Strategic Programme for Climate Resilience

SAINT VINCENT AND THE GRENADINES

PHASE TWO PROPOSAL

Resources Documents

ANNEXES

2 March 2011

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1. Pilot Programme for Climate Resilience, Caribbean Regional Track First Progress Report

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Pilot Programme for Climate Resilience, Caribbean Regional Track, First Progress Report

Background

The Pilot Programme for Climate Resilience (PPCR) is the first programme to become operational under the Strategic Climate Fund (SCF). The Fund in turn is one of two which make up the Climate Investment Fund (CIF). The PPCR was approved in November 2008, and Caribbean countries accepted an invitation to participate in the program in on May 14, 2009. The PPCR is intended to-

- Pilot and demonstrate approaches for integration of climate risk and resilience into development policies and planning;
- Strengthen capacities at the national levels to integrate climate resilience into development planning;
- Scale up and leverage climate resilient investment, building upon other ongoing initiatives;
- Enable learning by doing and lesson sharing at the country, regional and global levels;
- Strengthen cooperation and capacity at the regional level to integrate climate resilience in national and appropriate regional development planning and processes.

The Caribbean participation in the PPCR consists of national track and regional track programmes.[1] Joint missions are critical aspect of programme monitoring; for the PPCR regional track, the first joint mission was undertaken in June, 2010 in Barbados. One key output of the mission was a decision to engage a consultant to assist in the "coordination and implementation of activities under the Caribbean Regional –Track." Coordination activities would include linkages and relevance to country level and other regional activities geared toward building climate resilience. Main responsibilities of the Regional Coordinator are listed below, and the full terms of reference can be found at Annex 1.

1. Undertaking a needs assessment to identify tools, training and data gap analysis for implementing the PPCR;
2. Assessing whether the PPCR could support specific interactive elements of the Information Clearing House (ICH);
3. Undertaking a regional and national level consultations and dissemination of information concerning the PPCR Phase I to regional stakeholders in the public and private sector, non-government organizations (NGOs), bilateral agencies and other civil service organizations;
4. Identification and analysis of institutional capacity needs, existing knowledge, studies, research and assessment of gaps for implementation of PPCR regional track programme;
5. Identify possible areas and partners where the private sector can be supportive of regional adaptions strategies;
6. Support preparation and development of joint missions and assist technical team from IDB, World Bank and regional organizations in the coordination and implementation of PPCR regional track.

[1] Caribbean pilot countries are (i) Jamaica (ii) Haiti (iii) Saint Lucia (iv) Saint Vincent and the Grenadines (v) Grenada and (vI) Dominica.

Activities Completed as of February 4, 2010

Design of Caribbean PPCR Phase I Activities and Financing Proposal

With the contracting of a consultant as of November 8th, 2010, coordination and implementation of PPCR regional track activities were initiated. Initial tasks were geared toward consolidating design of the Phase I programme and preparation of a proposal for its financing. The key output of this Phase I is to be a Strategic Plan for Climate Resilience (SPCR) to be implemented in a follow-up Phase 2.

The preliminary draft of the Phase 1 regional track activities was prepared, discussed at a meeting of November 11, 2010 meeting to review PPCR progress. The draft financing proposal was revised and circulated for stakeholder input. Once comments were received and incorporated, an updated draft was circulated for further inputs, final comments received and amendments made and the proposal was submitted to the PPCR Review Committee at the end of December, 2010. The proposal was approved on January 19, 2011. Minor edits recommended by committee members were incorporated in the final edit of the proposal and the document finalized for dissemination.

Per the proposal, the Phase I Regional Track activities approved were the following-

Module 1: Capacity Development and Information Sharing

1. Support for Strengthening of data management capacity.

   Evaluation of data collection and management systems and processes;

   Workshop on climate modeling and monitoring systems.

2. Identification of Data Needs.
3. Information sharing and exchange of best practices.
   a. Assessment of need for additional functionality of the information clearing house.

Module II: Advocacy and policy development

1. Regional Policy Dialogue.
2. Stakeholder consultations.
3. Development and piloting of climate risk screening toolkit
   a. Piloting of screening tool.
   b. Formulation of toolkit.

Module III: Coordination, scoping and SPCR preparation

1. Coordination and national programs interface
   a. Participation in joint missions.
   b. Support to the development of regional results framework.
   c. PPCR Phase I coordination and transition to PPCR Phase II.
2. Gap Analysis of climate resilient systems, capacities and practices in the PPCR pilot countries.

b. Caribbean PPCR Start-up Activities

The first PPCR regional track start-up activity was the initial work-break down for the modules and activities listed above. This work breakdown, which can be found at Annex 2, better details the intended PPCR Phase I activities.

c. Assessment of clearing house mechanism

Discussions were initiated with the information technology (IT) team of the Caribbean Community Climate Change Centre (CCCCC) toward understanding the intended design of the Information Clearing House (ICH). The discussions helped to clarify that the core of the ICH is a document management system (DMS) which is being populated and refined to allow for ICH functionality.

The design process so far entails assessment of a web-based and desk-top interface. The second fully integrates with Microsoft Office programmes, allowing users to seamlessly access the DMS, which presents as a "drive" on users' computer systems. Both the web-based and desk-top interface were shared by the IT unit with the PPCR Regional Coordinator for collaboration on their assessment.

The ICH will involve various levels of users, and document saving will include options available at any of the levels that the user would want. The IT team also shared a draft MOU which is being refined and is intended to facilitate the collaboration of users. In addition to the type of data to be shared, the MOU provides for parties' responsibilities and limitations, intellectual property rights and metadata requirements.

Interaction with team developing the Implementation Plan for the Regional Framework for Achieving Development Resilient to Climate Change

The PPCR Regional Coordinator has initiated and is maintaining regular communication with the team which is preparing the Implementation Plan (IP) for the Caribbean Regional Framework for Development Resilient to Climate Change. So far the Coordinator and the team have shared background information on the respective initiatives and are liaising to ensure that conflicts are avoided and efforts and resources maximized. The IP preparation team has shared a database of projects and initiatives that have been undertaken in the region with the PPCR team. This database is expected to prove a key starting point for the PPCR gap analysis exercise.

The PPCR Coordinator is also included now in the monthly meetings that are conducted to track progress of the IP design.

Gap Analysis

A draft framework for analyzing gaps in climate resilience systems, capacities and practices in the PPCR pilot countries was prepared. The gaps will be assessed for plans, policies and strategies, institutional and individual capacities and information and data. The framework, found at Annex 3, is intended to guide the assessment of gaps in the priority areas indicated in the PPCR Phase I financing proposals. Assessment will be geared toward the regional priorities of supporting improvement in climate modeling and monitoring capacity and in improving the enabling policy and institutional framework for climate resilience. The assessment will be informed also by national priorities of PPCR pilot countries as listed below.

- Agriculture and food security
- Coastal zone management
- Infrastructure
- Land use planning and human settlement
- Human health
- Water resources
- Tourism

3. Immediate Next steps

a. Joint Missions

Second joint missions for Saint Vincent and the Grenadines and Grenada have been scheduled respectively for February 15th and 16th, and February 17th and 18th, 2010. It is anticipated that the PPCR Regional Coordinator will participate in these, as well as joint missions for other PPCR pilot countries.

b. Clearing House Mechanism

Collaboration will continue with the IT team at the Caribbean Community Climate Change Centre to determine the best approach to providing PPCR focal points and representatives from other countries with early access to the ICH. The process will also involve explicit efforts to identify what

stakeholders anticipate from a clearing house facility. The collaboration is expected to result in mutual benefit. For the IT team, it would provide early feedback on ICH functionality from a small team of users and so support design improvement. For the PPCR, it will facilitate information sharing and enable determination of whether and what measures for additional functionality of the ICH should be incorporated into the regional SPCR.

c. Regional Policy Dialogue and Stakeholder Consultations

Consistent with the requirements at 3.1(d) of the TOR, Phase I activities includes participation of PPCR regional track representatives in regional consultations to disseminate information on the PPCR. A second, and equally or more important objective of this dialogue would be to draw information on priorities for improving contribution to or acquisition of climate resilience on the part of the region's stakeholders. To this end, participation in a number of regional meetings will be sought, and parallel consultations through direct interviews or focus group meetings will be organized. The consultations will center on the priority areas of the national and regional track programmes, and will include stakeholders with involvement in and perspectives on the intersection of climate resilience and cross cutting issues such as gender and poverty.

In addition to assessment of data needs, the meetings to be targeted and/or organized will include any scheduled event within the region or to be attended by regional experts in the PPCR priority areas.

A preliminary schedule of regional meetings can be found at Annex 4. Meetings that are of the highest priority or will be attended by PPCR team members are shaded.

d. Preparation of Terms of Reference

i) Evaluation of data collection and management systems and processes

Terms of reference for a consultant for the evaluation for the data collection and management systems and processes will be developed over the next week and circulated and discussed among the PPCR regional track team.

ii) Development of climate risk screening toolkit

Terms of reference for a consultant for the design and application of a climate risk screening tool and development of a toolkit will be drafted within two weeks and will be circulated to and discussed among the PPCR regional track team.

e. Assessment of Data Needs

Assessment of data needs will be initiated with a determination of the bathymetric, hydrometric and topographic data critical to climate modeling and risk assessment. This will be followed by a stock-take of available national and regional level bathymetric, hydrometric and topographic data and identification of gaps. Assessment will be made thereafter of options for acquisition of the data required, including the application of LIDAR technology.

Annex 1: Terms of Reference, Regional Coordinator, Pilot Programme for Climate Resilience

I. BACKGROUND

1.1 All Caribbean countries are particularly vulnerable to climate change, with the expected main impacts to include shifts in precipitation patterns, with more intense storms and longer dry spells, increased hurricane intensity and unrelenting sea-level rise. These unavoidable consequences of global warming are coupled with the fact that most are Small Islands, with the majority of their populations and main commercial activities on, or near, the coastline and with limited surface and groundwater resources.

1.2 In response for the need to urgently scale up investments in climate risk and resilience measures for highly vulnerable countries, the Pilot Program for Climate Resilience (PPCR) was designed under the Strategic Climate Fund (SCF) to pilot and demonstrates ways to integrate climate risk and resilience into developing countries' core development planning. The pilot programs implemented under the PPCR are primarily country led but for the Caribbean and the Pacific regional programs are also being implemented. The PPCR provides incentives for scaled-up action and transformational change and offers additional financial resources to help fund public and private sector investment for climate resilient development plans.

1.3 The objectives of the PPCR are to pilot and demonstrate approaches for integration of climate risk and resilience into development policies and planning; to strengthen capacities at the national levels to integrate climate resilience into development planning; to scale-up and leverage climate resilient investment, building upon other ongoing initiatives; and to enable learning-by-doing and sharing of lessons at the country, regional and global levels. In addition, regional PPCR pilots will aim to achieve economies of scale in supporting action at the national level in countries participating in the pilot program and to strengthen cooperation and capacity at the regional level to integrate climate resilience into national and appropriate regional development planning and processes

1.4 The Caribbean pilot consists of a regional approach that proceeds along two closely linked and complementary tracks (i) country based investments in six highly vulnerable nations–Haiti, Jamaica, Dominica, Grenada, St. Lucia, and St. Vincent and the Grenadines; (ii) region-wide activities including data management and monitoring for improving understanding of climate risks and potential impacts, as necessary to take actions to enhance climate resilience, coupled with activities to tackle risks and vulnerabilities common to all Caribbean countries. The regional track will work through key entities in the Caribbean region to provide the scientific analysis so that countries can incorporate climate resilience into their national climate change strategies as well as in regional planning strategies, policies and financing mechanisms. The two tracks will thus be synergistic–the regional activities will supplement and strengthen the country-led programs and activities and also extend public good benefits and lessons learned from the pilot program to all CARICOM member countries.

1.5 The Caribbean PPCR is being implemented jointly by the Inter-American Development Bank and the World Bank Group in a multi-sectoral and integrated manner involving both public and private sector entities, regional organizations and development partners.

II. OBJECTIVE

2.1 The purpose of this consultancy is to assist in the coordination and implementation of activities under the Caribbean PPCR Regional-Track, at the regional level, including ensuring linkages and relevance to country level and other regional activities for building climate resilience.

III. SCOPE OF SERVICES

3.1 The consultant will undertake the following activities under the development and preparation of the "*Strategic Program for Climate Resilience*" (SPCR) for the Regional-track, but not limited to these:

a. Assist the PPCR Regional-Track Steering Committee in the coordination and supervision of technical and administrative activities related to the design and implementation of the Caribbean PPCR Regional-Track, including the organization of meetings, workshops, facilitate stakeholder participation, preparation of documents for submitting to the PPCR sub-committee and minutes of meetings, amongst other activities;

b. Clearing-house mechanism – assess whether PPCR could support specific interactive elements of this program. The assessment should include (i) specifications for CH structure, platform design (ii) the implementation strategy and stage, (iii) readiness for countries to access and utilise the platform, (vi) suitability of the platform, (v) knowledge management and learning, and (vi) other data formats.

c. Undertake a needs assessment to identify tools, training & data gap analysis for implementing PPCR, including how existing and new regional activities can support countries objectives for strengthening climate resilience, both in the PPCR pilot countries and more widely in the region;

d. Regional dialogue - undertake consultations at the regional and national levels and disseminate information concerning Phase 1 of the program to regional stakeholders (public and private sector, NGOs, bilateral agencies etc.);

e. Identification and analysis of institutional capacity needs, existing knowledge, studies, research and assessment of gaps for the implementation of the PPCR regional track;

f. Prepare a draft regional SPCR for discussions and agreement among regional and national stakeholders;

g. Support the preparation and development of the Joint Missions' program and relevant outputs;

h. Assist the technical team from the IDB, World Bank and regional organizations in the coordination and implementation of the PPCR regional track;

i. Interact with the team (coordinated by the Caribbean Community Climate Change Centre in partnership with the Climate and Development Knowledge Network (CDKN) developing the implementation plan for the Regional Framework for Achieving Development Resilience to Climate Change to ensure compatibility and complementarities among both programs (e.g. clearing house knowledge platform which is a joint deliverable and consultations);

j. Identify possible areas and partners where the private sector can be supportive of regional adaptation strategy.

IV. SPECIFICATION OF SERVICES

4.1 The consultancy will consist of the following:

- Type of consultant: Individual consultant.
- Duration of contact: The consultancy will be for 4.5 months starting November 8th, 2010.
- Place and time of work: The consultant will be based in the offices of the Caribbean Community Climate Change Centre (CCCCC) in Belize and will follow normal working hours. In addition the consultant will be expected to travel and work when required in the Caribbean region especially in the pilot countries of the Program.
- Qualifications: Masters degree or equivalent professional experience, in political sciences, environmental economics, environmental management or similar areas.

- Experience: Minimum 5 (five) years experience in the coordination and management of projects, preferably environmental projects; knowledge and understanding of the adaptation to climate change; working experience in the Caribbean; working knowledge of French would be an asset.

V. REPORTING[2]

5.1 An inception report after two weeks of the start of the consultancy. This report shall be limited to 5 pages (11 font size) and shall include a timeline of activities that the consultant will be engaged in.

5.2 In addition, a progress report should be submitted at the end of the first quarter of the consultancy. This report shall be limited to 5 pages (11 font size) and shall contain a summary of the progress of the work, operations in preparation and implementation until the date of delivery of the activities listed on the inception report, difficulties encountered and recommendations and next steps.

5.3 A draft of the final report of the consultancy will be submitted for review at the end of the consultancy to the PPCR Regional-Track Steering Committee. The draft report should contain a summary of the status of activities undertaken by the consultant, areas of difficulty and any outstanding activities. A final version of the report will be submitted ten (10) working days after receiving the comments to the draft. The consultancy report format shall be agreed with the supervisor at the IDB (see section 7.1). The consultant shall keep a record of all primary and secondary information that is used to prepare such reports.

VI. COORDINATION

6.1 The consultant will work under daily coordination of Dr. Neville Trotz, CCCCC Belize in close collaboration with the PPCR Regional Program Steering Committee, and under the supervision of the IDB PPCR Caribbean Coordinator, Mr. Gerard Alleng.

[2] All reports must be delivered to the Bank electronically in a single file that includes main page, the main document and annexes. (Files ZIP will not be accepted as final reports, due to the file management section regulations). Text, tables, graphics, sources of information and literature must be submitted in Word, written letter size 12, normal interlineal separation of a space. Boxes and graphics that are inserted in the text must be submitted also separately in excel by citing the respective source of information.

Annex 2: Work Breakdown PPCR Regional Track Programme, Phase I

Task No.	Task Name	Duration	Start	Finish	Predecessors
1	**Regional Pilot Program for Climate Resilience (PPCR)**	**116 days**	**Mon 1/10/11**	**Mon 6/20/11**	
2	***Module I: Support to Strengthening of Data Management Capacities***	***79 days***	***Mon 1/10/11***	***Thu 4/28/11***	
3	**Support to Strengthening of Data Management Capacity**	**59 days**	**Mon 2/7/11**	**Thu 4/28/11**	
4	***Evaluation of data collection and management systems and processes***	***47 days***	***Mon 2/7/11***	***Tue 4/12/11***	
5	Prepare TOR	7 days	Mon 2/7/11	Tue 2/15/11	
6	Contract Consultant	10 days	Wed 2/16/11	Tue 3/1/11	5
7	Oversee Analysis	30 days	Wed 3/2/11	Tue 4/12/11	6
8	*Climate Monitoring and Modeling Needs Workshop*	*44 days*	*Mon 2/28/11*	*Thu 4/28/11*	
9	Plan Workshop with UWI, CIMH and 5Cs	10 days	Mon 2/28/11	Fri 3/11/11	
10	Prepare TORs for Facilitator, including output	5 days	Mon 3/14/11	Fri 3/18/11	9
11	Logistic Arrangements-contract venue, catering and make travel arrangements	25 days	Mon 3/21/11	Fri 4/22/11	10
12	Execute Workshop	4 days	Mon 4/25/11	Thu 4/28/11	11
13	***Identification of Data Needs***	***30 days***	***Wed 3/2/11***	***Tue 4/12/11***	
14	Identification of bathymetric, hydrometric and topographic data critical to climate monitoring and modeling	7 days	Wed 3/2/11	Thu 3/10/11	6
15	Stock take of available and required national and regional level bathymetric, hydrometric and topographic data.	10 days	Fri 3/11/11	Thu 3/24/11	14
16	Identification of possible approaches for collection of bathymetric, hydrometric and topographic data	8 days	Fri 3/25/11	Tue 4/5/11	15
17	Analysis of options on basis of cost, sustainability and potential for technology transfer	5 days	Wed 4/6/11	Tue 4/12/11	16
18	***Information Sharing and Exchange of Best Practices***	***30 days***	***Mon 1/10/11***	***Fri 2/18/11***	
19	Assess need for additionality to Information Clearing House	30 days	Mon 1/10/11	Fri 2/18/11	
20	***Module II: Advocacy and Policy Development***	***64 days***	***Tue 2/1/11***	***Fri 4/29/11***	
21	***Regional Policy Dialogue***	***17 days***	***Tue 2/1/11***	***Wed 2/23/11***	
22	Confirm Dates of Key Meetings	5 days	Tue 2/1/11	Mon 2/7/11	
23	Arrange participation in key meetings with organizers	10 days	Tue 2/8/11	Mon 2/21/11	22
24	Make travel arrangements	12 days	Tue 2/8/11	Wed 2/23/11	22
25	***Stakeholder Consultations***	***25 days***	***Tue 2/22/11***	***Mon 3/28/11***	***23***
26	***Development and Piloting of Climate Risk Screening Toolkit***	***60 days***	***Mon 2/7/11***	***Fri 4/29/11***	
27	Preparation of TOR	10 days	Mon 2/7/11	Fri 2/18/11	
28	Contracting of Consultant(s)	10 days	Mon 2/21/11	Fri 3/4/11	27
29	Oversight of Analysis/Consulting	40 days	Mon 3/7/11	Fri 4/29/11	28
30	***Module III: Scoping, Coordination and SPCR Preparation***	***116 days***	***Mon 1/10/11***	***Mon 6/20/11***	
31	***Coordination and National Programs Interface***	***100 days***	***Mon 1/10/11***	***Fri 5/27/11***	
32	Coordination Meetings	5 days	Mon 3/14/11	Fri 3/18/11	
33	CIF Meeting	5 days	Mon 3/14/11	Fri 3/18/11	
34	*Participation in Joint Mission*	*29 days*	*Mon 2/14/11*	*Thu 3/24/11*	
35	SVG-Second Joint Mission	2 days	Mon 2/14/11	Tue 2/15/11	
36	Grenada-Second Joint Mission	2 days	Wed 2/16/11	Thu 2/17/11	35
37	St Lucia-Second Joint Mission	2 days	Mon 2/21/11	Tue 2/22/11	
38	Dominica-First Joint Mission	2 days	Wed 2/23/11	Thu 2/24/11	37
39	Jamaica-Second Joint Mission	2 days	Mon 3/21/11	Tue 3/22/11	
40	Caribbean Regional-Second Joint Mission	2 days	Wed 3/23/11	Thu 3/24/11	39
41	Refinement and Monitoring of Regional Results Framework	20 days	Mon 2/21/11	Fri 3/18/11	
42	PPCR Coordination and Transition to Phase II	100 days	Mon 1/10/11	Fri 5/27/11	
43	***Gap Analysis of Climate Resilient Systems***	***18 days***	***Mon 1/31/11***	***Wed 2/23/11***	

Annex 2: Work Breakdown PPCR Regional Track Programme, Phase I

Task No.	Task Name	Duration	Start	Finish	Predecessors
44	Refinement of Gap Analysis Objectives	5 days	Mon 1/31/11	Fri 2/4/11	
45	Organization of Gap Analsysis Working Meeting	10 days	Mon 2/7/11	Fri 2/18/11	44
46	Participation in Workshops	3 days	Mon 2/21/11	Wed 2/23/11	45
47	***SPCR Drafting and budgeting***	***83 days?***	***Thu 2/24/11***	***Mon 6/20/11***	
48	*Initial Draft: First Cut SPCR*	*36 days?*	*Thu 2/24/11*	*Thu 4/14/11*	
49	Incorporate results of gap analysis	8 days	Thu 2/24/11	Mon 3/7/11	43
50	Incorporate and build on results of stakeholder consultation	5 days	Tue 3/29/11	Mon 4/4/11	21,25
51	Circulate SPCR Draft	1 day	Tue 4/5/11	Tue 4/5/11	50
52	Draft Review	7 days	Wed 4/6/11	Thu 4/14/11	51
53	*Second Draft*	*54 days*	*Wed 4/6/11*	*Mon 6/20/11*	
54	Incorporate First Draft Feedback	8 days	Wed 4/6/11	Fri 4/15/11	51
55	Incorporate results of climate risk screening pilot	5 days	Mon 5/2/11	Fri 5/6/11	26
56	Incorporate results of final round of joint missions	8 days	Mon 5/30/11	Wed 6/8/11	31
57	Circulate Second Draft	1 day	Thu 6/9/11	Thu 6/9/11	56,55
58	Draft Review	7 days	Fri 6/10/11	Mon 6/20/11	57
59	*Third Draft*	*2 days*	*Fri 6/10/11*	*Mon 6/13/11*	
60	Incorporate suggestions on revised draft	1 day	Fri 6/10/11	Fri 6/10/11	57
61	Circulate Third and Final Draft	1 day	Mon 6/13/11	Mon 6/13/11	60

Annex 3: Draft Framework for PPCR Gap Analyses

1. The PPCR gap analysis is intended to achieve items a and b listed immediately below, which are respectively requirements (c) and (e) of the Terms of Reference for the Implementation of Activities on the Regional-Track of the PPCR in the Caribbean.[3] The results of the two will inform and/or be incorporated into the PPCR Strategic Plan for Climate Resilience (SPCR), which is the key output of the PPCR Phase I initiative.
    a. A needs assessment to identify tools, training and data gap analysis for implementing PPCR, including how existing and new regional activities can support countries' objectives for strengthening climate resilience, both in the PPCR pilot countries and more widely in the region.
    b. Identification and analysis of institutional capacities, existing knowledge, studies, research and assessment of gaps for the implementation of the PPCR regional track.
2. In order to fulfill the requirements above, assessment will be undertaken of the following framework tools: (i) policies, plans and strategies, (ii) institutional and individual capacities (iii) knowledge products and data. Furthermore, the assessment will be undertaken in the following PPCR priority areas.
    a. Agriculture and Food Security.
    b. Coastal Zone Planning/Management.
    c. Infrastructure.
    d. Land Use Planning and Human Settlement.
    e. Water Resource Management.
    f. Tourism.
3. Assessment of policies, plans and strategies will involve the following-
    a. Inventory of current policies, plans and strategies in the areas listed at 2(a) through 2(f) above, and/or the treatment of these issues in any comprehensive national plan in the six PPCR pilot countries.
    b. Identification of reference to and treatment of climate risk in policies, plans and strategies identified at 3 (a) above.
4. Assessment of institutional and individual capacities will be undertaken as follows-
    a. Institutional assessment via
        i. Identifying the technical knowledge, skills and functions required for achieving resilience through or in the PPCR focus areas identified at 2(a) through 2(f) above-
        ii. Identifying national and regional institutional arrangements for the execution of climate change related functions with respect to the thematic areas at 2(a)(i) above.
    b. Assessment of Individual capacities at 4(a)(iii) above via inventory of
        i. Established positions per technical/functional areas
        ii. Long term volunteers/fellows in technical/functional areas and

[3] These objectives are also consistent with PPCR regional level priorities of (1) monitoring and climate modeling activities and (2) facilitating enabling policy and institutional framework for climate resilience.

iii. Unfilled positions in technical/functional areas.

c. Identification of Institutional and functional Gaps via

i. Comparison of role and functions within each institution with the required roles and functional areas for climate resilience in or through areas at 2(a)(i) above.

ii. Identification of gaps in individual and institutional functions based on the results of activity at 4(c)(i) above.

iii. Rationalization of appropriate level—national or regional—for placement of required functions at 4(c)(ii) above.

5. Assessment of knowledge products will involve the following

a. Inventory of published and publicly available studies, tools and guidelines in the areas at 2(a) through 2(f) above.

6. Assessment of data needs

a. Assessment of the types of data required for climate resilience in the PPCR priority areas.

b. Determination of existing baseline and historical/trend data.

c. Assessment of most cost effective approach to acquiring baseline data and for regularly collecting updated data. Assessment will factor impact and sustainability.

Annex 4: Schedule of Caribbean Thematic Meetings for Potential Intervention on Climate Resilience

2011 DATES	EVENT	LOCATION
Feb 15-16	***PPCR Joint Mission, St. Vincent***	***St. Vincent***
Feb 17-18	***PPCR Joint Mission, Grenada***	***Grenada***
Feb 24 (am)	Meeting of Prime Ministerial Sub-Committee on CSME	Grenada
Feb 24 (pm)	Meeting of Prime Ministerial Sub-Committee on external negotiations	TBD
Feb 25	Twenty-second intercessional meeting of CARICOM Heads of Government of the Caribbean Community	Grenada
Feb 21 – 25	Red Cross Disaster Risk Reduction Strategy Meeting	Santo Domingo, Dominican Republic
Feb 21 - 25	Regional Workshop on Commitments of Multilateral Environmental Agreements (MEAs) Capacity-Building for the Use of Integrated Environmental Assessments and for Mainstreaming MEAs into Policy Development and Implementation	Suriname
Last Week in February	Sixth CARICOM-UN General Meeting	Guyana
Mar 1 – 3	GEF Caribbean Constituency Meeting	Belize
Mar 1 – 4	UNEP Caribbean Ozone Officers Meeting	Antigua and Barbuda
Mar 3-6	Caribbean Conference on Sustainable Tourism Development	Bermuda
Mar 6 & 7	IDB Climate Change and Water Resources Workshop	Trinidad and Tobago
Mar 14	Annual Caribbean Tourism Summit	
Mar 14 – 17	2nd ISDR Regional Platform Meeting for the Americas	Nuevo Vallarta, Mexico
Mar 19 – 27	UWI/CERMES Study Tour	Belize
Mar 21 – 25	Special Meeting of the Council for Trade and Development (COTED) on Energy	TBD
Mar 22 – 24	UNEP/EU ACP CDM DNA Workshop	Havana, Cuba
Mar 28 & 29	EU/CARICOM Adaptation Meeting	Belize
TBD	OECS Consultation on CARICOM Investment Code	
Apr 3 – 8	UNFCCC AWGs Meetings	Bangkok, Thailand
Apr 27-29	IPCC Workshop on Scientific Writing for SIDS	Belize
May 8-13	UN/ISDR 3rd Session of the Global Platform for Disaster Reduction	Geneva, Switzerland
May 10 - 11	Caribbean Hotel and Investment Conference	TBA
May 10-13	33rd Session of the IPCC	Abu Dhabi, United Arab Emirates
May 16 May – Jun 3	16th WMO Congress	Geneva, Switzerland
Jun 5 - 11	Caribbean Week in New York	New York City
Jun 6-17	UNFCCC Subsidiary Bodies Meetings	Bonn, Germany
June 21 - 25	5th Biennial Caribbean Environmental Forum and Exhibition	Montego Bay, Jamaica
July 3-9	Caribbean Food Security and Climate Change Conference	Barbados
July 17-21	29th West Indies Agricultural Conference; "*Agribusiness as the Path to Sustainable Agricultural Development in the Caribbean*"	St. Vincent and the Grenadines
Nov 28–Dec 9	UNFCCC COP 17 & CMP 7	Durban, South Africa

Note: Shaded events represent potential events for PPCR outreach and stakeholder consultation. Target sectors for consultation include the private sector and representative of key cross-cutting issues such as gender and poverty.

2. CARIBSAVE PROJECTS 2011

Source: http://caribsave.org/index.php?id=5 sourced 24 January 2011.

Projects

Modelling the Transformational Impacts and Cost of Sea Level Rise in the Caribbean

This study provides the most detailed analysis to date of the damages and costs associated with SLR for the CARICOM nations, and builds on work completed in Phase I in 2009, previous economic studies as well as recent developments identified in the Economics of Climate Change Working Group (ECA) study in estimating impacts due to climate change. The methodology incorporates top-down and bottom-up approaches (i.e., macro, meso- and micro-scales analyses) to model impacts on the economies of each CARICOM country individually. A unique strength of this economic study is that it is based on the most detailed geographic reality of coastal geomorphology and development that determine vulnerability to SLR.

The economic implications of the impacts of climate change and required adaptation are being increasingly quantified to better inform international negotiations regarding adaptation assistance.

Such in-depth information is essential for the Caribbean States, SIDS and LDCs to strategically reduce vulnerability through investment, insurance, planning, and policy decisions, and inform negotiations regarding adaptation assistance under the Copenhagen Accord that was agreed at COP15 in Copenhagen.

The CARIBSAVE Climate Change Risk Atlas (CCCRA)

Phase One of this project involves 15 countries across the Caribbean and is identifying the impacts of climate change in individual countries on key sectors as they relate to tourism and livelihoods. The project is using climate models, examining sectoral vulnerabilities, assessing adaptive capacity and developing practical response strategies with the countries across the region. CARIBSAVE is working with regional organisations and the governments, communities and private sector in The Bahamas, Barbados, Jamaica, St. Lucia, St Kitts, St Vincent and the Grenadines, Suriname, Nevis, Grenada, Belize, Dominican Republic, Antigua, Dominica, Turks and Caicos and Anguilla. The project includes significant capacity building initiatives for coastal management agencies in the countries, the analysis of sea level rise, the impact of climate change on coastal communities and is funded by UKAID (formerly DFID) and AusAID.

Climate Change Film Series

CARIBSAVE is producing a series of high quality short films for awareness raising, education and capacity building in communities and governments across the region. The films focus on three core themes; climate change and tourism, climate change and disaster management, and climate change and coastal resources. Dissemination of the films will take place on local and regional television and in communities across the region. This project is funded by UKAID, the Travel Foundation and the British Foreign and Commonwealth Office (FCO).

J-Fish Fund Feasibility Study

This project is funded by the Travel Foundation and Virgin Holidays. The aim of this project is to assess the feasibility of establishing a fund to provide sustainable financial assistance to the fish sanctuaries from revenues obtained from selected tourism activities and the sale of local crafts. This approach is recognised as a cornerstone to protecting and enhancing the resilience of vital natural resources in the Caribbean against the pressures of climate change.

Economies of Climate Change on Tourism

The International Institute of Environment and Development (IIED) and Oxfam are funding a project to examine the impact of climate change on the economics of tourism in Jamaica. The project also examines the issues of gender and agriculture in the context of economics and climate change. CARIBSAVE is working in collaboration with agencies in Jamaica and regional experts to assess these impacts using a methodology developed by IIED, enhanced with a Delphi type process. Simultaneously, under a separate initiative, UNECLAC are funding CARIBSAVE staff to conduct a study in Barbados using econometric models. This project is in coordination with work in other countries including Aruba, the Netherland Antilles. The Bahamas, St Lucia and Montserrat.

Fish Sanctuary Awareness and marker Bouys

This project involves capacity building and the construction and installation of 50 marker buoys to demarcate the boundaries of the fish sanctuary at Bluefields Bay, Jamaica. CARIBSAVE is working with the Bluefields Bay Fishermen's Friendly Society to assist in the training of how to build and install marker buoys that will also raise awareness of the importance and relevance of protecting fish stocks to enhance vital resources in the face of climate change and other pressures.

Capacity Building with the University of the West Indies

As part of The CARIBSAVE Partnership's capacity building initiatives across the Caribbean, the organisation is funding a number of staff at University of West Indies (UWI) Campuses across the region in Jamaica, Barbados and Trinidad.

Funding of two Research Fellows at UWI, Mona Campus, Jamaica; one in Climate Studies and one in Gender and Development Studies.

Funding of two Research Scientists one at UWI, St Augustine, Trinidad Campus focusing on health and water; and one, based at CARIBSAVE's headquarters, attached to CERMES at Cave Hill, Barbados Campus focused on Coastal Resources and Biodiversity.

Other appointments in the region and beyond have been made to enhance the capacity building process and to further examine the issues, and develop and implement strategies surrounding climate change, livelihoods, tourism and environment and other associated sectors including: water, energy, agriculture, health, biodiversity, infrastructure and settlement, comprehensive disaster management.

UNDP - an overview of Modelling Climate Change Impacts in the Caribbean Region with Contribution from the Pacific Islands:

CARIBSAVE Climate Change Risk Atlas:

Modelling the Transformational Impacts and Cost of Sea Level Rise in the Caribbean

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economic studies as well as recent developments identified in the Economics of Climate Change Working Group (ECA) study in estimating impacts due to climate change. The methodology incorporates top-down and bottom-up approaches (i.e., macro, meso- and micro-scales analyses) to model impacts on the economies of each CARICOM country individually. A unique strength of this economic study is that it is based on the most detailed geographic reality of coastal geomorphology and development that determine vulnerability to SLR.

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3. Environmental Legislation List

ST. VINCENT AND THE GRENADINES

LEGISLATION RELATING TO POLLUTION CONTROL AND PUBLIC HEALTH
Environmental Health Services Act, No. 14 of 1991
Oil Pollution (Liability and Compensation) Act, 1997
Oil in Navigable Waters Act

LEGISLATION RELATING TO COASTAL AREA MANAGEMENT
Fisheries Act, No. 8 of 1966
Beach Protection A
Maritime Areas Act, No. 15 of 1983

LEGISLATION PERTAING TO LANDUSE
Town and Country Planning Act, No. 45 of 1992
Crown Lands (Sale) Regulations, 1983

LEGISLATION RELATING TO WATERSHEDS
Central Water and Sewerage Authority, No. 6 of 1978
Forest Resource Conservation Act, 1992
Forests Act

LEGISLATION RELATING TO ENVIRONMENT AND CONSERVATION
National Parks Act, 2002
Marine Parks Act, 1997
Wildlife Protection Act, 1987
St. Vincent and the Grenadines National Trust Act, 1969

4. Disaster Vulnerability Reduction Project Description

SVG Component 1 and 2 Project Description

Component 1 - Prevention and Adaptation Investments (US$12.9 M)

This component is designed to reduce physical vulnerability and pilot adaptive measures to build resilience to current and future climatic changes. It includes a broad set of works activities, such as drainage improvements, rehabilitation, reconstruction and retrofitting of bridges and roads, retrofitting of critical public buildings (including schools and emergency shelters), investments in satellite emergency centers, and adaptive watershed to reef system measures. Civil works will be executed to include construction and rehabilitation of existing infrastructure in order to reduce their vulnerability to natural hazards and climate change. Works will focus on priority public infrastructure including transportation systems, educational facilities and public utilities and will include activities rehabilitation or construction of emergency shelters, re-enforcement of river and coastal defenses that protect key infrastructure and realignment, and rehabilitation of bridges. In the case of the Arnos Vale and Georgetown Watershed to Reef systems, civil works will be complimented by soft activities designed to comprehensively build resilience throughout the identified systems.

Included under works is the potential for the design, development and preparation of priority works construction projects such as a new hospital complex to assist the Governments in engaging construction financing available from other donors in the region. Other infrastructure works include construction of two Satellite Community Warehouses in identified sites and stockpiling of gabion baskets in order to ensure a reliable stock in case of future river and/or coastal defense malfunction.

The project will fund supporting studies required for the development of works and soft activity packages such as hydrologic/hydraulic investigations, geotechnical investigations and associated pre-engineering and engineering activities required to support engineering design and safeguard compliance. During the execution of the identified activities, comprehensive measures will include the integration of building code requirements and land use planning according to coastal and river contours in the project development process and will introduce hazard/risk analysis and climate change impact analysis to assist in the design and construction of resilient systems.

Sub-Component 1.1 – Disaster Risk Mitigation Infrastructure Investments

Aging and unmaintained infrastructure coupled with changing climatic conditions has facilitated the deterioration of existing public infrastructure – resulting in high levels of vulnerability to natural hazards. Historically, designs did not take into account impacts from anticipated changes in future land use and climate changes, and were based on a limited analysis of past hazard events. Additionally, existing vulnerabilities related to landslip, rock fall and flooding left unattended will continue to exacerbate the iterative deterioration of critical infrastructure. Finally, under this sub component, the community emergency shelters of Kingstown and Dorsetchire Hill Government School will be retrofitted and satellite warehouses for Rose Hall and Sandy Bay will be constructed to improve community resilience and increase localized capacity to disaster and climate change events.

The majority of works are relatively small in nature and the project will support the technical studies required to produce engineering designs that integrate risk reduction and climate change effects in order to improve the long-term performance of the selected structures. Additionally, this sub-component will provide for the necessary studies to support the relation of the National Milton Cato Memorial Hospital to a safer location. Specific activities identified under this sub-component are summarized in the following table:

#	Project Component and Activities	Construction and Engineering Support (USD)	Equipment/ Goods	Estimated Cost (USD)	Funding Source
1.1.1	**Retrofitting/Rehabilitation of Public Buildings**				
	Studies for the relocation of the Milton Cato Memorial Hospital	$2,000,000		$2,000,000	IDA
	Retrofitting of Emergency Shelters: Kingstown Government	In-house	$250,000	$250,000	IDA
	Retrofitting of Emergency Shelters: Dorsetshire Hill Government School	In-house	$150,000	$150,000	IDA
	Satellite Warehouse for Communities: Phase 1 – Sandy Bay and Ross Hall	$700,000	$800,000	$1,500,000	IDA
	Generators for shelters/schools Phase 1	In-house	$100,000	$100,000	IDA
	Sub-Total	**$2,700,000**	**$1,300,000**	**$4,000,000**	**IDA**
1.1.2	**Rehabilitation and Risk Reduction of Transportation Infrastructure**				
	Rehabilitation South River Rd Bridge, Kingstown	In-house	$300,000	$300,000	IDA
	Rehabilitation of bridges: Fenton Road Bridge 1 - Dauphine	In-house	$300,000	$300,000	IDA
	Rehabilitation of bridges: Fenton Road Bridge 2 - Green Hill	In-house	$700,000	$700,000	IDA
	Slope Stabilization: Dark View	$150,000	$1,200,000	$1,350,000	IDA
	Sub-Total	**$150,000**	**$2,500,000**	**$2,650,000**	**IDA**

Sub-Total Component 1.1	**$6,650,000**	**IDA**

1.1.1. Retrofitting/Rehabilitation of Public Buildings

Background: The government has identified critical, life-line structures in need of immediate retrofitting to improve disaster resilience. These structures include public shelters and emergency response support structures such as satellite warehouses. Under this sub component, the project will support the analysis and evaluation of site-specific building performance with respect to expected hazards and retrofit the structures accordingly.

Satellite warehouses are to be designed, constructed and equipped under this sub component. A total of two (2) community satellite warehouses will be established under the project at Rose Hall and Sandy Bay to store emergency equipment and supplies in close proximity to the respective communities. These facilities serve as community coordination centers and afford the opportunity to pre-position disaster response equipment at the local level.

Two (2) emergency shelters will be retrofitted under the project – complimenting the three (3) emergency shelters funded under the Hurricane Tomas Emergency Recovery Project. The project will fund the complete retrofitting of Dorsetshire Hill and Kingstown Government School with installation of Emergency equipment, sanitary facilities and improved drainage.

Additionally, under this component, the project will support the required designs to relocate the existing, aging Milton Cato Memorial Hospital in Kingstown to a new hospital complex.

Satellite Warehouses

Rational: Saint Vincent and the Grenadines is a multi island state, and due to its rugged topography, communities such as Sandy Bay and Rose Hall can easily become isolated in major disasters. The objective of this activity therefore is to construct satellite warehouses in specific communities, to provide them with the capacity to respond to disasters at the community level.

Proposed Investments. The satellite warehouses will include a small office and washroom that can be use for meetings and converted into a Community Emergency Operations Centre, and storage facility for critical disaster response equipment. The warehouses will be managed by the local or district disaster committees.

Project Beneficiaries. Direct beneficiaries of the proposed satellite warehouses include the members of the community in Sandy Bay and Rose Hall – particularly persons in sub-standard housing and person with social or environmental vulnerability to disaster, and NEMO.

Retrofitting of Emergency Shelters

Project Rationale. The Government of Saint Vincent and the Grenadines, under the auspicious of the National Emergency Management Organization (NEMO), operates various emergency shelters throughout the main island of Saint Vincent and also select population centres in the Grenadines. Each year, NEMO, in collaboration with a host of partners, conducts a shelter inspection process aimed at identifying suitable structures (private and government owned) to be used as emergency shelters. While there continue to be challenges, the need to have these buildings available and in the good condition remains a top priority for the NEMO. Accordingly, NEMO has designated a total of 141 emergency shelters throughout St. Vincent and the Grenadines 10 2010, an average of 9 per constituency.

During and after the passage of Hurricane Tomas in October of 2010, for example, over 1,000 individuals were housed in these various shelters. A number of shelters were identified for retrofitting in an effort to make them better able to withstand natural disasters and better protect persons seeking refuge after a disaster event. Shelters will also be outfitted with generators as back-up power supply.

Proposed Investments. The retrofitting of the Dorsetshire Hill and Kingstown Government School emergency shelters will include the installation of emergency equipment, sanitary facilities and drainage improvements. These works are limited to replacement, rehabilitation and improved disaster resistance capabilities. Specifically for the Kingstown Government School, which serves the communities of Lodge Village and Redemption Sharpes, among others, additional site–specific proposed works include: repairs to the roof, replacement of doors and windows and the installation of commercial grade manual shutters among other things. Site specific works are due to the fact that the School was constructed in constructed in (***), and has deteriorated extensively although maintenance has ensured its continued operation. As for the Dorsetshire Hill Government School, the proposed retrofitting will include the refurbishment of a new roof, windows, doors as well as upgrades to bathroom facilities (toilets and showers), kitchen facilities and road access.

Project Beneficiaries. Direct beneficiaries of proposed interventions include the school children and teachers of Dorsetshire Hill and Kingstown Government School (approximately 700 students), the communities of Dorsetshire and Kingstown (given that the buildings serve a dual purpose of primary school and community shelter), the Ministry of Education, and NEMO. It must be noted that the Dorsetshire Hill Government School is the only shelter available to the residents (approximately 1,064) in this community and is considered in less than disaster-ready condition.

Studies for the Relocation of the Milton Cato Memorial Hospital

Rational: PAHO conducted a *Safe Hospital* study which highlighted that the Milton Cato Memorial Hospital was structurally unsound (vulnerable to category 1 Hurricane, flooding and had other critical issues) and that operational conditions were below accepted standards. The study underlined the dire structural inefficiencies of the building and operational conditions of the main General Hospital - the only one on Saint Vincent island. The study, therefore, recommended the need to build a new Hospital with higher construction standards at a new location.

Proposed Investments. Based on the number and scale of the issues uncovered in this study, the most feasible option appears to be the construction of a new hospital in a different location, with higher structural standards. Accordingly, the intervention has been proposed under the Project which will undertake activities including the completion feasibility studies, design and other pre-construction activities for the new hospital.

Project Beneficiaries. The feasibility studies, design and other pre-construction activities for the new hospital will eventually benefit the entire population of Saint Vincent island. The mitigation works also will indirectly improve the quality of care for all future patients of the main populations center's only hospital.

1.1.2. Rehabilitation and Risk Reduction of Transportation Infrastructure

Background. Under this sub component the actions will be aimed at the rehabilitation of bridges and landslide stabilization in order to reduce the vulnerability of existing infrastructure considering the increase in intensity and frequency of storms and hurricanes affecting the Caribbean region. Technical designs for interventions will take into account parameters related to the hydrological and geotechnical characteristics specific to each of the zones.

Identified critical infrastructure includes the rehabilitation of bridges at:

- South River (Bridge Road),
- Fenton Road (Dauphine), and
- Fenton Road (Green Hill).

South River Bridge is located in the city of Kingstown within an area of commercial activity. Because the intersection of two tributaries of the river just before the bridge, during the rainy season the river level and flow stream increasing considerably, this has led to the weakening of the bridge. This bridge connects Long Lane Upper with South River Road and allows the pass of light and heavy vehicles helping the mobility of people and the commercial activity.

Fenton Road has been selected by the Government as an essential route to improve mobility between Kingstown and Arnos Vale. This only road has performed as a bypass to Kingstown on several occasions. The road has two bridges which have deteriorated to the degree that they have rendered the route unsafe for use. This project seeks to replace these bridges to improve the long-term performance of the selected structures.

Slope Stabilization: Dark View (road realignment and coastal defense)

Dark View landslide usually affects Leeward Highway during the rainy season, disrupting traffic on the Northern communities such As Fitz-Hughes, Petit Bordel and the town of Chateaubelair, which are only accessible by this route. In addition there is evidence of coastal erosion that can affect the stability of the road.

Project Rational. The rehabilitation of bridges and landslide risk mitigation are oriented at reducing the vulnerability of existing infrastructure face of increased of the amount of water in the

rainy season and hurricanes causing floods and landslides, with increasing frequency and intensity. These interventions allow improve population mobility and reduce socio-economic effects caused by traffic disruption or congestion.

Project Beneficiaries. Directly the beneficiaries of these interventions are the people and businesses in the Kingstown area (South River), the population of Arnos Vale and Northern communities (rural fishing community) such as Fitz-Hughes, Petit Bordel and the town of Chateaubelair. Indirectly these interventions help the general population due to improved mobility between different areas of Kingstown and the rest of the island. Moreover, they have implications on the ability of persons to evacuate the capital or access critical services in the event of a disaster.

Proposed Investments. The design for each intervention will be done at home by the Ministry of Transport and Works. Improvement of South River Bridge and Fenton bridges specifications, should consider hydrological studies to define the design parameters in terms of maximum river level and flow stream. The proposed intervention for Dark View will address two issues; first, extensive coastal erosion that threatens the main road artery from Northern communities. Secondly, it will address a severely unstable upper embankment of this roadway and the roadway realignment. The proposed interventions include the construction a sea wall in the first former case and terracing of the embankment in the latter. Dark View landslide interventions need previous geotechnical characterization studies (shear strength parameters), rainfall levels and pluvial hydrology to determine appropriate engineering solutions. For all intervention sites, topographic surveys should be conducted and rainfall and earthquake conditions must be analyzed as instability triggers. According with information from Ministry of Works in Dark View there is one house will require land acquisition and compliance with Bank Resettlement safeguards.

Sub-component 1.2 – Climate Adaptation Infrastructure Investments

The government has identified a number of national priority adaptation measures designed to strengthen national climate resilience through the demonstration of integrated climate change adaptation activities. The key to this approach is the comprehensive integration of physical works, policy development and implementation, preventive measures and other soft options. Activities will be focused within two vulnerable watershed-river-coastal systems. The two pilot areas will implement and test a broad spectrum of ideas and interventions to build resilience within the identified systems.

Physical investments include reinforced river defense systems at targeted vulnerable sections of Warrawarrow River, drainage improvements in Arnos Vale, coastal defense infrastructure at Georgetown Administrative Centre and provisions for stockpiles of gabion baskets to support future flood mitigation reinforcement needs. Additionally, under this sub component, the project will support the analysis and evaluation of defense mechanism performance with respect to expected hazards and reinforce/climate proof targeted investments accordingly. Activities to be financed under this sub-component include:

#	Project Component and Activities	Construction and Engineering Support (USD)	Equipment/ Goods	Estimated Cost (USD)	Funding Source
1.2.1	**Arnos Vale Watershed to Reef System**				
	Stockpile of gabion baskets (total of 12,000)	In-house	$300,000	$300,000	IDA
	River defense: Construction of gabion/reinforced concrete for the Warrawarrow River system including drainage improvements for Arnos Vale	In-house	$2,000,000	$2,000,000	CIF
	Rehabilitation of river crossings (5 fords/culverts): Fenton River system	$200,000		$200,000	CIF
	Geology assessment of Arnos Vale as a single drainage basin inclusive of soil testing, ground water assessment and monitoring	$30,000		$30,000	CIF
	Forestry management activities inclusive of silviculture along with bio-engineering works	$15,000	$50,000	$65,000	CIF

	and other soil and conservation measures				
	Designation and delineation of drainage channels and buffer zones in the Arnos Vale watershed	In-house		$0	
	Application of relevant effluent regulations/standards at the coastal area of Arnos Vale (Indian Bay and Vila Beach)	$35,000		$35,000	CIF
	Warraworrow/Greathead beach management (beach and delta breaching of berm, sediment removal)	In-house	$10,000	$10,000	CIF
	Sub-Total	**$2,280,000**	**$860,000**	**$3,140,000**	**CIF/IDA**
1.2.2	**Georgetown Watershed to Reef System**				
	Conduct Forestry management activities inclusive of silviculture along with bioengineering works and other soil and water conservation measures	$15,000		$15,000	CIF
	Designation and delineation of drainage channels and buffer zones in the Georgetown watershed	In-house			
	Testing and monitoring of the enforcement of new building code provisions, including training of building inspectors	$15,000		$15,000	CIF
	Appropriate numerical and physical modeling to determine optimum shoreline stabilization techniques for the Georgetown pilot area, including ecosystem	$100,000		$100,000	CIF

	conservation, and reduction of downstream impacts				
	Coastal Defense (civil works): Georgetown	$1,900,000		$1,900,000	CIF
	Assessment of Climate Change impacts on Coastal and Marine Ecosystems and Commercial Fisheries	$1,200,000		$1,200,000	CIF
	Sub-Total	**$3,230,000**	**$0**	**$3,230,000**	**CIF/IDA**
			Sub-Total Component 1.2	**$6,370,000**	**CIF/IDA**

1.2.1 Arnos Vale Watershed to Reef System

Background. Arnos Vale and neighbouring communities such as Fountain, Villa and Belair, have undergone significant developments in recent years including the construction of a number of major infrastructural projects. As a result of this development, flooding of the Warrawwarrow River has increased in recent years - threatening residents and a number of critical infrastructures including the E.T. Joshua Airport Arnos Vale Sporting Complex. Previous flood mitigation interventions have focused on sets of gabion walls along the river banks, which have experienced structural failures leading to dramatic changes in flow, threatening their ability to adjust to and absorb disturbances. This has led to an increased in flood flows. Without any intervention, this will continue to threaten the lives and properties of residents, commercial enterprises and a number of critical infrastructures along and near the river system.

Project Rational: The continuous trend being observed and projected is the increase of global air temperature between 1.5 and 2.0 degrees Celsius and the decrease in precipitation quantity. The projections are for a 7-8 percent decrease in the length of the rainy season by 2050, while there is a 6-8 percent increase in the length of the dry season being projected for the same period. In addition, the frequency of intense rainfall is already up an average of 3 percent and this is projected to increase to 20 percent by 2050 and the number of consecutive days of heavy rainfall events is increasing. Due to the above trends, disturbances leading to influxes in flooding experienced in recent years in the Arnos Vale Watershed and Warrowarrow River system will be exacerbated. It is therefore imperative to develop and implement a comprehensive model for managing watershed-river-coastal systems inclusive of physical works, legislation, and implementing an integrated watershed management and coastal zone management strategy geared towards sustainable development and economic prosperity. The technical design and construction of risk mitigation works and adaptation measures to mitigate flooding and promote river erosion control will reduce damage to public and private property, improve the mobility of population and other socio-economic effects caused by road blockage generated by water from floods. Moreover, comprehensive river management plans will reduce the environmental impact caused by the inadequate garbage disposition at rivers and channels.

Project Beneficiaries. Direct beneficiaries of these interventions are the area covers the current E. T. Joshua Airport, VINLEC power station, Arnos Vale Playing Field, the residents and commercial business enterprises of Arnos Vale. The mitigation works will indirectly improve the quality of life of vulnerable groups, including women, children and the elderly, living along the river system and targeted vulnerable coastal areas. Beneficiary ministries include the Ministry of Agriculture, Physical Planning, NEMO, the Ministry of Transport and Works, Lands and Statistics-MoFEP).

Proposed Investments. This project is designed to measurably reduce the negative impacts to life, the environment, private property and critical public infrastructure which may result from flooding in Arnos Vale. Activities will aim to mitigate the risk of flooding through the improvement or construction of river defenses. The designs for interventions take into account parameters related to the technical characteristics with which to incorporate the appropriate use of land and the effects of climate change. In additional to the issues with the river, there are also other drainage concerns in the Arnos Vale basin which need to be addressed as well.

The design for each intervention will be done at home by the Ministry of Transport and Works. Preliminarily has been defined that construction works include the installation of gabion baskets in Warrawarrow River and drainage improvements in Arnos Vale. For the design and construction river defense should be carried out at least hydrological and hydraulic assessments in order to identify possible solutions and specific designs. It is advisable to review other technical solutions as it has been shown that the use of gabions baskets may not be as effective. Additionally, it will be necessary to have a maintenance plan that includes activities related with periodical drainage clean and educational programs to change human behavior in relation with garbage management.

The main activities of the project include:

- Installation of gabion walls at the Warrawarrow river
- Construction of 350 metres of concrete lined drainage channel
- Construction of 2 detention ponds, and
- Construction of cross culvert

In addition, some technical work in the form of soil testing, geological assessment, and ground water assessment and monitoring will be done through a consultant or regional training institution. This activity will be done in the Arnos Vale Catchment, Warrowarrow River and related coastal outlets system.

1.2.2 Georgetown Watershed to Reef System

Background. Georgetown is a rural coastal community on the north eastern coast of Saint Vincent. It is the service centre for the windward communities, particularly those north of the Rabacca Dry River. In recent years, the government has made several large investments in the area including the construction of an orphanage, reconstruction of the Georgetown Police Station and in 2010 the completion of the School for Children with Special Needs. In addition, a Modern Medical Complex is being constructed which will provide diagnostic, surgical, laboratory, and dialysis services among other modern hospital services, and will significantly improve health care in Saint Vincent and the Grenadines. There are also advanced plans to construct a multi-million dollar facility to house the Town Board Office, Revenue Office, Post Office, a branch of the National Commercial Bank, Restaurants, and medium sized shops in the vicinity of the proposed site. This will generate much needed economic activity and assist to further decentralize critical services to benefit these areas.

Project Rational: This project is designed to measurably reduce the risk to life, the environment, private property and critical public infrastructure which may result from coastal erosion in the Georgetown community. The Georgetown coast has suffered extensive erosion in recent years. At the site of the proposed works, this erosion threatens the main windward highway; the only playing field in Georgetown; other critical public infrastructure; private residences and a number of restaurants and shops along the coast. The problem has been exacerbated by damage sustained by the passage of several hurricanes including Tomas in October 2010 and now requires immediate attention

Project Beneficiaries. Direct beneficiaries include the entire community of Georgetown. The coastal defense works and associated activities will also benefit neighboring communities and inhabitants surrounding the river systems outlets of the Georgetown area. Beneficiary ministries include the Ministry of Physical Planning, NEMO, the Ministry of Transport and Works.

Proposed Investments. The main activity of this project is the construction of a reinforced concrete, stepped sea wall. This activity will be complimented by:

- Designation and delineation of drainage channels and buffer zones in the Georgetown watershed;
- Testing and monitoring of the enforcement of new building code provisions in the Georgetown community;
- Appropriate numerical and physical modeling to determine optimum shoreline stabilization techniques for the Georgetown pilot area, including ecosystem conservation, and reduction of downstream impacts
- Assessment of Climate Change impacts on Coastal and Marine Ecosystems and Commercial Fisheries

In addition, a concerted effort will be aimed at the households and businesses located less than five meters from the coastline. People in these areas will be a part of a comprehensive disaster preparedness program that will be significantly improved by the provision of a pilot early warning system.

Component 2 - Capacity Building for Disaster Response, Climate change Awareness, Hazard and Risk Evaluation and Applications for Improved Decision Making (US$ 5.33M)

The project will support improving the national capacity to evaluate, assess and integrate natural hazard and climate change risk reduction into the national development policy, improved engineering design, and inform the development decision making process. Improvements in risk analysis capacity will support future programs in new construction and retrofitting of existing infrastructure, disaster risk mitigation, and disaster preparedness planning. This improved capacity will allow SVG to prioritize investments and improve risk management across sectors promoting the use of a variety of tools including cost-benefit analysis, life cycle analysis, hazard and vulnerability modeling.

The risk modeling and data management tools and strategies directly serve the disaster risk reduction agenda reducing the impacts of disasters as setbacks to development and economic growth of the country.

Improvements in risk analysis capacity will support future programs in new construction and retrofitting of existing infrastructure, disaster risk mitigation, and disaster preparedness planning. This improved capacity would allow Grenada to prioritize investments and improve risk management across sectors promoting the use of a variety of tools including cost-benefit analysis, life cycle analysis, hazard and vulnerability modeling and land planning.

Three key elements are required to advance the integration of risk management strategies in the development process. These are data development and analysis, better understanding of hazard risk and climate change impacts, and capacity building for better risk management.

The institutionalization of risk management activities within the national development planning process is a critical element for the long-term integration of disaster and climate resilience strategies in development activities.

Sub-Component 2.1 – Improved understanding of natural hazards and climate change impacts

Varying levels of information about exposure to natural hazard and the impacts of climate change are available at the national level in Saint Vincent and the Grenadines. Despite the fact that the available information is lacking in several areas and is in need of improvement, existing information is only incorporated in national development activities on a limited scale. In order to take advantage of current information, as well as positioning GoSVG to be able to incorporate future analytical works, this component of the project will conduct institutional strengthening to allow for better integration of knowledge products into physical development activities. The main IDA-financed activity within this component will focus on the Ministry of Transportation and Works – which is responsible for all public works and conducts civil and structural engineering analysis and design. Further activities, financed by non-IDA sources, will focus on improving the quality of hazard and climate impact analysis for Saint Vincent – as well as continued strengthening of local capacity for practical applications of such knowledge.

#	Project Component and Activities	Estimated Cost (USD)	Funding Source
2.1.1	**Institutional Strengthening of the Ministry of Transportation and Public Works**		
	Sub-total	$250,000	IDA
2.1.2	**Hydro-Meteorological Capacity Building**		
	Installation of hydro-meteorological sensor equipment.	$583,910	CIF
	Capacity building of Met Office	$225,000	CIF
	Capacity building of CSWA	$40,000	CIF
	Technical training on areas in support of climate resilience	$75,000	CIF
	Sub-total	$848,910	
2.1.3	**Climate Change Risk Assessments**		
	Coastal Inundation Impact Modeling	$100,000	CIF
	Community Based Climate Risk Base Maps	$17,500	CIF
	Expansion of Social Risk Assessment	$7,500	CIF
	Training of Community Risk Monitors	$7,500	CIF
	Sub-total	$132,500	
2.1.4	**Public Education and Community Outreach**		
	National education program on community based risk and resilience	$300,000	CIF
	National curriculum development for secondary schools in climate change and disaster risk reduction	$150,000	CIF
	Development of information packages for individuals in high-risk areas	$55,000	CIF
	Sub-total	$505,000	
2.1.5	**Information and Data Management Capacity Building**		
	Development of National Spatial Data Infrastructure	$270,000	CIF
	GIS Training	$20,000	CIF

	Information Management Training	$30,000	CIF
	Equipment and Goods for Information and Data Management	$197,000	IDA
	Sub-total		
2.1.6	**Natural Hazard and Climate Risk Model Improvements and Capacity Building**		
	Sub-total	$800,000	GFDRR
Sub-Total Component 2.1		**$2,056,410**	

2.1.1 Institutional Strengthening of the Ministry of Transportation and Works (IDA)

Project Rationale: The Ministry of Transportation and Works (MoTW) has the responsibility for public infrastructure including the design and engineering studies. The MoTW has been working to establish technical lab for data collection and conducting analysis in support of engineering designs – such as soil analysis. The ministry has vital intellectual capacity and trained engineers that are crucial to proper development in Saint Vincent and the Grenadines. However, the ministry is lacking crucial testing equipment, GIS capacity, and training in certain areas. The ministry currently only has the tools for rudimentary analysis in support of works projects - particularly drainage, slope stability, bridges, culvert and road design - and as a result there is a tendency to build vulnerability into their projects. Through this activity the goal is to strengthen the capacity of MoTW to conduct more effective engineering designs and be able to incorporate natural hazard and climate risk information into their engineering design processes and civil works planning activities.

Project Beneficiaries: This project will directly support the capacity of the individual engineers and the Ministry of Transportation and Works as a whole to better complete its mandate of responsibility for the public infrastructure in Saint Vincent and the Grenadines. Through this increased capacity the entire population of Saint Vincent will eventually benefit through higher quality designs of infrastructure and public facilities – as well as having to experience lesser negative impacts of adverse natural events due to more resilient infrastructure. Furthermore, through designing less vulnerability public works the costs for maintenance and future retrofitting will be reduced.

Project Investments: The project will provide the MoTW a variety of needed goods and trainings in order to be able to conduct higher quality engineering analysis. The goods will include different field testing equipment to fill the needed gaps in their Lab – such as soil testing instruments, and GIS software and hardware to support planning activities. The activity will also provide for training on the provided tools and in areas needed to support the project objectives. Specific line-item purchases have been discussed with the ministry and are to be detailed in the procurement plan with review of the World Bank project team.

2.1.2 Hydro-Meteorological Capacity Building (CIF)

Project Rationale: Proper availability and collection of hydro-meteorological information and its analysis is of significant importance for long-term climate change adaptation and natural hazard risk planning and mitigation activities. It provides the fact-based understanding of the environment for issues such as hurricane, saturation-induced landslide, flooding and other natural hazards – which have changing levels of exposure due to climate change. This project will build on previous activities within Saint Vincent and the Grenadines in order to take advantage of economies of scale as well as previous successes – such as the capacity building, instrumentation and analysis that was conducted under the EU-funded "National Water Resource Management Project," which, in addition to strengthening water resource management on the island, identified certain future needs of which certain issues are being addressed with this project. This project activity will significantly strengthen the existing hydro-meteorological network (both physical equipment and human capacity) throughout the country and will provide training and capacity building for in-country use and integration of data into development and risk management planning.

Project Beneficiaries: A wide series of government stakeholders will benefit from the increased capacity – including direct and significant training for the Met Office and CWSA, as well as training and coordination development with Ministry of Agriculture, NEMP, Forestry, VINLEC, Ministry of Transportation and Works, NEMO, National Parks, Ministry of the Environment and others. This project will help build the scientific and fact based decision making needed for long-term climate change adaptation activities and for mainstreaming climate change into development within Saint Vincent and the Grenadines. Furthermore, the project will have in-direct benefits to the public through stronger hydro-meteorological and climatological capacity on the island – such as better weather forcasting for farmers and increased capacity for hydro-metrological natural hazard early warning and forecasting. The project will also benefit to international climate change scientific analysis community by providing a rich set of scientific data of a small island developing state that is experiencing the impacts of climate change – allowing a better international understanding of the impacts of climate change.

Project Investments: This project will include a series of investments within the government to strengthen hydro-climatologically monitoring, analysis and understanding. Strengthening capacity of the Met Office for forecasting and intergovernmental coordination including marine forecasting, communications equipment, planning for linkages to global systems of climate tracking, in close collaboration with regional organizations and initiatives. This includes a strategy for inter-governmental capacity building, and relationships between Agriculture, NEMP CWSA, Forestry, VINLEC, National Parks, Environment and other ministries. The project will also provide specific and technical training and capacity building for Met Officers. Strengthening capacity for CSWA for hydrology, drainage and waste water management. In-house training and exchanges will occur for CWSA utilizing Caribbean (CIMH) experts over a period of two years. Training may include experts from other ministries. The project will provide technical training for officials in various sectors on specific technical capacity and monitoring programs in support of climate resilience (e.g. climatology, marine meteorology, coastal zone monitoring, hydrology, geomorphology, and agronomy).

2.1.3 Climate Change Risk Assessments (CIF)

Project Rationale: The vulnerability of Saint Vincent and the Grenadines has been increasing and will continue to increase due to climate change. However, despite the fact that this general idea is well understood on the island – the specific impacts of climate change are primarily based on either crude regional and planetary scale climate models, or based on best guesses of possible impacts.

This lack of local level understanding is a significant hindrance to the countries mainstreaming of climate change adaptation into its development activities. It is through scientific analysis as well as community and social engagement on climate change risks that the population of Saint Vincent and the Grenadines can plan for and adopt climate change adaptation strategies. This will be a valuable vehicle for development of community-based approaches to building resilience, awareness and hazard mapping.

Project Beneficiaries: The project will benefit both government officials engaged in climate change adaption planning and implementation as well as community members through increased understanding of climate change risks.

Project Investments: The project will take a two-pronged approach to climate change risk assessment through both scientific analyses of climate impacts (i.e. costal inundation impact modeling) as well as through a social and community approach – including, community-based risk mapping, expansion of social risk assessments, and training of community leaders and disaster management committee members in community leadership as well as risk monitoring and climate resilience.

2.1.4 Public Education and Community Outreach (CIF)

Project Rationale: The education of the public in their exposure to natural hazards and the impacts of climate change can have significant results in reducing their vulnerability to such adverse natural events. The public, especially the poorest and most vulnerable, are on the front lines of the battle against adverse impacts of climate change and natural hazards and their understanding and engagement of adaptation and mitigation is an important component of a comprehensive vulnerability reduction strategy. It is through this project that there will be a series of public engagement and education activities with the goal of increasing this understanding and engagement.

Project Beneficiaries: The direct beneficiaries of this activity are the public within Saint Vincent and the Grenadines – especially secondary school students and those living in high risk coastal areas which will specifically targeted certain activities.

Project Investments: The project will engage in three different public education and community outreach activities, including: a three-year public education program to build community based climate risk and resilience understanding; the development and implementation of a national curriculum, including training of teachers, on climate change and disaster risk reduction; the creation and distribution of information packages for families living in high-risk coastal zones.

2.1.5 Information and Data Management Capacity Building (CIF & IDA)

Project Rationale: Disaster risk management, risk assessment and climate change adaptation activities are rooted in having access to proper data and having capacity to analyze and interpret that information. Risk analysis requires the integration of geographic and environmental data in order to identify vulnerabilities and assist with the development of resilient land use strategies. While government of SVG has already invested in these some of these capabilities, in order to take

advantage of improvements in risk modeling systems and advance government capacity for improved risk assessment, this project provides for expanded investments in equipment, training and analytical support that will allow for improved risk analysis. Currently within Saint Vincent and the Grenadines data and information is not managed in a systematic manner, this causes significant inefficiencies within the government and increases the chances that valuable investments in data collection activities will not be fully utilized. This activity also contributes to assist government of SVG with taking advantage of ongoing regional efforts and supports SVG with the acquisition of key training and equipment needed to support ongoing and future planning and risk analysis needs.

Project Beneficiaries: The principal beneficiaries of this sub-component are the NEMO, Ministry of Planning, Town and Country Planner, Ministry of Works, Department of Land and Surveys and other government individuals working with geospatial and scientific data. Activities are designed to provide key equipment and personnel training to expand the departmental capacities for risk analysis and land planning activities.

Project Investments: The project will provide for purchase of needed goods and trainings to create the technical capacity within the country for comprehensive data and information management. The project will also support the development of an enterprise national spatial data infrastructure through implementation of policies, standards and best practices which will allow for systematic management of geospatial information throughout the Government of Saint Vincent and the Grenadines.

2.1.6: Risk Modeling Improvements and Data Collection (GFDRR)

Project Overview: This co-financed activity will support the transition of the Government of Saint Vincent and the Grenandines to current best practices for disaster and climate risk modeling and analysis within development processes. This grant funded activity will leverage regional activities and economies of scale to support updating of risk models for the country. The project will continue building national capacity to integrate assessment of natural risk into policy and decision making in various sectors operations including development investments, disaster risk mitigation, and disaster response planning. The project will work with a variety of governmental sectors to applying risk modeling results into operational risk understanding analysis within their respective areas of development responsibility. The highly scientific portions of modeling development will occur at a regional level – where this capacity will be improved and relationships built in parallel activities so that applying risk modeling tools can become common practice within relevant sectors. The models will be built upon existing hazard and vulnerability studies in the region such as CCRIF and UWI risk atlas project. This co-financed project will help support the overall project goals that have been outlined within this document.

Sub-Component 2.2 – Capacity Building for and Application of Natural Hazard Risk and Climate Change Impact Management

This sub-component is designed to address the need for practical natural hazard risk and climate change impact management activities to be conducted within Saint Vincent and the Grenadines. Such activities require sufficient capacity for implementation, as well as having proper procedures,

legislation, guidelines and practical experience amongst the government and community members engaged in disaster risk management and climate change adaptation. This sub-component will strengthen specific institutions which have important roles within these activities – such as the National Emergency Management Organization, the Physical Planning Unit, the Ministry of Transportation and Works, the Ministry of Health and the Environment, the Ministry of Finance, Economy and Planning, and others. There will be a comprehensive review of governance and institutional issues surrounding climate change adaptation as well as specific intervention to address a specific number of those issues. Finally, the sub-component will conduct a pilot climate change adaptation implementation on Union Island within the Grenadines, this pilot will improve the resilience of Union Island but will also serve as a tool for the actors responsible for climate change adaptation and disaster risk management within Saint Vincent and the Grenadines to gain practical experience in a comprehensive and cross-sectoral approach to these issue and allow them to pilot different intervention methods and the process of strategic long term planning of future adaptation measures.

#	Project Component and Activities	Estimated Cost (USD)	Funding Source
2.2.1	**Capacity building of National Emergency Management Organization (NEMO)**		
	Development of a National Shelter Management Policy (gender sensitized) and enforcement support	$20,000	IDA
	Assessment and development of DRM training program for government agencies.	$30,000	IDA
	Completion of national emergency communications network	$300,000	IDA
	Planning and development of early warning system	$60,000	CIF
	Institutional Strengthening of NEMO for community engagement and climate change adaptation	$140,000	CIF
	Sub-total	$550,000	
2.2.2	**Strengthening Enforcement of Building Codes**		
	Sub-total	$100,000	IDA
2.2.3	**Community-based Water Resource Management**		
	Water Conservation and Management in the Grenadines	$75,000	CIF

	Guidelines for Commercial Fishing and Recreational Boating	$50,000	CIF
	Agrochemical Use Awareness for Farmers and Local Communities	$15,000	CIF
	Sub-total	$140,000	
2.2.4	**Institutional Capacity Building For Climate Change Adaptation**		
	Climate Change Adaptation Institutional Strengthening for MoFEP, MoHE, MoTW, Physical Planning	$450,000	CIF
	Booklet on Climate Change Governance	$35,000	CIF
	Draft Policy and Legislation of Mainstreaming Climate Resilience	$200,000	CIF
	Strategy for Public-Private Partnership on CCA	$10,000	CIF
	Institutional Exchange with Caribbean Partners	$90,000	CIF
	Sub-total	$785,000	CIF
2.2.5	**Climate Change Adaptation Pilot Area: Union Island**		
	Implementation of Numerical and Physical Modeling within Pilot Area	$300,000	CIF
	Geological Assessment of Union Island	$30,000	CIF
	Mangrove Replanting and Coastal Management	$85,000	CIF
	Drainage Designs for Union Island	$65,000	CIF
	Sub-total	$480,000	
Sub-total Component 2.2		$X	

2.2.1 Capacity building of National Emergency Management Organization (NEMO) ***(IDA & CIF)***

Project Rationale: The National Emergency Management Organization (NEMO) is the key agency tasked with emergency response and disaster risk management activities for Saint Lucia and the Grenadines. NEMO has a decent level of capacity, but there are several areas in which there is a need for additional capacity and strengthening to allow the organization to carry out its mandate – and a selection of those issues are being addressed within this project component. The monetarily largest task ($300K USD) within this activity is the completion of the national emergency communications network. The emergency communications network is designed to allow for communication within the government during times of emergency. The National Shelter Management Policy has been drafted by NEMO but needs further expertise for completion and the provision of support for enforcement of the policy. The shelter policy provides the framework for which the emergency shelter network within the country operations and is of importance for high-quality emergency response capacity. The project will also provide a range of trainings and goods that are needed for proper disaster risk management operations. Further activities for the strengthening of NEMO will be co-financed under funding from the CIF through the PPCR program, they will provide additional capacity on-top of IDA funded activities – such as further training of NEMO officials for climate change adaptation. Furthermore, the planning of an early warning system will be conducted as current early warnings sent via cell phone networks are not well understood and have not been as effective as they should. This project activity will allow for NEMO to have stronger capacity to coordinate and conduct emergency response and disaster risk management throughout the country.

Project Beneficiaries: The immediate beneficiaries of the project are the staff of NEMO through further training and equipping of needed goods to allow them to better carry out their duties and responsibilities. However, the project will benefit the entire population of Saint Vincent and the Grenadines through having a more effective emergency management organization which can serve them and increase their resilience to natural disaster and adverse impacts of climate change.

Project Investments: The project will finance a series of activities, including the completion of the national emergency communications network. A portion of the network was previously established but needed additional funding for completion – the specifics of the needs were identified in the "Status Report on the Implementation of the National Emergency Telecommunications System" – and this project will provide for the needed goods and services for completion of the network. This project will also finalize the National Shelter Management Policy and provide enforcement support which will have a strong consideration of gender issues during crisis situations. Furthermore, the activity will provide for designing training on disaster risk management to be delivered by NEMO to other agencies within the Government and the public, as well as training for emergency response officials on complex search and rescue activities. Specific goods will be acquired for NEMO which will allow it to more effectively carry out its duties – such as search and rescue equipment. Finally, the CIF portion of the project will provide technical training in Climate Change (Specialist) and enhancement of local Community Disaster Management Committees (e.g. training, computers, public education). Additionally, a review of all possible and necessary early warning systems will be undertaken, including a review of regional examples and strengthening of the cell phone network.

2.2.2 Strengthening Enforcement of Building Codes (IDA)

Project Rationale: Proper building codes and their enforcement is a vital activity for building resilience within Saint Vincent and the Grenadines to adverse natural events – which are projected

to get more extreme in the future due to climate change. The government has adopted the 2008 building codes for the country but there is currently limited capacity for enforcement. Therefore creating an environment in which building codes are frequently ignored and not understood by the public. This activity will allow for more effective enforcement and through such strengthened capacity allow for the government in the future to adopt and integrate into development activities new building codes as are needed – such as through incorporation of expanded understanding of natural hazard exposure and climate change impacts.

Project Beneficiaries: The project would directly benefit the Physical Planning unit through increasing is enforcement capacity for building codes. It will indirectly benefit the public of Saint Vincent and the Grenadines through improved standards for building construction and therefore reduced vulnerability to adverse natural events.

Project Investments: The project will provide technical support to build capacity and streamline the process within the Physical Planning Department for the enforcement of building codes.

2.2.3 Community-based Water Resource Management (CIF)

Project Rationale: The engagement of end-users can be a high-effective method of water resource management through increasing understanding and changing water-usage behaviors. Within the Grenadines there are significant water resource management issues and it is an area that is highly vulnerable to water issues which will likely be exacerbated through future climate change. Engagement on water conservation and management allow for adaptation and reduction of vulnerability in a cost-effective and efficient manner. Furthermore, other communities within Saint Vincent and the Grenadines have significant impacts on water resource management and through targeted engagement of commercial fisheries, recreational boaters, farmers and community members will result in more efficient management of scarce water resources.

Project Beneficiaries: The direct beneficiaries of this project activity will be the community members who are currently exposed to a high level of vulnerability from water-resource issues, as well marine ecosystems and other areas that are directly affected by poor water resource management and water contamination issues.

Project Investments: The project will conduct a series of three interventions on community based water resource management including; a program of water conservation and management within the Grenadines; preparation of guidelines for commercial fishing and recreational boating on issues such as disposal of solid waste, and grey and black water management; finally there will be an awareness and education program for farmers and community members within the identified pilot areas on the use of agrochemicals and its implications for surface freshwater contamination.

2.2.4 Institutional and Governance Capacity Building for Climate Change Adaptation (CIF)

Project Rationale: Governance and institutional capacity is particularly significant in the early stages of mainstreaming climate change considerations into national development planning. All government departments and ministries need to know their role, that of others, as well as the responsibilities of government, the business community and individual citizens in building resilience and awareness. Furthermore, the government needs to have the capacity to be able to fulfill its responsibilities and to incorporate climate change adaptation into their planning and operational activities. It is through strengthening these processes and the understanding of their

importance that this project activity will increase the mainstreaming of climate change adaptation through Saint Vincent and the Grenadines.

Project Beneficiaries: The direct project beneficiaries are the various governmental departments, ministries and staff that are engaged in climate change adaptation activities. It will indirectly benefit the entire population of Saint Vincent and the Grenadines through more effective governance and institutional capacity to reduce their vulnerability to adverse climate change impacts.

Project Investments: The project will engage in a series of interventions and investments in increasing institutional and governance capacity for climate change adaption. It will conduct institutional strengthening of the MoFEP, MoHE, Ministry of Works, and Physical Planning to increase in-house climate change adaptation capabilities – such as strengthening of EIA processes, revised land use zoning plans, revision of building codes, guidelines on drainage issues, and additional specific activities. There will be the development of draft policy and legislation in support of mainstreaming climate change resilience into development – including the National Physical Development Plan, Data Management Policies, the National Emergency Management Plan, EIA regulations, finalization of the Environmental Management Act, revision of the Disaster Management Act, the National Economic and Social Development Plan, drafting a Marine Pollution Act and Effluence Limitation Guidelines – all of which will occur through comprehensive stakeholder consultations. The project will also develop a strategic plan for establishment of Public-Private Partnerships for combating the adverse impacts of climate change. Finally, the project will support an exchange of research, capacity building, training, policies and practices with other actors in the Caribbean region to increase collaboration and access to capacity for Saint Vincent and the Grenadines.

2.2.5 Climate Change Adaptation Pilot Area #X: Union Island (CIF)

Project Rationale: Union Island, the southern-most grenadine island, is an area that is highly vulnerable to climate change impacts and therefore was chosen as one of the three pilot areas within the project to engage in a comprehensive climate change adaptation intervention. The complex nature of the adverse impacts of climate change necessitates a comprehensive approach to adaptation interventions. This need has lead to the approach of conducting a series of interventions throughout the Union Island watershed. The pilot will allow for a more comprehensive understanding of the climate change profile and impacts for the island as well as conduct certain specific interventions to reduce vulnerability – such as mangrove replanting. The pilot will create designs for a series of future interventions that would allow for a fully comprehensive adaptation intervention on Union Island.

Project Beneficiaries: The direct beneficiaries of this project will be the population of Union Island which will have a reduced level of vulnerability to climate change impacts due to the pilot – as well as being prepared for further future vulnerability reduction activities. Additional beneficiaries include the various government agencies and ministries who will be involved in the pilot who will gain invaluable practical experience and lessons in practical and comprehensive climate change adaptation which they can replicate in other locations within Saint Vincent and the Grenadines.

Project Investments: Conduct a geology assessment of Union Island as a single drainage basin inclusive of soil testing, ground water assessment and monitoring. Test the application of Union Island's Integrated Coastal Zone Management plan and the community awareness strategy. Implement numerical and physical modeling techniques for Union Island on climate change

adaptation – including accounting for downstream impacts, shoreline stabilization and the development of specific engineering projects for Union Island. Implement forestry management activities and other soil and water conservation measures, such as, the replanting of mangroves and other plant species in select areas, establishment of flying nurseries, possible establishment of terraces and sedimentation traps, supporting best practices in Agriculture and Agro-forestry, and other activities. Finally the project will design and delineate drainage channels and buffer zones on Union island and engage in definition of the legal and legislative implications of drainage channels for various communities as well as GIS mapping to record the drainage systems.

5. List of Preidentified Stakeholders

Agency/Organisation	Point Persons	Position	Email	Telephone	Related Sector
Ministry of Works	Mr. Brent Bailey	Chief Engineer	office.transport@mail.gov.vc	4572031	Infrastructure; Coastal Zone Management; Disaster Vulnerability
	Mr. Louis De Shong	Permanent Secretary	office.transport@mail.gov.vc	4572031	Infrastructure; Coastal Zone Management
Bridges Roads and General Services Authority (BRGSA)	Mr. Brian George	Chief Executive Officer			Physical Infrastructure
Ministry of Health and the Environment	Mr. Lanceford Weekes	Permanent Secretary	officehealth@mail.gov.vc mohesvg@vincysurf.com	4561111-ext 511 4500511	Coastal Zone Management; Water Resource Management; Natural Resource Management; Biodiversity
	Mr. Edmund Jackson	Director of Environmental Management Department	edmund_jackson2000@yahoo.com svgenv@vincysurf.com	485-6992	Coastal Zone Management; Water Resource Management; Natural Resource Management; Biodiversity
	Ms. Yasar Belmar	Environmental Resource Analyst Environment Management Dept.	yasa.belmar@gmail.com svgenv@vincysurf.com	485-6992	Coastal Zone Management; Water Resource Management; Natural Resource Management; Biodiversity
	Ms. Nyasha Hamilton		nyakkh@googlemail.com	485-6992	Coastal Zone Management; Water Resource Management; Natural Resource Management; Biodiversity
	Mr. Allan Alexander	Permanent Secretary	office.agriculture@mail.gov.vc	456-1410; 4561111-ext 311	Agriculture; Forestry Resources

Ministry of Agriculture Forestry and Fisheries	Mr. Reuben Robertson	Chief Agricultural Officer	office.agriculture@mail.gov.vc	456-1410; 4561111-ext 311	Agriculture
	Mr. Fitzgerald Providence	Senior Forestry Supervisor	forestrysvg93@yahoo.com	4562738	Forestry Resources; Biodiversity; Water Resources
	Mr. Raymond Ryan	Chief Fisheries Officer	fishdiv@vincysurf.com	4562738	Marine Resources; Coastal Zone Management
	Mr. Kris Isaacs	Research Analyst, Fisheries Division	kris.isaacs@yahoo.com	Ext 881	Marine Resources; Coastal Zone Management
Ministry of National Mobilisation, Social Development Etc	Mrs. Rosita Snagg	Permanent Secretary	rsnagg@hotmail.com	456-1111 ext 395	Gender; Social Development
	Mr. Eli Francis	Director of Social Development	efrancis_svg@ymail.com	456-1111 ext 400	Gender; Social Development
	Mrs. Sandra Augustus	Gender Affairs Division	sandraaug@hotmail.com	456-1111 ext 395 or 396	Gender; Social Development
	Mr. Roger Young	Community Development Supervisor	rogeraly@hotmail.com	456-1111-ext 501	Social Development
Ministry of National Security	Mr. Godfred Pompey	Permanent Secretary	office.natsec@mail.gov.vc		Coastal Zone Management
	Mrs. Doreen Simmons	Senior Assistant Secretary	office.natsec@mail.gov.vc	4561703	Coastal Zone Management
St. Vincent and the Grenadines Coast Guard	Lieutenant Commander. Brenton Cain	Lt. Commander	office.coastguard@mail.gov.vc	4574578	Coastal Zone Management
	Lieutenant Henry	Lieutenant	office.coastguard@mail.gov.vc	4574578	Coastal Zone Management
St. Vincent and the Grenadines Maritime Association	Mr. David Robin	Head	svgmarad@gmail.com	4561378	Coastal Zone Management
St. Vincent and the Grenadines Fire Services				4571211	Forestry Resources

Energy Unit	Mr. Leonard Dean	Head		4500369	
National Emergency Management Organisation (NEMO)	Mrs. Michelle Forbes	Director of NEMO	nemosvg@gmail.com	456-2975	Physical Infrastructure; Coastal Zone Management; Natural Resources; Disaster Vulnerability
	Mrs. Houlda Peters	Training Officer	nemosvg@gmail.com	456-2975	
Ministry of Tourism	Mrs. Lavern Grant		tourism@vincysurf.com	4571502	Tourism Resources
	Ms. Vida Bernard		tourism@vincysurf.com	4571502	Tourism Resources
	Ms. Faylene Findlay-Scrubb		tourism@vincysurf.com	4571502	Tourism Resources
National Parks, Rivers and Beaches Authority	Mr. Andrew Wilson		nationalparks@vincysurf.com	4531623	Natural Resources, Coastal Zone Management; Marine Resources; Biodiversity; Water resources
	Mr. Hayden Billingy	Superintendent of Rivers, Beaches and Recreation sites	nationalparks@vincysurf.com haydensvg2003@yahoo.com	4531623	GIS; Natural Resources; Coastal Zone Management; Water Resources
	Andrew Lockhart	Superintendent of Marine and Terrestrial parks	nationalparks@vincysurf.com	4531623	Marine Resources; Biodiversity; Natural Resources; Forest Resources; Water Resources
Ministry of Housing, Physical Planning, Land and Informal Settlements	Mr. Kenwick Glynn	Permanent Secretary	office.housing@mail.gov.vc	4562050	Physical Infrastructure
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St. Vincent and the Grenadines Meteorological Office			svgmet@gmail.com metoffice.airport@mail.gov.vc		Legal Affairs

International Airport Development Corporation (IADC)	Dr. Rudy Mathias				Physical Infrastructure
	Mr. Jeffery Cato				Physical Infrastructure
Basic Needs Trust Fund (BNTF)	Mr. Kenneth Douglas				Physical Infrastructure; Social Infrastructure
Central Water and Sewage Authority	Mr. Garth Saunders	General Manager	cwsa@vincysurf.com		Water Resources; Physical Infrastructure
	Mr. Marco Audain	Engineer	cwsa@vincysurf.com		Water Resources; Physical Infrastructure
Ministry of Finance and Economic Planning	Mr. Maurice Edwards	Director General of Finance and Planning			
	Mrs. Laura Anthony Browne	Director of Planning	cenplan@vincysurf.com		Economic Analysis; Investment Promotion; Water Resource Management
	Ms. Decima Corea	Deputy Director of Planning (ag)	cenplan@vincysurf.com joiedeci@yahoo.com		Economic Analysis; Disaster Vulnerability
	Ms. Ingrid Fitzpatrick	Accountant General			Economic Analysis; Budgeting; Investment Promotions
	Mr. Edmond Jackson	Budget Director			Economic Analysis; Budgeting; Investment Promotions
	Ms. Deidre Anthony	Senior Economist, Economic Research and Policy Unit			Economic Analysis, Debt Management
	Mr. Berisford George	Senior Economist, Economic and Social Policy Unit	berisg@gmail.com	457-1746	Economic Analysis; Agriculture; Social Analysis
	Mr. Trelson Mapp	Economist; PPCR Coordinator	trelmapp@gmail.com;	457-1746	Economic Analysis; Disaster Vulnerability; Social Analysis
	Ms. De Anna Ralph	Social Analyst	delralph@gmail.com	457-1746	Social Analysis; Gender
	Ms. Joel Warren	Social Analyst	gdjwarren@yahoo.com	457-1746	Social Analysis; Gender
	Ms. Ronette Jordan	Project Officer	Tett45@hotmail.com		Disaster Vulnerability; Economic Analysis
	Ms. Marcelle Edwards-John	Coordinater, Project Coordination Unit	svgpcu@vincysurf.com		Disaster Vulnerability; Economic Analysis
	Mr. Maurice John		svgpcu@vincysurf.com		Disaster Vulnerability;

					Physical Infrastructure; Coastal Zone Management
	Mr. Sheik Kadir	Head European Development Fund Project Coodination Unit (EDFPMCU)	edfstatus@gmail.com edfpmcu@vincysurf.com		Disaster Vulnerability; Physical Infrastructure; Water Resources
St. Vincent and the Grenadines' National Trust	Ms. Rachel Moses		svgntrust@vincysurf.com	451-2921	
Grenadines' Affairs	Mr. Herman Belmar		humpback1952@yahoo.com	458-3510	
SANDWATCH	Ms. Joan Stowe				
Sustainable Land Management	Mrs. Lystra Culzac-Wilson				
St. Vincent and the Grenadines' Hotel and Tourism Authority	Ms. Francelia Marksman		svghotels@vincysurf.com chicconcepts@yahoo.com	458-4379	
Private Climate Change Activists	Mr. Morrison Baisden	Self-Employed expert on climate Change		456-9222	
	Mr. Andrew Simmons		jimpy_simmo@yahoo.co.uk kingshill.reserve@gmail.com	456-9533	
St. Vincent and the Grenadines' Chamber of Industry and Commerce				4571464	
Social Investment Fund	Mr. Bentley Browne	CEO		4566853	
St. Vincent and the Grenadines Electricity Services Ltd	Mr. Thornley Myers	Managing Director	vinlec@vinlec.com	4561701	Energy, Water resources

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Academic Research	2000	GPS Geodetic Constraints on Caribbean-North America Plate Motion	Geophysical Research Letters, Vol 27, #3, Pp 437-440, Feb. 1, 2000, DeMets, C. et al.
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Academic Research	1988	The influence of Geology and Karst Development on the formation fo Freshwater Lenses on Small Limestone Islands	Mather, John, D, British Geological Survey, in IAH 21st Congress, Karst Hydrogeology and Karst Environment Protection, 10-15 October, 1988, Gulin, China, PP 423 - 428.
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Antigua and Barbuda	1997	19 Effects of Hurricane Luis (September 1995) on Structures in Antigua	Gibbs t. Pub. #3, Pp 165-177, Natural Hazards and Hazard Management in the Greater Caribbean and Latin America
Antigua and Barbuda	2003	Status of Hazard Maps, Vulnerability Assessments and Digital Maps: Antigua & Barbuda, Country Report	Caribbean Disaster Emergency Response Agency (CDERA)
Antigua and Barbuda	1998	Antigua and Barbuda National Plan to Reduce the Vulnerability of Schools to Natural disaster 1998	Government of Antigua and Barbuda
Antigua and Barbuda	2001	Antigua and Barbuda's Initial National Communication on Climate Change	Government of Antigua
Antigua and Barbuda	2002	Antigua Disaster Management act of 2002 No 13 of 2002	Government of Antigua and Barbuda

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Antigua and Barbuda	1967	Chapter 147, The Emergency Powers Act	Government of Antigua and Barbuda
Antigua and Barbuda	2000	HOUSING SECTOR RECOVERY PLAN ANTIGUA AND BARBUDA	Organization of American States
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Dominica	2009	Volcanic Processes Inferred from GPS Geodesy, Dominica, Lesser Antlles (PPT)	
Dominica	2002	2002 Physical Planning Act 5, Commonwealth of Dominica	Commonwealth of Dominica
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Dominica	1999	Progress Bulletin_ Post-disaster Response_ Landslide Dam in the Layou River, Dominica	CDMP - OAS, USAID, EU
Dominica	2000	Volcano Hazard Report for Southern Dominica, Interpretation of 1998-2000 Earthquakes and Hazard Mapping Results	THE UNIVERSITY OF THE WEST INDIES, SRU
Dominica	2009	NATURAL HAZARDS AND DISASTERS LANDSLIDES IN DOMINICA	http://www.mona.uwi.edu/uds/Land_Dominica.html
Dominica	2003	Dominica's National Report on Barbados Programme of Action +10, July 2003	Government of Dominica
Dominica	2009	Enhancing Gender Visibility in Disaster Risk Management and Climate Change in the Caribbean, Country Assessment Report for The Commonwealth of Dominica	Erika Ellis, UNDP
Dominica	2007	FAO AGRICULTURAL DAMAGE ASSESSMENT MISSION TO DOMINICA FOLLOWING HURRICANE DEAN, TCP/DMI/3102, PRELIMINARY SUMMARY OF FINDINGS AND RECOMMENDATION, 9/17/2007	FAO
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EC regional	1999	Reference Criteria for Consulting Services for Infrastructure Projects Part II: Guidelines for Maintenance	Gibbs, T. OAS CDMP
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EC regional	2001	A Strategy and Results Framework for Comprehensive Disaster Management in the Caribbean	Cdera, Bisek, Paul A., et al
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EC regional	N/D (2003)	Comprehensive Disaster Management, Strategy and Programme Framework 2007-2012	Baastel-ESL (Canada-Jamaica) Co

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EC regional	2009	NATURAL HAZARDS AND DISASTERS, LANDSLIDES IN THE WINDWARD ISLANDS	Unit for Disaster Studies, UWI Mona, Jamaica,http://www.mona.uwi.edu/uds/Land_Windward.html
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St. Kitts and Nevis	2007	Lessons Learnt from Recent Cyclone Activity, St. Kitts-Nevis (PPT)	Nema St. Kitts, Government of St. SKN
St. Kitts and Nevis	2001	St. Kitts and Nevis, Hazard Vulnerability Assessment: Final Report	OAS, Edwardo M. Mattenet
St. Lucia	2003	Status of Hazard Maps, Vulnerability Assessments and Digital Maps: St. Lucia, Country Report	Caribbean Disaster Emergency Response Agency (CDERA)
St. Lucia	2006	Vulnerability Assessment of Critical Facilities, Saint Lucia, West indies	CIPA
St. Lucia	2005	Country Report, Legislative Review and Institutional Capacity Assessment for Hazard Mitigation St. Lucia	CDERA and CDB
St. Lucia	1997	OECS Building Code St Lucia 1997	Caribbean Community Secretariat And OECS, Gibbs, T.

St. Lucia	2009	NATURAL HAZARDS AND DISASTERS, LANDSLIDES IN St. Lucia	http://www.mona.uwi.edu/uds/Land_St_Lucia.html
St. Lucia	2006	Disaster Management Act, #30, 2006	Government of St. Lucia
St. Lucia	2007	Saint Lucia National Emergency Management Plan 2007	Government of St. Lucia
St. Lucia	1995	Emergency Powers Act (Disasters), 1995	Government of St. Lucia
St. Lucia	2000	Disaster Preparedness and Response Act, #13, 2000	Government of St. Lucia
St. Lucia	2009	Interim national progress report on the implementation of the Hyogo Framework for Action	Government of St. Lucia
		2001 Population and Housing Census Report	Government of St. Lucia
St. Vincent	2003	Status of Hazard Maps, Vulnerability Assessments and Digital Maps: St. Vincent and the Grenadines, Country Report	Caribbean Disaster Emergency Response Agency (CDERA)
St. Vincent	2006	Implementation Completion Report, Emergency Recovery and Disaster Management Project, St. Vincent and the Grenadines	The World Bank
St. Vincent	2009	NATURAL HAZARDS AND DISASTERS, LANDSLIDES IN St. Vincent and the Grenadines	Unit for Disaster Studies, UWI Mona, Jamaica http://www.mona.uwi.edu/uds/Land_Windward.html
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St. Vincent	2009	State of Disaster Management in SVG PM address	Gonsolves, R
St. Vincent	2006	SAINT VINCENT AND THE GRENADINES NATIONAL EMERGENCY AND DISASTER MANAGEMENT ACT, 2006	Government of St. Vincent
St. Vincent	2005	St. Vincent and the Grenadines National Disaster Plan	Government of St. Vincent
St. Vincent	2009	Correspondence - Country_Status Report_St_Vincent to CDERA	NEMA, Government of St. Vincent
St. Vincent	2009	Correspondence - NEMA CWork plan 2012	NEMA, Government of St. Vincent
St. Vincent	2009	SVG NEMO CDEMA Country Report St. Vincent 2009.doc	Government of St. Vincent NEMO St Vincent and the Grenadines

St. Vincent	2003	Report to the Regional Consultation on SIDS Specific Issues, St Vincent and the Grenadines, 2003	Lystra Culzac-Wilson, BPOA
St. Vincent	N/D (1998)	Hurricane Vulnerability and Risk Analysis of the VINLEC Transmission and Distribution System	OAS, USAID, UNDP

CIF & PPCR Documents

Date	Title	Author
2009	Proposal prepared by Inter-American Development Bank and World Bank Group for PPCR Regional Program for the Caribbean	
2010	CIF Knowledge Management - Creating the Capacity to Act	Joint Meeting of the CTF and SCF Trust Fund Committees
2010	Pilot Programme on Climate Resilience (PPCR): Financing Modalitiies	CIF
2009	The Selection of Countries to Participate in the Pilot Programme for Climate Resilience: Report of the Expert Group to the Sub-Committee of the PPCR	CIF; Expert Group
2009	Guidance Note on PPCR Regional Programs	
2010	Mozambique: Proposal for Phase 1 funding	Meeting of the PPCR Sub-Committee
2009	GUIDELINES FOR JOINT MISSIONS TO DESIGN PPCR PILOT PROGRAMS (PHASE I)	CIF
N/D	Developing Nepal's Strategic Program for Climate Resilience (SPCR) : Prioritisation Planning Process (DRAFT)	Governement of Nepal
2009	PROGRAMMING AND FINANCING MODALITIES FOR THE SCF TARGETED PROGRAM, THE PILOT PROGRAM FOR CLIMATE RESILIENCE (PPCR)	CIF
2008	THE PILOT PROGRAM FOR CLIMATE RESILIENCE UNDER THE STRATEGIC CLIMATE FUND	
2010	A Strategy to Engage the Private Sector in Climate Change Adaptation in Bangladesh	Asian Tiger Capital Partners
2010	Strategic Program for Climate Resilience - Bangladesh	CIF: Meeting of the SPCR Sub-Committee
2010	CIF Joint Mission Reporting Requirements and Procedures	MDB Committee CIF
2010	Pilot Program for Climate Resilience Caribbean Regional Proposal	Inter-American Development Bank
N/D	Pilot Program for Climate Resilience Caribbean Regional-Track Background Document - Regional Framework	Inter-American Development Bank and World Bank
2009	Supplemenetary Report of the PPCR Expert Group	PPCR Expert Group; CIF

CCCCC & UNECLAC Documents

2010	Economics of Climate Change in Latin America and the Caribbean	Barcena, A., Prado, A.,Samaniego, J., Malchik, S.	2010 Economics of Climate_Change
2009	Climate Change and the Caribbean: A Regional Framework for Achieving Development Resilient to Climate Change (2009-2015)	Caribbean Community Climate Change Centre 2009	Regional Framework for Resilience CCCCC

World Bank Documents

Date	Title	Author
2004	RAPID ONSET NATURAL DISASTERS: THE ROLE OF FINANCING IN EFFECTIVE RISK MANAGEMENT	Gurenko, E., Lester, R., World Bank Policy Research Working Paper 3278;
2010	Cost Benefit Analysis in World Bank Projects	IEG World Bank, IFE, MIGA; Fast Track Brief, 2010.
2010	REGIONAL PARTNERSHIP STRATEGY FOR THE ORGANIZATION OF EASTERN CARIBBEAN STATES FOR THE PERIOD FY10-FY14	Caribbean Country Management Unit, International Finance Cooperation, Latin America and the Caribbean
2006	Project Appraisal Document for Implementation of Adaptation Measures in Coastal Zones Project	Environmentally & Socially Sustainable Development Sector Management Unit, Caribbean Country Management Unit, Latin American and Caribbean Region
2007	Impact of Sea Level Rise on Developing Countries: A comparative Analysis	Dasgupta,S., Laplante, B. Meisner, C. Wheeler, D. & Yan J. World Bank Policy Research Working Paper 4136;
	Implementation Completetion Report on EMERGENCY RECOVERY AND DISASTER MANAGEMENT PROJECT	Finance Private Sector and Infrastructure Department

7. Brainstorming Workshop Summaries January 2011

Minutes of the meeting of the Technical Working Group
Of the
Pilot Programme for Climate Resilience
(PPCR)
Of
St. Vincent and the Grenadines
Wednesday 5th January, 2010

In attendance were:

Yasar Belmar	Environmental Resource Analyst; Environmental Management Unit
Hayden Billingy	Superintendent of Rivers Beaches and Recreation Sites; National Parks, Rivers and Beaches Authority
Samantha Bullock	Economist; Central Planning Division
Scott Cunliffe	Lead Consultant/PPCR; World Bank
Michelle Forbes	Director (ag) National Emergency Management Organisation (NEMO)
Nyasha Hamilton	Environmental Educator; Environmental Management Unit
Dornet Hull	GIS Officer; Ministry of Housing, Physical Planning, Land informal settlements etc.
Edmund Jackson	Director, Environment Management Department
Trelson Mapp	Economist; Central Planning Division
Francelia Marksman	St. Vincent and the Grenadines Hotel and Tourism Association
FitzGerald Providence	Senior Forestry Supervisor; Ministry of Agriculture, Forestry and Fisheries
Tashana Providence	GIS Mapping Officer; Central Planning Division
De Anna Ralph	Social Policy Coordinator; Central Planning Division
Grace Warren	Technical Assistant Social Development; Central Planning Division
Roxanne Williams	Administrative Cadet; National Emergency Management Organisation (NEMO)

Agenda Items:

1. **Opening Remarks and Brief Update of PPCR progress**
   The PPCR Coordinator, Mr. Trelson Mapp in his opening remarks congratulated the members of the Technical Working Group on a job well done in formulating the PPCR Phase 1 proposal for St. Vincent and the Grenadines. Mr. Mapp further indicated that this proposal was accepted by the Climate Investment Funds with little criticisms from the donor countries of the PPCR, on November, 22nd 2010.

Mr. Mapp also spoke briefly about the procurement process of hiring the lead consultant for the PPCR. He then conveyed that the progress on phase 1 was momentarily challenged by slow expressions of interest from potential candidates for the other positions, particularly GIS/Data Management Specialist and Legal Specialist.

Mr. Mapp also reported on his visit to Washington, District of Columbia during the week on November 9th to 13th 2010 for a series of PPCR related meetings with the World Bank, the Inter-American Development Bank, members of the PPCR trust fund committee and other PPCR countries.

2. Introductions

Mr. Mapp then introduced the Lead Consultant of the PPCR in St. Vincent and the Grenadines, Dr. Scott Cunliffe. Dr. Cunliffe then expressed his excitement in being awarded the contract and his desire to be involved in such an integral assignment.

3. Outline of meeting agenda/purpose

Dr. Cunliffe outlined the purpose of the meeting and gave a brief outline of the workplan for the Phase 1 of the PPCR. He highlighted the intention to have three (3) half-day workshops as part of the process. The intention according to him, to host one on each of the following themes:

- Social Vulnerability
- Economic Vulnerability
- Environmental/Disaster vvulnerability

Dr. Cunliffe then outlined that, "***Understanding Vulnerability is the Key to Building Resilience***". In his presentation, he further declared that the assignment would be guided by four (4) principles:

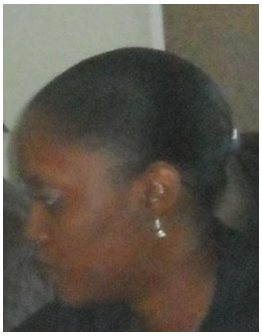
- Make use of available materials;
- Avoid duplication;
- Respect the team effort; and
- Never lose sight of families and communities. The aim is to minimize the impact of disasters on families and communities.

4. Rapid Brainstorm

Members at the meeting were divided into three groups, namely, environmental, social and economic, using simple random sampling. A brainstorm exercise was conducted in each group to list areas that are vulnerable in each sector **(See attached).**

5. **Presentation of Priorities outlined in Brainstorm Exercise**
   - Ms. De Anna Ralph presented for the social group;

   - Ms. Tashana Providence presented for the economic; and



   - Ms. Yasa Belmar presented for the environment group. (see attached also).

6. **Questions and Answers**

Mr. Edmund Jackson enquired about whether proposed sectors in the phase 1 proposal would be lost using the approach outlined by Dr. Cunliffe of having three (3) half day workshops, for environmental, social and economic sectors, respectively.

Dr. Cunliffe replied that we must in the end, design the PPCR around the sector contributions; this is what will make it 'real'. Any proposed project or programme in the Phase I PPCR will necessarily fall under one or more sectors (in this case a sector meaning say Transport, Health, Public Works etc.). Whether we arrange the workshops around; a) social, economic and environmental issues, vulnerabilities and priorities, or whether we structure them around the sectors (Coastal Mgt., Watershed Mgt., Legal and Legislative Aspects, and GIS / Data Management), in the end we results will likely be the same. Given the prior use of these more general 'sectors' as in b) above, then we should stay with that for the workshops.

ADDENDUM:

In follow-up meetings with the Ministry of Health and Environment, the above discussion was re-opened. The following summarises the proposed arrangement of the Workshops:

a. We will retain the sectoral approach, there will therefore be four half-day Workshops, co-hosted by the Ministry of Finance and the Ministry of Health and Environment:
    i. Coastal Mgt.,
    ii. Watershed Mgt.,
    iii. Legal and Legislative Aspects, and
    iv. GIS / Data Management)
b. The purpose of the Workshops will therefore be to i) have a practical presentation from the specialist consultant, ii) outline/discuss/understand what exists (including gaps), and iii) Review institutional arrangements, public education opportunities and training needs (again noting gaps).

This information will be prepared in detail to outline the respective Workshops, attendees, venue, dates etc. It will be important that the specialist consultants are on board to participate.

7. Any Other Business, Adjournment

The meeting was adjourned at 11:30 am.

Pilot Project for Climate Resilience

SAINT VINCENT AND THE GRENADINES

PHASE ONE

December to March 2011

Technical Working Group

Meeting: 5 January 2011

Dear TWG members:

The following is a brief summary of the brainstorming we did last Wednesday. Thanks to those who were able to attend and contribute.

As promised we are working on an outline for the follow-on three half day workshops that will occur in the next two weeks. This will be forwarded for your inputs shortly. We are also looking at ways and means of engaging private companies and organizations to be active partners in building climate change resilience in SVG.

Also, after further discussions with the Ministry of Health and Environment, it was suggested that we not lose that 'sectoral' focus that has been with the development of the proposal throughout. This will be the basic structure of the Workshops: to then match practical, implementable projects and programmes to the priorities for transforming national policies and development to be increasingly resilient to the changing climate.

Your continued assistance and contributions will be critical to the quality and success of the project. It is in our collective interest to make this the best PPCR in the Caribbean!!!

An update from recent discussions with the other PPCR countries nearby (St. Lucia and Grenada) will be sent through shortly FYI. We will also set dates for the next TWG meeting. The additional consultants for the Team have been selected, and are going through the contract procedures right now; we hope to have some of them on the ground late next week.

Regards, PPCR team.

Date	*Organization/Location*	*Who*	*Purpose*
Wednesday 5 Jan 0930-1100hrs	TECHNICAL WORKING GROUP (TWG), Ministry of Finance and Economic Planning – Central Planning Division	SEE ATTENDANCE LIST INCLUDED IN A SEPARATE REPORT IN THE ATTACHMENTS	Introduction and Brainstorming on Vulnerability and priorities, progress update on Project

Meeting Notes:

1. SEE SEPARATE REPORT ON THE RESULTS OF THE BRAINSTORMING FROM THIS SUBSTANTIVE MEETING.
2. A **brainstorming** session was facilitated to focus on vulnerabilities and priorities in three areas: social, economic and environmental vulnerabilities to a changing climate.
3. There were 15 members present coming from a variety of government and non-government organizations. The meeting was very productive. More time for discussion will be allowed in future meetings.
4. There will be three follow-up **Workshops** (half-day each, focussing on social, economic and environmental vulnerabilities), utilizing the results of this brainstorming, to drill down to specifics, to the Sectoral implications of how to address the vulnerabilities identified, costs, benefits, responsibilities and resource requirements, in as much detail as possible.
5. The results from the Workshops, together with guidance provided by the TWG, will significantly shape the PPCR and subsequent investment plan.
6. It was agreed that the TWG should meet again at or prior to key milestones or within two to three weeks maximum during the PPCR preparations. A Schedule for TWG meetings will be prepared by SC.

End

Brainstorming

Technical Working Group

Pilot Project for Climate Resilience

Vulnerabilities

Four groups – SOCIAL
ECONOMIC
ENVIRONMENTAL
DISASTERS

- ✓ Much has been done on various vulnerabilities in St. Vincent and the Grenadines.
- ✓ This exercise is deliberately short, just do as much as possible in the time !!!
- ✓ …. your knowledge and your experience will guide your Group's work
- ✓ We will not capture everything, but we will get the major items.
- ✓ More detailed and specific information will come from three later Workshops

The Job:

- ❑ In these Sectors, brainstorm amongst the group, then write down (list) the most important things, places, people, groups, organizations etc. that you think are vulnerable to the impacts of a changing climate (in your Group's SECTOR).

You may wish to list these vulnerabilities as IMMEDIATE, or LONG TERM, or Priority ONE, Priority TWO or just list what you believe as most vulnerable aspects of Vincentian community, society, life in general, livelihoods, economy and physical environment. HOW WILL CLIMATE CHANGE AFFECT YOU?

THI DOES NOT HAVE TO BE SCIENTIFICALLY CORRECT!!!
…have fun…

THE WORLD BANK

Tuesday 4 January 2011

ENVIRONMENTAL

VULNERABILITIES AND PRIORITIES

LIVELIHOODS AT THE CENTRE *… this is largely a coastal culture and society…*

BIO-DIVERSITY:

- ⑥ FORESTS
- ⑥ MARINE
  - o FISH
  - o TOURISM
    - ▪ RECREATIONAL AREAS
    - ▪ PROTECTED AREAS
    - ▪ COASTAL ENVIRONMENTS/ECOSYSTEMS
- ⑥ NATURAL LNADSCAP/SEASCAPE
- ⑥ WATER
- ⑥ FOOD

AGRICULTURE:

- ⑥ WATER

- FISHERIES
- CROPS AND LIVELIHOODS
- LAND RESOURCES

FORESTS:

- **INDIGINOUS SPECIES**
- **FOOD**
- **WILDLIFE**
- **WATER**

HEALTH

- **HUMAN HEALTH**
- **ENVIRONMENTAL HEALTH**

INFRASTRUCTURE

- **HOUSING**
- **ROADS, BRIDGES**
- **ARIPORTS**
- **5M COASTAL ZONE (***primary focus, key concentrations of people, infrastructure)*
- **SLOPES RIVERS FLOOD PLAINS** *(flash floods)*

ECONOMIC
VULNERABILITIES AND PRIORITIES

THINGS:

- Farmlands – Vegetation/Crops
- Forests
- Housing
- Fishing Industry
- Road Network

PLACES:

- Coastal Zones (lower lying)
- Infrastructure
- Hotels, jetty, restaurants, dive shops
- Commercial areas
- Historical sits
- Fisheries
- Shelters

PEOPLE:

- In sub-standard housing
- Farmers
- Fisherman (folks)
- In service industry
- Marginalized (women, children, elderly, rural areas)

GROUPS/ORG:

- NEMO
- Health canters
- Educational institutions
- NOG's (red cross, etc)
- Religious org.

Social Vulnerabilities

PPCR Brainstorming session

(01.05.11)

Education

School Curriculum (content structure)

Health

- Hospital space

- Diseases resulting from flooding and improper solid waste disposal (Solid Waste Management)

Agriculture

- Food Supply/Food Security

- Safe Water

Poverty

- Increased risk of falling into poverty- climate change would generate new and increase other social vulnerabilities

Housing

- Relocation to interior of the country

Family

- Displacement

- Negatively impact on the structure of families

Gender

- Women who may be in shelter and other safe house are likely to be exposed to issues of violence/abuse

- Men when outside of homes (shelter or safe houses) may not feel they have full control on the family in terms of decision making, protection and provision for their families.

Climate change can impact on the self esteem of both males and females.

Children

- Education get disrupted

- Security

Social Security

Protection – (Family, homes, institutions)

Mental Issues

Stress/Trauma (effect on children, elderly, disabled)

7. Key Meetings and Notes

Pilot Programme for Climate Resilience

SAINT VINCENT AND THE GRENADINES

PHASE ONE

December to March 2011

Meeting Reports

10 January 2011

NB: *The following report presents a summary of meetings with key persons in St. Vincent and the Grenadines over the course of the project. The purpose is to ensure the records of those discussions are available for inclusion in the required reporting processes. Many specific recommendations emerge from these meetings; most are mentioned in the Meeting Notes.*

Not all meetings are noted here, only those sith substantive discussions and results that may contribute to the PPCR.

Following some meetings, these recorded notes have in some cases been forwarded to those in attendance for verification when required, and revised accordingly.

Date	Organization/Location	Who	Purpose
Friday 24 Dec	Ministry of Finance and Economic Planning – Central Planning Division	**Mrs. Laura Anthony-Browne** – Director of Planning; Trelson Mapp – Economist; Scott Cunliffe **	Introduction

** SC = Scott Cunliffe

Date	Organization/Location	Who	Purpose
Wednesday 29 Dec	Ministry of Finance and Economic Planning – Central Planning Unit	**Mrs. Decima Corea** – Deputy Director of Planning, Scott Cunliffe	Discussion of National Economic and Social Development Plan 2011-2025

Meeting Notes:

1. National Economic and Social Development Plan 2011-2025 (NESDP) is in draft form at present, not for distribution.
2. The recent elections held up finalization of the plan for endorsement by the Prime Minister. The preparation of the Budget will now take precedence over the NESDP finalization. The Budget will be completed before the end of January at which time, work on the NESDP can restart.
3. SC pointed out the significance of the NESDP and the subsequent Sectoral Plans, as a primary document for identifying opportunities to be inclusive of climate resilience guidelines, policies and programmes. At this stage, the generally 'broad-brush' approach of the NESDP, is an ideal opportunity to consider the inclusion of additional climate resilience guidance and strategies. The first stage then will be to screen the document for possible areas and opportunities to mainstream climate resilience into the Objectives and Strategic Interventions.
4. Goal Four (Improving physical infrastructure, preserving the environment and mitigation the impact of climate change) will be the focus of mainstreaming climate resilience considerations.
5. The document is structured around five main goals under which Objectives and Strategic Interventions are detailed. The operationalisation of these Strategic Interventions will occur at implementation, following the development of the Sectoral Plans.

Date	Organization/Location	Who	Purpose
Wednesday 29 Dec	Ministry of Finance and Economic Planning – Central Planning Division	**Mr. Dwayne Allen** – GIS, Ministry of Housing, Physical Planning and Informal Settlements (MHPPIS); Trelson Mapp – Economist; Scott Cunliffe	Mapping capacity assessment and discussion

Meeting Notes:

1. This facility is the man Government mapping facility. There are two plotters and several computers, using ARCView and other software, predominantly mapping site maps for development approval processes and land use planning. Dwayne is on the Technical Working Group (TWG).
2. The computers were down at the time, and have been for some days. Only small-scale pdf versions of maps/plans for development approvals could be generated.
3. Disaster data (impacts, extent of damage, losses – households, buildings, shelters etc.) is provided by NEMO. MHPPIS does not systematically collect this type of data.
4. Immediate needs are substantial in terms of an upgraded mapping capacity to the benefit of National planning and managing developmental processes – hardware and expertise. This should be investigated in detail by the GIS consultant in January.

Date	*Organization/Location*	*Who*	*Purpose*
Wednesday 29 Dec	National Emergency Management Organization – Meeting at Ministry of Finance and Economic Planning – Central Planning Division	**Ms. Michelle Forbes** –Director of National Emergency Management Organization (NEMO), Trelson Mapp – Economist; Scott Cunliffe	Discussion of National Economic and Social Development Plan 2011-2025

Meeting Notes:

1. Established in 2002 following a WB supported project, NEMO has been functional for nearly ten years (10-year celebrations in 2011). National Disaster Management Act came into law in 2006. This is now overdue for significant revisions. The legislation was built on the CEDMA model in 2006, which itself has since been revised. The Act is 24pp. and takes an 'all hazards' approach, focusing on Shelter Management and Vulnerable Areas. There is no mention of climate change, adaptation or resilience. NEMO is mainly active in public education, relief management and recovery and shelter management. Staffing is low and lacks some highly skilled Risk Management expertise. The Annual budget is approximately EC$700,000.
2. No hazard maps or evacuation plans are available. This is an urgent need. A high level of poverty amongst rural and peri-urban populations creates an accentuated vulnerability to disasters in these largely coastal towns along both Windward and Leeward coastlines. Thus the high level of impacts as indicated by Hurricane Thomas in October this year, even though it did not make landfall on SVG.
3. The status of disaster shelters is monitored annually. This is a result of a strong inter-ministerial approach that identifies various appropriate building types (along the coastline mostly) that are subsequently used as hurricane shelters in times of need. The main hurricane events in the last decade are: Ivan 2004, Dean 2007, Omar 2008, Thomas 2010.
4. Marine protection legislation only covers Protected Areas. This is an issue that needs urgent attention; the impacts of recreational boating on marine ecosystems, and the long-term health and welfare of those ecosystems, so valuable to the tourism industry, fishing and coastal management. David Robin is the Maritime Officer to talk to about the legislation to see if climate resilience could be relevant to extending further protection to other areas.
5. The level of awareness and knowledge of early warning systems and basic hurricane protection systems is low at best. The population has become somewhat complacent since there has been no significant hurricane damage and loss for many years.
6. The 2011 Census posed an opportunity to collect data of relevance to protecting coastal populations from likely future impacts of climate change, and to collect relevant climate resilience data. This needs to be investigated urgently.
7. Specific needs of NEMO include: technical staff and expertise (GIS, mapping and other technical capacity); hazard maps (the full extent of disaster risk management mapping); and the need to get other Ministries involved in the management of disaster impacts, preparedness and recovery processes. Public education is currently inadequate. This is not a major expense, rather a matter of having the people in NEMO to deliver. The existing building is n need of urgent basic maintenance and upkeep. Finally, there need to be a thorough evaluation of the organization; overall performance, resource use, capacity assessment, mandate and responsibilities etc.

Date	Organization/Location	Who	Purpose
Monday 3 Jan	Ministry of Finance and Economic Planning – Central Planning Division	**Ms. Ronette Jordan** – Project Coordinator, DVRP	Discussion of Disaster Vulnerability Reduction Project

Meeting Notes:

1. Project focuses on disaster preparations/preparedness, the legal aspects of DRR and critical public infrastructure. Data and data management needs are also addressed.
2. Ronette will provide the PPCR team with all relevant documents from the DVRP (I already have Resettlement Plan, proposed financials)
3. The DVRP has a large investment portfolio (+/- USD$40 m), of which some EC$20m could be used for immediate response should the need arise.
4. The project has been stalled since the needs assessment in February 2010 was followed by the WB Mission (for prioritization), then the Min of Finance review (again for prioritization), then Cyclone Tomas occurred!
5. Current status – in preparation, environmental impact assessment underway, social assessment of activities also underway.
6. SC requested a short (one page) on the status of the project to use in the Inception Report.
7. AVOIDING OVERLAP: key topic of discussion. Eventually the work will be merged – SC to follow this up with Niels and Justin (WB).
8. SC suggested that the DVRP also make clear statements about the relationship to the PPCR and this should be included in the current work/activities, not just the financial plan.
9. There were components of the DVRP we were unable to discuss at the time including: the Resettlement report, the EIA, the social assessment, proposed financial breakdown and other components.
10. This was an initial meeting; we will need to discuss in detail a number of issues as the PPCR nears the mid-point, and after clarification is sought from the WB and discussions with Justin 10-11 January.

Date	Organization/Location	Who	Purpose
Wednesday 5 Jan 0930-1100hrs	TECHNICAL WORKING GROUP (TWG), Ministry of Finance and Economic Planning – Central Planning Division	SEE ATTENDANCE LIST INCLUDED IN A SEPARATE REPORT IN THE ATTACHMENTS	Introduction and Brainstorming on Vulnerability and priorities, progress update on Project

Meeting Notes:

8. SEE SEPARATE REPORT ON THE RESULTS OF THE BRAINSTORMING FROM THIS SUBSTANTIVE MEETING.
9. A **brainstorming** session was facilitated to focus on vulnerabilities and priorities in three areas: social, economic and environmental vulnerabilities to a changing climate.
10. There were 15 members present coming from a variety of government and non-government organizations. The meeting was very productive. More time for discussion will be allowed in future meetings.
11. There will be three follow-up **Workshops** (half-day each, focussing on social, economic and environmental vulnerabilities), utilizing the results of this brainstorming, to drill down to specifics, to the Sectoral implications of how to address the vulnerabilities identified, costs, benefits, responsibilities and resource requirements, in as much detail as possible.
12. The results from the Workshops, together with guidance provided by the TWG, will significantly shape the PPCR and subsequent investment plan.
13. It was agreed that the TWG should meet again at or prior to key milestones or within two to three weeks

maximum during the PPCR preparations. A Schedule for TWG meetings will be prepared by SC.

Date	*Organization/Location*	*Who*	*Purpose*
Wednesday 5 Jan **and Friday 7 Jan** 1400-1600hrs	Social Assessment Team, Ministry of Finance and Economic Planning – Central Planning Division	**Trelson Mapp, De Anna Ralph, Grace (Joel) Warren, Samantha Bullock** (all members of the Central Planning Division, Min of Finance)**, Scott Cunliffe**	Initial discussion of social assessments under both PPCR and DVRP, status of the two TORs, how to merge and avoid duplication. DVRP = Disaster Vulnerability Reduction Project

Meeting Notes:

1. This was an initial meeting following the finalization of the Terms of Reference for the Social Assessment Team contributing to the PPCR. This will be the same team undertaking the social assessment and impact evaluation for the DVRP. The Team were interested to know about the possible **methodologies** and expectations under the PPCR project and how to ensure there is no duplication of effort.
2. Recognition of the very time frame of the PPCR – undertaking **training** for example just may not be possible.
3. Key difference between the two assessments lies in DVRP assessing the impacts of specific proposed activities and interventions; PPCR assessment assesses the potential social impacts of climate related hazards on various sectors of the population.
4. SC covered some general aspects of the assessment process: using the descriptive data and information compilation to provide good analytical argument and analytical presentation of findings; the informal housing sector will provide considerable challenges due to the nature of these communities; different vulnerable groups; finding need to reflect recommendations on how to reduce those vulnerabilities; health and disease (vector and airborne) scenarios may be useful) possible epidemic etc.);accessibility to critical infrastructure needs to be considered (possible loss of road links, airport etc.); solid waste, waste water and climate, pollution etc.; necessary inter-agency collaboration, time consuming but critical; psycho-social impacts of disaster events on the population and pre-disaster preparations to have those requisite skills available local (trained persons, RNs, trauma counselling, etc.); framing recommendations could possibly use "pre-disaster, during disaster and post disaster" as sub-categories; consider curriculum development, skills required for this, possible models, incl. all other possible avenues of building awareness and understanding of climate resilience and the impacts on Vincentian society; record all useful/relevant Knowledge products (books reports and other materials), present findings as much as possible graphically, using maps and graphs to illustrate key points; the development of awareness, knowledge and understanding of climate change, climate resilience and adaptation; communications infrastructure may be affected by climate-related damage; emergency evacuation plans will likely also be a basic common good to be considered as a mitigation measure. Other assorted issues arose; the main discussion was around the relationship to the DVRP. Specific details of the four main activities of the PPCR TOR will be discussed on Friday.
5. DVRP TOR for the social assessment was available in August, work began in November, not much has been completed to date. Thirty-three (33) communities have already been identified under the DVPR. It is likely these communities include those in relative "climate hot-spots" along the windward and leeward coasts of St. Vincent and the islands of the Grenadines.
6. We will meet again on Friday afternoon. The team will prepare the following: a list of the main elements where the TOR for the PPCR deviates from the assessment needs as stated in the TOR for the DVRP; prepare for the discussion of the differences in the TORS and strategy to proceed; an outline methodology for the social assessment and an indication of what the mapping needs of the team may be over the course of the assessment. SC will prepare a comprehensive list of tasks, activities and deliverables based on the Terms of Reference.

Date	Organization/Location	Who	Purpose
Monday 10 Jan **and Tues day 11 Jan** all day	Launch of the Grenada PPCR (morning), Meeting of PPCR teams from St. Lucia, St. Vincent and Grenada with WB.	**Justin Locke (WB), Luvette … Crispin… (St. Lucia), Arun Banjaree, Joyce… Margaret… (Permanent Secretary Environment, Grenada) Trelson Mapp, Scott Cunliffe**	Initial discussion of PPCR progress, constraints and opportunities, commonalities, possible shared resources etc. Meeting Chaired by Joyce: touched on a full range of issues relating to the PPCR preparation.

Meeting Notes:

1. Full report from the PPCR meeting being prepared by Justin Locke.
2. The following additional information was sent to Justin and Joyce the morning of Wednesday 12 January:

COMMONALITIES

- **Climate Risk Analysis x2**

Who will formally request Barbara Carby (or Michael Taylor) to summarise the climate risk analysis we need for i) regional, and ii) national (all three countries)? How do we share such costs?

- **GIS data sharing**

Can I suggest that by Friday 4 Feb. (or before if draft available) we agree to share our respective GIS and data management needs/gap analysis? This should indicate likely actions best undertaken collectively (regional) and those that are country-specific (national).

- **Legislative review**

Having agreed that at there is a common basis of legislative instruments and controls, did we decide such a review could be undertaken for all three countries by someone simultaneously? If so, how can this move forward, asap?

- **Tourism**

Indeed, issues regarding climate change impacts on tourism, tourism locations and tourists behaviour (e.g. arrivals forecasting), and the need to build resilience in this significant economic sector are also likely very similar between the three countries? Can we streamline this sector analysis to share amongst us all?

- **Consultation processes**

While we recognized this area may suffer from the time constraints we have, would it be useful to share an outline strategy of how we propose to achieve an acceptable level of consultation and participation of stakeholders (public and private) in the PPCR planning and development process? Could we do this by say a week from now, Wednesday 19th Jan.?

- **Private Sector**

Personally, I would like to discuss more the options/opportunities for actively and meaningfully engaging the private sector. Trelson and I have some ideas, maybe this goes with the consultation point above.

Finally, Justin: we spoke briefly in DC about setting up a temporary Google project site to which we can upload stuff like the above… can you get this going asap, thanks a lot. IT can be pretty simple, no passwords etc.

Date	Organization/Location	Who	Purpose
Friday 7 Jan 1600hrs	Director of Planning, Ministry of Finance and Economic Planning – Central Planning Division	**Laura Anthony-Browne, Director of Planning,** SC	Discussion on "retroactive financing" to support purchasing a printer/plotter for Statistics Division to start generating maps for the PPCR project.

DVRP = Disaster Vulnerability Reduction Project

Meeting Notes:

1. Mrs. Browne agreed that it would be possible to utilise the retroactive financing mechanism to fast-track the financing of the printer/plotter for Statistics so we can commence making maps for the PPCR project suing Statistics data which is built largely on 2007 aerial photo interpretations.
2. Meeting concluded with her agreement to discuss on Monday with procurement, the appropriate account from which the funds should be drawn.
3. Procurement will need to follow WB procurement requirements.
4. SC also met with the Procurement Team in Central Planning to give them the heads up on this approval and to expect the discussion with Mrs. Browne.
5. In this regard, I have secured specifications for what is required and this has been forwarded to Procurement in readiness.
6. UPDATE: AT THURSDAY 13 JANUARY, NO FOLLOW-UP ACTION FROM THE OFFICES OF THE DORECTOR OF PLANNING AS YET.

Date	*Organization/Location*	*Who*	*Purpose*
Wednesday 12 Jan 1200 - 1330hrs	Director of Environment, Ministry of Health and Environment	**Eddie Jackson, Director, Yasa, Nyasha, Trelson,** SC	First wide-ranging discussion with the other key partner for the PPCR. See Agenda below prepared by SC

Meeting Notes:

1. Meeting was very broad, no specific conclusions or agreement made on agenda items, mostly questions from Eddie about the PPCR development and possible Stage Two administration.
2. In discussion of the Workshops, the term "consultation fatigue" was mentioned, following a comment that NONE of the notes, reports or meeting minutes were passed back to the stakeholders from the numerous meetings and discussions help over the course of the last six months or so, including the First Joint Mission, Hurricane Tomas investigations and most importantly, the range of materials collected for the DVMP project development. **SC to follow up with Justin to see is this material is available.**
3. Meeting Agenda below:

   Agenda Draft - Meeting 12:30pm Wednesday 12 January 2011

   Half-day Workshops

   Regarding the proposed half-day Workshops: it would be great if we could do this jointly; Min of Health and Environment and Min of Finance and Economic Planning. It should be your show, and I will assist where required. I have started to prepare a Workshop outline and will forward it to you prior to our discussions on Wednesday if possible (tentative until you and colleagues confirm).

   These workshops will require thorough preparations so as to be able to achieve solid, practical recommendations for priority, sectoral projects and programmes that should be included in the PPCR for possible funding in Phase II. This is the prime objective. We need to drill down to costs, benefits, sustainability, responsible persons/orgs, affects on legislation if any, mainstreaming opportunities. All proposals will need to indicate clear connection to i) resilience building, and ii) inclusion in national priorities (as reflected in budget and legislation). We therefore need to do the preparations together so that those attending are also thoroughly prepared. We want these sessions to be as productive as we can.

   The other general items for this discussion will be as follows:

   1. DOCUMENTATION

      Summary List of all relevant documentation relating to climate change, adaptation and resilience, disaster risk reduction and preparedness - from say the last five to ten years.

   2. PROJECTS AND PROGRAMMES

Summary list and brief descriptions of all (current and proposed from the immediate past) projects and programmes relevant to building climate resilience in SVG.

3. HALF-DAY WORKSHOPS

(as above) but also to discuss the main objectives and the proposed approach and methodology. How can we make these sessions as productive as possible.

4. AWARENESS BUILDING

What are the main components of a programme to build awareness, understanding and knowledge of climate change, resilience and environmental protection (adults, children, elderly, schools, hospitals, Police, Fire Brigade and other persons associated with critical infrastructure)

5. KNOWLEDGE MANAGEMENT

How can we build an accessible collection of materials for public consumption, who would store it, sustain it... etc. Can this be done, has it been done before, can we do it?

6. HAZARD MAPS

This is a critical need for all concerned with climate change, disaster preparedness, response and recovery. Ideas... strategy.. same issues as above... sustainability, updates... etc.

7. OTHER BUSINESS

... there will be other items from your side....

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Date	*Organization/Location*	*Who*	*Purpose*
Thursday 13 Jan 1200-1300hrs	Social Assessment Team, Ministry of Finance and Economic Planning – Central Planning Division	**Trelson Mapp, De Anne, Grace (Joel), Samantha Bullock** (all members of the Central Planning Unit, Min of Finance), SC	Initial discussion of training component, methodology and results requirements, census questions.

Meeting Notes:

1. Discussion of training requirements for field officers, census questions to include climate change issues.
2. SC revised some questions and we added four new questions relating to climate and climate impacts.
3. The Social Assessment team will follow up with Census team to get questions included.

Date	*Organization/Location*	*Who*	*Purpose*
Monday 17 Jan 0900-1300hrs	Field Officer Training Session with Social Assessment Team, Ministry of Finance and Economic Planning – Central Planning Division	**Field Staff (15) Trelson Mapp, De Anne, Grace (Joel), Samantha Bullock** (all members of the Central Planning Unit, Min of Finance), SC	Training session for numerators/field officers from all parishes, introduction to climate change vulnerability and resilience.

Meeting Notes:

1. Discussion; climate change, resilience and adaptation, importance of the social survey.
2. SC presentation on the project.
3. TM introduction to the PPCR and process.
4. SC Slides of SVG vulnerabilities.

5. Training continued until lunch time.

Date	*Organization/Location*	*Who*	*Purpose*
Monday 17 Jan 1100hrs	Director of Planning, Ministry of Finance and Economic Planning – Central Planning Division	**Laura Anthony-Browne, (LAB) Director of Planning, Trelson Mapp,** SC	Project Update, agenda items as below (not in this order).

Meeting Notes:

1. Mrs. Browne informed the Procurement officer that it would be possible to utilise the retroactive financing mechanism to fast-track the financing of the printer/plotter for Statistics so we can commence making maps for the PPCR project using Statistics data which is built largely on 2007 aerial photo interpretations. (Procurement will need to follow WB procurement requirements)
2. Agreed it would be possible to hire Howie Prince for 2 weeks on project budget, to assist SC with final writing of PPCR (possibly start Thursday 3 February, finish Friday 18 February, total 12 working days).
3. Agreed it would be possible to use project budget to pay for minor incidentals for Field Officers, snacks at meetings etc, and transportation costs.
4. Need clarification from WB on use of and access to these funds.
5. SC gave an update on Grenada visit.
6. Agreed in principle on the Launch idea with PM to lead, details to be prepared by SC, TM to follow-up as required, Mrs. Browne offered additional resources if required for the organization.
7. Agreed to meet with PM (LAB, SC and TM) asap after budget is set to discuss national commitment to CCA and building resilience.
8. Agreed the additional questions for the Census was a good idea.
9. Agreed to link Launch to Second Joint Mission timing (10-11 Feb.) while Justin is in SVG also.
10. Meeting concluded with her agreement to discuss possible dates with the PM to meet with Trelson and myself.
11. SC also met with the Procurement Team in Central Planning to follow up on this approval and determine approximate deliver date (week of 31 January at the earliest).
12. Mrs. Browne no interest in attending CIF Tunisia meeting, Trelson could attend if security situation is OK.
13. Agreed Second Joint Mission should proceed. Tentative dates for Thursday 10th and Friday 11th February. PM to speak at Launch on 11th if available. LAB to follow this up.
14. Agreed Final Planning Workshops to occur Monday 31st, Tuesday 1st and Wednesday 2nd February.
15. Agreed we should proceed with the review of the NESDP as soon as possible, add to the relevant sections where possible, sensitizing the document to climate change and building resilience.
16. LAB will write to MoHE if necessary to provide details of what is required for their assistance to the project. Sc to f/u with the details.
17. Agreed the total for the investment plan would be m$5 for the PPCR proposal, unlikely their would be any concessional loan request.
18. Until the 28th Jan. the budget will be the priority!
19. SC provided and update on consultant schedule, hope for arrival all by Monday 31 January.

FOLLOW-UP ACTIONS REQUIRED

20. Inform Howie Prince, inform WB, send STC to Howie, confirm start date (Thursday 3 January), confirm dates.

21. SC to prepare list of activities/contributions from MoHE this week.
22. SC and TM to prepare detailed outline of the launch. Urgent need to begin this organization to work towards the 11th event, incl. School kids, cultural additions (music), venue on the coast/beach.
23. SC to complete the draft Census questions and forward copy to LAB for comment (hard copy).

Date	*Organization/Location*	*Who*	*Purpose*
Monday 17 Jan 1500-1600hrs	Ministry of Tourism…	**Permanent Secretary, Mrs. Laverne Grant, Deputy Secretary Arlene Lewis,** SC	Introduction, Tourism Master Plan, possible involvement with PPCR

Meeting Notes:

1. Discussion; climate change, resilience and adaptation, importance of tourism to the SVG economy. There is no definitive estimate of the contribution that tourism makes to the SVG economy.
2. SC verbal presentation of the project.
3. Tourism Authority set up in 2009. Ministry retains responsibility for public awareness and training.
4. There is no specific legislation covering the tourism sector.
5. Various Acts cover the privately owned islands and parts of islands (Mustique, Canouan)
6. Hotel and Tourism Authority are the best source of contact information for the main private sector companies.
7. Bequia also as a local Tourism Authority.
8. 2007 National Parks Legislation.
9. Tourism Master Plan now under review. There is virtually no mention of climate change or the impacts of CC on tourism. This was not in the brief to the consultants apparently. Under Toursim related infrastructure, there are a few sentences only on water and solid waste disposal. These are two significant issues for the Grenadines' future and building resilience to CC.
10. There is a National Tourism Sector Strategic Plan (2002-2006), the National Marine Tourism Policy (2005) and the National Tourism Policy (2003).

Date	*Organization/Location*	*Who*	*Purpose*
Tuesday 18 Jan 1000-1200hrs	Consultant team (partial)	**David Smith** (plus 2 colleagues from Jamaica office), **Otis Joslyn, Trelson Mapp,**	Intro, Strategy

Meeting Notes:

1. Introduction to all
2. Update on progress
3. Expectations
4. Q+A

Date	*Organization/Location*	*Who*	*Purpose*
Monday 24 Jan 1500hrs	Director of Planning, Ministry of Finance and Economic Planning – Central Planning Division	**Laura Anthony-Browne, (LAB) Director of Planning, Trelson Mapp, Scott Cunliffe**	Project Update, agenda items as below (not in this order).

Meeting Notes:

1. Financial plan – what has been agreed to date?
    a. (USD) m$10 IDA loan (DVRP)
    b. …likely m$5-7 PPCR
    c. other sources?
2. Approach of the PPCR ?
    a. All projects (DRR and CCA) m$52 ++
    b. Only CCA/Resilience projects m$9.55 (plus soft projects arising from the PPCR)
    c. Only PPCR projects m$5-7 (not an option)
    d. DVRP (current proposal) m$37 (sources of funds > m$10 ?)
    e. ERL (current proposal) m$10 (approved m$13.6 over 3yrs)
3. Only ERL in the 2011 budget – confirm
4. Proposed implementation period
5. PM meeting and interest in joining donors (brief hullo/welcome 15th)
6. Opening and launch on the 16th morning with ministers.
7. Still no confirmation from the Bank on Howie Prince, start date (Thursday 3 January).
8. Census questions completed, revisions to all existing environmental questions as well.
9. Critical dates:
    a. Final Planning Workshops – Tuesday-Thursday 1-3 February
    b. Tuesday 15 February – Second Joint Mission
    c. Wednesday 15 February – Opening/Launch of the SPCR (PM to open)
10. Possible tax incentives for responsible design and construction (water conservation, waste water recycling etc.)
11. "*Green and Clean SVG*" – national campaign, national commitment, high level leadership, women's groups, schools, teachers, etc.
12. "*Climate Change is Everybody's Business*"
13. Tourism Master Plan – missing components
14. Information memo to all stakeholders from LAB:
    a. commitment to CC
    b. events and dates coming up
    c. PM endorsement
    d. Final planning meetings
    e. Opening/launch of the SPCR (dates)
    f. Overall progress, finish dates
    g. Expected outcomes, needed contributions (MoHE, MoT)

Date	Organization/Location	Who	Purpose
Monday 24 Jan 1500hrs	Director of Planning, Ministry of Finance and Economic Planning – Central Planning Division	**Scott Cunliffe**	Project Update, agenda items as below (not in this order).

Meeting Notes: (RESPONSES N ALL CAPS)

1. Financial plan – what has been agreed to date?
    a. (USD) m$10 IDA loan (DVRP)
    b. …likely m$5-7 PPCR
    c. other sources? NONE AS YET
2. Approach of the PPCR ? USD$
    a. All projects (DRR and CCA) m$42 ++ YES THIS APPROACH
    b. Only CCA/Resilience projects m$9.55 (plus soft projects arising from the PPCR)
    c. Only PPCR projects m$5-7 (not an option)
    d. DVRP (current proposal) m$37 (sources of funds > m$10 ?)
    e. ERL (current proposal) m$5 (approved mEC$13.6 over 3yrs = mUSD$5)
3. Only ERL in the 2011 budget – confirm YES
4. Proposed implementation period THREE YEARS
5. PM meeting and interest in joining donors (brief hullo/welcome 15th) POSSIBLE, WILL SPEAK TO PM
6. Opening and launch on the 16th morning with ministers. POSSIBLE
7. Still no confirmation from the Bank on Howie Prince, start date (Thursday 3 January). OK
8. Census questions completed, revisions to all existing environmental questions as well. GOOD
9. Critical dates:
    a. Final Planning Workshops – Tuesday-Thursday 1-3 February
    b. Tuesday 15 February – Second Joint Mission
    c. Wednesday 15 February – Opening/Launch of the SPCR (PM to open) OK DATES
10. Possible tax incentives for responsible design and construction (water conservation, waste water recycling etc.) WILL SPEAK TO DIRECTOR GENERAL OF TAXATION
11. "*Green and Clean SVG*" – national campaign, national commitment, high level leadership, women's groups, schools, teachers, etc. POSSIBLE – WILL TALK TO PM
12. "*Climate Change is Everybody's Business*" AS ABOVE
13. Tourism Master Plan – missing components – WILL CHECK ON STATUS
14. Information memo to all stakeholders from LAB: YES – SC TO DRAFT MEMO ASAP
    a. commitment to CC
    b. events and dates coming up
    c. PM endorsement
    d. Final planning meetings
    e. Opening/launch of the SPCR (dates)
    f. Overall progress, finish dates
    g. Expected outcomes, needed contributions (MoHE, MoT)

FOLLOW-UP ACTIONS REQUIRED

15. SEE ALL CAPS ABOVE

End

Date	Organization/Location	Who	Purpose
Wednesday 3 Feb 1300hrs	WB and MoFEP	Laura Anthony Browne (Director of Planning), Seyoum (WB Procurement) Dianne (WB Engineer), Justin, Ronette, Trelson, SC	Update, financial envelope confirmation, other business

Meeting Notes:

1. See Meeting notes and Aide Memoire from Justin Locke forthcoming.
2. Key item was LAB confirmation of a USD$10 million envelope for the PPCR including m$7.0 grant funding and m$3.0 concessional financing.
3. LAB requested copies of the latest Investment Plan. (Delivered first thing the following morning by Ronette).
4. Brief update on Workshops provided by SC.

End

Date	Organization/Location	Who	Purpose
Tuesday and Wednesday 2-3 February 0900-1300hrs	**Final Planning Workshops:** TECHNICAL WORKING GROUP and private sector, NGO representatives	TWG members (see meeting n	Project Update, presentations, group discussions on Investment Plans

Meeting Notes:

1. Follow-up needed – circulate draft IP for SPCR by next Tuesday or Wednesday for final review.
2. THIS IS CRITICAL AND URGENT.

End

Date	Organization/Location	Who	Purpose
Saturday 5 Feb all day	Team Brainstorming – first draft Investment Programme	Howie, Ottis, Lorna, Winston, SC (Jacob sick – back in Trinidad)	Investment Plan for PPCR

Meeting Notes:

1. First draft completed and circulated by SC 2200hrs Saturday.
2. Need to finalise short and detailed descriptions by Wednesday morning meeting with Chief Engineer.
3. SC to start work on the narrative doc Sunday, send draft for Monday to all.
   End

Date	Organization/Location	Who	Purpose
Friday 5 Feb 1000hrs	FIRST FULL TEAM MEETING	ALL CONSULTANT TEAM (Howie, Lorna, Winston, Jacob and Ottis)	SC big Agenda

Meeting Notes:

1. Contracts 30 days can stop before that time.
2. Need a brochure for the opening
3. Three documents for the SPCR
4. ftp site for docs, calendar, annexes, TOC, need coordination for inputs from team
5. SC upload weekly time sheets excel file, mapping wish list, Annex folder
6. Possible presenters for @ Joint Mission: Lestra and Michelle (Howie to follow this up).
7. Need info on sand mining.
8. Aide Memoir from Bank, check draft.

End

8. Climate Risks in the Caribbean and Saint Vincent and the Grenadines

Climate Risks in the Caribbean

The Caribbean is the most tourism-dependent region in the world with few options to develop alternative economic sectors. The region is one of the most vulnerable in the world to the impacts of climate change including sea level rise, biodiversity loss and impacts on human health[4].

In most of the eastern Caribbean states, for instance, more than 50% of the population resides within 2 km of the coast; the corresponding figure in Barbados is estimated t o be in the region of 60%[5]. These settlements are at risk from projected sea-level rise-which will likely be accompanied by slowly increasing inundation, increased flooding, coastal erosion, and considerable loss of land. This vulnerability is compounded by the locations of critical infrastructure in or adjacent to the coast This infrastructure will be highly vulnerable to the effects of projected sea-level rise, especially during extreme events; this is precisely the situation in Saint Vincent and the Grenadines. Damage to critical infrastructure (coastal roads, bridges, seawalls for example) can lead to secondary and compounding losses due to short-term restricted access to health and medical supplies, water and food supplies etc., and other types of economic, social, and cultural activities.

Small islands are variable in their marine, coastal, and terrestrial biodiversity. The impacts of climate change, in association with human-induced stresses, probably would result in a loss of biodiversity. The establishment of nature reserves (terrestrial as well as marine) therefore is worth consideration as a viable option for arresting the decline in terrestrial, marine, and coastal biodiversity.

[4] http://www.caribsave.org/ opening page, accessed 12 January 2011.

[5] Nurse, 1992.

In many of the small island states in the eastern Caribbean, the annual rainfall regime often is characterized by pronounced wet and dry seasons. Therefore, to the extent that the availability of water resources in these islands is dependent on heavy rainfall events, changes in the occurrence of these phenomena inevitably will impact water supplies[6].

Most Caribbean countries face an annual threat from hurricanes. Saint Vincent is also prone to disruptive volcanic activities. The last major eruption was in 1902 killing over 1500 persons. Virtually all Caribbean countries can be classified as vulnerable to the effects of climate change and sea-level rise, which might include for example; higher incidence of flooding and inundation, beach and coastal land loss, reef damage, salinization of the freshwater lens, and disruption of tourism. Almost all are heavily dependent on groundwater supplies. Tourism is commonly the most vital economic sector. Even a short-term (days or weeks) disruption to tourism or damage to critical infrastructure would create significant economic and social crises.

The Organisation of Eastern Caribbean States (OECS) sub-region currently has nine members, spread across the Eastern Caribbean. Together, they form a near-continuous archipelago across the Leeward Islands and Windward Islands. Like other small island developing states, the members of the OECS have certain inherent characteristics that make them vulnerable to the adverse impacts of climate variability and change. The islands are small (Dominica, the largest of the nine is less than 760 sq. km); so that there is limited reserve capacity for retreat from, or accommodation of natural hazards and severe weather events. The sub-region is located in the path of tropical hurricanes of the Atlantic and Caribbean Sea, and is therefore prone to experiencing periodic disruptions from these systems. Most of the islands' infrastructure is located within the coastal zone, making them particularly vulnerable to the impacts of sea level rise and coastal flooding. These insular states also have exclusive economic zones several times larger than their land area, so that their coastal dependence is further exacerbated.

Caribbean Rainfall and Temperature Variability – Historical: As a consequence of lying between the equator and tropic of cancer the climate of the Caribbean region is one that is distinctly tropical in nature. It is heavily influenced or modulated by tropical features including the northeast trade winds, sea surface temperatures and the effects of transient tropical and extra-tropical systems. Although described as having a rainfall regime that is distinctly bimodal in nature (Chen and Taylor 2002), the size and orientation of the Caribbean Islands with respect to the modulating features heavily influences not only the amount of rainfall but the time in which the maximum precipitation is received (Jury et al 2007). The larger more mountainous Islands of the Greater Antilles often receive rainfall exceeding twice that of the smaller less mountainous Windward Islands (Taylor and Alfaro, 2005).

Temperatures in the Caribbean region are fairly constant and are not very different from the mean of its individual island states. The coolest and warmest temperatures occur respectively during the boreal-winter and early spring (December to April) and the summer months. Variations in temperature for the individual island states are generally small (on average 24°C - 32°C) but strongly vary with altitude.

Peterson et al (2002) investigate historical changes in climate extremes for the region, and show that whereas the maximum number of consecutive dry days experienced throughout the Caribbean has been decreasing, the daily rainfall intensity has also been decreasing (see figure 1a and 1b). This means that the recent tendency has been for the Caribbean to get more frequent rainfall events but of lower intensity thus making for a drier region. Corollary to this is the warming associated with the region. The number of warm days have been increasing while the number of and cool nights have been decreasing, narrowing the diurnal temperature range and making for a much warmer Caribbean (see

[6] IPCC 1996, WG II, Sections 10.1, 10.3, 10.4.

figure 11c and 11d) below.

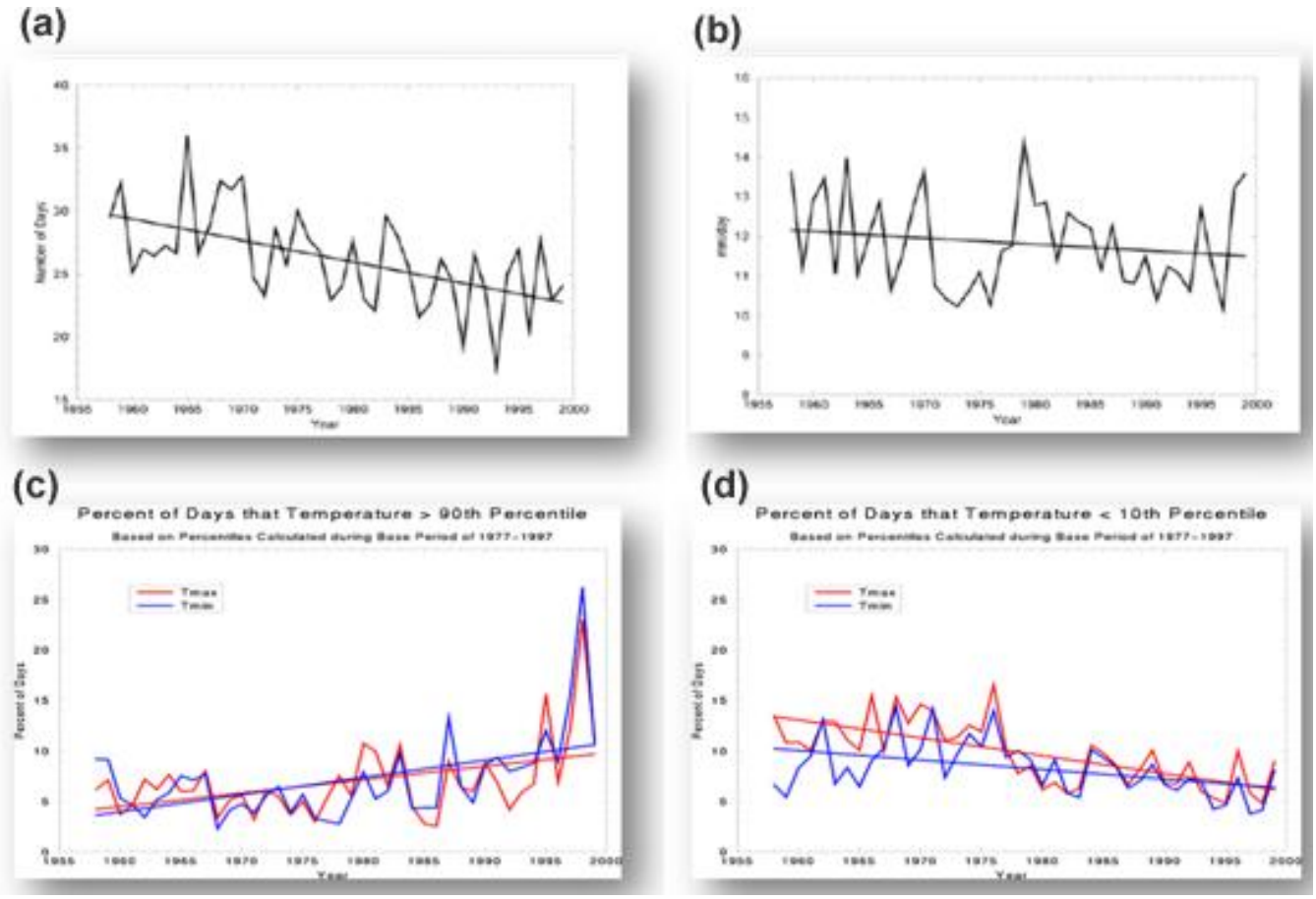


Figure 1: Diagram showing the (a) decrease in the number of consecutive dry days (b) decrease in daily intensity (c) increase in the number of warm days (>90th percentile) and (d) a decrease in the # of cold nights (<10th percentile). Peterson et al, 2002.

Caribbean Rainfall and Temperature Variability – Projected: Recent climate change projections from regional climate models suggest that irrespective of the scenario used, a warming of the Caribbean is expected. The estimated increases in temperature range from a low of 1°C (Under B1 scenario) to a high of 5°C (under A2 scenario) by the end of the century. This warming is consistent with projections for other parts of the globe and far exceeds the recent historical variability of Caribbean temperatures from observational records (Campbell et al. 2010, Taylor et al. 2007).

Projections are that rainfall will be reduced over the Caribbean and OECS by the end of the century. The projected drying lies between 25%-30% of current climatological mean values. The drying also exceeds historically observed variability and is primarily concentrated in the months June to October. i.e. during the Caribbean wet season. This indication is that the OECS will experience an end-of-century wet season with considerably less rainfall (Campbell et al. 2010, Taylor et al. 2007). The regional models also suggest that intervening years through mid century will likely be characterised by increased variability in the prevailing rainfall regimes.

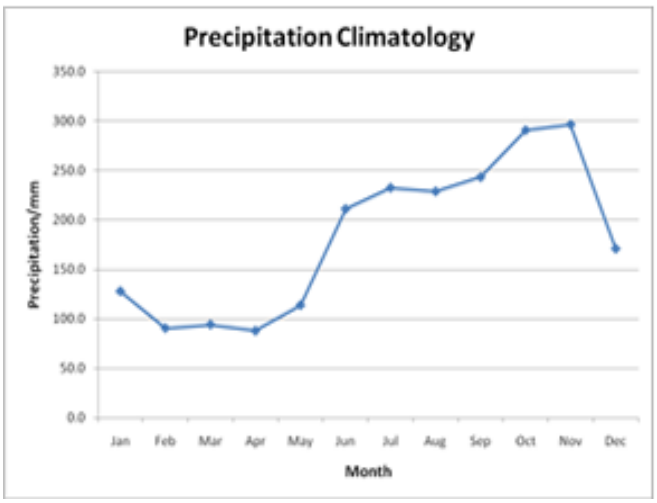
Climate Risks in Saint Vincent and the Grenadines

In Saint Vincent and the Grenadines, we can be sure that our changing climate will have impacts (negative and some positive) on various socioeconomic sectors, including tourism, infrastructure, agriculture, water resources, and human health-all of which are sensitive to fluctuations in rainfall, temperature, and sea level. Drawing on the National Adaptation Programme and the detailed climate-related studies, the following Table summarises the likely impacts of a changing climate in Saint Vincent and the Grenadines, and the opportunities that exist to build resilience and undertake mitigation and risk reduction adaptation actions.

Rainfall and Temperature Variability – Historical

Rainfall on the island averages at 2190 mm per year, placing it among the wetter of the Caribbean islands. Annual rainfall follows a unimodal pattern, with a June-November wet season and January-May dry season. The island experiences nearly 70% of its total rainfall during the wet season and peak rainfall corresponds with peak hurricane activity in the region. Inter-annual variability of rainfall is distinct in the climate records of the island, but there is no statistically significant long term trend towards wetter or drier conditions. Variation in rainfall is also seen with changes in elevation across the islands.

Temperature shows very little mean variation throughout the year, but can reach a maximum of 31^{o}C during summer months and a minimum of 23^{o}C in February. Like rainfall, temperatures also vary on a inter-annual cycle, but show no statistically significant long-term trend. Maximum temperatures, however, are increasing at a faster rate than minimum temperatures. There is also a trend of longer warm spells and more warm days and nights. By contrast the number of cool days and nights are decreasing.



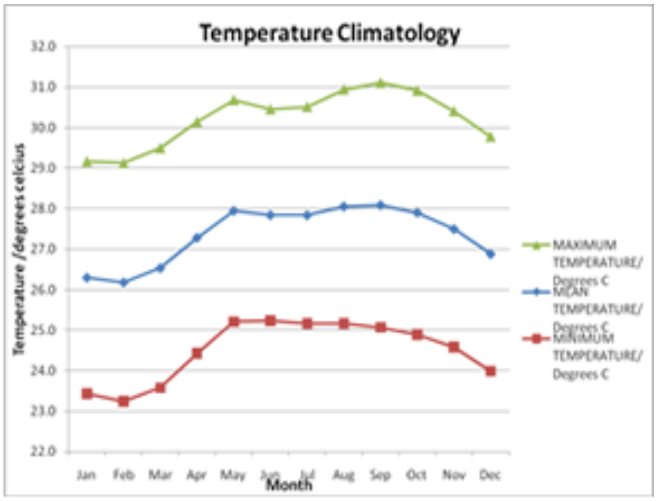


Figure 2: Mean annual monthly rainfall (mm/month and climatology of minimum, maximum, and mean temperature (^{0} C) for Saint Vincent (ET Joshua Airport 1987 -2008).

Projections General circulation models (GCMs) project a reduction in annual rainfall of up to 58% by the end of the century. Greatest seasonal drying is projected for the summer months, but the existing dry season may also become drier. GCMs indicate increases in temperature of nearly 15oC per decade (1.5 oC per annum) over the next century, with greatest seasonal warming occurring in December-February (McSweeney et al, 2008).

Droughts and floods Major droughts in Saint Vincent and the Grenadines have occurred three times in the 21 year period spanning 1987-2008, each lasting more than six months. The Standardized Precipitation Index (SPI) graph below shows that the longest drought lasted around 2 years between 2001 and 2004. Also noticeable is a cyclical pattern of drought and heavy rainfall. Since the country's economy depends on agriculture, a meteorological drought can have adverse effects. For example, the ECLAC report of 2001-2002 states that banana production was down by 27% due partly to leaf spot disease and drought conditions.

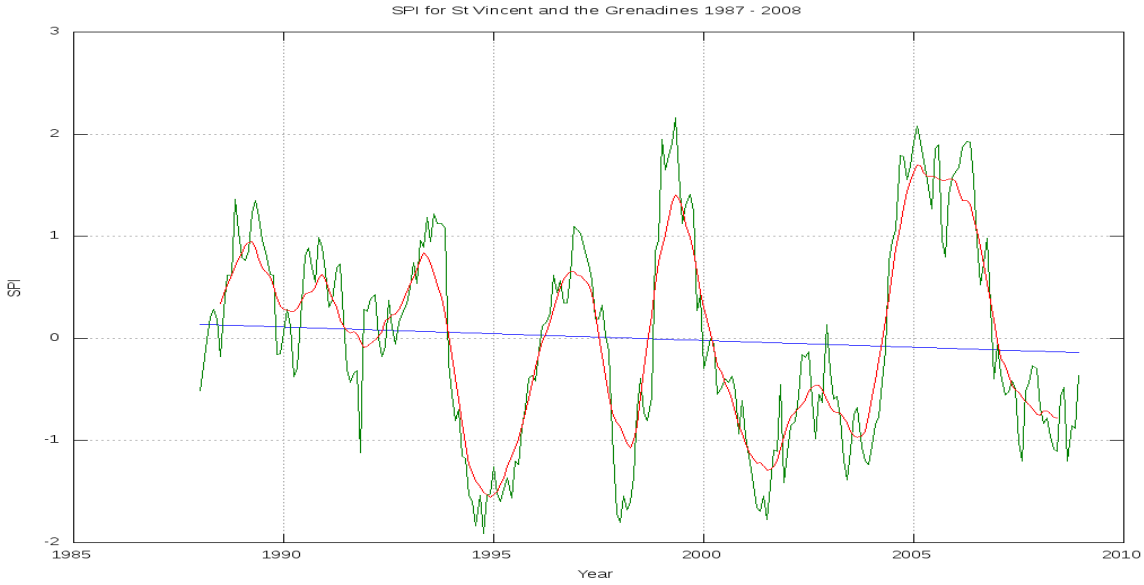


Figure 3: SPI graph for ET Joshua in Saint Vincent and the Grenadines over the period 1987 - 2008. Above zero, the period was wet, the more positive, the wetter. Below zero, the period was dry, the more negative, the drier. The green line is SPI, the blue, the trend line and the red the running mean.

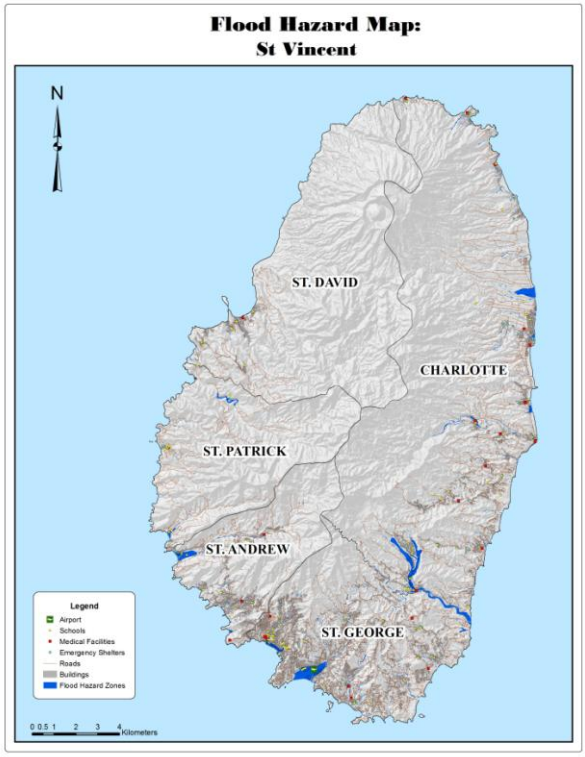


Figure 4: Flood Hazard Map

During the last century, four floods have been classified as major disasters [EM-DAT (WHO Emergency Event Database), 2011]. The worst of these affected 1000 people and cost the country US$5 million in 1987. EM-DAT further reports that the flood of 1992 affected 200 people and killed three. The rarity of this type of event makes the country more vulnerable, as preparation for it is not a priority.

Impacts of Tropical hurricanes In the recent past, few hurricanes have made landfall on Saint Vincent and the Grenadines. Nonetheless, the islands' location at the southern edge of the Atlantic hurricane belt makes them prone to the effect of tropical storm activity. The islands have been impacted by tropical storms such as Lenny (1999) which caused US$142,000 (EC$386,250) in damages (UNFCCC,2000), and Tomas (2010) which caused landslides, devastated crops and displaced many citizens from their homes. In 2002, Tropical Storm Lili caused damage estimated at EC$978,000. Damages from Hurricane Ivan in 2004 amounted to EC$100 million. In 2005, Hurricane Emily caused an estimated EC$10 million dollars worth of damages, while Hurricane Dean caused EC $2.2 million worth of damages in 2007. In 2008, Hurricane Omar caused damages at an estimated cost of EC$5.6 million. This data came from the National Emergency Management Organisation (NEMO).

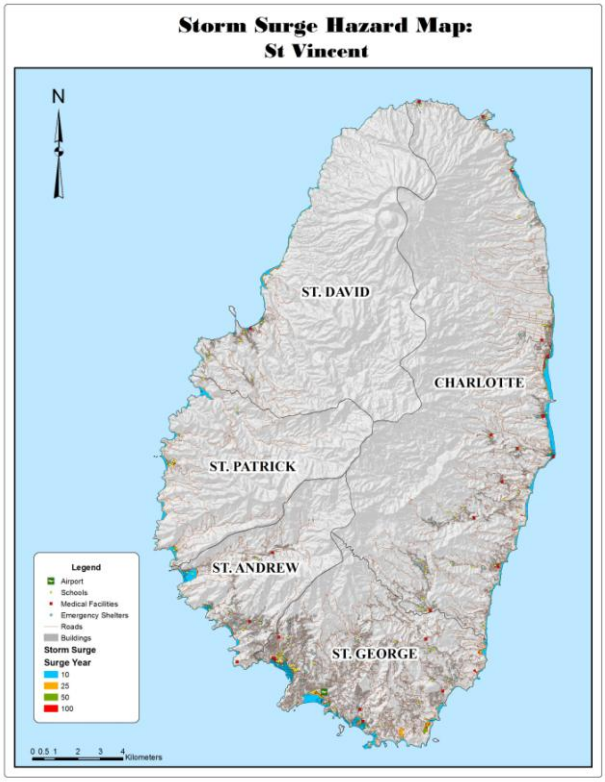


Figure 5: Storm Surge Hazard Map of Saint Vincent

In general, north Atlantic hurricane frequency is characterized by a multi-decadal cycle which yields active and inactive phases lasting 10 or more years (Goldenberg et al. 2001). (See figure 3) It is noteworthy that since 1995, the north Atlantic has swung into an active hurricane phase. Hurricane variability is also influenced by (among other things) ENSO which impacts on hurricane formation, intensity and tracks. In the last decade no fewer than four tropical hurricanes have affected the OECS member states. The systems are namely Hurricane Ivan (2004), Hurricane Emily (2005), Tropical Storm Tomas (2010) and Tropical Storm Nicole (2010). These resulted in costly damage to infrastructure and key socioeconomic sectors and loss of lives and livelihood. For example, Hurricane Ivan made landfall over Grenada as a category 4 hurricane with sustained winds of 140 mph. The impacts counted a total of 28 people killed and the gross costs of the damage were estimated at twice the GDP of the country at the time (US$889 million) (Mimura et al, 2007; ECLAC Economic Survey, 2005).

Based on a range of models, the IPCC (2007) suggests that future hurricanes of the north tropical Atlantic will likely become more intense, with larger peak wind speeds and heavier near storm precipitation. There is however less confidence in model projections of a decrease in the number of relatively weak tropical hurricanes, increased numbers of intense tropical hurricanes and/or a global decrease in the numbers of tropical hurricanes. Some modeling studies attribute the possible global decrease in the number of hurricanes to increased stability of the tropical troposphere (upper atmosphere over the tropics),-due to differential warming in the vertical in a warmer climate- which compensates for the impact of the warmer ocean temperatures.

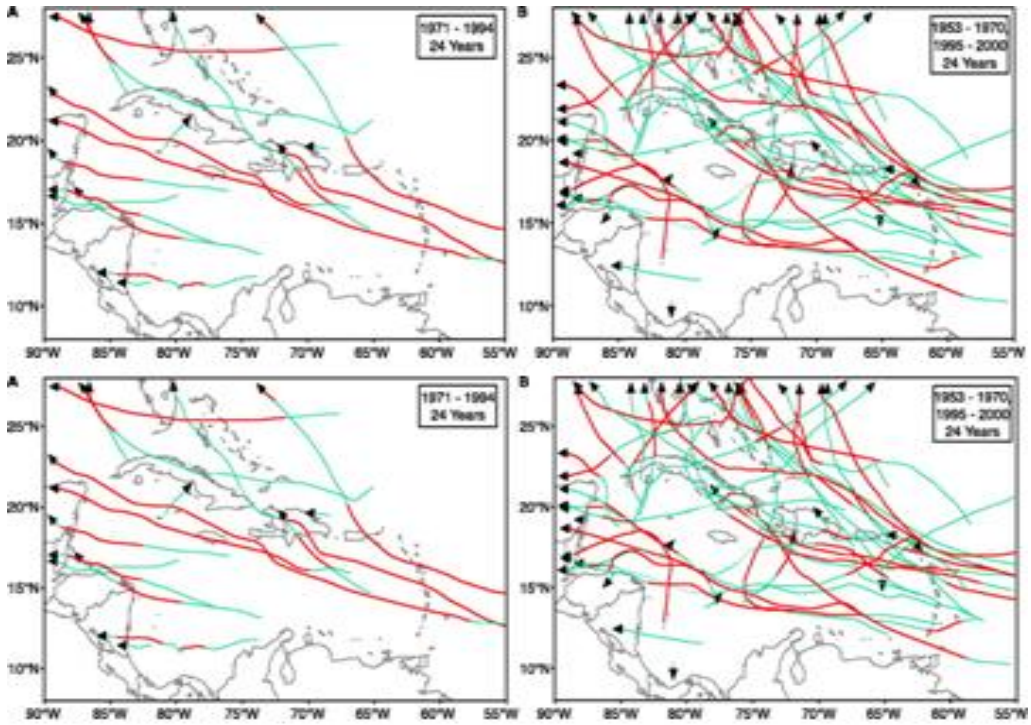


Figure 6: Figures showing hurricane activity in the Caribbean region during a inactive AMO phase (above) and an active phase (below).

Sea level rise

Due to the size, location and limited coastline of the islands, they are highly vulnerable to erosion, inundation and storm surges resulting from sea level rise (SLR). According to Simpson et al (2010) reports, Saint Vincent and the Grenadines are projected to lose 2% of agricultural lands, 67% of sea ports and nearly half the number of airports under a 1-metre rise in sea levels. Being heavily dependent on the agricultural industry and the export of these products, such losses would devastate the economy of Saint Vincent and the Grenadines. The projected loss of 10% of tourist resorts can only worsen this devastation.

Under a 1-metre rise scenario, a 1 in 100 year storm surge event would also cause severe damages to infrastructure and livelihood, since such an event could bring with it surges of 4.5 m and loss of 3% of the population and 7% of agricultural lands. Under a mid-range rise scenario, capital costs of infrastructure and land losses could approach US$445 million in 2050. By 2080 that cost could increase to US$1,290 million. Also associated with SLR is an exacerbation of any tsunamis or sea waves that may result from an eruption of the active submarine volcano Kick 'em Jenny, which is located south of the Grenadines.

Droughts and floods: Drought in the Caribbean is described by Chen et al (2005) as a disruption of the normal seasonal cycle. The primary phenomenon that causes Caribbean rainfall extremes i.e. droughts and floods, is the El Niño Southern Oscillation (ENSO) (Chen et al., 2005). The next major cause is decadal fluctuations in the annual rainfall. Though there are considerable efforts underway to develop seasonal prediction tools for the region (Ashby et al., 2005, Stephenson et al., 2007), there are limitations to their use due to a need to better understand the dynamics of the annual cycle. In the recent past the Caribbean has undergone significant drought events, including major drought events of 1997-98 and 2009-2010.

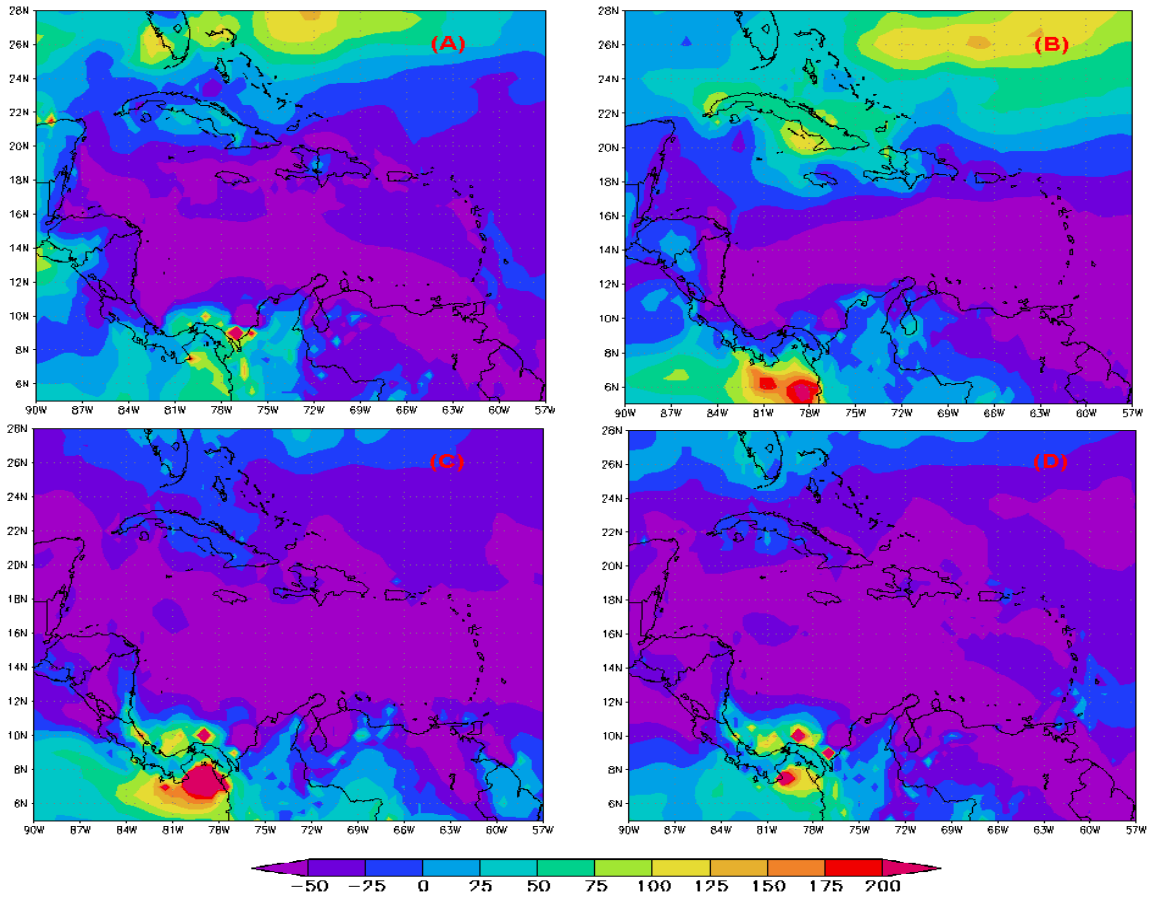


Figure 7: Rainfall projections for 2001-2100 relative to the 1961-1990 baseline under the A2 scenario. Percentage change sis presented. Panels (A0, (B), (C), (D) represent NDJ, FMA, MJJ and ASO respectively.

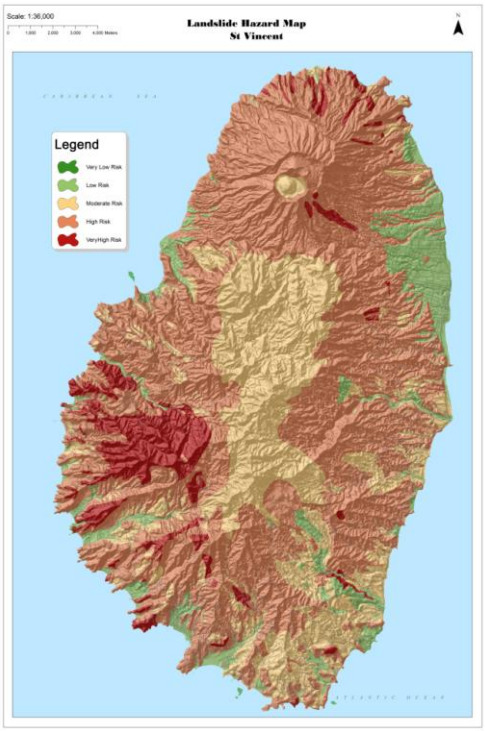


Figure 8: Landslide Hazard Map

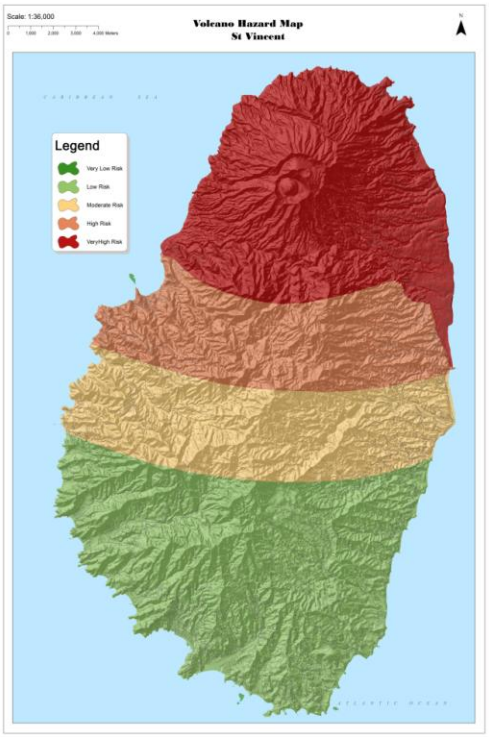


Figure 9: Volcanic Hazard Map

Figure 10: Susceptibility to Soil Erosion

Ocean expansion (due to warming) and the inflow of water from melting land ice have raised the global sea level over the last decade. The IPCC (2007) estimates that between 1993 and 2003 the mean global sea surface rose by 3.1±0.7mm/year. According to the IPCC projections, sea level rise (SLR) in the Caribbean has been near the global mean.

Under IPCC (2007) projections, for the A1B scenario, sea level rise within the Caribbean is projected to be between 0.17 m and 0.24 m by 2050 (IPCC 2007). For comparison, global sea level rise under the same scenario by the end of the century (relative to the period 1980-1999) is projected to average 0.35 m (0.21 to 0.48 m). More recent projection studies are direr and suggest that the Caribbean will experience greater SLR than most areas of the world due to its location closer to the equator and related gravitational and geophysical factors (Simpson et al. 2010). It is important to note, however, that changes in ocean density and circulation will ensure that the distribution of sea level rise will not be uniform across the region.

SLR impacts on the islands of the Caribbean will be both direct and indirect and its threat will be varied, with implications for land use, coastal population and infrastructure, and industry. Small islands such as those in the OECS are at high risk, due in many cases to low elevation and limited coastal areas. Under just 1-metre of SLR, an estimated 110,000 CARICOM nationals will be displaced and tourism and agriculture, the main industries of the Caribbean, adversely impacted. Transportation will similarly be significantly impacted as 1-metre rise is projected to cause inundation of 21 of 64 airports and over 550km of roads within CARICOM. The vast costs incurred by such losses would be difficult for many small islands to recover from, such as the mid-century capital costs exceeding US$ 26,000 million expected under a mid range SLR scenario (Simpson et al. 2010).

SLR however, foreshadows even greater risks when extreme events such as hurricanes or storm surges are considered. A surge event associated with a 1 in 100 year storm, for example, could bring with it surges of up to 5 m under a 1-metre rise scenario. For the Eastern Caribbean, this could result in losses of up to 13% of population and 9% of prime agricultural land in Antigua and Barbuda, 86% of major tourism resorts in Saint Kitts and Nevis, and most airports within the region (Simpson et al. 2010).

A regional study in 2009 (Caribsave[7]) investigated the damages and costs associated with sea level rise for the CARICOM nations[8]. Previous economic studies and recent developments identified in the study, incorporates a modelling of impacts on the economies of each CARICOM country individually[9]. A strength of this economic study is that it is based on detailed geographic reality of coastal geomorphology and development that determine vulnerability to sea level rise.

Such in-depth information is essential for the Caribbean States, and indeed Saint Vincent and the Grenadines to strategically reduce vulnerability through investment, planning, and policy decisions, and inform negotiations regarding adaptation assistance for the region.

Biodiversity and Climate Resilience in Saint Vincent and the Grenadines

The *Caribbean Islands Hotspot, of which Saint Vincent and the Grenadines is a part,* was identified by a Conservation International (2003) survey as the fifth ranking "hotspot" and one of the highest priorities

[7] The CARIBSAVE Partnership (CARIBSAVE) is a Not-For-Profit regional organization based in the Caribbean that works with stakeholders to address the impacts and challenges surrounding climate change, the environment, economic development, tourism and community livelihoods across the Caribbean Basin, using an integrated and holistic approach. It's Headquarters is in Barbados. It was formed in 2008 as a partnership initiative between the Caribbean Community Climate Change Centre (CCCCC) and the University of Oxford.

[8] Economics of Climate Change Working Group (ECA)… date?

[9] http://caribsave.org/index.php?id=5 accessed 24 January 2011.

in any global strategy for biodiversity conservation and sustainable management[10]. Another study classified the Eastern Caribbean Region, to which Saint Vincent belongs as "an unique marine ecosystem of the tropical northwest Atlantic province" and ranked as the highest priority within the province, in terms of its conservation status (most threatened)[11]. The principal ecosystems are dry and humid tropical forests, wetlands and tidal flats, sandy and rocky beaches, coral reefs, sea grass beds, mangroves, offshore islets. The reef, sea grass and mangrove systems of this area are recognized as among the most productive in the world.

9. Complete List of Unfunded Investment Projects ("*Sponsor Wanted*")

(next page)

[10] Conservation International. 2003. State of the Hotspots. (Conservation International. Washington, D.C.)

[11] Sullivan, Sealey and Bustmante, 1999. Setting Geographic Priorities for Marine Conservation in Latin America and the Caribbean. The Nature Conservancy, Arlington, Virginia.

Unfunded Projects									
Project	Project Component #	Activity	Institutional Strengthening			Preliminary Costs (USD)	Implement'n	Beneficiary	Implementing Agency
			Knowledge mgt., Consultants	Works	Goods				
	1	River defense: Buccament		$700,000		$700,000		MoW	MoW
	2	River defense: South River		$560,000		$560,000		MoW	MoW
	3	Villa Beach Restoration: Study to determine the pollution levels of the villa beach	$370,000			$370,000		MoW	MoW
	4	Coastal Defense: Sandy Bay	in-house	$1,000,000		$1,000,000		MoW	MoW
	5	River Defense: Cumberland River	in-house	$120,000		$120,000		MoW	MoW
	6	Rehabilitation of Road to Paget Farm	$550,000	$3,700,000		$4,250,000		MoW	MoW
	7	Slope Stabilization: Chester Cottage		$405,000		$405,000		MoW	MoW
	8	Slope Stabilization: Maroon Hill		$335,000		$335,000		MoW	MoW
	9	Slope Stabilization: Paget Farm		$2,210,000		$2,210,000		MoW	MoW
	10	Slope Stabilization: Fancy		$370,000		$370,000		MoW	MoW
	11	Slope Stabilization: Mt. Pleasant/Peruvian Vale	in-house	$885,000		$885,000		MoW	MoW
	12	Slope Stabilization: Mt. Grennean						MoW	MoW

	13	Slope Stabilization: Spring						MoW	MoW
	14	Slope Stabilization: Baleine		$650,000	$100,000	$750,000		MoW	MoW
	15	Retrofitting /Reconstruction of Government Buildings: Calliaqua Police Station		$6,000,000		$6,000,000		NEMO	MoW
	16	Retrofitting /Reconstruction of Government Buildings: Colonarie Health Clinic		$500,000		$500,000		NEMO	MoW
	17	Retrofitting /Reconstruction of Government Buildings: Marriaqua Health Clinic		$0		$0		NEMO	MoW
	18	Retrofitting /Reconstruction of Government Buildings: Calliaqua Health Clinic		$500,000		$500,000		NEMO	MoW
	19	Retrofitting /Reconstruction of Government Buildings: Kingstown Health Clinic		$500,000		$500,000		NEMO	MoW
	20	Retrofitting /Reconstruction of Government Buildings: South Rivers Health Clinic		$500,000		$500,000		NEMO	MoW
	21	Retrofitting /Reconstruction of Government Buildings: Fancy Health Clinic		$500,000		$500,000		NEMO	MoW
	22	Retrofitting /Reconstruction of Government Buildings: Troumaca Health Clinic		$1,000,000		$1,000,000		MoW	MoW
	23	Retrofitting /Reconstruction of Government Buildings: Overland Health		$500,000		$500,000		MoW	MoW
	24	Retrofitting /Reconstruction of Government Buildings: Stubbs Police Station	$55,000	$1,100,000		$1,155,000		MoW	MoW
	25	Retrofitting /Reconstruction of Government Buildings: Marriaqua Police Station	$55,000	$1,100,000		$1,155,000		MoW	MoW
	26	Satellite Warehouse for Communities: Bequia, Mesopotamia, Rose Hall, Sandy Bay, Peter's Hope, Mayreau, Union Island, Canouan, Colonarie/Georgetown		$3,300,000	$2,350	$3,302,350		MoW	MoW
	27	Generators for shelters/schools - Phase 2			$250,000	$250,000		MoW	MoW
		TOTAL	**$1,030,000**	**$26,435,000**	**$352,350**	**$27,817,350**			