CCA/AF	2011 - 2012	Adoption of Code and Regulations with CC elements Structural changes made to accommodate implementation (number of staff employed, reassignment of duties, etc)	**MPDE-PPD, SLBS, Association of Professional Engineers of Saint Lucia (APESL)**
	Support for regional initiative for development and implementation of climate-resilient tools and instruments for use in development planning	CCA/AF Regional Track		Tools/ instruments prepared and adopted	**OECS, MPDE, Caribbean Community(CARICOM)/Caribbean Community Climate Change Centre (CCCCC)**
B.1.3 Implement Integrated Watershed Planning	Pilot Project in a key watershed in e.g. enhancing climate resilience of North East Quadrant development plan to demonstrate integrated watershed Planning/	CCA/AI	2011 - 2013	Project developed and implemented	**SDED; Water Sector Reform Project**
	Support implementation	CCA/AF	2011 -		**MALFF-WRMA; Water Sector Reform**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	of IWRM Roadmap initiatives		2012		**Project; SDED; CEHI**
	Facilitate implementation of Watershed Management Plans and Riverbank Assessment and Rehabilitation Strategy	CCA/AF	2012 - 2016	Plans implemented	**MALFF/WRMA, DoF; MWTPU;MPDE-PPD**
B.1.4 Implement measures for rehabilitation, restoration and management of degraded ecosystems	Facilitate implementation of measures for rehabilitation and restoration under: ○ new Forest Management Plan ○ National Reforestation and Watershed Rehabilitation Programme ○ Coastal Zone Management Strategy	CCA/AI	2011 - 2016	DoF reports; Elements of framework for sustainable natural resources management implemented	**MALFF – DoF/ National Biodiversity Unit (NBU)** **MPDE/SDED**
B.1.5 Address poverty issues within INRM	Support the use of SLM for ensuring sustainable livelihood initiatives within poverty reduction initiatives in areas of high climate risks:	CCA/AI	2011- onwards	National Reports – e.g. Poverty Assessments, etc. Increased livelihood opportunities,	**MALFF – DoF, Biodiversity Unit; MPDE-SDED** **MoST; Agencies with mandate for poverty reduction; Local communities**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	○ Agro-forestry and other measures using biological resources identified through the National Biodiversity Strategy and Action Plan			income generation and poverty alleviation	
Target B 2. Sustainable Land Management Initiatives					
B.2.1 Establish and maintain patterns of sustainable land use and management that protect agricultural productivity and food security	Promote sustainable land Management practices: ○ Soil and Water Conservation Programmes ○ Implementing GAPs/ organic agriculture and Certification Programmes for sustainable land use in agriculture	DRM	2011-onwards	Sector and agency reports Increase used of sustainable land management practices	**MALFF ; MPDE; PCU** **Other national agencies; CBOs; Producers & Associations; Private Sector**
	Facilitate implementation of Land Bank Initiative to promote sustainable land management through management of land assets	DRM	2011-onwards	Sector and agency reports: Land Bank Initiative advanced – land assets secured and properly managed	**MALFF; MPDE-SDED;PCU ; Producers** **Regional agencies - FAO**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	Support for updating of regulatory protocols to manage/ Protected Areas and regulatory mechanisms for existing PA[11]s, including SMMA, CAMMA, PMA, PSEPA	DRM	2011 - onwards	Protocols established and adhered to	**Committee of Permanent Secretaries; MALFF - DoF/Biodiv Unit; MPDE**
B.2.2 Maintain the integrity and value of terrestrial and aquatic environments	Support implementation of NAPSAP: Studies to identify priority areas for rehabilitation	DRM	2011-onwards	Study reports	**MPDE-SDED;PCU; MALFF – DoF Other relevant government/ national agencies; Local communities**
	Utilise community-based management approaches, incorporating SLM practices , and piggy-backing on IWM, to undertake physical measures to rehabilitate degraded lands, including riverbank and slope stabilization in degraded priority watersheds *inter alia*: ○ Agro-forestry	DRM	2011-onwards	Sustainable land practices integrated into landscape by utilising community-based efforts which recognise the importance of improvement of water quality, to rehabilitate degraded lands	**MALFF – DoF; MPDE-SDED;PCU; MoH; Other relevant government/ national agencies; Local communities; Farmers**

[11] Under the HSFM for MPA project GEF funded SLU determined that it would not need to establish any new site but support established sites, even if the project document (PIF) spoke to establishment.(was specific to those islands who had few sites established).

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	cropping systems – (traditional and modified) ○ Management of riverbank Buffer Zones and Ridge Reserves (RBBZ) and Protected Forest Areas (PFA)				
B.2.3 Introduce environmental best practice in the sustainable land management approach to engender the adoption of conjoined environment/land/water management approaches	Support community SLM initiatives in establishment of demonstrations of Best Practice in SLM – support for SLM project	DRM	2011-onwards	Demonstration sites established	**UNDP/SLM Project; MALFF –DoF; MPDE – SDES;PCU; CBOs; MoST**
B.2.4 Promote investment in SLM	Utilise legislation, regulations and incentive measures for more frequent incorporation of SLM practices in production and development activities:	DRM	2011-onwards	More frequent incorporation of SLM practices into production and development activities Increased investment in infrastructure to protect land and water	**MALFF – DoF; MPDE-SDED;PCU;**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
Target B 3. Climate Resilient Coastal Zone Management					
B.3.1. Promote climate resilient coastal zone planning and development	Review of methodology for determining coastal setbacks and facilitation the implementation of these new setbacks into the development planning process in the context of sea level rise Assessment of existing coastal engineering structures and formulation of design guidelines/ standards in the context of storm surge Completion of coastal habitat mapping activity	CCA/AF	2011-2013	National Standards and Legislation Guidelines for coastal setbacks and design guidelines/ standards for coastal structures for development planning	**MPDE-SDED; MCWTPU MALFF-Department of Fisheries**
B.3.1. Promote best practice in climate resilient coastal zone planning and development	Facilitate re-design and modification of critical coastal infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise based on SLR modelling	CCA/AI		National Reports Reduced damage and economic loss due to climate resilient coastal infrastructure	**MPDE-SDED; SLASPA; MCWTPU**

Result Area B: Application of Integrated Natural Resources Management for Sustainable Development					
Intervention	**Actions**	**Outcome Area[9]**	**Time Frame**	**Performance Indicators[10]**	**Responsibility/ Collaboration**
	Facilitate implementation of community adaptation measures including artificial reefs, silt traps at river mouths				**MALFF; MCWTPU; MPDE-SDED**
Target B 4. Risk Reduction to Climate Related Disasters					
B.4.1 Incorporate climate change considerations into disaster risk management	Support systematic risk studies to provide understanding of insurance costs and costs of active mitigation efforts for future planning	DRM	2011-2013	Study reports	**NEMO; MPDE-SDED; National Insurance Council; MPDE; MCWTPU; MALFF/DoF/WRMA**
	Install systems for systematic risk assessment using GIS capability		2011 - 2015	GIS risk systems installed	**NEMO; MPDE-SDED/PPD MALFF-DoF/WRMA Other relevant national agencies**

Result C. Framework for Promoting Enterprise/Business Resilience Established					
Intervention	**Actions**	**Outcome Area**	**Time Frame**	**Performance Indicators**	**Responsibility/ Collaboration**
Target C1. Increase investment in resilience building interventions					
C.1.1 Establish financing facility to support programme areas	Create Climate Change Adaptation Financing Facility and scale up to a Climate Change Trust Fund in the context of proposed Environmental Trust Fund	CCA/AF	2012-2014	Reports on PPCR CC Adaptation financing facility established and scaled up to Trust Fund	**SDED-PPCR; SLDB; Financial services sector; Private sector; CBOs, NGOs International Partners - IDB/IFC**
C.1.2 Promote private sector investment in programmes aimed at building business and community resilience	Facilitate implementation of specific private sector initiatives to target issues of building resilience in enterprise/ business, complement existing initiatives, and integrate with the broader environmental management programmes – such as Certification for Green globe, Blue flag, ISO 14000) Facilitate the development of partnerships for active involvement of private sector in community climate resilience building Design and implement national programmes to promote corporate social responsibility (CSR) of the private sector to support community/civil society involvement in climate change adaptation initiatives through a participatory approach, building on existing "adopt-a-community" projects and "Greening initiatives"		2012-onwards	Reports on PPCR Uptake of concessional loan financing	

Result C. Framework for Promoting Enterprise/Business Resilience Established					
	Target C2. Supply chain development with expansion of business opportunities				
C.2.1 Establish mechanisms to develop supply chain to support climate resilience building	Design and implement national initiatives to support businesses that embrace/assimilate climate change in their business processes ○ E.g. incentives/dis-incentives		2012 - onwards	Reports Number of new business areas related to climate resilience building	**SDED-PPCR; MTICCAI Relevant Ministries Financial Services Sector Private sector/business community –small and medium enterprises (SMEs)**
	Target C 3 Business Productivity Enhancement				
C.3.1	Support changes in business processes for increased climate resilience (e.g. business continuity planning) Provide support for initiatives that forge a nexus between conservation/ protection of a natural resource and revenue generating business activity ○ Assistance for technology and innovation Support value added and new business opportunities ○ Provision of climate adaptation technologies and services		2012 - onwards	Reports Number of new business areas related to climate resilience building	**SDED-PPCR; MTICCAI Financial Services Sector Private sector/business community – SMEs. Ministry of Tourism, Saint Lucia Hotel & Tourism Association (SLHTA)**

Result Area D: Enhanced Capacity and Institutional Strengthening					
Intervention	**Actions**	**Outcome Area**	**Time Frame**	**Performance Indicator**	**Responsibility/ Collaboration**
Target D 1. Strengthening of enabling environment for building a climate risk resilient Saint Lucia					
D.1.1 Mechanism to promote collaboration among all actors within key economic sectors to integrate climate resilience considerations into all relevant policies and programmes and facilitate coordinated implementation of initiatives	Assist in facilitating a State Leadership Initiative for the adoption of an integrated approach to climate change resilience building among government agencies , utilising the integrated development planning (IDP) process within the environmental management framework	CCA/AF	2011-onwards	Implementation of IDP process in development planning framework for mainstreaming climate change adaptation	**MPDE-SDED/NEC** **Ministry of Finance** **Other Government agencies**
	Provide functional support to CC Focal Point – national Secretariat/Office re adequate resources to support inter-agency functional collaboration for implementation of PPCR/SPCR;		2011-2016	PPCR Reports Functional PPCR Implementation Unit established[12]	**SDED; MPDE/ NEC** **Other Focal Point Agencies**
D.1.2 Implement harmonised policies, plans and other instruments (financial and socio-economic)	Harmonize policy framework through the promotion of a consultative and collaborative approach to develop linkages among		2011–2016	Reports Harmonised sector policies, plans and	**MPDE-SDED/NEC** **Other Government Ministries/agencies** **OECS/USAID project**

[12] Budget should include funds for meetings of the NCCC and the Climate Resilience Sub-Committee.

Result Area D: Enhanced Capacity and Institutional Strengthening					
that are compatible and mutually reinforcing to create an enabling environment that promotes CC resilience building for sustainable development	sectors to encourage integration of climate change objectives into revised sector policies, plans and programmes; Issues related to climate change such as land degradation and drought, biodiversity management, disaster risk reduction, policy guidelines for access and use of traditional knowledge and practices, etc. should be considered and measures to address these incorporated into the revised policies			programmes	
	Facilitate fast tracking of the implementation of revised NCCAP, and other relevant policies and strategies, such as NAPSAP to provide for the coordinated implementation of the PPCR/SPCR (provide technical support and advocacy as required and utilize the IDP process)		2012-2013	Status Reports on policy implementation produced	**MPDE-NEC /SDED** **Other Focal Point Agencies**

Result Area D: Enhanced Capacity and Institutional Strengthening					
	Establish and implement appropriate instruments to provide incentives and penalties (dis-incentives) to support and promote climate resilience building[13]		2012-onwards	PPCR Progress Reports Creative and effective use of a wide range of instruments that encourage CC resilience building	**MPDE-SDE/NEC ; MTICCAI; Other Government Ministries/agencies wrf CC sensitive and vulnerable sectors**
D.1.3 Improvement and implementation of legal measures for strengthening the mandates of public agencies involved in climate change	Implement legal measures from PPCR Phase I, for ensuring coherence and compatibility to strengthen mandates of agencies to operate in a harmonised frame		2012 - 2014	Legislation relating to environmental management harmonised and integrated providing an improved legislative framework for climate change	**MPDE NEC/ SDED ; MALFF Attorney General's Office OECS/USAID Project**
D.1.4	Implement and enforce relevant measures (e.g. codes, standards, guidelines) for natural resources (land, water and coastal) management to ensure climate resilience		2012 - onwards	Codes, standards, guidelines and other relevant legal measures established for natural resources management	**MPD-NEC/SDED/MPDE/Crown Lands Section MALFF-DoF /Fisheries Attorney General's Office Financial Institutions**

[13] Need for collaboration among government agencies such as Tourism – Tourism Incentives Act, Special Areas Development Act, among others

Result Area D: Enhanced Capacity and Institutional Strengthening					
	Strengthen environmental standards and regulations; and enforcement support structures and mechanisms to monitor compliance, as well as provide basis for monitoring impact of adaptation interventions; Foster regional networking to support national initiatives in this regard.		2011 - 2012	Agency Reports produced indicating reduction in CC related impacts	**MPDE-SDED; Saint Lucia Bureau of Standards/ Caribbean Regional Organisation of Quality and Standards (CROSQ); OECS/USAID Project**
Target D2 Development of effective Research and Systematic Observation (RSO) and data and information and communication systems aimed at achieving effective CC resilience building					
D.2.1 Establish and implement effective information management systems for appropriate assessment and monitoring of issues, trends and impacts of climate change	Expand data network for climate change beyond GeoNode Phase I activity Promote a regional GeoNode and CHM as data sharing tool, where access can be gained to data from regional agencies) is also important in the longer term Facilitate collaboration among relevant agencies in the establishment of comprehensive databases of climate change indicators/	CCA-AF	2011 - onwards	Central repository with hosts and users established under PPCR Phase I, expanded to other create comprehensive national Climate Change database to include "fit-to-purpose" data, such as vulnerability maps, assessment reports, etc. , available in formats for incorporation into web-based efficient,	**SDED-PPCR; MPDE/NEC; Other Government ministries and agencies; CBOs; NGOs** **NEMO** **PCU**

Result Area D: Enhanced Capacity and Institutional Strengthening					
	parameters, including available information on assessment of impacts, identification of root causes and vulnerability mapping in order to set a baseline for and establish a system for CC Research and Systematic Observation (RSO)	DRM/ CCA-AF		user driven and improved GeoNode platform Centralized GIS	
	Establish security protocols and procedures for safeguarding of databases and information systems at all levels and ensure requisite approval procedures for granting access to such information are followed		2011 - onwards	Procedures established and compliance monitored	**SDED ; MPDE-NEC** **Other Government ministries and agencies** **CBO's**
D.2.2 Ensure knowledge and information on climate change issues and adaptation measures and benefits to be derived are accessible and utilised by state and non-state parties and civil society to advance socio-economic development	Facilitate regional level programmes for data sharing; - vulnerability mapping exercise; support to hazard mapping; data acquisition using top-of-the-line-technology, e.g. .LIDAR; PPCR regional clearinghouse mechanism (CHM) – Note: hazard and events mapping can be considered for regional application, although the	CCA – AF/ DRM	2012 - onwards	Regional Clearing House Mechanism established and accessible Bathymetric survey output of island's coastline and near shore waters Enhanced Sea Level Rise Models	**SDED;PCU; MPDE-NEC; Other Government ministries and agencies** **CBOs** **Regional and International Agencies** **5C's**

Result Area D: Enhanced Capacity and Institutional Strengthening					
	immediate need in the context of Saint Lucia must be emphasised. Enable participation in 5Cs Clearing House Mechanism and Information Management System for climate change for dissemination of information on trends and impacts of climate change, adaptation measures, policies and plans, among others, to promote effective CC resilience building in pursuance of sustainable development				
	Produce and disseminate information materials to relevant target groups inclusive of vulnerable groups, civil society, public and private sector		2011 - onwards	PEA Information materials KAP	**SDED** **MPDE;NEC** **Other Government ministries and agencies** **Government Information (GIS CBOs** **Regional and International Agencies**
D.2.3 Build capacity for Research and Systematic Observation to guide climate adaptation/resilience building	Facilitate the establishment of national and community-based Environmental (Meteorological and Hydrological) Monitoring Networks to encourage and facilitate contributions to		2012 - onwards	Environmental Monitoring Networks established and persons/CBOs equipped to manage networks	**SDED; MPDE/NEC;MCWTPU–Meteorological Department; MALFF/WRMA/DoF/Fisheries; Other Government ministries and agencies; CBOs; Regional and International Agencies**

Result Area D: Enhanced Capacity and Institutional Strengthening					
	information management systems; provision of training, equipment and instrumentation for development and maintenance of network; Develop protocols for data collection and information sharing				
	Establish systems for assessment, monitoring, research, etc. on Climate Change Facilitate the operations of the National Council for Science and Technology to coordinate research activities within a broader national environmental framework		2012 - onwards	Monitoring and assessment systems established within broader national environmental framework	**SDED-PPCR; MPDE-NEC/SDED; NCSTD; MALFF – DoF; Other Government/ national agencies**
	Establish procedures and guidelines for Green Accounting – in particular economic valuation of land resources to inform decision making - Determine the opportunity cost of no-regrets options		2012 - 2016	Procedures and guidelines for economic valuation of natural resources established	**SDED; MPDE-NEC** **Ministry of Finance;** **Other relevant Ministries and Depts;** **CBOs** **Regional and International Agencies**
Target D 3 Training and Skills upgrading					
D.3.1 Empowerment of	Develop a long-term training		2012 -	National training	**SDED; MPDE/NEC; MALFF – DoF;**

Result Area D: Enhanced Capacity and Institutional Strengthening					
communities, and state and non-state parties to effectively lead and participate in CC resilience building and implementation of the PPCR/SPCR	programme to improve the availability and quality of human resource to support CC resilience building and promote collaborative arrangements with educational and training institutions for implementation		2014	programme developed to support climate change adaptation	**Ministry of the Public Service; Ministry of Education; Sir Arthure Lewis Community College; Other Government/national agencies; Regional agencies- University of the West Indies**
	Conduct training – using training of trainers' model - to equip human resource with appropriate knowledge and skills – professional skills (e.g. architects), artisans		2012 - onwards	Trained personnel in private and public sector with capacity to manage CC resilience building	**SDED; MPDE-PPD/Architectural Division; Other Government/ national agencies; Private Sector; CBOs; NGOs**
D.3.2 Develop and implement training and educational programmes targeted at the various actors to ensure a structured and systematic approach to capacity building for building climate resilience	Improve training and educational tools and methods in order to incorporate climate change information into relevant subject areas (e.g. organic agriculture); Assist in facilitating the modification of curricula at all educational levels with respect to Science and Technology to emphasise issues of climate change/environmental		2012 - onwards	Training and educational tools including school curricula enhanced to incorporate elements of climate change	**SDED; MALFF - DoF Ministry of Education; SALCC Other Government/ national agencies**

Result Area D: Enhanced Capacity and Institutional Strengthening					
	management				
	Conduct specific training in Geographic Information Systems (GIS) to facilitate participatory approach in integrated spatial planning		2011 - onwards	Trained personnel in private and public sector with capacity to participate in planning	**SDED; MPDE; All Government/ national agencies Private Sector Local communities – CBOs, NGOs**
Target D 4. Enhancement of awareness of all publics (communities, schools, judiciary, politicians, businesses, land developers, etc.) on climate change issues to promote effective CC resilience building at all levels					
D.4.1 Develop and implement a Public Education and Outreach (PEO) programme awareness programmes to increase stakeholder participation and development of partnerships for active involvement in CC resilience building	Implement Public Education and Outreach (PEO) Strategy formulated under Phase I PPCR -		2012-2015	PEO strategy tailored for different audiences to be implemented by SDED over a 3 year period	**SDED; Government Information Service (GIS); Media houses; Min. of Social Transformation; Min. of Education; Educational institutions Other Government Ministries/ national agencies; Private Sector Local communities; CBOs, NGOs; Farmers; Fishers; Faith-based organisations (FBOs)**
	Develop and implement specific Awareness Programmes to targeted audiences building on and complementing existing initiatives, and integrating with the broader environmental management programme Programmes to incorporate		2011-onwards	Public well informed and implementing CC adaptation measures and participating implementation of PPCR/SPCR	**SDED; Government Information Service (GIS); Media houses; Min. of Social Transformation; Min. of Education; Educational institutions Other Government Ministries/ national agencies; Private Sector Local communities; CBOs, NGOs; Farmers; Fishers; Faith-based organisations (FBOs); Popular theatre groups; Folk Research Centre,**

Result Area D: Enhanced Capacity and Institutional Strengthening					
	fresh and innovative approaches for (i) design – (e.g. use of imagery from local folklore, use of popular/contemporary messages in media – fuel crisis/rising food prices, use of children to connote a "future" theme) and (ii) delivery such as through press briefings, focus groups, popular theatre, cinema advertisement slots, messages through church/religion and music;				**Cultural Development Foundation**
	Build on results of 2nd KAP study to conduct aggressive public awareness campaign throughout the country, to highlight the impacts of climate change and options for adaptation in economic, social and environment/ecological dimension; utilise press briefings, talk shows, focus group discussions, among other delivery methods determine from outcomes of KAP		2011-2012	Campaign evaluation to determine level of sensitisation of farming, rural and local communities	**SDED; MPDE; MALFF; Other Government Ministries/ national agencies; CBOs; NGOs, Communities**
	Establish fora for regular		2011-	Increased stakeholder	

Result Area D: Enhanced Capacity and Institutional Strengthening					
	dialogue and information dissemination on climate change issues – workshops/seminars, website, internet chat groups, talk shows, among others		onwards	participation and collaborative partnerships demonstrated by community involvement in climate change adaptation	
	Assist in facilitating the enhancement of existing educational tools and teaching aids for environmental management to climate change issues and adaptation			Tools and teaching aides enhanced	**SDED; MALFF; Ministry of Education**
D.4.2. Promote corporate social responsibility and good stewardship in business lead to a sharing of responsibility and resources for implementing resilience building measures	Design and implement national programmes with the private sector and community/civil society involvement in climate change adaptation initiatives through a participatory approach, building on existing "adopt-a-community" projects and "Greening initiatives" for businesses (e.g. Green globe, Blue flag, ISO 14000)		2011 - onwards	Reports Increased investment in CC resilience building Certifications achieved/issued	**SDED ; MALFF – DoF; MPDE-NEC; Other Government ministries and agencies with land-related responsibilities; Educational Institutions; Farmers and Fishers; Community Groups; Private sector/business community**

Result Area D: Enhanced Capacity and Institutional Strengthening					
D.4.3 Establish mechanisms to promote a positive socio-cultural acceptance of ongoing adaptation to climate change for improved knowledge, attitudes and practice	Conduct studies on the impact of social and cultural factors on climate change adaptation to inform PEO Strategy and Awareness Programmes		2011 - onwards	Report on impact studies produced	**SDED; MPDE; Community Based Organisations (CBOs) NGOs; MoST**
	Develop and implement formal and informal strategies to educate individuals and groups about climate change issues – regular fora including workshops/ seminars, talk shows, popular theatre, cinema advertisement slots, messages through church/religion and music, etc.		2011 - onwards	Reports on KAP studies	**SDED; MPDE/NEC; Government Information (GIS); Min. of Education; Educational institutions; Other Government Ministries/ national agencies; Private Sector; Local communities; CBOs, NGOs; MoST**
	Produce and disseminate information materials for relevant target groups		2011 - onwards	Information materials produced and disseminated to five (5) key target groups inclusive of state and non-state parties	**SDED; MALFF-DoF /Agriculture Information Unit (AIU); Government Information Service (GIS); Media; OECS/USAID Project**
Target D 5 Increase level of usage of traditional knowledge and practices in community resilience building					
D.5.1 Create formal and informal knowledge exchange strategies and mechanisms to facilitate	Develop protocols for access and use of traditional knowledge and practices		2011 - 2012	Protocols/processes developed/applied	**SDED; Folk Research Centre; Cultural Development Foundation; MALFF-DoF/Fisheries**

Result Area D: Enhanced Capacity and Institutional Strengthening					
access to local and traditional knowledge and practices and promote benefits to be derived – documentation, awareness, etc.					
	Facilitate the documentation and dissemination of local and traditional knowledge and practices associated with adaptive capacity and resilience building utilising CC database, GeoNode platform and CHM			Policy and procedures for preserving traditional knowledge and practices, as well as rights of communities and resource users established	**SDED; MPDENEC; MALFF - DoF /AIU; Government Information (GIS); Folk Research Centre (FRC); CBOs NGOs**
			2011-2014	Wider range of educational resources available tools	**SDED; MPDE; Ministry of Education; Educational institutions Other Government Ministries/ national agencies Private Sector; Local communities; CBOs, NGOs**

Result Area E: Systems for Disaster Risk Management Established					
Intervention	**Actions**	**Outcome Area**	**Time Frame**	**Performance Indicators**	**Responsibility/ Collaboration**
Target E 1. Adoption of measures to mitigate and prevent natural and man-made hazard risks					
E.1.1 Design and implement systems to identify and assess negative social and environmental impacts of natural and man-made hazards including those caused by development activities (tourism, agriculture, industry) and minimise harmful effects of these sectors on national ecosystems and to increase ecosystem/land resilience to such hazards	Build on existing methodologies such as the Riverbank Assessment methodology to develop and adopt appropriate methodologies for assessment of land degradation and drought monitoring		2011 - 2012	Methodologies developed and adopted	**SDED** **MALFF – DoF/WRMA;** **MCWTPU – Meteorological Department** **MPDE-SDED; NEMO; MALFF** **Other relevant sector agencies**
	Conduct assessment of disaster risk and hazards with respect to land degradation and drought– to enhance Disaster Management Planning		2011 - 2012	Assessment reports	**MALFF-DoF; NEMO** **MCWTPU – Meteorological Department; MPDE-SDED**
	Enhance/develop and implement national Disaster Management Plans for: Flood Drought Land degradation Storm surge		2011 - 2012	Disaster Management Plans revised or produced	**NEMO; MPDE-PPD;** **MCWTPU;** **MALFF/WRMA; Other relevant national agencies**
E.1.2 Incorporate disaster risk considerations into management of land	Conduct systematic risk studies to provide understanding of insurance costs and costs of		2012-2014	Study reports	**NEMO; MPDE; MCWTPU;** **MALFF/DoF/WRMA**

Result Area E: Systems for Disaster Risk Management Established					
degradation and drought	active mitigation efforts for future planning				
	Install systems for systematic risk assessment using GIS capability		2011 - 2015	GIS risk systems installed	**NEMO; MPDE; MALFF/DoF/WRMA; Other relevant national agencies**
	Promote the inclusion of climate associated impacts in the conduct of environmental impact assessments through provision of logistical support to review EIAs for development initiatives and to monitor and enforce compliance with recommendations arising from such reviews.		2012- onwards	EIAs contain procedures for assessment of climate impacts on proposed developments Compliance with recommendations and conditions resulting from EIA reviews	**MALFF - DoF; MPDE-SDED**
Target E 2 Adoption of measures for early warning					
E.2.1 Capacity building to provide timely, relevant and quality data for resilience building of operations in relation to climate change impacts	Conduct baseline studies utilising SNC vulnerability and adaptation assessments with respect to climate change indicators at national and sector level to derive appropriate predictive models		2012 - 2014	Study reports	**MALFF – DoF/WRMA MCWTPU – Meteorological Department; MPDE-SDED; NEMO**
	Develop systems/predictive models for early warning for climate-related phenomena – floods, drought, storm surge		2012 - 2015	Appropriate systems/ predictive models produced	**MALFF – DoF/WRMA; MCWTPU – Meteorological Department; NEMO**
	Combine various national initiatives aimed at data capture		2012 - 2015	Systems for data capture and analysis	**MALFF – DoF/WRMA MPDE-SDED; MCWTPU –**

Result Area E: Systems for Disaster Risk Management Established					
	and vulnerability and hazard mapping to establish systems for data capture and analysis for vulnerability and hazard mapping of resources and hazards relating to landslides, flood risks, drought, and other climate impacts			established	**Meteorological Department**
	Provide equipment and resources to facilitate implementation of systems for data capture and analysis using available technologies such as GIS for vulnerability and mapping; Include GIS training to improve human resource		2012 - 2016	Trained persons and facilities available to enable use of data systems	**MALFF – DoF/WRMA; MPDE-SDED; MCWTPU – Meteorological Department**
	Utilise environmental monitoring networks to establish systems at the local/community level for early warning re: storm surge, floods, landslides drought, etc.		2012 - onwards	Early warning systems established	**MALFF/DoF/WRMA MPDE-SDE/NEC; Other relevant national agencies; Local communities**
	Deepen relationship and use of CIMH to approach drought triggers on a regional level		2012 - onwards	Inter-agency linkages strengthened	**MCWTPU – Meteorological Department; MALFF – DoF/WRMA; NEMO**

Appendix 9: Key Contributors to Saint Lucia's SPCR and Investment Plan[14]

THE SAINT LUCIA PPCR TEAM	
Ministry of Physical Development and the Environment	
Mr. George James	Permanent Secretary
Mr. Hildreth Lewis	Deputy Permanent Secretary
Mr. Crispin d'Auvergne	Chief Sustainable Development and Environment Officer, Climate Change Technical Focal Point and Team Leader for PPCR-National
Ms Dawn Pierre-Nathoniel	Sustainable Development and Environment Officer and Coordinator for PPCR-National
Ms. Neranda Maurice	Sustainable Development and Environment Officer with responsibility for PPCR Finance and Investment
Ms. Laverne Walker	Sustainable Development and Environment Officer and Coordinator for PPCR-Regional
Ms. Joanna Rosemond, Climate Change Project Assistant, Ms. Heidi Soucra-Albert, Secretary, Ms. Shandra St Ville, Ms. Kasha Jn. Baptise and Mr. Dunstan Brice, SDED/Project Assistants	Administrative Staff
Ministry of Finance, Economic Affairs and National Development	
Mr. Isaac Anthony	Permanent Secretary
Mr. John Calixte	Deputy Permanent Secretary
Mr. Cheryl Mathurin	Head, Project Coordinating Unit
National Consultants, PPCR Saint Lucia	
Ms. Luvette Louisy	Lead Consultant, SPCR and Investment Plan
Dr. Vasantha Chase, Ms. Vimla St. Hill, Ms. Gillian Vidal-Jules	Policy, Legislation and Fiscal Regimes
Ms. Agnes Francis	Public Education and Awareness
Ms. Elizabeth Soomer	Data Management
World Bank-PPCR Executing Agency for Saint Lucia	
Mr. Niels Holm Nielsen	Team Task Leader and Senior Disaster Risk Management Specialist

[14] See following tables for contributors from national consultations, small focus group meetings and one-on-one consultations.

THE SAINT LUCIA PPCR TEAM	
Mr. Justin Locke	Disaster Risk Management Specialist
Mr. Brad Lyon	Knowledge Management Consultant
Mr. Galen Evans	GIS/Data Specialist
Ms. Kanta Kumari	PPCR Coordinator
Mr. Oscar Apodaca	Operations Analyst
Other Contributors	
Mr. Gerard Alleng, Dr Cassandra Rogers	Inter-American Development Bank
Ms. Noleen Dube, Mr. Kalim Shah	International Finance Corporation
Ms. Patricia Mendozoa	PPCR Regional Track Consultant
Ms. Alma Jean	Coordinator, Second National Communication (part of SDED's Climate Change Team)
Ms. Menellia Valcent	Administrative Support
Ms Jasmine Baksh	Administrative Support
External Reviewer	
Mr. Scott Cunliffe	Risk Analysis Specialist

PPCR Scoping Mission: December 02-04, 2009

Participants List

Name of Participant	Name of Organization
Hon. Stephenson King	Prime Minister & Minister of Finance
H. E. June Soomer	Ambassador to CARICOM, the OECS and the Diaspora
George James	Permanent Secretary, Ministry of Physical Development & the Environment
Lyndon John	Ministry of Agriculture, Lands, Forestry and Fisheries-Forestry Department
Peter Murray	Organisation of Eastern Caribbean States Secretariat
Allena Joseph	Ministry of Agriculture, Lands, Forestry and Fisheries-Department of Fisheries

Name of Participant	Name of Organization
Yvonne Edwin	Ministry of Agriculture, Lands, Forestry and Fisheries-Department of Fisheries
Angela St. Denis	Caribbean Youth Environmental Network
Bishnu Tulsie	Saint Lucia National Trust
Mervin James	First Caribbean International Bank
Julian Du Bois	National Emergency Management Organisation
Swithin Donelly	Ministry of Finance, Economic Affairs & National Development
Christopher Alexander	Saint Lucia Air and Sea Ports Authority
Teddy Matthews	Saint Lucia Air and Sea Ports Authority
Herbert Regis	Ministry of Communications, Works, Transport and Public Utilities-Meteorological Services Department
Joanna Rosemond	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment
Alma Jean	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment
Neranda Maurice	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment
John Calixte	Ministry of Finance, Economic Affairs and National Development
Jim King	Water and Sewage Company Inc.
Shanta King	Professional Solutions Inc.
R. Michael Flood	Ministry of Communications, Works, Transport and Public Utilities
Elizabeth Charles Soomer	Geographic Information System Specialist
Edgarfue Felicite	Saint Lucia Solid Waste Management Authority
Cornelius Edmund	Saint Lucia Electricity Services Limited
Crispin D'Auvergne	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment
Dawn Pierre-Nathoniel	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment

PPCR First Joint Mission

Day One

Ministry of Finance, Project Coordination Unit Conference Room

Monday, 9th August 2010

Participants List

Name of Participant	Name of Organization
Crispin d'Auvergne	Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Dawn Pierre-Nathoniel	National Project Coordinator, Special Programme on Adaptation to Climate Change, Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Joanna Rosemond	Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Laverne Walker	Coastal Zone Management Unit, Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Luvette Louisy	Local Consultant (engaged under PPCR)
Neranda Maurice	Sustainable Development & Environment Officer, Ministry of Physical Development and the Environment
Data Management Invitees	
Luther Tyson	Ministry of Agriculture, Lands, Forestry and Fisheries
Sherma Lawrence	Saint Lucia Government Department of Statistics
Thomas Auguste	Ministry of Communications, Works, Transport and Public Utilities –Meteorological Services Department
Venantius Descartes	Ministry of Communications, Works, Transport and Public Utilities –Meteorological Services Department
Mission Team	
Peter A. Murray	Organisation of Eastern Caribbean States-Environment and Sustainable Development Unit
Niels Holm-Nielsen	World Bank (World Bank Team Leader)
Galen Evan	World Bank
Sahar Safaie	World Bank
Gerald Meier	World Bank
Justin Locke	World Bank

PPCR First Joint Mission

Day Two

Ministry of Communications and Works, Transport and Public Utilities Conference Room

Tuesday, 10th August 2010

Participants List

Name of Participant	Name of Organization
Adams Toussaint	Ministry of Agriculture, Lands, Forestry and Fisheries – Department of Forestry
Alfred Grünwaldt	Inter-American Development Bank (Mission Team)
Allena Joseph	Ministry of Agriculture, Lands, Forestry and Fisheries – Department of Fisheries
Alva Francis	Saint Lucia Air and Sea Ports Authority
Andrew George	National Emergency Management Organisation, Office of the Prime Minister
Anita James	Ministry of Agriculture, Lands, Forestry and Fisheries – Biodiversity Unit
Bhaiya Sondawle	Financial Sector Supervision – Ministry of Finance, Economic Affairs and National Development
Cassian Henry	Saint Lucia Solid Waste Management Authority
Crispin d'Auvergne	Ministry of Physical Development and the Environment – Sustainable Development and Environment Section
Dawn Pierre-Nathoniel	Ministry of Physical Development and the Environment – Sustainable Development and Environment Section
Denia George	Saint Lucia National Trust
Denise Collymore	National Conservation Authority
Gabriel James	Saint Lucia Electricity Services Limited
Galen Evan	World Bank (Mission Team)
Gerald Meier	World Bank (Mission Team)
Jason Mathurin	Saint Lucia Air and Sea Port Authority
Jim King	Water and Sewage Company Inc.
Joanna Octave-Rosemond	Ministry of Physical Development and the Environment – Sustainable Development and Environment Section
Justin Locke	World Bank (Mission Team)
Kimari Storey	Ministry of External Affairs, International Trade and Investment
Laverne Walker	Ministry of Physical Development and the Environment – Sustainable Development and Environment Section
Luvette Louisy	AGRICO Ltd. (consultant engaged under PPCR)

Name of Participant	Name of Organization
Myrtle Drysdale	Ministry of Finance, Economic Affairs and National Development – Project Coordination Unit
Nadia Simeon	Ministry of Finance, Economic Affairs and National Development - National Development
Neranda Maurice	Ministry of Physical Development and the Environment – Sustainable Development and Environment Section
Niels Holm-Nielsen	World Bank (Mission Team)
Peter A. Murray	Organisation of Eastern Caribbean States– Environment and Sustainable Development Unit (Mission Team)
Phil Leon	Ministry of Physical Development and the Environment – Geographic Information System
R. Michael Flood	Ministry of Communications, Works, Transport and Public Utilities – Public Utilities Department
Rosilia Joseph	Ministry of Finance, Economic Affairs and National Development – Project Coordination Unit
Sahar Safaie	World Bank (Mission Team)
Samantha Charles	Ministry of Tourism and Civil Aviation
Simone Banister	UK Department for International Development (Mission Team)
Tyrone Sankak	Sir Arthur Lewis Community College – Division of Agriculture
Venantius Descartes	Ministry of Communications, Works, Transport and Public Utilities –Meteorological Services Department

PPCR First Joint Mission

Day Three

Ministry of Economic Affairs, First Floor Conference Room

Wednesday, 11th August 2010

Participants List

Name of Participant	Name of Organization
Crispin d'Auvergne	Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Dawn Pierre-Nathoniel	National Project Coordinator, Special Programme on Adaptation to Climate Change, Sustainable Development & Environment Section, Ministry of Physical Development and the Environment

Name of Participant	Name of Organization
Joanna Rosemond	Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Neranda Maurice	Sustainable Development & Environment Officer, Ministry of Physical Development and the Environment
Laverne Walker	Coastal Zone Management Unit, Sustainable Development & Environment Section, Ministry of Physical Development and the Environment
Mission Team	
Alfred Grünwaldt	Inter-American Development Bank
Peter A. Murray	Organisation of Eastern Caribbean States-Environment and Sustainable Development Unit
Niels Holm-Nielsen	World Bank (World Bank Team Leader)
Galen Evan	World Bank
Gerald Meier	World Bank
Justin Locke	World Bank
Sahar Safaie	World Bank

PPCR First Joint Mission

Data Management Meeting

Ministry of Physical Development and the Environment

Wednesday, 11th August 2010

Participants List

Name of Participant	Name of Organization
Galen Evan	World Bank (Mission Team)
Hildreth Lewis	Ministry of Physical Development and the Environment (Deputy Permanent Secretary)
Laverne Walker	Coastal Zone Management Unit, Sustainable Development & Environment Section, Ministry of Physical Development and the Environment

Name of Participant	Name of Organization
Peter Felix	Ministry of Physical Development and the Environment-Surveys and Lands Section
Suzanna Aurelien	Ministry of Physical Development and the Environment-Surveys and Lands Section
Randall Emilaire	Physical Planning Section, Ministry of Physical Development and the Environment
Peter Murray	Organisation of Eastern Caribbean States-Environment and Sustainable Development Unit (Mission Team)
Sahar Safaie	World Bank (Mission Team)

PPCR National Consultations

Stakeholder Consultation – Regional/International Organisations, Academia, Research Institutions

Venue: Bay Gardens Hotel, Saint Lucia

Date: Tuesday, March 08, 2011

Participants List

Name of Participant	Name of Organisation
Andrew Thorington	Caribbean Electric Utility Services Corporation (**CARILEC)**
Andy Phillip	Caribbean Water & Wastewater Association (CWWA)
Anne-Marie Blackman	Organization of American States (OAS)
Beverly Joseph Charlene Charles	Caribbean Youth Environmental Network (CYEN)
Cynthia Joseph c/o Marcia Symphorien	Saint Lucia National Commission for United Nations Educational, Scientific and Cultural Organization (UNESCO) Ministry of Education
Eulampia Polius Springer	University of the West Indies (UWI) Open Campus
Gerardo Lozano	Embassy of Mexico
Jeannine Blanchard	National Authorising Office European Development Fund-PNCU

Name of Participant	Name of Organisation
Mizutani Kyohei	Japan Overseas Cooperation Volunteers **(**JOCV) /Japan International Cooperation Agency (JICA)
Peter A. Murray	OECS Environment and Sustainable Development Unit (OECS-ESDU)
Rahjim Albertinie	WINFRESH
Shermaine Clauzel	Caribbean Environmental Health Institute (CEHI)
Una May Gordon	Inter-American Institute for Cooperation on Agriculture (IICA)
Crispin d'Auvergne Dawn Pierre-Nathoniel Neranda Maurice Laverne Walker Joanna Rosemond Shandra St. Ville Kasha Jn Baptiste	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment (National Executing Agency)
Luvette Thomas-Louisy **Lead Consultant, SPCR** Vasantha Chase **Policy Consultant** Gillian Vidal-Jules **Legislative Consultant** Vimla St. Hill **Fiscal Regimes Consultant** Agnes Francis **Public Education and Awareness Consultant**	National PPCR Consultants

PPCR National Consultations

Stakeholder Consultation – Private Sector

Venue: Bay Gardens Resort, Saint Lucia

Date: Tuesday, March 15, 2011

Participants List

Name of Participant	Name of Organization
Allana Lansiquot	National Development Corporation
Bob Hathaway	The Marina at Marigot Bay
Joralia St. Louis	Insurance Council of Saint Lucia (ICSL)

Name of Participant	Name of Organization
Lindell Gustave	Tapion Hospital
Marcellinus Hippolyte	Consolidated Foods Ltd (CFL)
Mc Hale Andrew	Saint Lucia Hotel and Tourism Association (SLHTA)
Ormond Reece	Saint Lucia Electricity Services Limited (LUCELEC)
Tennyson Scott	East Caribbean Financial Holding Ltd (ECCH)
Verne Emmanuel	Association of Professional Engineers of Saint Lucia (APESL)
Vishal Bhalla	Coconut Bay Beach Resort and Spa
Crispin d'Auvergne Dawn Pierre-Nathoniel Neranda Maurice Alma Jean Caroline Eugene Joanna Rosemond Shandra St. Ville Kasha Jn Baptiste Bethia Daniel	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment (National Executing Agency)
Luvette Thomas-Louisy **Lead Consultant, SPCR** Vasantha Chase **Policy Consultant** Vimla St. Hill **Fiscal Regimes Consultant** Gillian Vidal-Jules **Legislative Consultant** Agnes Francis **Public Education and Awareness Consultant**	National PPCR Consultants

PPCR National Consultations

Stakeholder Consultation – Civil Society (North)

Venue: Coco Palm Resort, Rodney Bay

Date: Tuesday, March 17, 2011

Participants List

Name of Participant	Name of Organisation
Aloycius Hyacinth Marcia Boxill	Caritas Antilles Chancery Offices
Anne Johnson-Lowrie	Saint Joseph's Convent
Arishey Fontinelle	Gros Islet Town Council
Bishnu Tulsie	Saint Lucia National Trust (SLNT)
Burnet Sealy	Iyanola Council for the Advancement of Rastafari Inc
Cuthbert Nathoniel	Castries Fishermen's Cooperative Society Ltd
Donovan Brown Eget Martyr	Saint Lucia Dive Association-Anbaglo
Empress Itopia Ronda Archer	The Great Physician International
Evestus Augustin	Dennery Mabouya Valley Development Foundation Inc
Kentry Jn Pierre	Folk Research Centre
Marie Edwards	Ciceron Secondary School
Newton Eristhee	Soufriere Marine Management Association (SMMA)
Raphael CK St. Hill	National (Saint Lucia) Consumers Association
Trevor Heath	Gros Islet Football League
Crispin d'Auvergne Dawn Pierre-Nathoniel Neranda Maurice Joanna Rosemond Shandra St. Ville Namiko Hattori Dunstan Brice Heidi Soucra-Albert	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment (National Executing Agency)

Name of Participant	Name of Organisation
Luvette Thomas-Louisy **Lead Consultant, SPCR** Vasantha Chase **Policy Consultant** Gillian Vidal-Jules **Legislative Consultant** Agnes Francis **Public Education and Awareness Consultant**	National PPCR Consultants

PPCR National Consultations Stakeholder Consultation – Civil Society (South)

Venue: Kimatrai Hotel, Vieux-Fort

Date: Wednesday, March 23, 2011

Participants List

Name of Participant	Name of Organization
Anicetus St. Aime	Vieux Fort South Football League
Augustine Dominique	Laborie Development Foundation
Caius Cassius	Mabouya Valley Youth and Sports Council
Dave Charlery	Mon Repos Youth and Sports Council
Desma Faucher	Dennery Village Council High Street
Elias Sewak	Contractor Cocou, Vieux Fort
Gregor Biscette	Mothers and Fathers League
Henson Samuel	Choiseul Village Council
James Prophet	Laborie Youth and Sports Council
Kelland Joseph	Vieux Fort North Council
Magnus Deboville	Anse La Raye Development Foundation
Marcellina Newton	Micoud RC Infant School/ Micoud North Disaster Preparedness Committee
Nancy Charles	Vieux Fort North Rural Council
Natasha Ismond	Micoud Youth and Sports Council c/o President Lester Justin
Neil Philip	Roots Alley Lane Football Team
Octavia A. Emmanuel	Desruisseaux Youth and Sports Council
Rita Harrison	Soufriere Marketing Board
Valerina St. Helen	Youth and Sports Officer of Ministry of Social Transformation, Youth and Sports
Vincent Charlery	Vieux Fort North Disaster Preparedness Committee
Vincent Hanan Gabriel	Hanan's Designs and Construction Service Ltd

Name of Participant	Name of Organization
Webster Albert	Police Officer (football clubs/youth involvement)
Winston Lubin	Vieux Fort South Disaster Committee-Office of the Prime Minister - National Emergency Management Office (NEMO)
Crispin d'Auvergne Dawn Pierre-Nathoniel Joanna Rosemond Shandra St. Ville Heidi Soucra-Albert Giselle Amedee	Sustainable Development and Environment Division, Ministry Physical Development and the Environment (National Executing Agency)
Luvette Thomas-Louisy **Lead Consultant, SPCR** Vasantha Chase **Policy Consultant**	National PPCR Consultants

PPCR National Consultations

Stakeholder Consultation/Project Prioritization and Validation – Public Sector (and special invitees)

Venue: Royal Saint Lucia by Rex, Rodney Bay

Date: Thursday, April 07, 2011

Participants List

Name of Participant	Name of Organisation
Sumita Daniel Adams Toussaint Sarita Williams-Peter Allena Joseph Michael Gaspard Andrew Farzana Leon Bernadine Joseph	Ministry of Agriculture Lands, Forestry & Fisheries -Department of Agriculture -Department Fisheries -Department of Forestry -Water Resources Management Unit
Govinda Augustin	Meteorological Services Department, Ministry of Communications, Works, Transport and Public Utilities
Martha Blanchard	Ministry of Social Transformation, Youth and Sports

Name of Participant	Name of Organisation
Daren Cenac Adrian Hillaire Peter F. Jean Cuthbert Nathoniel	Saint Lucia Air and Sea Ports Authority (SLASPA)
Michael Charles George Victoria	Saint Lucia Fire Service, Ministry of Physical Development and the Environment
Denise Collymore	National Conservation Authority (NCA)
Jenny Daniel	Ministry of Housing, Urban Renewal & Local Government
Merlene Fredericks Wenal Gabriel	Ministry of Health
Deepa Girdari	Ministry of Tourism & Civil Aviation
Gabriel James	Saint Lucia Electricity Services Limited (LUCELEC)
Jim C. Joseph	Computer Centre Ltd
Jim King	Water and Sewage Company Inc.
Kimberly Louis	Ministry of External Affairs, International Trade and Investment
Peter A. Murray	Organization of Eastern Caribbean States-Environment and Sustainable Development Unit (OECS-ESDU)
Vincent Peter	Officer of the Prime Minister-Office of Private Sector Relations (OPSR)
Avril Edwin- Boxill Norma Cherry- Fevrier Bhaiya Sondawle	Ministry of Finance, Economic Affairs & National Development (National Executing Agency)
Myrtle Alexander David Desir Phil Leon Haward Wells	Ministry of Physical Development & the Environment (National Executing Agency) -Physical Planning Section -Administrative (Budget) Section
Dawn Pierre-Nathoniel Neranda Maurice Laverne Walker Alma Jean Joanna Rosemond Caroline Eugene Dunstan Brice	Ministry of Physical Development & the Environment -Sustainable Development and Environment Division
Luvette Thomas-Louisy	National PPCR Consultants

Name of Participant	Name of Organisation
Lead Consultant Vimla St. Hill Gillian Vidal – Jules **Legislative Consultant**	

Saint Lucia's Second Joint Mission-Towards the Refinement of the Strategic Programme for Climate Resilience and Investment Plan

Auberge Seraphine

Day 1: Tuesday, May 10, 2011

Participants List

Name of Participant	Name of Organization
Cassandra Rogers	Inter-American Development Bank (IDB)
Pat Mendoza	PPCR Coordinator, Regional Tract
Kalim Shah	International Finance Corporation (IFC)
Justin Locke Galen Evans	The World Bank
Peter A. Murray	OECS Environment and Sustainable Development Unit (OECS/ESDU)
Dawn French	Office of the Prime Minister-National Emergency Management Office (NEMO)
Kohei Hori	Japan International Cooperation Agency (JICA)
Josette Maxwell-Dalson Nadia Simeon Norma Cherry-Fevrier Fiona Ghirawoo Mrytle Drysdale-Octave Yasmine Anatole Rosilia Joseph	Ministry of Finance, Economic Affairs and National Development (National Executing Agency)
Crispin d'Auvergne Dawn Pierre-Nathoniel Laverne Walker Shandra St. Ville	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment (National Executing Agency)
Luvette Thomas-Louisy-**Lead Consultant** Vasantha Chase-**Policy Consultant** Gillian Vidal-Jules- **Legislative Consultant** Vimla St. Hill- **Fiscal Regimes Consultant** Agnes Francis- **Public Education and Awareness Consultant** Elizabeth Charles Soomer-**Data Consultant**	National PPCR Consultants

Saint Lucia's Second Joint Mission

Strengthening Civil Society and Private Sector Engagement in Building Climate Resilience

Royal St. Lucia by Rex Hotel

Day 2: Wednesday, May 11, 2011

Participants List

Name of Participant	Name of Organization
Cassandra Rogers	Inter-American Development Bank (IDB)
Patricia Mendoza	PPCR Consultant, Regional Tract
Justin Locke Galen Evans	The World Bank
Kalim Shah Noleen Dube	International Finance Corporation (IFC)
Kohei Hori Mizutani Danny	Japan International Cooperation Agency / Japan Overseas Cooperation Volunteers (JICA/JOVC)
Philbert Francis	Saint Lucia Development Bank (SLDB)
Cuthbert Nathoniel Peter F. Jean Jason King Nichalan Myers Christopher Alexander	Saint Lucia Air and Sea Ports Authority (SLASPA)
Alvin Blaize	Saint Lucia Workers Credit Union Ltd
Raphael Felix Thomas Kuk	Belle Vue Farmers' Co-operative / U.S. Peace Corp
Disraeli James	Bank of Nova Scotia
Augustine Dominique	Laborie Development Foundation
Jacqueline Emmanuel	Office of the Private Sector Relations (OPSR)
Ronald Charles	National Research Development Foundation (NRDF)
Noorani Azeez	Saint Lucia Hotel and Tourism Association (SLHTA)
Alexander Joseph	Saint Lucia Co-operative League
Symphorosa Henry	Eastern Caribbean Financial Holdings/ Bank of Saint Lucia (ECFH)
Johnny Cyril	First Caribbean International Bank
Gilbert Fontenelle	National Development Corporation
Monica Moses	Fond St. Jacques Credit Co-operative Society Ltd
Lindell Gustave	Tapion Hospital

Name of Participant	Name of Organization
Bob Hathaway	The Marina at Marigot Bay
Marcellinus Hippolyte	Consolidated Foods Ltd (CFL)
Alixis Felix	Alexis Felix Architect Inc
Henry Annelle	Mon Repos Eastern Co-operative Credit Union
Bishnu Tulsie	Saint Lucia National Trust (SLNT)
Peter Lorde	Ministry of Commerce, Industry and Consumer Affairs
Alison King-Joseph	Alison King- Joseph –Consultant
Eglan Flavien	Dannion CE Ltd
Geraldine Lendor-Gabriel	Beeq Investment Inc
Orual Vandendool	Anse Chastanet/Jade Mountain Hotel
Cuthbert Phillips	Chamber of Agriculture
Evestus Augustin	Heritas
Josette Maxwell-Dalson Nadia Simeon Norma Cherry-Fevrier Avril Edwin-Boxill Fiona Ghirawoo Mrytle Drysdale-Octave Yasmine Anatole Rosilia Joseph Charmaine Louis-Justin	Ministry of Finance, Economic Affairs and National Development (National Executing Agency)
Crispin d'auvergne Dawn Pierre-Nathoniel Laverne Walker Alma Jean Caroline Eugene Shandra St. Ville	Sustainable Development and Environment Division, Ministry of Physical Development and the Environment(National Executing Agency)
Luvette Thomas-Louisy-**Lead Consultant** Gillian Vidal-Jules- **Legislative Consultant** Vimla St. Hill- **Fiscal Regimes Consultant** Agnes Francis- **Public Education and Awareness Consultant**	National PPCR Consultants

PPCR Focus Groups and One-On-One Consultations

Data Management Participatory Process[15]

Participants List

Name of Participant	Name of Organization
Gregory Squiers	Ministry of Agriculture, Lands, Forestry and Fisheries -Department of Agriculture- Plant Quarantine Department
Michael Andrew Farzana Yusuf-Leon	Ministry of Agriculture, Lands, Forestry and Fisheries -Water Resources Management Unit
Michael Bob *Rebecca Rock	Ministry of Agriculture, Lands, Forestry and Fisheries -Forestry Department
Sarah George Sarita Williams	Ministry of Agriculture, Lands, Forestry and Fisheries -Fisheries Department
Anita James	Ministry of Agriculture, Lands, Forestry and Fisheries -Biodiversity Unit
Thomas Auguste Herbert Regis	Ministry of Communications, Works, Transport and Public Utilities -Meteorological Department
Laverne Walker	Ministry of Physical Development and the Environment-Sustainable Development and Environment Division-Coastal Zone Management Unit
*Phil Leon *David Alphonse *Karen Augustin *Marcathian Alexander *Roxanne Bradford	Ministry of Physical Development and the Environment-Physical Planning Section Administrative (Information Technology) Section
*Celsus Baptiste *Portia St. Catherine	Ministry of Physical Development and the Environment-Crown Lands
*Gregory Clairemont *Suzana Aurellien *Sam Benjamin	Ministry of Physical Development and the Environment-Surveys and Mapping Section
*Mc Garret Camille or Other	Ministry of Physical Development and the Environment-Land Registry
*Joanne Haynes or Other	Ministry of Physical Development and the Environment-Architectural Division

[15] This includes persons consulted on data management during small focus groups and one-on-one discussions, especially coinciding with the work of the national consultant (data), from February to May 2011. Persons with * next to their names received orientation in GeoNode.

Name of Participant	Name of Organization
Gabriel James	Saint Lucia Electricity Services Limited (LUCELEC)
*Kasha Jn Baptiste	Ministry of Physical Development and the Environment and Housing- Sustainable Development & Environment
Jim King	Water and Sewage Company Inc.
*Jim Joseph *Mervin Alexis *Kenyan Octave	Computer Centre Limited
Edwin St. Catherine	Department of Statistics
Emerson Vitalis	Ministry of Health-Environmental Health Section
Julian Dubois	Office of the Prime Minister- National Emergency Management Organisation (NEMO)
Richmond Felix	National Information and Communication Technology Office (NICTO)
Ann Margaret Xavier	Ministry of Tourism and Civil Aviation
Andrina Abraham	Ministry of Finance, Economic Affairs and National Development- National Development Section
Galen Evans	GIS/Data Specialist
Ariel Nunez	Global Facility for Disaster Reduction and Recovery

PPCR Focus Groups and One-On-One Consultations

PPCR Policy Legal and Fiscal Regimes Participatory Process[16]

Participants List

Name of Participant	Name of Organization
Financial Institutions	
Joralia St. Louis	Saint Lucia Insurance Council
Joanna Charles	Banking Association
Mr. Gregor Franklyn, President Representative	Eastern Caribbean Central Bank
Mr. Jean-Francois Sonson – Managing Director Ms. Jennifer Faisal Mr. Philbert Francis	Saint Lucia Development Bank
Business Associations	
Member : Edward Harris	Saint Lucia Industrial and Small Business Association

[16] This includes persons consulted on policy, legislative and fiscal regimes during small focus groups and one-on-one discussions, especially coinciding with the work of the national consultant from February 2011.

Name of Participant	Name of Organization
Professional Associations	
Mr. Claude Guillaume	Saint Lucia Association of Architects
Verne Emmanuel	Association of Professional Engineers of Saint. Lucia
Statutory Bodies	
Mr. McHale Andrew	Saint Lucia Hotel and Tourism Association
NGOs / Development Foundations	
Bishnu Tulsie, Director	Saint Lucia National Trust (incl. Southern & Soufriere Chapters)
Newton Eristhee - Head	Soufriere Marine Management Association
Dominic Alexander: General Manager :	Soufriere Regional Development Foundation
Rita Harrison	Ministry of Agriculture , Lands Forestry and Fisheries-Department of Fisheries
Augustin Dominique - President Lucius Ellevic – Vice President, Manager Laborie Credit Union	Laborie Development Foundation
Public Sector	
Karen Augustin	Physical Planning Section, Ministry of Physical Development and the Environment
Anita James	Ministry of Agriculture, Lands, Forestry and Fisheries : Biodiversity Unit
Private Sector	
Allana Lansiquot	National Development Corporation
Bob Hathaway	The Marina at Marigot Bay
Lindell Gustave	Tapion Hospital
Marcellinus Hippolyte	Consolidated Foods Ltd (CFL)
Ormond Reece	Saint Lucia Electricity Services Limited (LUCELEC)
Tennyson Scott	East Caribbean Financial Holding Ltd (ECFH)
Vishal Bhalla	Coconut Bay Beach Resort and Spa

PPCR Focus Groups and One-On-One Consultations

PPCR Lead Consultant, SPCR and SDED Participatory Process[17]

Participants List

Name of Participant	Name of Organization/Designation
Issac Anthony John Calixte Cheryl Mathurin Michael Gittens/ Aviva Frederick-St. Clair	Ministry of Finance, Economic Affairs and National Development Permanent Secretary Deputy Permanent Project Coordinator, Project Coordination Unit Deputy Chief Economist
George James Hildreth Lewis Karen Augustin Augustin Poyotte Howard Wells	Ministry of Physical Development and the Environment Permanent Secretary Deputy Permanent Secretary Deputy Chief Physical Planner Chief Architect Architect
Donovan Wiliams	Ministry of Social Transformation, Youth and Sports Permanent Secretary
Dawn French	Office of the Prime Minister-NEMO Director
Jacqueline Emmanuel	Office of Private Sector Relations (OPSR)
Wenal Gabriel	Ministry of Health-Chief Environmental Health Officer
Bertram Clarke	Banana Industry Trust - Executive Director
Christopher Cox	Caribbean Environmental Health Institute/IWCAM Project -Programme Director
Shanta King	Water Sector Reform Project -Project Manager
Niels Holm Nielsen	The World Bank
Justin Locke	The World Bank
Brad Lyon	The World Bank

[17] This includes persons consulted during small focus groups and one-on-one discussions, especially coinciding with the work of the national consultant and inclusive of discussions initiated by the Sustainable Development and Environment Division.

PPCR Knowledge, Attitude and Practice (KAP) Survey[18] (2011) on Climate Change-Public Education and Awareness Consultant Participatory Process

Respondents by District in Saint Lucia

District Settlement	Number Respondents	Percentage
Castries (Suburban, Rural , Central)	235	**49.5**
Anse La Raye	12	**2.5**
Canaries	10	**2.1**
Soufriere	31	**6.5**
Choiseul	10	**2.1**
Laborie	9	**1.9**
Vieux Fort	21	**4.4**
Micoud	44	**9.3**
Dennery	31	**6.5**
Gros Islet	72	**15.2**
Total	**475**	**100**

Respondents by Gender

	2006			2011		
District Settlement	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
Castries	96	82	178	145	90	235
Anse La Raye	9	9	18	5	7	12
Canaries	4	3	7	3	7	10
Soufriere	11	10	21	18	13	31
Choiseul	11	9	20	4	6	10
Laborie	12	11	23	4	5	9
Vieux Fort	26	26	52	15	6	21
Micoud	26	24	50	25	19	44
Dennery	21	20	41	19	12	31
Gros Islet	33	32	65	41	31	72
Total	***248***	***226***	***475***	***279***	***196***	475

[18] The results of this study will inform the development and implementation of a Public Education and Awareness Strategy and Implementation Plan on Climate Change. Implementation of the Plan is to be undertaken during Phase II of the PPCR and beyond. An intercept survey was also conducted at each of the five (5) national consultations held between March and April 2011, whose results will also feed into the Strategy and Implementation Plan.

Respondents by Age & Gender

Age Group	Female	Male	Total
15 to 24 years	74 26.5%	41 20.9%	**155** **24.2%**
25 to 34 years	92 33%	59 30.1%	**151** **31.8%**
35 to 44 years	53 19%	46 23.5%	**99** **20.8%**
45 to 54 years	36 12.9%	24 12.2%	**60** **12.6%**
55 to 64 years	16 5.7%	21 10.7%	**37** **7.8%**
65 years and over	8 2.9%	5 2.6%	**13** **2.7**
Total	**279** **49%**	**196** **51%**	**475** **100%**

Appendix 10: Proposed PPCR Caribbean Regional Tract

Select/Potential Regional SPCR Activities

- Module 1 SPCR: Capacity Development and Information Sharing
  - Activity 1: Strengthening Capacity for data management.
    - Rationalize roles of regional organizations, and inter-linkages with national agencies and identify and address capacity gaps.
    - Related ongoing initiatives and lead agencies:
      - Multi-hazard, multi-stakeholder approach to strengthening climate products (WMO).
      - Implementation Plan with Gap Analysis (Acclimatize),

Select/Potential Regional SPCR Activities (Cont'd)

- Module 1 SPCR: Capacity Development and Information Sharing (Cont'd)
  - Improved data availability for climate monitoring and modeling: Design for the collection of baseline data to be linked to monitoring and monitoring programmes.
  - Information Clearing House PPCR Piloting
    - Twofold objective: Facilitate exchange of information and best practices
    - Support enhancement/additionality to ICH to accommodate the needs
    - Overview of ICH Structure and PPCR Piloting The Clearinghouse Mechanism Excerpt (ID 2644).pptx
    - Project elements: PPCR_ICH Project.docx

Select/Potential Regional SPCR Activities (Cont'd)

- Module 2 SPCR: Advocacy and Policy Development
  - Development of Framework policy and model legislation for Climate Adaptation
    - Potential partners include OAS because of the established policy dialogue structure that includes a gender focused group

Source: Taken from Presentation by PPCR Regional Tract Consultant: Update on PPCR Caribbean Regional Tract : Caribbean Regional Conference on Adaptation: Global Climate Change Alliance: March 28-29, 2011

Appendix 11: PPCR Caribbean Regional Framework

Regional priority thematic areas/themes under PPCR

Cross-cutting themes: (i) monitoring and climate modeling activities; (ii) facilitating an enabling environment (policy and institutional framework); (iii) raising the political profile of the importance of factoring in climate risks into sustainable land-use management and spatial planning; (iv) capacity building and awareness raising aimed at different levels, including sectors and policy makers; and (v) integration of climate change into development and budget planning

National level priority thematic areas/themes under PPCR

Cross-cutting themes: data management, capacity building and public awareness on climate change.

Haiti	**Jamaica**	**Saint Lucia**	**Grenada**	**Saint Vincent & the Grenadines**	**Dominica**	**CARICOM**
• Agriculture and food security • coastal zone management • reconstruction • tourism • infrastructure and land planning • data management	• Water Resources • Agriculture and Food Security • Tourism • Human Health • Human Settlements • Coastal Resources	• Improvement of enabling environment for private investments in climate resilience • Training an investments for improved data capture, collection, and management, for climate change impact assessments purposes • Training and investments for understanding and interpreting climate impact models and assessments • Investments for	• Expand on the foundation set forth by the National Climate Change Policy and Action Plan • Training and investments for improved data capture, collection, and management, for climate change impact assessments and interpretation purposes in collaboration with the private sector/quasi-government • National level-specific infrastructure investments	• Review and expansion of the National Climate Change Adaptation Policy • Training and investments for improved data capture, collection, and management, for climate change impact assessments purposes • Training and investments for understanding and interpreting climate impact models and assessments • National level-specific infrastructure investments	(To be determined)	Priority Actions of CARICOM's Regional Strategy for Achieving Development Resilient to Climate Change, 2009 -2015

Source: Taken from: PPCR Caribbean Regional Tract Proposal: Draft of November 2010

Appendix 12: A Regional Framework for Achieving Development Resilient to Climate Change: 2009-2015 and Overview of the Implementation Plan for the CARICOM Regional Framework for Achieving Development Resilient to Climate Change: 2011-21

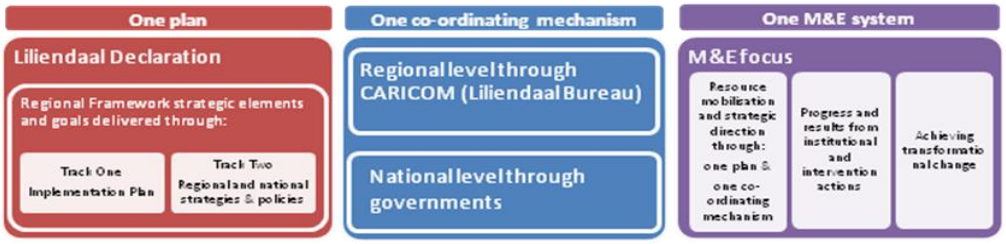
The Liliendaal Declaration provides the vision of transformational change in our response to the challenges of a changing climate.

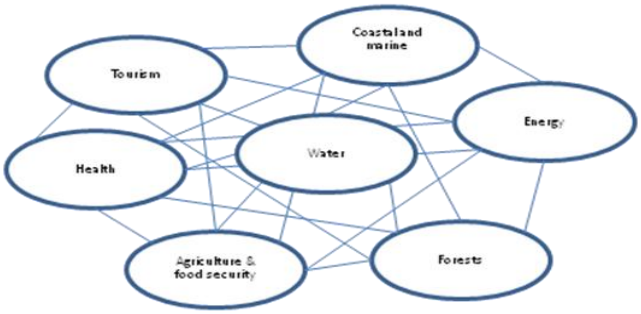
This drives the Regional Framework's Five Strategic Elements (and 20 goals nested within these):

1. Mainstream climate change adaptation strategies into the sustainable development agendas of CARICOM states.
2. Promote the implementation of specific adaptation measures to address key vulnerabilities in the region.
3. Promote actions to reduce greenhouse gas emissions through fossil fuel reduction and conservation, and switching to renewable and cleaner energy sources.
4. Encourage action to reduce the vulnerability of natural and human systems in CARICOM countries to the impacts of a changing climate.
5. Promote action to derive social, economic, and environmental benefits through the prudent management of standing forests in CARICOM countries.

To build resilience to a changing climate and low carbon economies

With resource mobilisation to meet the challenge through the 'three ones' principle





Focussing on the Regional Framework sectors

These are the sectors identified in the Regional Framework. Impacts in one sector have consequences and feedbacks into the others.

Delivering actions in these areas:

Institutional and governance building blocks

These are key priorities for transformational change and for successful implementation.

Actions are proposed including the adoption of the 'three-ones' principle.

Cross-cutting challenges

Information and evidence gaps.
Gender
Public outreach, engagement and communications.
Disaster risk reduction.
Technical, financial and human capacity.
Information management and access.
Private sector mobilisation.

Actions are proposed in these areas.

Technical and physical impacts

Actions are proposed in all these areas at both regional and national levels.

Those actions that could be undertaken (subject to funding and other capacity challenges) are identified as possible projects in the next 2 years.

Source: Taken From: (Top) : Presentation by Senior Programme Officer, CDEMA: Priorities for Climate Change Adaptation and Disaster Risk Reduction in the Caribbean: Caribbean Regional Conference: Global Climate Change Alliance: Belize City: March 28-29, 2011; (Bottom): Regional Workshop on Delivering transformational change 2011-21: Implementing the CARICOM 'Regional Framework for Achieving Development Resilient to Climate Change': May 03-04, 2011.

Appendix 13: Project Concepts Developed for Climate Change Adaptation and Reducing Risk to Climate Related Disasters, for which Funding is Unidentified or to be Confirmed[19]

Health Sector

PROJECT PROFILE 1	
Project Title: Effective Surveillance and Control of Schistosomiasis in Saint Lucia	
Justification: Schistosomiasis is a parasitic infection affecting millions of people in many tropical countries. There are several species of the schistosomes. The parasite rapidly penetrates the skin, migrates and develops to maturity in the blood vessels of the intestines (Intestinal Schistosomiasis) or of the urinary bladder (Urinary Schistosomiasis). Schistosomiasis is endemic in Saint Lucia. Human beings get infected through contact with infested fresh water. With the increasing pace of development, housing, hotels industry and other infrastructure have placed an increasing demand on the island's limited water resources. As a result, the frequency of people using rivers has increased. The recent drought of 2009-10 and Hurricane Tomas in 2010 resulted in large numbers of persons having to resort to using rivers as their only source of water supply[20]. To date, cases of Schistosomiasis continue to be reported annually to the Epidemiology Unit. However, there is no active surveillance or control programme in place. With increasing contact with the rivers, particularly in areas where transmission occurs and intermediate hosts exist, the incidence of the disease is expected to rise. The non-existence of an active surveillance programme in Saint Lucia severely undermines the ability of the Ministry of Health to effectively monitor and control the spread of the disease. Given the history of Schistosomiasis in Saint Lucia and the potential socio-economic impacts of a resurgence of the disease, there is need for the immediate development and implementation of an active surveillance programme.	
Project Objectives: (i) Determine the prevalence of vector snails in Saint Lucia; (ii) map areas where vector snails are present and the potential for transmission of schistomiasis; (iii) train officers in the identification and surveillance of vector snails.	
Project Duration: Preliminary survey/assessment by consultant - 4 weeks Training of officers - 2 weeks Mapping of sites - 4 weeks	**Estimated Cost:** **TOTAL** **US$50,000.00**
Activities and Tasks: Activities should include, *inter alia*: ○ Preliminary survey/assessment by consultant to determine the prevalence of vector snails in	

[19] The project concepts are randomly presented. Costs are indicative only. Saint Lucia welcomes investment by interested parties. Project concepts identified for PPCR funding are not included here, but co-financing interest is also invited for project concepts identified in Saint Lucia's SPCR and Investment Plan. All figures are quoted in USD.

[20] Climate change is projected to result in more intense droughts and hurricanes which in turn may serve to induce persons to continue using the rivers.

PROJECT PROFILE 1
Saint Lucia o Training of officers in the identification and surveillance of vector snails o Mapping of sites where vector snails are present
Implementing Agency: Ministry of Health

PROJECT PROFILE 2	
Project Title: Enhancing the Water Quality Surveillance Programme of the Department of Environmental Health	
Justification: The importance of safe water can never be over-emphasized. Its impact on health is profound, and is both direct and indirect. The direct impacts are related to quality of water utilized, (in particular water, which is consumed,) and the amount used for personal, domestic and household hygiene. Climate events can have an adverse effect on water quality, and by extension, on the health of users of a country's water resources. Hurricane Tomas caused severe damage to the Saint Lucia, its utilities and its very fragile and precariously perched water resources and supplies. To date, recovery has been slow with some areas still not receiving a safe, continuous and adequate supply of water, thereby creating a very uneasy and unstable situation. As a surveillance agency, the Department of Environmental Health has implemented a monitoring/surveillance programme. Routine chlorine residual monitoring is conducted which is very inconsistent, and neglects Microbiological parameters. This creates the potential for serious health impacts if contamination were to occur, rendering the public vulnerable to an epidemic. The potential for the occurrence of such an event is heightened after climate events such as hurricanes, and, the frequency and intensity of climate events has increased as a result of climate change. There is, therefore, a heightened need for adequate equipment and trained personnel in the area of water quality surveillance.	
Project Objectives: Decrease of water related diseases, mortality rate and potential epidemics.	
Project Duration: **TBD**	**Estimated Cost:** Training - US$6,500.00 Purchasing of new equipment- 10,000.00 **TOTAL** **US16,000.00**
Activities and Tasks: Activities should include, *inter alia*: o Training (water and waste water quality analysis and sampling). o Procurement of new equipment to facilitate water and waste water quality analysis and sampling.	
Implementing Agency: Ministry of Health	

PROJECT PROFILE 3
Programme: Climate Change and Mental Health
Project Title: Mitigating The Mental Health Impacts Of Climate Change And Climate Variability In Saint Lucia

Justification :

The Intergovernmental Panel on Climate Change (2007)[21] found with very high confidence that climate change currently contributes to the global burden of disease and premature deaths. Climate-related exposures that impact human health include changing weather patterns (e.g., temperature and precipitation), sea level rise, and more frequent extreme events (e.g., storm, wind, flood, and drought)[22].

The effects on human health are projected to increase progressively in Saint Lucia. Based on evidence from other Small Island Developing States[23], it is envisaged that extreme events may bring about the following impacts:

- Injury or death in unsafe conditions during or following an event Infectious disease
- Toxic contamination
- Mental health problems such as anxiety and depression
- Increases in respiratory and diarrheal diseases
- Contamination of water from chemicals, heavy metals, or other hazardous substances
- Behavioral disorders in young children

Human vulnerability to weather disasters depends upon the attributes of the person at risk. Although evidence from Saint Lucia is very lacking at this point in time, there is evidence in the literature[24],[25] to show that the person's location, age, income, education, and disability are important considerations, as are the broader social and environmental factors such as the level of disaster preparedness, health sector responses, and environmental degradation. Thus, the severity of health impacts of climate change is in part determined by the adaptive capacity of the population. People living in poverty, those geographically vulnerable to extreme weather

[21] IPCC, 2007. Summary for Policymakers. In: *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contributions of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Parry, M.L., and others (eds.0]. Cambridge University Press. Cambridge, United Kingdom and New York, NY, USA.

[22].Climate Change and Human Health: This World Health Organization (WHO) website explains how human health is at risk from climate change, where these risks are most prevalent, and what WHO is doing around the world to protect public health from the impacts of climate change.

[23] Climate Variability and Change and Their Health Effects in Small Island States: Information for Adaptation Planning in the Health Sector: This publication reports on the consequences of climate change and variability for the health of residents of island nations in the Pacific and around the world. It provides guidelines and recommendations for strategies, policies, and measures that island nations can implement to prepare for the increased burden of climate-related diseases and other health issues.

[24] World Health Organisation (WHO): *Mental Health in Emergencies: Psychological and social aspects of health of populations exposed to extreme stressors*. Geneva: World Health Organisation; 2003 World Health Organisation (WHO): *Mental Health in Emergencies: Psychological and social aspects of health of populations exposed to extreme stressors*. Geneva: World Health Organisation; 2003

[25] Reser J: The experience of natural disasters: psychological perspectives and understanding. In *International Perspectives on Natural Disasters: Occurrence, mitigation, and consequences*. Edited by Stoltman JP, Lidstone J, DeChano LM. Dordecht: Kluwer Academic; 2004:369-384.

PROJECT PROFILE 3

events, those highly dependent on agriculture for their livelihood and those vulnerable to developing mental illness are at high risk. The principal and direct concerns include injuries and fatalities related to severe weather events and heat waves; infectious diseases related to changes in vector biology, water and food contamination; allergic symptoms related to increased allergen production; respiratory and cardiovascular diseases related to worsening air pollution; and nutritional shortages related to changes in food production. Major concerns, for which data to support projections in Saint Lucia are not available, more complex and have multiple determinants, are the mental health consequences. This was clearly observable during the drought and Hurricane Tomas in 2010 in Saint Lucia and Hurricanes Ivan (2004) and Emily (2005) in Grenada in 2005. Lessons learned from these events showed that mental health consequences need to be studied from several dimensions: psychological distress *per se*; consequences of psychological distress including proneness to physical diseases as well as suicide; and psychological resilience and its role in dealing effectively with the aftermath of disasters. It was also noted that significant mental health issues are experienced by members of communities in disaster-prone areas, particularly during 'disaster seasons' where people have to live with ongoing uncertainty, anxiety and dread before a disaster has even occurred. There is therefore an urgent need in Saint Lucia for better understanding of the mental health impact of ongoing climate-change 'threats' on individuals and communities living in disaster prone regions.

Furthermore, experiences in Saint Lucia show that caring for the mental health needs of affected people following an extreme weather event, or other natural disaster is constrained by several factors, such as limitations in service capacity (resources and skills), high levels of immediate chaos, widespread distress, and delays before essential services are re-established. Emergency mental health services need to combine several interventions to meet the needs of a distressed community, as well as the needs of those who are traumatised and those with severe mental illness. People with pre-existing severe mental health issues, such as psychosis, are especially vulnerable to significant mental health impacts following a disaster. These people need urgent care and can present a significant challenge in an emergency context where pre-existing mental health services may have been destroyed and severely disrupted by the disaster.

Project Objectives:

Given the variation of climate change impacts across different areas and population, effective policy-making and resource allocation to reduce mental health impacts will require a solid research base. Key research questions in relation to the impact of climate change on mental health include the following.

- What are the key mental health impacts and implications of the most probable climate change scenarios? What are the implications of climate change for the key social and economic determinants of mental health and community wellbeing?
- What are the implications for particular localities and for the most vulnerable and excluded population groups?
- What are the key mental health and mental health promotion impacts of proposed climate change mitigation and adaptation strategies?

PROJECT PROFILE 3

Under the PPCR the GOSL will be undertaking risk mapping of vulnerable groups to profile each of these groups within the context of the vulnerable situations in which they live and to identify their coping and adaptive capacities. The mapping will also help to identify hotpots of high vulnerability in Saint Lucia. In order to generate information necessary to reduce the health impacts of hazard events, in high-risk areas, community-based training will be provided in disaster mental health using existing community training models used successfully in Japan, the United States, and elsewhere.

Project Duration: 3 years	**Estimated Cost: TBD**

Activities and Tasks:

The GOSL will build on the mapping and profiling exercise by including the following:

- Assessment of current coping capacity and the need for adaptation.
- Identification and development of opportunities for adaptation.
- Identification of gaps in current knowledge needed for assessment of coping capacity and/or development of adaptation.
- Inventory of the strengths of specific social groups as well as talents and skills within the community that could contribute to mitigation and alleviation of the psychosocial impacts of climate change

The information and data generated from the research and mapping exercises will be used to train both specialized and non-specialized staff in appropriate mental health and psychosocial interventions. Local professionals (e.g. school teachers, nurses, doctors, and first responders) will also be trained in the basic principles of psychological first aid and in providing referrals to specialized staff if necessary.

Modules will also be created for infusion into social studies on the potential impacts of climate change and response strategies. The intent is to familiarize children with the potential problems, and empower them to overcome fear, or deal with it in a positive way. High school students will be taught disaster first aid in a progressive fashion, so that they are better able to assist their communities should climate-related disasters increase in severity and frequency.

Outcomes:

- More targeted programming aimed at reducing the mental stresses of hazard related disasters

Key results

(1) Adaptation of psychosocial instruments to reliably assess psychological stress in post-disaster situations in Saint Lucia,
(2) Study on how disaster response work can be better organized and managed to reduce stress risks, and
(3) Recommendations on ways to improve mental health interventions to reduce the risks of post-traumatic stress

Implementing Agency: Ministry of Health and Ministry of Social Transformation in collaboration with the National Disaster Management Organisation

PROJECT PROFILE 4	
Programme: Climate Change and Vector Control	
Project Title: Short-Term Rodent Control Project	
Justification: In St. Lucia, more particularly in the urban areas, there is a serious rodent infestation problem. The problem is manifested in the observation of large rats roaming the streets and premises by day and night. There are increasing reports of damage to property and food products. In the past, the Department of Environmental provided a limited baiting programme, which included providing rodenticide to members of the public. In 2004 the Ministry of Health undertook a Rodent Control Project which ended in 2008. The number of cases of leptospirosis was particularly high in 2010 and the rate of confirmation of cases seemed to have skyrocketed after the passage of Hurricane Tomas. In 2010, a total of 15 cases of Leptospirosis were noted and 6 of these cases were noted after the passage of Hurricane Tomas in October 2010. In addition, Epidemiology department reports that there was 1 death due to Leptospirosis post-Hurricane Tomas and a second in January 2011. It appears that, in Saint Lucia, there is an increased incidence of leptospirosis in the aftermath of intense climatic events such as hurricanes. Given the fact that the intensity (and possibly the frequency) of such climatic events is projected to increase as a result of climate change, there is need for a focused project to reduce the impacts of climate events, and in particular, to set the platform for a more participatory and comprehensive rodent control programme in St. Lucia.	
Project Objectives: (i) Reduce rodent population in nine (9) major towns and villages in Saint Lucia; (ii) ensure sustainability of the programme through existing town village councils; (iii) Educate the public about measures that may be taken to reduce the likelihood of contracting rodent-borne diseases, particularly in the aftermath of an extreme weather event.	
Project Duration: Six (6) months	**Estimated Cost:** Sensitisation/awareness (including procuring protective equipment) – EC$10,000.00 Manpower recruitment – 150,000.00 Training – 16,800.00 Public Education – 20,000.00 Evaluation/Report – 4,000.00 Public meetings/consultations – 18,000.00 **TOTAL EC$218,800.00** **US$81,038.00**

PROJECT PROFILE 4
Activities and Tasks: Activities should include, *inter alia*: o Sensitization of key stakeholders o Implementation of control strategies o Consolidation (Stakeholders assuming responsibility of control)
Implementing Agency: Ministry of Health

Knowledge Management

PROJECT PROFILE 5	
Project Title: Mainstreaming the Lessons of Hurricane Tomas and Other Recent Climate Events	
Justification: Over the last decade, Saint Lucia has been severely affected by a number of extreme weather events. Hurricane Tomas affected Saint Lucia on 30th and 31st October 2010 and caused loss of life and major environmental, property, agricultural and infrastructural damage. The impacts of Tomas were compounded by the rains brought by the surface trough of 18th November. Other noteworthy extreme events include Hurricane Debbie (1994), the tropical waves of 1996 and 1998, Hurricane Lenny (1999) and Hurricane Dean 2007. Much of the local population remains at risk to damage caused by climate events, not purely because of their location, economic circumstances and other such factors, but also due to their knowledge/understanding, attitudes and choices/behaviours, where such risks are concerned. Moreover, apart from the standard information communicated about weather events during the hurricane season, there has been little in the way of holistic education and sensitization strategies aimed at meaningfully changing behaviours and getting people to make the critical steps to reducing their long-term vulnerability to such events. An initiative is therefore needed to increase social resilience to extreme weather events through education, sensitization and information dissemination.	
Project Objectives: Increase social resilience to extreme weather events at the individual, household and community levels by mainstreaming the experiences gained from climate events, and promoting the adoption of best practices in key aspects through education, sensitization and information dissemination.	
Project Duration: TBD	**Estimated Cost:** **TOTAL US$ TBD**

PROJECT PROFILE 5
Activities and Tasks: Activities should include, *inter alia*: ○ Identify and engage agency and community stakeholders; ○ Design and conduct a baseline of disaster literacy- how much do people know about hurricanes and other such events and what they can do to reduce their vulnerability; ○ Identify key aspects requiring attention, such as house design and construction; risk sharing (insurance, etc); water security (e.g. rainwater harvesting), sewage disposal) ○ Work collectively to identify support systems (fiscal incentives, sources for further information and technical support) ○ Design education and communication programmes ○ Implement programmes ○ Review and report findings.
Implementing Agency: Sustainable Development and Environment Division

Coastal Zone Management/Sea Level Rise

PROJECT PROFILE 6
Project Title: Coastal Stabilization of Pigeon Island to Prevent and Mitigate Coastal Erosion Caused by Climate Change
Justification: The Pigeon Island National Landmark is an important heritage resource as it is home to some of Saint Lucia's most important historical buildings and artifacts. Stone, clay and shell artifacts belonging to the Amerindians, Pigeon Island's earliest inhabitants, have been found along the eastern shore; and the ruins of an 18th century military fortification dominate the island's landscape and tell the history of Saint Lucia's occupation by the French and British. It has been recognized that coastal erosion caused by sea swells during extreme weather events is a major threat to the Landmark. In 1999, Hurricane Lennie caused significant erosion to the south-western shore, an area which consists of two beaches, restaurant, military ruins and cemetery. In 2007, Hurricane Dean caused further damage to the area. With sea levels are expecting to rise and hurricane frequency and intensity expected to increase due to Climate Change, the rate of coastal erosion at Pigeon Island is expected to increase. An engineering analysis for the coastal stabilization of Pigeon Island conducted in 2008 found that hurricane waves from a south-westerly direction result in offshore wave heights of 5.0 metres approaching the shore. This can be expected to result in significant erosion of the shoreline as these waves are well in excess of the tolerable near-shore wave height of 2.5 metres for stable shoreline conditions. Moreover, assuming a rise in global sea-level rise as a result of climate change, it is estimated that certain coastal areas of Pigeon Island could retreat at varying lengths between 5.6 and 9.6 meters.
Project Objectives: (i) Restore the sections of the south-western coastline of the Pigeon Island National Landmark that were eroded/lost to the effect of storm surges and wave action; (ii) Stabilize the south-western shoreline.

PROJECT PROFILE 6	
Project Duration: **TBD**	**Estimated Cost:** Preliminary Work – US 210,700 Beach 2 (P1 Beach West) - 278,100 Beach 1 (P1 Beach East) - 437,850 Revetment- 400,100 Days Work- 168,000 Sub-total- 1,494,750 Contingency (15%) - 224,213 **TOTAL** **US$1,718,963**
Activities and Tasks: Activities should include, *inter alia*: ○ Reclamation of land lost to coastal erosion. ○ Beach nourishment to lengthen Beaches 1 and 2 ○ Rehabilitation of existing groynes. ○ Placement of two partially emergent offshore breakwaters.	
Implementing Agency: Saint Lucia National Trust	

PROJECT PROFILE 7
Programme : Climate Change and Ports
Justification: There is overwhelming scientific evidence that Sea Level Rise (SLR) associated with climate change projected to occur in the 21st century and beyond, represents a serious and chronic threat to the sustainable management of the coastal zone in Saint Lucia as in other CARICOM nations. It is estimated that SLR of 1m will inundate a total of 21 out of 64 airports within CARICOM. Seaports will also be affected, with the surrounding port lands of 35 out of 44 ports in CARICOM inundated by 1m SLR unless protected by coastal structures. It is further estimated that 1m SLR + 1 in 100 year storm surge will result in flooding of all airports in Saint Lucia[26]. While there are no available cumulative rebuild costs of the air and sea ports, these costs will be a greater proportion of the GDP. It is against this background that the Saint Lucia Sea and Airports Authority (SLASPA) has identified a suite of adaptation initiatives. Past interventions for climate change adaptation in Saint Lucia have largely been focused on adjustments to sea-level rise and storm surges associated with hurricanes. Very early measures placed emphasis on protecting land, in particular coastal lands, through 'hard' shore-protection measures. The costs of such overall infrastructure and settlement protection have been a significant proportion of Gross Domestic Product (GDP). Further, plans to develop large hotel plants close to the sea and marinas along the rough east (Atlantic) coast will, if realised, add to the economic vulnerability of the island as a whole and the tourism industry in particular.

[26] UNDP-CaribSave. 2010 summary document

PROJECT PROFILE 7

Some efforts to mitigate natural and climate-related hazards impacts can, in turn, have negative impacts on the natural environment and may, in specific areas, negatively impact coastal settlements, or inadvertently cause destruction in the coastal environment.

This activity will inventory and assess existing coastal engineering structures towards validation of the various coastal engineering solutions and for up-scaling best practice in other locations around the island and at the regional level. Design guidelines and standards will also be an output that will inform the coastal engineering process in Saint Lucia, through the authority of the DCA.

At least one hard-core pilot intervention is also proposed under this sub-component, involving the re-design and modification (pilot) of critical infrastructure, such as ports, to adapt to storm surge, coastal flooding and sea level rise.

This sub-component is inextricably linked with the sub-component on SLR discussed in section 2.4.1.3.2. The two sub-components are expected to inform each other and enhance the knowledge management process at the national and regional level.

It is also worth noting that this sub-component is linked to the *Advocacy and Policy Development* module of the PPCR Regional tract.

Included in this suite is a project that will provide support for the implementation of retrofitting measures that provide meaningful adaptation, as well as mitigation benefits, thereby increasing resilience in the face of existing and emerging climate change impacts. This project is the implementation of solar cooling at Hewanorra International Airport (HIA), George F. L.Charles Airport (GFLC) and Castries Seaport. It is envisaged that this will make the retrofitted buildings more habitable in the face of increasing temperatures.

Project Concept	Responsibility	Indicative Cost	Other Issues to be Addressed	Adjustments Needed to the Enabling Environment
Bathymetric survey to all ports of entry.	Saint Lucia Air and Sea Ports Authority (SLASPA)	US$50K per location for 5 locations namely; Port Castries, Port Vieux-Fort, Rodney Bay Marina, Marigot Bay Marina, and Soufriere Bay. Total of US$250K.	None	Reduction or elimination of Airport Service Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.
Dredging at seaports.	SLASPA	US$2.25M Re. Port Castries. Should be	Public awareness of	Reduction or elimination of

PROJECT PROFILE 7				
		done every 3 – 4 years; Bathymetric survey will further inform the frequency of such an exercise. Marinas should be every 5-10 years at cost of US$1.5M	private sector and yachtsmen – Joint initiative of SLASPA and marina operators. Dredging is an activity that must be done periodically.	Airport Service Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.
Undertake study to assess impact of Sea Level Rise on all facilities of SLASPA	SLASPA	Preliminary cost of US$100K.	Capacity building of relevant managers and SLASPA personnel; Public awareness aimed at port stakeholders and internal customers; Compilation of all available research in specific area.	Grant financing through donor agencies for a project with significant GCC adaptation potential and of national importance.
Elevation of runways to adapt to sea level rise and flooding	SLASPA	To be informed by the study undertaken above.	Public awareness geared at airline community, Saint Lucia Tourist Board (SLTB), etc.	Reduction or elimination of Airport Service Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.
Re-designing of drainage at all ports and	SLASPA	US$200k for Port Castries, including Ferry Terminal;	Capacity building of relevant	Reduction or elimination of Airport Service

PROJECT PROFILE 7				
installation of pumps to combat sea level rise.		US$300K for George F.L.Charles Airport (GFLC); US$3M for Hewanorra International Airport (HIA). Port Vieux-Fort is not considered critical at present;	managers and SLASPA personnel; Public awareness aimed at port stakeholders and internal customers;	Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.
Re-designing of port infrastructure – reinforcement for more intense hurricanes and storms.	SLASPA	US$4M for the construction of redesigned berth 4 and 5; installation of blow holes upon re-construction so as to protect gabion baskets.	Public awareness; Capacity Building;	Reduction or elimination of Airport Service Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.
For the HIA Redevelopment Project – necessity for utilization of rain water harvesting at facility; Possibly at GFLC Airport and Castries Seaport	SLASPA	US$350K for procurement of purifying equipment and distribution; US$1M for construction of 250K gallon tanks.	Public awareness of stakeholders, internal customers particularly, employees of the specific locations.	Reduction or elimination of Airport Service Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.
Implementation of solar cooling at HIA, GFLC, and Castries Seaport.	SLASPA	US$110k for HIA technical feasibility and US$2.2M for installation; US$540K for installation at La Place Carenage; US$360K at Castries Seaport; US$220K for Shed 6;	Compilation of all available research and similar projects globally; Public awareness geared at stakeholders and internal customers.	Reduction or elimination of Airport Service Charge (ASC) remittance to the Government of Saint Lucia in order to cover cost of activity and other follow –up activities.

Data Management

PROJECT PROFILE 8	
Programme Area: Data Management	
Result Area: A comprehensive spatial and descriptive database of landslides and floods resulting from Hurricane Tomas; mainstreaming of events mapping in disaster planning and locally built capacity in events mapping using GIS and related technologies.	
Project Title: Events Mapping – Hurricane Tomas	
Justification: The mapping of flood and landslide events - actual location, description and size occurrence of hazards - is critical to enhancing and validating the outputs of natural hazard GIS-linked models and for providing base information to guide settlement planning, reforestation and other land management programmes, emergency planning, private sector investment, risk assessments for banks and insurance companies, as well as development decisions of private citizens (buying a piece of land or investing in a home). The need for time series event mapping was brought to the fore as a result of the unprecedented landslide and flood event of Hurricane Tomas. Information required includes the development of comprehensive landslide, debris flow and flood inventory map(s) with particular information about these – flood heights, flow extents and other information. Given the wide spatial distribution of these occurrences, high-tech and time-efficient methods are required to capture this important information. .	
Project Objectives: To produce an Event Map of Hurricane Tomas and comprehensive descriptive database using scientific methods	
Project Duration: 9 months	**Estimated Cost: US$150,000**
Activities and Tasks: Activities should include, *inter alia*: ▪ Assessment of available geo-referenced satellite imagery including radar and selection of the most suitable image/type or combination of the same ▪ Augmenting the above with information from other sources – air footage and pictures of affected areas, descriptive ▪ Assessment of existing events maps developed crudely from various sources following Hurricane Tomas ▪ Propose and document a GIS procedure for the geo-referencing of the above ▪ Use of GIS/Image interpretation software for the processing of satellite information ▪ Suggesting of other useful sources of remote sensed data for assessment and interpretation to achieve the same example radar for floods ▪ Use of a 'learning by doing' approach to build local capacity to undertake future event mapping ▪ Involving local Disaster Committee representatives in data collection and mapping at the local level ▪ Developing and documenting a procedure for mainstreaming events mapping in the disaster management process using a consultative approach	
Implementing Agency: Ministry of Physical Development, NEMO and local Disaster Committees, Ministry of Works and National Reconstruction and Development Unit	

PROJECT PROFILE 9	
Programme Area: Data Management	
Result Area: Enhanced capacity of the Physical Planning and Survey and Mapping Departments in the management of digital geo data.	
Project Title: Enhancing the capacity of the Ministry of Physical Development	
Justification: GIS development in Saint Lucia has, by and large, been project-led. The use of GIS in Saint Lucia is developing with four (4) key agencies within the public sector using GIS actively in planning and development control applications, mapping and analysis of social indicators, natural resource management, hazard and vulnerability mapping, river bank assessment, sea level rise assessment, environmental, agriculture and farm planning related applications. The software of choice is ESRI software and ESRI-compatible technologies such as CAD systems (AUTOCAD). The Physical Planning Department (PPD) within the Ministry of Physical Development was the first to establish a comprehensive system in 1995 and has since its establishment been the lead producer and user of geo-referenced data in Saint Lucia. To a large extent, the Survey and Mapping Section (SMS) of that Ministry, with responsibility for topographic mapping and land survey authentication, provides the critical base data for use by the PPD in thematic mapping and data analysis – parcel data (not kept in real time), topographic digital maps and digital aerial photography. The SMS has, however, has lagged behind in terms of the comprehensive use of digital technology. Critical to the sustainability of the GeoNode system initiated in Phase 1 of the PPCR, is the enhancement of the existing capacity of the PPD so that this unit may continue to lead the supply, maintenance and update of geo-data information in Saint Lucia, until such time that other related agencies build their capacity to achieve the same. While the SMS is bidding for some technical assistance to build the broader capacity of the Land Registry System, Survey process, conversion of analogue archives, etc., some immediate assistance is required to improve the collection of field data in digital format to facilitate the update of existing information.	
Project Objectives: Enhancing the capacity of the Physical Planning Department to sustain the upkeep and expansion of existing GIS systems; and building of the capacity of the Survey and Mapping Unit in the updating of field data using GPS technology	
Project Duration: 1 year	**Estimated Cost: 200,000** **40,000 – Equipment** **160,000 – Training in GPS and Image Processing**
Activities and Tasks: Activities should include, *inter alia*: ▪ Purchase of Trimble GPSs for both the PPD and SMS and the development of a training programme in their use from the supplier – Trimble Caribbean Agents (12 people) ▪ The purchase of 4 front-end computers for the PPD with adequate capacity to handle GIS, remote sensed data and aerial photographs. ▪ Renewal of ARC GIS licenses and the purchase of modules for Image Processing for the PPD ▪ Provision of training in ARC GIS Image processing module for the PPD	
Implementing Agency: Ministry of Physical Development – Physical Planning; Survey and Mapping	

PROJECT PROFILE 10	
Result Area: Installed Automated Systems and internal capacity to use the system.	
Project Title: Enhancing the capacity of The Ministry of Agriculture – Pest Control and Surveillance Services	
Justification: An important identified impact of climate change in the agricultural sector is the increased incidence of pathogens. In addition to developing internal systems to monitor the incidence of pathogens, the Pest Control Department of the Ministry of Agriculture is cognizant of the need to establish robust surveillance systems to prevent the inter island or country spread of pathogens. There exists little historical, statistical or analytical information on any outbreaks or pest-related incidents. Surveillance is undertaken manually - there is no application at the ports of entry to assist the quarantine department in pest identification or surveillance. Systems will be required at 4 points of entry – Rodney Bay, Castries Customs, GFL Charles and Hewanorra Airports.	
Project Objectives: To automate the processes of the Plant Quarantine Department to enhance capacity in pest surveillance and identification	
Project Duration: 3 months	**Estimated Cost: US$100,000**
Activities and Tasks: Activities should include, *inter alia*: ▪ Acquisition of Plant Health Surveillance and Pest Response System (PHSAPRS/SURVRES) – a web-based system for health surveillance and pest response, which automates/manages all the processes in a Plant Quarantine Department and automates the processes for Surveillance and Pest Identification. ▪ Training in the use of the proposed system from the vendors of the software ▪ Acquisition of the necessary hardware and net-ware – computers at 4 ports of entry plus 1 at the Ministry of Agriculture	
Implementing Agency: Ministry of Agriculture	

PROJECT PROFILE 11
Programme Area: Data Management
Result Area: Improved Management of Water Network and capacity in the use of GIS and related technologies.
Project Title: Enhancing the capacity of WASCO in the use of GIS technology
Justification: The mapping of water infrastructure to support management decisions regarding fault detection, network management, planning and financing, is important to providing an efficient service to consumers – private, public and to households. Several attempts at mapping this network have failed mainly due to financial constraints and the lack of internal capacity to implement such systems. Given the impacts of Hurricane Tomas on existing water infrastructure, and the growing demands to improve the supply and distribution of water nationally, automated mapping of networks and effective decision support systems are critical to enhancing the operations of the agency.
Project Objectives: Improving the Operations of WASCO's distribution and supply system through the use of GIS technology

PROJECT PROFILE 11	
Project Duration: 18 months	**Estimated Cost US$260,000**

Activities and Tasks: Activities should include, *inter alia*:

- Design of appropriate GIS. he design of the GIS should not follow a generic approach, but rather should be driven by specific technical needs. The choice and design of the system should be preceded by a thorough technical needs assessment and assessment of best practice within similar agencies. The selected system should be shp-file-compatible and should use the national standard projections in accordance with the statutory requirement of the Survey and Mapping Department.
- Establishment of a GIS and Mapping Unit with dedicated staff.
- Acquisition of ARC GIS with Network Analyst Module along with other support software.
- Conversions of Analogue and digital records (dxf from CAD systems) to GIS format.
- Digital mapping of all infrastructure using appropriate technologies including GPS (or manual in the absence of these) and conversion of the same.
- Training of WASCO GIS and Mapping staff in the required routines and GIS to support decision making.
- Training in support technology – use of handheld devices or PDA, GPS among others deemed appropriate for a water company.

Implementing Agency: Saint Lucia Water and Sewerage Company (WASCO)

PROJECT PROFILE 12
Programme Area: Hazard Mapping
Result Area: Effective hazard maps to guide land planning
Project Title: Development of Landslide Hazard Maps based on newer comprehensive Hazard Models

Justification: In the Damage Assessment Report on Hurricane Tomas (UNECLAC, 2010), it was highlighted that the event demonstrated in some cases, a lack of conformance between areas severely impacted by landslides and the Landslide Severity Risk maps.

This non-conformity is due to a number of critical issues regarding the limitations of landslide hazard models and the parameters used, along with the quality of base data required to effectively model landslide risk. The Hazard models used are based on soil type, geology, slope and rainfall parameters which do not tell the complete picture of landslide susceptibility.

These models do not utilize algorithms that model infiltration, pore pressure changes and stability analysis in a quantitative manner consistent with a specific event magnitude obtained from probabilistic and or deterministic analyses of storm intensity. Such models are however available and can, with more detailed and relevant soils and geological mapping, provide a more scientific and realistic assessment of landslide risk. Additionally Hazard Maps are at a general scale and are not useful in local area planning.

PROJECT PROFILE 12	
Project Objectives: To develop comprehensive and high-quality hazard maps at a useable scale to provide strategic guidance to land planning.	
Project Duration: 3 years if new input maps are required. 1year if improvement in input mapping is not required	**Estimated Cost:** 600,000 US if further mapping is not required; 1 Million US if required.
Activities and Tasks: Activities should include, *inter alia*: o Assessing current landslide hazard maps o Assessing the parameters that underpin existing hazard mapping models o Assessing existing input map databases – soils and geology o Making recommendations regarding these key input maps o If input maps are inadequate, recommending updates and provide guidelines o Creating Digital Elevation Model (DEM) from the conversion and joining of existing contour lines at 1:2,500 o Identifying and assess improved models that take into account special soil and other factors o Producing new hazard maps at a local scale.	
Implementing Agency: Ministry of Physical Development, Ministry of Communications and Works	

PROJECT PROFILE 13
Programme: Climate Change Mitigation and Resilience Building
Result Area: Scientifically restored landslides in forested areas, along roads and within settlement areas.
Project Title: Rehabilitation of Main Landslides resulting from Hurricane Tomas

PROJECT PROFILE 13	
Justification: Hurricane Tomas, which impacted St. Lucia in October 2011, was predominantly a landslide event. Several major landslides and debris flows occurred along major roadways and settlements. The national responsibility for landslide rehabilitation is disjointed, with the main responsibility for road and settlement falling with the Ministry of Communications and Works, and the responsibility for landslides occurring in the Forest Reserve being that of the Forestry Department. Landslides occurring on private forested lands remained the responsibility of private owners while the Ministry of Agriculture, through its Engineering Division, provided some support to farmers whose farms or feeder roads were affected by landslides. Notwithstanding the scale and complexity of the landslides and debris flows have posed enormous challenge to St. Lucia as the rehabilitation solutions and cost of landslide rehabilitation outstripped local capacity in terms of technical expertise and finance. Preliminary assessments were conducted by the Association of Professional Engineers of St. Lucia and more focussed assessments conducted by the engineering firm FDL. All of these studies including the UNECLAC Damage Assessment Report on Hurricane Tomas have pointed to the need for detailed geo-technical assessment of all major landslides to guide their scientific rehabilitation.	
Project Objectives: To rehabilitate major landslides based on scientific assessment and the implementation of sound measures	
Project Duration: 3 years	**Estimated Cost: 5 mil**
Activities and Tasks: Activities should include, *inter alia*: ▪ Further Geo technical assessment of landslides affecting settlement and roads. ▪ Further Geo technical assessment of Landslides in the Government Forest Reserve and in areas on private lands critical to water supply. ▪ The development of fly nurseries in close proximity to landslides in the forested areas ▪ Capacity building in landslide rehabilitation	
Implementing Agency: Forestry Department and Ministry of Communications and Works	

PROJECT PROFILE 14
Programme Area: Data Management/Collection
Result Area: Improved locational information on fires
Project Title: Enhancing the capacity of the Fire Department to address climate-induced fires
Justification: The Fire Department, especially in the dry season, responds to a host of climate-induced fires in rural areas. Many reported fires occur in the dry life-zones around the island. While the location and vulnerable areas are known, little is officially documented and the impact of these requests on the Fire Department manpower is not calculated. The latter is important in the planning of human and other resources to respond efficiently to demand.
Project Objectives: To improve the capacity of the Fire Department to respond to Climate and hence man made fires

PROJECT PROFILE 14	
Project Duration:	**Estimated Cost: 100,000**

Activities and Tasks: Activities should include, *inter alia*:

- Supporting customised software designed for improving the mapping of and response to climate induced and other fires
- Improving the geo-referencing of capture data in the field in real time through the introduction and use of GPS technology and training in the same for Fire Stations island-wide

Implementing Agency: Fire Department

PROJECT PROFILE 15

Project Title: Climate Proofing The Laborie Community

Justification:

Like most coastal communities, Laborie has not been spared the impacts of climate change. In fact, in recent years, there has been a rapid increase in the intensity and level of climate change impacts as reported by locals. Laborie's beaches are no longer as wide as they used to be and buildings and residential spaces have suddenly found themselves closer to the water's edge. With the growing threat of climate change, sea level rise and increases in extreme weather systems, these issues are likely to become more severe. Consequently, the following problems need to be addressed:

A. Extensive coastal erosion which has occurred over the past 10 years leading to -

1) loss of vegetation (mostly coconut palms)
2) beach space used for livelihoods
3) beach recreational space
4) threats to (infrastructure) coastal businesses and residences
5) the expressed need for zoning coastal activities

B. Heavy flooding which occurs during the now more intense adverse weather phenomena that result in -

1) Hillside runoff being channelled into the village streets
2) Threats to hillside residential areas
3) Frequent damage to water catchment area resulting in regular and acute water shortages
4) Loss of prime agricultural lands during heavy rains
5) Heavy siltation of the bay that in turn results in degradation of the reefs and decline in coastal water quality, ecosystem destruction and contamination due to sedimentation
6) Resultant loss of fish habitats within the near shore areas thereby requiring that fishers venture further out to catch fish thus increasing their overhead and operating costs (rising cost of fuel)

C. Decline of traditional industries of fishing and agriculture because of climate variability. The local economy needs to be transformed to build capacity to adapt to the impact of climate change on the livelihoods of the people of Laborie.

Project Objectives: To build the Laborie Community's resilience to climate change

PROJECT PROFILE 15	
Project Duration: 3 years	**Estimated Cost: IN USD** Research on coastal Dynamics 30,000 Design and construction Of water channelling Systems 100,000 Training and equipment For livelihoods Adaptation 75,000 Institutional Strengthening 40,000 **Total US$245,000** The Laborie Community will provide up to 25% in in-kind contributions.

Activities and Tasks: Activities will include, *inter alia*:

- Research on better understanding of coastal dynamics and factors responsible for coastal erosion in Laborie to inform the design of engineering and other solutions to protect the community from the effects of sea level rise and coastal erosion;
- Design and construction of water channelling systems to manage the flow of water from hillsides especially in the area above the Kennedy Highway/Laborie Bypass.
- Design, in collaboration with the Laborie Co-operative Credit Union, an Adaptation Financing Facility that can obtain concessional loans for on-lending to households and individuals for retrofitting their homes for the purpose of harvesting and storing rainwater
- Training and provision of equipment to fishers and farmers – GPSs and safety-at-sea equipment so that fishers can travel further to fish; greenhouses and concomitant technologies to mitigate soil loss and impact of climate variability on cropping systems.
- Institutional strengthening and capacity development of the Laborie Development Foundation to lead initiatives at building community resilience.

Implementing Agency: Laborie Development Foundation

Appendix 14: Tentative[27] Co-Financing for Building Climate Resilience and Reducing Risk to Climate-Related Disasters[28,29, 30,31] under PPCR and Beyond

Organisation/Project	Area of Focus	Year of Initial Communication
Caribsave	Sea Level Rise	2009
The Climate and Development Knowledge Network (CDKN)	Assessment and Analysis of Vulnerable Groups[32]	2011
Coconut Bay Beach Resort and Spa	Water Conservation/Renewable Energy	2011
Consolidated Foods Limited	Food Security &Storage/Certified Farmer Programme	2011
Saint Lucia Air and Sea Ports Authority	Ports and Sea Level Rise/Renewable Energy	2011
Saint Lucia National Trust	Coastal Erosion and Climate Change	2010

[27] The national executing agencies continue bilateral discussions with key entities for co-financing. These discussions are expected to progress over the next few weeks-months. As such, it would be premature for Saint Lucia to indicate the commitment of these organisations at this time. Progress on these commitments will be communicated to the PPCR Sub-Committee in South Africa.

[28] Saint Lucia has presented a 'blended' PPCR and **Disaster Vulnerability and Risk Reduction Project (DVRP)** co-financed Project. The DVRP is currently in design phase, with the potential for accessing IDA funding of USD 10-15 million. Discussions with the proponents have confirmed complementarity with the activities outlined in the SPCR and that these will help to form the basis for further elaboration of the DVRP. In this regard, it is envisaged that the SPCR will be able to leverage up to USD 10 million through the financing framework of the DVRP and RDVRP which will therefore provide a means of supplemental funding to enable upscaling of the SPCR implementation activities to realise larger, blended projects.

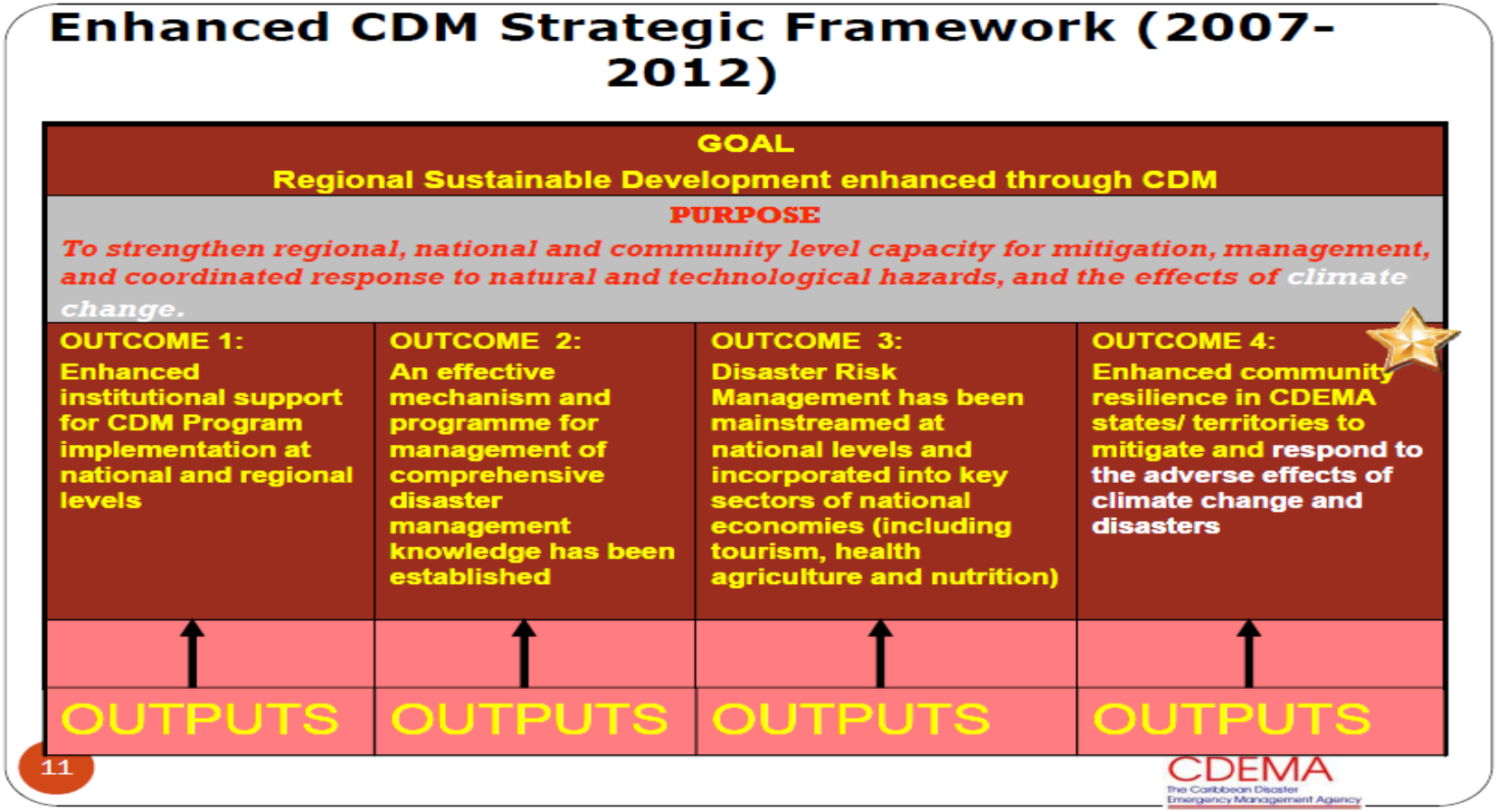
[29] The **Hurricane Tomas Emergency Recovery Project (ERP)** is funded to the amount of US 15 million. Proponents of the Project have, through the process of consultation, committed to collaborative implementation of these projects with the SPCR in areas of complementarity. Areas of complementarity (from the Recovery Project) include: Component 2: Institutional Strengthening and Hazard and Risk Analysis (US$1.5); Component 3: Reconstruction and Rehabilitation of Damaged Critical Public Infrastructure (US$11 million.

[30] **A USAID-OECS Project on Climate Variability, Change and Adaptation** will be implemented in the OECS. The stated grant for the project is USD 2.5 million in the first year with US 2 million per annum for the next four years, contingent on congressional approval. Proponents of the Project have, through the process of consultation, committed to collaborative implementation of these projects with the SPCR in areas of complementarity.

[31] Refer also to Table 4 in Part 2: Components of Saint Lucia's Investment Plan under the PPCR-Grant Funding

[32] Area of focus to be determined/confirmed

Appendix 15: Enhanced Comprehensive Disaster Management Strategic Framework: 2007-2012



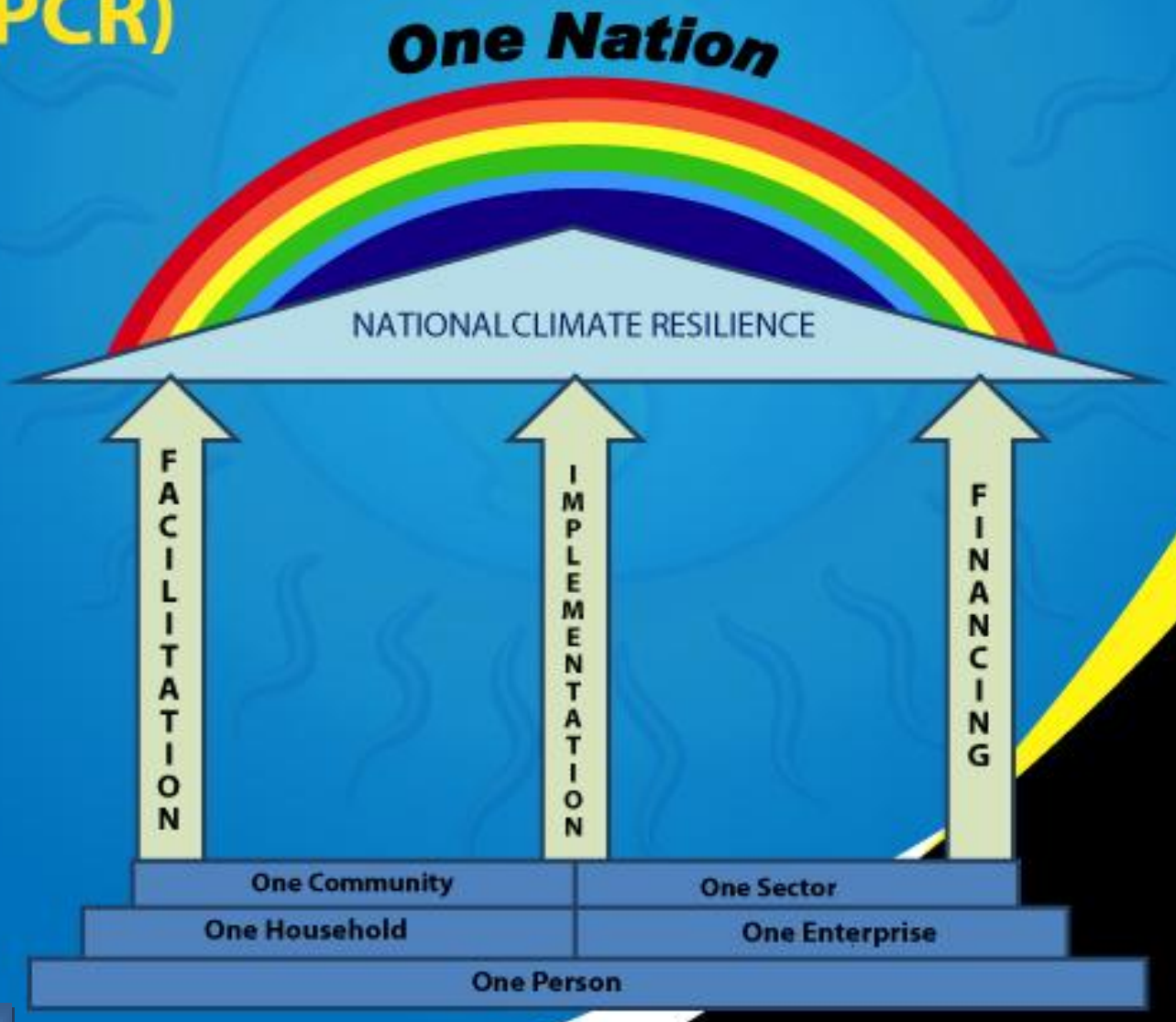
Source: Presentation by Senior Programme Officer, CDEMA: Priorities for Climate Change Adaptation and Disaster Risk Reduction in the Caribbean: Caribbean Regional Conference: Global Climate Change Alliance: Belize City: March 28-29, 2011

Saint Lucia's

Strategic Programme for Climate Resilience (SPCR)

Under and Beyond the

Pilot Programme for Climate Resilience (PPCR)



June 1st 2011

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(Outside of the preparation and submission of an SPCR and Investment Plan)

1. Updated Climate Change Adaptation Policy;
2. Climate Change Knowledge Attitude Practice Study;
3. Drafting Instructions for an Environmental Management Bill, Environmental Impact Assessment (EIA) and Physical Planning regulations to incorporate the climate change element ;
4. Climate Change Public Education and Outreach Strategy and Implementation Plan (with a focus on special and vulnerable groups);
5. Report on Data Management for Climate Change in Saint Lucia;
6. Report on incentives to be implemented within and beyond PPCR to address climate change.

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GOVERNMENT OF SAINT LUCIA

Ministry of Finance, Economic Affairs & National Development

Corporate Office

6th June 2011

3rd Floor, Financial Centre
Bridge Street
Castries
Saint Lucia, West Indies

The Administrator
Administration Unit
Pilot Program for Climate Resilience
The World Bank
1818 H Street NW
Washington D.C.
20433

Dear CIF Administrator

Saint Lucia's Strategic Programme for Climate Resilience

I am pleased to submit, for consideration, Saint Lucia's Strategic Programme for Climate Resilience (SPCR) and Investment Plan under the Pilot Programme for Climate Resilience (PPCR). Saint Lucia is seeking to access up to seven million United States Dollars (USD5 million - 7 million) in grant funding under the PPCR, subject to the availability of resources in the funding envelope for the Caribbean Region. Saint Lucia is also requesting ten million dollars (USD10M) in concessional funding, again, subject to the availability of resources in the regional funding envelope.

Saint Lucia is further requesting a Project Preparation Grant of three hundred and seventy-five thousand seven hundred and sixty United States Dollars (USD375,760.00) to be advanced from the grant funds requested under the PPCR. These funds are to be used for the conduct of studies and assessments ahead of project implementation and to secure technical support for project preparation and implementation readiness.

Saint Lucia is indeed honoured to be a part of the PPCR and grateful for the considerable assistance and support provided by the CIF Administrative Unit. We therefore look forward to the favourable consideration of our SPCR and Investment Plan, as well as our Project Preparation Grant request, in order to expedite Saint Lucia's transition to the next phase of implementation.

Yours sincerely

ISAAC ANTHONY
Permanent Secretary

IA/