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Report No: PAD 770

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL FINANCING CREDIT

IN THE AMOUNT OF SDR 23.1 MILLION
(US\$35.6 MILLION EQUIVALENT)
INCLUDING A CREDIT IN THE AMOUNT OF SDR 10.8 MILLION
(US\$19.0 MILLION EQUIVALENT) FROM
THE CRISIS RESPONSE WINDOW RESOURCES

AND A PROPOSED ADDITIONAL FINANCING GRANT FROM THE STRATEGIC
CLIMATE FUND –
PILOT PROGRAM FOR CLIMATE RESILIENCE
IN THE AMOUNT OF US\$5.0 MILLION

TO

SAINT VINCENT AND THE GRENADINES

FOR THE

REGIONAL DISASTER VULNERABILITY REDUCTION PROJECT

April 16, 2014

Caribbean Country Management Unit
Disaster Risk Management and Urban Unit
Sustainable Development Department
Latin America and Caribbean Region

This document is being made publicly available prior to Board consideration. This does not imply a presumed outcome. This document may be updated following Board consideration and the updated document will be made publicly available in accordance with the Bank's policy on Access to Information.

CURRENCY EQUIVALENTS

Exchange Rate Effective {April 10, 2014}

Currency Unit	=	XCD
XCD 0.65	=	US\$1
US\$1.54	=	SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
APL	Adaptable Program Loan
CARICOM	Caribbean Community
CIF	Climate Investment Fund
CPD	Central Planning Division
CQS	Consultant Quality Selection
CRW	Crisis Response Window
CWSA	Central Water and Sewage Authority
DRM	Disaster Risk Management
EC	Eastern Caribbean
EIRR	Economic Internal Rate of Return
EMF	Environmental Management Framework
FBS	Fixed-Budget Selection
FM	Financial Management
FY	Fiscal Year
GDP	Gross Domestic Product
GIS	Geographic Information System
GoSVG	Government of Saint Vincent and the Grenadines
ICB	International Competitive Bidding
IDA	International Development Association
IFR	Interim Financial Report
LCS	Least-Cost Selection
M&E	Monitoring and Evaluation
MoFEP	Ministry of Finance and Economic Planning
MoHILPP	Ministry of Housing, Informal Human Settlements, Lands and Surveys, and Physical Planning
MoTW	Ministry of Transportation and Works
NCB	National Competitive Bidding
NEMO	National Emergency Management Organization
NPV	Net Present Value
OECS	Organization of Eastern Caribbean States

OP/BP	Operational Policy/Bank Procedure
ORAF	Operational Risk Assessment Framework
PDO	Project Development Objective
PMU	Project Management Unit
PPCR	Pilot Program for Climate Resilience
PSIPMU	Public Sector Investment Program Management Unit
QBS	Quality-Based Selection
QCBS	Quality- and Cost-Based Selection
RAP	Resettlement Action Plan
RDVRP	Regional Disaster Vulnerability Reduction Program
RPF	Resettlement Policy Framework
RPS	Regional Partnership Strategy
SA	Social Assessment
SBD	Standard Bidding Document
SCF	Strategic Climate Fund
STC	Short-Term Consultant
SVG	Saint Vincent and the Grenadines
TOR	Terms of Reference
VINLEC	Saint Vincent Electricity Services Limited

Vice President:	Hasan A. Tuluy
Country Director:	Sophie Sirtaine
Country Manager:	Alessandro Legrottaglie
Sector Manager:	Anna Wellenstein
Task Team Leader:	Tiguist Fisseha

SAINT VINCENT AND THE GRENADINES
REGIONAL DISASTER VULNERABILITY REDUCTION PROJECT
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Project Paper Data Sheet

ADDITIONAL FINANCING DATA SHEET

Saint Vincent and the Grenadines

Regional Disaster Vulnerability Reduction Project (Additional Finance) (P146768)

LATIN AMERICA AND CARIBBEAN

LCSDU

Basic Information – Parent							
Parent Project ID:	P117871			Original EA Category:	B - Partial Assessment		
Current Closing Date:	12/31/2016			Current EA Category:	B		
Basic Information – Additional Financing (AF)							
Project ID:	P146768			Additional Financing Type (from AUS):	Scale Up Cost overrun		
Regional Vice President:	Hasan A. Tuluy			Proposed EA Category:	B - Partial Assessment		
Country Director:	Sophie Sirtaine			Expected Effectiveness Date:	July 9, 2014		
Sector Director:	Ede Jorge Ijjasz-Vasquez			Expected Closing Date:	12/31/2018		
Sector Manager:	Anna Wellenstein			Report No:	PAD770		
Team Leader:	Tiguist Fisseha						
Borrower							
Organization Name	Contact	Title	Telephone	Email			
Saint Vincent and the Grenadines	Ms. Laura Anthony-Browne	Director of Planning	784-457-1746	cenplan@svgcpd.com			
Project Financing Data – Parent (Regional Disaster Vulnerability Reduction APL1 - Grenada and Saint Vincent and the Grenadines-P117871)							
Key Dates							
Project	Ln/Cr /TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P117871	IDA-49850	Effective	23-Jun-2011	20-Sep-2011	01-Nov-2011	31-Dec-2016	31-Dec-2018
P117871*	IDA-49860	Effective	23-Jun-2011	09-Sep-2011	18-Oct-2011	31-Dec-2016	31-Dec-2018

IDA Credit from the Crisis Response Window (CRW)	19.00
Strategic Climate Fund Grant	5.00
Total	40.60

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018
Annual	1	6	16	17.6
Cumulative	1	7	23	40.6

Policy Waivers

Does the project depart from the CAS in content or in other significant respects? No

Explanation

Does the project require any policy waiver(s)? No

Explanation

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Subhash C. Seth	Consultant	Road Engineer	LCSDU
Gerald E. Meier	Consultant	Hydrology	LCSDU
M. Mozammel Hoque	Senior Financial Management Specialist	Financial Management	LCSFM
David I	Senior Financial Management Specialist	Financial Management	LCSFM
Edith Ruguru Mwenda	Senior Counsel	Senior Counsel	LEGAM
Plamen Stoyanov Kirov	Senior Procurement Specialist	Procurement	LCSPT
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M. Yaa Pokua Afriyie Oppong	Senior Social Development Specialist	Social Safeguards	LCSO
Ali Alwahti	Urban Specialist	co-Team Lead	LCSDU

Tiguist Fisseha	Disaster Risk Management Specialist	Team Lead	LCSDU
Justin Locke	Disaster Risk Management Specialist	Disaster Risk Management Specialist	LCSDU
Cynthia Linero Molina	Consultant	Landslide Engineer	LCSDU
Melanie Simone Kappes	E T Consultant	Disaster Risk Assessment Specialist	LCSDU
Michael J. Darr	Consultant	Environmental Safeguards	LCSEN
Keren Carla Charles	E T Consultant	Disaster Risk Management Specialist	LCSDU

Non-Bank Staff

Name	Title	Office Phone	City

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
SVG		Kingstown			
SVG		Georgetown			
SVG		Arnos Vale			
SVG		Ginger Village			
SVG		Mt. Greenan			
SVG		Maroon Hill			
SVG		Spring			
SVG		Dark View			
SVG		Troumaca			
SVG		Petit Bordel			
SVG		Rose Bank			
SVG		Belle Isle			
SVG		Sandy Bay			
SVG		Milton Cato Memorial Hospital			

Institutional Data				
Parent (Regional Disaster Vulnerability Reduction APL1 - Grenada and Saint Vincent and the Grenadines-P117871)				
Sector Board				
Urban Development				
Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Water, sanitation and flood protection	Flood protection	68		
Transportation	Aviation	24		
Public Administration, Law, and Justice	Public administration- Water, sanitation and flood protection	8		
Total		100		
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Social protection and risk management	Natural disaster management	65		
Environment and natural resources management	Water resource management	35		
Total		100		
Additional Financing Regional Disaster Vulnerability Reduction Project (Additional Finance) (P146768)				
Sector Board				
Urban Development				
Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Agriculture, fishing, and forestry	Irrigation and	40	50	

	drainage			
Water, sanitation and flood protection	Flood protection	20	50	
Transportation	Urban Transport	20		
Transportation	Aviation	20		
Total		100		
<input type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.				
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Environment and natural resources management	Climate change	65		
Social protection and risk management	Natural disaster management	15		
Urban development	Other urban development	15		
Environment and natural resources management	Land administration and management	5		
Total		100		

I. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide Additional Financing (AF) in the amount of US\$ 40.6 million equivalent to Saint Vincent and the Grenadines (SVG) to support the Regional Disaster Vulnerability Reduction Project (P117871) (RDVRP).

2. The proposed AF would scale up project activities and cover a cost overrun in the SVG Regional Disaster Vulnerability Reduction Project (RDVRP). Specifically, the AF would: (i) support emergency recovery and construction activities; (ii) enhance development impact; (iii) increase the number of beneficiaries, including women; (iv) meet an unanticipated financing gap in Component 1- prevention and adaptation investments and Component 2 - regional platforms for hazard and risk evaluation, and applications for improved decision making; (v) replenish Component 3 – natural disaster response component; and (vi) allocate additional funds to Component 4 - project management and implementation support. This project falls in the category “*Projects in Situations of Urgent Need of Assistance or Capacity Constraints described in OP/BP 10.00, para. 11, as about 50 percent of project proceeds would be used to support the Government of SVG’s (GoSVG’s) emergency recovery efforts. In particular, the project would have special procurement procedures (and accelerated business standard for Board submission).*”

3. **Funding arrangements.** The proposed AF would be comprised of US\$19.0 million equivalent from the Crisis Response Window (CRW), US\$16.6 million equivalent from the SVG’s remaining IDA-16 (International Development Association) allocation and US\$5.0 million grant from the Strategic Climate Fund (SCF) through the Climate Investment Fund’s (CIF’s) Pilot Program for Climate Resilience (PPCR) for a combined AF of US\$40.6 million equivalent . The CRW funds would address the urgent recovery and reconstruction needs following the December 2013 flood event in SVG. The CIF PPCR funds aim to integrate climate risk and resilience into core development planning and implementation in SVG through the provisions of technical assistance and investments.

II. Background and Rationale for Additional Financing

4. **Vulnerability Context.** SVG is exposed to high levels of risk to meteorological and geophysical hazards,¹ which have significant negative impacts on SVG’s economic and fiscal stability. These natural hazards are being exacerbated by the adverse impacts of climate change, which are putting increased stress on water availability, coastal investments, national infrastructure and livelihoods, especially of the poor and vulnerable groups in SVG. The combined long-term impacts of sea level rise and 1 in 100 year storm surge in SVG include²: (i) over 50 percent of major tourism resorts at risk to damage, and (ii) potentially severe flooding risk at the SVG national airport. In the past decade, damage from major natural disasters in SVG were approximately US\$41 million, which was more than the accumulative sum of damage from

¹ Meteorological: High wind/excess rainfall/hurricanes and drought. Geophysical: Seismic/volcanic/tsunami.

² SPCR SVG (Narrative document).

<http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/SPCR%20SVG%20Narrative%2025march-1.pdf>

1961 – 2000.³ The GoSVG's gross debt relative to GDP was 70 percent in 2012⁴ - giving the country limited capacity to manage the fiscal impacts of exogenous shocks.

5. **Overview of Disaster Event and Impacts.** On December 24, 2013, a tropical weather trough passed over SVG producing extraordinarily intense rainfall at a time well outside of the traditional hurricane season. Over a 3-hour period, SVG received 278 millimeters of rain, which expert analysis strongly suggest was in excess of a 1 in 100 year event. The ensuing flash floods and landslides resulted in severe damages and 9 confirmed deaths with 2 persons still missing and presumed dead. The GoSVG declared a National Level 2 Disaster⁵ on December 26, 2013 and formally requested assistance and resources from the World Bank on December 31, 2013. A rapid Damage and Loss Assessment (DaLA) carried out by a World Bank team from January 6 – 15, 2014, estimated that the combined physical damage and economic losses were approximately US\$108.4 million (15 percent of GDP). Given the size of the disaster the Government will require significant support to manage the reconstruction and to enhance the country's overall resilience to such disasters going forward. In view of this, US\$19.0 million is being sought from the IDA Crisis Response Window (CRW) to support the country's reconstruction and recovery needs⁶.

6. **Strategic Context.** With support from the World Bank and the PPCR, the GoSVG is responding to the December 2013 disaster, increasing gender-informed climate resilience, and reducing physical and fiscal vulnerability derived from natural disasters. The proposed AF would support the implementation of GoSVG's endorsed Strategic Program for Climate Resilience (SPCR) dated April 18, 2014 – more specifically, Component 1: Climate Vulnerability, Risk Assessments and Risk Reduction and Component 4: Design and Implementation of a Public Education and Capacity Building Program of the SPCR. By increasing the financing available under the RDVRP, the GoSVG can further reduce its vulnerability to climate and disaster risk; and in turn, improve its physical and fiscal resilience to the economic impacts of disaster events in the short and long term. Reducing vulnerability to risk from natural hazards and climate change is also a core element of the Organization of Eastern Caribbean States (OECS) Regional Partnership Strategy (RPS) FY10-FY14. Finally, SVG will continue to benefit from the knowledge sharing and capacity building through the PPCR.

7. **Links to Poverty Reduction and Poverty Reduction.** Agriculture is the primary income generating activity for a majority of the population – in particular, the poor. Some of the roads selected for slope stabilization are feeder roads for the small farmers in SVG's major agricultural basin. Without the access from these roads, farmers have to increase transportation costs to get their produce to the major markets located in Kingstown. In addition, the impact of the December 2013 disaster was concentrated in zones with the highest levels of poverty such as

³ EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be – Université catholique de Louvain – Brussels – Belgium.

⁴ IMF, World Economic Outlook Database, October 2013.

⁵ A Level Two (2) Disaster is declared when the damage is severe and for which local resources and response capacity is overwhelmed and specialized external assistance is requested, in accordance with the National Emergency and Disaster Management Act, 2006.

⁶ A Note presented to the WB Board on March 20 2014 informed the Executive Directors of Management's intention to allocate an indicative amount of US\$19.0 million equivalent to support SVG'S reconstruction efforts in the aftermath of the December 2013 Floods.

Georgetown and Sandy Bay (55.6 percent poverty headcount⁷), where the focus of economic activity is on agriculture, fishing and services. An estimated 44 percent of the people affected are classified as living in poverty. Low-income families, whose agricultural production is primarily for personal consumption and local sales (i.e. farmers markets), would disproportionately feel the impact of the disaster on agriculture. Preliminary observations indicate that vulnerable families, dependent on agricultural production, may be at risk of falling below poverty line due to the disaster. By supporting SVG in its disaster response and by improving road conditions, the AF will contribute to improving the economic activity and livelihoods of poor farmers and thereby contributing to poverty reduction and shared prosperity.

Status of Original Project

8. **Project Financing.** The RDVRP was approved in June 23, 2011 and became effective in October 2011. The lending instrument was an Adaptable Program Loan (APL) in the Parent Project and is being implemented in the Organization of Eastern Caribbean States (OECS); however, the term APL has been retired and subsequent Projects in the series fall under the new Investment Project Financing (IPF) guidelines. Projects in SVG and Grenada form IPF1 with total financing of US\$47.1 million, broken downs as follows: (Grenada: US\$10.0 million in IDA credits, US\$8.0 million in PPCR grants and US\$6.2 million in PPCR concessional loans; SVG: US\$10.9 million in IDA credits, US\$7.0 million in PPCR grants and US\$3.0 million in PPCR concessional loans). Saint Lucia and Dominica will comprise IPF2 and IPF3, respectively. Both the Dominica Disaster Vulnerability Reduction Project (P129992) and the Saint Lucia Disaster Vulnerability Reduction Project (P127226) are scheduled to be approved by the Board in fiscal year 2014.

9. **Project Objectives and Description.** The project development objective (PDO) is to measurably reduce vulnerability to natural hazards and climate change impacts in SVG and in the Eastern Caribbean sub-region. Project components include: Component 1 - prevention and adaptation investments; Component 2 - regional platform for hazard and risk evaluation, and applications for improved decision making; Component 3 - natural disaster response investments; and Component 4 - project management and implementation support. Cross-cutting themes, such as gender, knowledge management and monitoring and evaluation (M&E), are addressed in detail in the original project (RDVRP).

10. **Implementation Status.** Project implementation is currently rated as moderately satisfactory⁸ and the achievement of the PDO is rated satisfactory. Disbursement is US\$2.9 million (14 percent) which is within expected forecasts and US\$5 million (approx. 25 percent) of original project proceeds will be committed by the second quarter of 2014. It is anticipated that the construction phase of the original project would commence by the end of 2014 for a majority of the civil works sub-projects. The RDVRP was designed to front-load technical assistance and capacity building activities in order to improve the knowledge base on climate change (CC) and disaster risk management (DRM). As a result of this effort, 6 out of the 10 intermediate indicator targets, which measure capacity development in the parent project results framework were met or

⁷ SVG Country Poverty Assessment, 2008

⁸ The project implementation is rated as moderately satisfactory due to delays experienced in the early stages of implementation. The PSIPMU is now fully staffed and it is expected that the IP rating would improve to satisfactory in the next ISR.

exceeded within the first two years of the original project. Finally, the project is fully compliant with all conditions and legal covenants.

The Additional Financing

11. **Project Activities to be supported by the Proposed Additional Financing.** The AF would finance emergency recovery and reconstruction activities (US\$20.7 million), project scale-up activities (US\$16.9 million) and cost overruns (US\$3.0 million).

- a. *Emergency recovery and reconstruction activities, scale up of ongoing activities for disaster response (Total: US\$20.7 million, of which CRW US\$19.0 million, IDA US\$1.7 million).* These activities include river training, bridge rehabilitation and reconstruction, road realignment, coastal defenses and replenishment of the emergency contingency component. The activities would rehabilitate and reconstruct the infrastructure that were damaged in the floods in December 2013 to be more disaster resilient.
- b. *Project scale up (Total: US\$16.9 million, of which IDA US\$11.9 million and PPCR US\$5.0 million).* Proposed AF activities include additional slope stabilization works, expansion of river defense works as well as the construction of additional satellite warehouses to support community disaster preparedness. The AF would augment institutional strengthening activities to address disaster preparedness and climate change impacts. Finally, the AF would support increased monitoring and evaluation (M&E) consistent with the increase in project scope.
- c. *Cost Overruns (Total: US\$3.0 million; all IDA financed).* Cost overruns identified under the current project are due to inflation experienced during project execution, increases in the scope of civil works activities due to damage from heavy rain events since 2011 and increases in costs associated with sub-project development – more specifically, an increase in the scope of the pre-engineering studies required to inform detailed designs. The US\$3.0 million would also finance: (i) consulting services to develop detailed designs for the new National Hospital and (ii) the construction of the Georgetown Coastal Defense.
- d. The detailed project description of new and modified activities can be found in Annex 3.

12. **Project Cost and Financing.** The table below summarizes the project cost and financing by Component.

Table: Project Financing by Component in US\$ millions

Activity	Parent project	AF	AF by financing source		
			IDA CRW Credit	IDA Credit	PPCR Grant
Component 1 - Prevention and Adaptation Investments	\$7.30	\$23.56	\$7.94	\$12.82	\$2.80
Component 2 - Regional Platforms for Hazard and Risk Evaluation, and Applications for Improved decision making	\$10.80	\$15.44	\$10.96	\$2.48	\$2.00
Component 3 - Natural Disaster Response Investment	\$1.00	\$1.00	\$0.00	\$1.00	\$0.00
Component 4 - Project Management and Implementation	\$1.80	\$0.60	\$0.10	\$0.30	\$0.20
Total	\$20.90	\$40.60	\$19.00	\$16.60	\$5.00

13. **Emergency Procedures.** Given the emergency nature of the proposed AF, streamlined procedures enabled under OP/BP 10.00 paragraph 11: Special Considerations would be utilized for Board processing. In addition, the implementation of Components 1, 2 and 3 of the original project (RDVRP-P117871), after approval of the AF, would also operate under special procurement procedures allowed under OP/BP 10.0 Special Considerations. In particular, the procurement thresholds would be increased for packages⁹. The urgency of the activities identified under these components either directly address the GoSVG's emergency recovery needs or address activities with increased urgency as a result of the December 2013 disaster.

14. **Expected Outcomes.** The AF would have the same expected outcomes as the RDVRP, but at a greater scale, which include: (i) capacity built to identify and monitor climate risk at the national level; (ii) reduced vulnerability of public infrastructure and emergency communications; (iii) strengthened emergency management capacity and improved effectiveness of risk reduction investments; and (iv) established disaster risk financing mechanism. New results framework targets are presented in Annex 1: Revised Results Framework and Monitoring Indicators.

15. **Consistency with PDO.** Activities identified under the proposed AF are consistent with the current PDO. The AF would support the scaling of up of key project activities and close the financing gap for current project activities. Key outcomes resulting from AF activities would be a significant increase in the population, particularly in poor communities, including women, benefiting from improved infrastructure resilience, and strengthened emergency and disaster response capacity in the short and long term.

16. **Project Risks.** The overall implementation risk rating for the RDVRP is moderate. Given the size of the country, implementation capacity to handle a large number of contracts is limited. Interagency coordination, quality control, and information sharing among various agencies are also limited. In order to mitigate these risks, the RDVRP has supported targeted training for project staff to manage Bank supported projects – specifically as it relates to procurement, financial management and safeguards. Moreover, the RDVRP supports technical assistance to improve the capacity of relevant government institutions. To ensure quality control, the Bank supervision team carries out technical audits on a routine basis and has established critical path inspection procedures, which have been integrated into the project operations manual.

17. **Improved Decision Making Capacity.** The RDVRP has supported capacity building activities to improve climate resilience and DRM capacity. It is anticipated that the GoSVG's improved understanding of climate change and DRM would enable the MoTW to derive better cost estimates of infrastructure sub-projects as they now have more experience and information required to quantify costs associated with pre-engineering studies, detailed design consultancies as well as supervision services. In addition, sub-project selection was determined taking into account gender, poverty, and climate change considerations.

18. **Implementation Arrangements.** The AF implementation, institutional and internal quality control arrangements would remain the same as the arrangements established under the RDVRP. The additional activities under the AF are within the current capacity of GoSVG to execute, with some additional support. Many activities of the AF would: (i) scale up existing

⁹The same procedures that were used under Hurricane Tomas Emergency Recovery Project (HTERP-P124939).

activities currently under implementation through amending ongoing contracts of the same type; and (ii) be incorporated into the scope of services required under request for proposals (RFPs) that will be launched soon. As a result, the current implementing entity, Public Sector Investment Program Management Unit (PSIPMU) within the Central Planning Division (CPD), would benefit from economies of scale and reduced transactions costs. The PSIPMU is reasonably staffed and targeted training has facilitated capacity development to manage Bank-supported projects. In addition, the proposed AF would support additional project staff – including an additional Procurement and Contract Management Specialist and Senior Quantity Surveyor in order to increase the implementation capacity of the PSIPMU. The proposed AF would also scale up technical assistance provided under the RDVRP to support improved project management capacity and financial management systems.

19. **Expected Benefits.** The proposed activities to be financed under the AF would result in a more rapid and resilient recovery to the recent disaster event and an increase in overall project benefit realized through further reduction in disaster and climate change risk over the long-term. Under the proposed AF, the GoSVG would leverage an additional US\$5.0 million in grants currently available through the PPCR, which would increase the number and scale of interventions to be financed under the AF. In addition, it is important to note that the economic analysis conducted for the original project is still applicable despite recent increases in inflation.

20. **Safeguards.** No new safeguards policies would be triggered and safeguard implementation arrangements are expected to remain the same. Emergency recovery and rehabilitation activities would not change substantially or fundamentally from those already described in the EMF. The Environmental Management Framework was first disclosed on January 27, 2014 and re-disclosed on April 9, 2014 on the both the national and the World Bank websites. The Resettlement Policy Framework and Social Assessment Report were disclosed on February 25, 2014 on national and the World Bank websites.

21. **Monitoring and Evaluation (M&E).** M&E mechanisms would remain the same as the Original project. Targets in the Results Framework were revised to reflect the increase in scope of activities and a new indicator is proposed to capture results from the construction of satellite warehouses. The table below highlights the changes to the results framework.

Indicator Name	Prior	Revised
Reduced risk of SVG's population to failure of roads and bridges due to natural hazards or climate change impacts	10,500	32,156
	Daily users currently at risk: 1) Fenton – 500; and 2) South River Rd Bridge - 10,000	Daily users currently at risk: 1) Fenton – 500; 2) South River Rd Bridge - 10,000; 3) Spring – 9,800; 4) Carriere, Maroon Hill & Ginger Village - 10,200; and 5) Coulls Hill - 1,656
Reduced risk of SVG s population to flooding in areas with flood mitigation works financed by the Project in SVG	60	1,275
	15 households with an average of 4 people per household	425 households with an average of 3 people per household (average household value based on latest census estimates)
Increased capacity of communities to respond to disaster events	0	6
	New	Fully operational satellite warehouses located within vulnerable communities

Summary of Proposed Changes

The activities under the proposed Additional Finance (AF) include emergency response activities, additional slope stabilization works, expansion of river defense works, construction of additional satellite warehouses to support community disaster preparedness, pre-engineering studies and support for the monitoring and evaluation (M&E) capacity development in SVG. AF proceeds would also be allocated to meet sub-project specific shortfalls and to hire additional project management staff. Collectively, these activities would aim to increase national resilience to the impact of natural disasters and improve the capacity of government ministries to identify and manage the impacts associated with climate change.

Change in Implementing Agency	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Project's Development Objectives	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Results Framework	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Safeguard Policies Triggered	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change of EA category	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Other Changes to Safeguards	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Legal Covenants	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Loan Closing Date(s)	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Cancellations Proposed	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Arrangements	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Reallocation between Disbursement Categories	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Estimates	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change to Components and Cost	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Institutional Arrangements	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Financial Management	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Procurement	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Implementation Schedule	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Other Change(s)	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]

Development Objective/Results

Project's Development Objectives

Original PDO

The Program aims at measurably reducing vulnerability to natural hazards and climate change impacts in the Eastern Caribbean Sub-region. The objective of the Project in Grenada is to measurably reduce vulnerability to natural hazards and climate change impacts in Grenada and in the Eastern Caribbean Sub-region. The objective of the Project in Saint Vincent and the Grenadines is to measurably reduce vulnerability to natural hazards and climate change impacts in Saint Vincent and the Grenadines and in the Eastern Caribbean Sub-region.

Change in the Results Framework									
Explanation: The indicators and targets would be increased to account for the change in project scope.									
Finance									
Loan Closing Date - Additional Financing (Regional Disaster Vulnerability Reduction Project (Additional Financing) - P146768)									
Source of Funds					Proposed Additional Financing Loan Closing Date				
International Development Association (IDA)					31-Dec-2018				
Strategic Climate Fund Grant					31-Dec-2018				
Loan Closing Date(s) - Parent (Regional Disaster Vulnerability Reduction APL1 - Grenada and Saint Vincent and the Grenadines - P117871)									
Explanation: The loan closing dates, pertaining to SVG, would be extended by two years to December 31, 2018 to accommodate the increased scope of the Project with the Additional Financing.									
Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)				
IDA-49850	Effective	31-Dec-2016	31-Dec-2016	Grenada*	31-Dec-2016				
IDA-49860	Effective	31-Dec-2016	31-Dec-2016	31-Dec-2018	31-Dec-2016				
TF-10204	Effective	31-Dec-2016	31-Dec-2016	Grenada*	31-Dec-2016				
TF-10206	Effective	31-Dec-2016	31-Dec-2016	31-Dec-2018	31-Dec-2016				
TF-11131	Effective	31-Dec-2016	31-Dec-2016	Grenada*	31-Dec-2016				
TF-11132	Effective	31-Dec-2016	31-Dec-2016	31-Dec-2018	31-Dec-2016				
*Note that the closing dates for the Grenada loans/credits/grants would not change.									
Change in Disbursement Arrangements									
Explanation: The threshold ceiling of the Designated Account would be variable based on the estimated cash flow needs for the following six months.									
Change in Disbursement Estimates (including all sources of Financing)									
Explanation: Additional Financing would be added to the original project.									
Expected Disbursements (in USD Million) (including all Sources of Financing)									
Fiscal	2015	2016	2017	2018	2019	2020	2021	2022	2023

Year									
Annual	1.00	6.00	16.00	17.60	0.00	0.00	0.00	0.00	0.00
Cumulative	1.00	7.00	23.00	40.60	40.6	0.00	0.00	0.00	0.00

Allocations - Additional Financing (Regional Disaster Vulnerability Reduction Project (Additional Finance) - P146768)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement % (Type Total)
			Proposed	Proposed
TF	USD	Category 1	5.00	12.00
		Total:	5.00	
IDA	USD	Category 1	34.60	88.00
		Category 2	1.00	100.00
		Total:	35.60	

Components

Change to Components and Cost

Explanation:

The proposed AF of US\$40.6 million equivalent would be used for: a) emergency recovery activities in the amount of US\$20.7 million (51 percent); b) scale up activities in an amount of US\$16.9 million (42 percent); and c) cost overrun in an amount of US\$3.0 million (7 percent). The AF is required to cover the reconstruction needs as a result of the disaster, the financing gap for completion of the on-going RDVRP activities as well as to scale up in form of new activities of similar type and objective to activities already included in RDVRP. There would be no change in the overall project design, and the project components would remain the same. The AF would be used to increase all the components of the RDVRP:

- Prevention and Adaptation Investments in an amount of US\$23.56 million;
- Regional Platform for Hazard and Risk Evaluation and Application for Improved Decision making in an amount of US\$15.44 million; and
- Natural Disaster Response Investments in an amount of US\$1.00 million; and
- Project Management and Implementation Support in an amount of US\$0.60 million.

The main causes for the cost overruns are: a) inflation since the approval of RDVRP in June 2011; b) increase in the scope of civil works activities due to damage occurred on account of heavy rain events experienced since 2011 combined with further deterioration and damage to

identified rehabilitation sub-projects due to a lack of maintenance; and c) expanded scope of pre-engineering and design consultancy services required to further incorporate disaster and climate risk.

For project scale up, the proposed additional activities are in line with the original project objectives and would be the best mechanism to maximize development impact. The magnitude of scale up activities can be easily accommodated within the context of the project framework. Moreover, most of the scale-up activities were part of the initial RDVRP appraisal, but were not included in the Parent project due to financing limitations. Additionally, the PSIMPU would hire additional staff to ensure that they will have the adequate capacity to implement the scaled up project.

Component 1: Prevention and Adaptation Investments (Increase by US\$23.56 million)

The proposed AF would support the carrying out of selected infrastructure investments and related supporting studies, including: (a) retrofitting and rehabilitation of selected public buildings and emergency shelters and construction of selected satellite warehouses; (b) rehabilitation of selected transportation infrastructure; and (c) rehabilitation of selected bridges, slope stabilization, and related supporting studies; (d) improvement of selected roads and coastal defense infrastructure; and (e) support for the preparation of future sub-projects all through the provision of works, technical advisory services, operating costs and acquisition of goods. It would be used to cover emergency response activities, financing gaps and scale up to increase the impact of RDVRP in terms of building disaster and climate resilience of the built infrastructure in the proposed Project locations. Specific sub-projects and activities identified under this component are summarized as follows:

- Emergency response river training and bridge rehabilitation using the CRW resources;
- Financing gaps for consulting services to develop detailed designs for the Milton Cato Memorial Hospital using IDA resources;
- Scaled up consulting services and civil works to construct 2 additional satellite warehouses using IDA and PPCR resources;
- Emergency recovery and scaled up consulting services and civil works for slope stabilization and road realignment works in the Dark View, Troumaca, Petit Bordel, Rose Bank, Ginger Village, Mt. Greenan, Maroon Hill, Spring, English Gutter, German Gutter, Coull's Hill and Belle Isle areas, using CRW, IDA and PPCR resources; and
- Consulting services to carry out feasibility and pre-engineering studies and preparation of preliminary designs - including reliable cost estimates at Paget Farm in Bequia.

Component 2: Regional Platforms for Hazard and Risk Evaluation, and Applications for Improved Decision Making (Increase by US\$15.44 million)

The proposed AF would support building the regional capacity for assessment of natural risks and

integration of such assessment into policy and decision making process for the development of investments, disaster risk mitigation and disaster response across sectors, through the provision of technical advisory services, training and acquisition of goods. In addition, it would facilitate regional collaboration, including knowledge sharing and learning process to develop coastal defenses, including the construction of coastal protection, designation and delineation of drainage channels and buffer zones all through the provision of works, technical advisory services, training and acquisition of goods. Funds would be used to cover financing gaps and scale up for the following sub-projects and activities, summarized as follows:

- Scaled up scope for construction of: (i) South River Bridge; (ii) Green Hill Bridge; (iii) Dauphine Bridge; and (iv) Fenton River Fords aimed at Flood Mitigation measures for Arnos Vale/Warrawarrow River Watershed Pilot area using both PPCR and IDA resources;
- Scaled up consulting services and civil works for River Defense Works at (i) Buccament; and (ii) Carriere, using both PPCR and IDA resources;
- Capacity building in the Ministry of Transport and Works to strengthen disaster response, using CRW resources;
- Emergency recovery coastal defense works in Dark View and Sans Souci using CRW resources; and
- Financing gaps required for the construction of Georgetown Coastal Defense using IDA resources only.

Component 3: Natural Disaster Response Investments (US\$1.00 million)

The proposed AF would support carrying out of Emergency Recovery and Reconstruction Subprojects under an agreed action plan of activities designed as a mechanism to implement the Recipient's rapid response to an Emergency. This would make funds available in case of a natural emergency. AF funding would replenish the Natural Disaster Response Investment Component of the original operation, which was utilized in response to the December 2013 disaster event.

Component 4: Project Management and Implementation Support (Increase by US\$0.60 million)

The AF would support strengthening and developing the institutional capacity for Project management, and improving the capacity for disaster risk management and climate change monitoring, including (a) recruiting a Senior Quantity Surveyor, and Procurement and Contract Management Specialist; (b) recruiting a monitoring and evaluation (M&E) specialist; and (c) provision of training to the Public Sector Investment Management Unit (PSIPMU) staff and the staff of relevant key agencies in Project management, implementation support, coordination of disaster risk management and climate resilience activities under the Project, all through the provision of technical advisory services, training, operating costs and acquisition of goods. The AF would also support M&E training, including the PPCR program level M&E, for the PSIPMU and staff of key implementing agencies. Project management and implementation support

activities may include training and capacity building through participating in regional workshops and seminars. These activities are designed to improve national capacity for disaster risk management and climate change monitoring to support the integration of risk management principles into national development planning. In addition, the activities would strengthen the capacity of the PSIPMU to coordinate disaster risk management and climate resilience activities under the Project.

Current Component Name	Proposed Component Name	Current Cost (US\$M)	Proposed Cost (US\$M)	Action
Component 1 - Prevention and Adaptation Investments	Component 1 - No change	19.10	42.66	Revised
Component 2 - Regional Platforms for Hazard and Risk Evaluation, and Applications for Improved Decision Making	Component 2 - No change	22.20	37.64	Revised
Component 3 - Natural Disaster Response Investments	Component 3 - No change	2.00	3.00	Revised
Component 4 - Project Management and Implementation Support	Component 4 - No change	3.80	4.40	Revised
	Total:	47.10*	87.70	

* Parent Project, includes Grenada's amounts.

Other Change(s)

Change in Implementation Schedule

Explanation:

The closing dates of all credits and grants to SVG supporting this operation would be extended by two years to December 31, 2018.

Change in Procurement

Explanation:

Upon approval of the AF, the part of project implemented in SVG would operate under the 2011

Procurement and Consultants’ or Guidelines, January 2011. Additionally, given that the activities proposed under the AF and all forthcoming activities under components 1, 2 and 3, represent in urgent need of assistance because of a natural disaster, the procurement of these activities would be implemented following the streamlined procurement procedures enabled under OP/BP 10.00 – Special Considerations¹⁰, and in particular applying the following Procurement Methods and Prior Review Thresholds:

Expenditure Category	Contract Value (Thresholds) US \$ thousands	Procurement Method	Contracts Subject to Prior Review
1. Works	>1,500	ICB	All
	>200-<1,500	NCB	First three regardless of value and all >500
	200<	Shopping	First
	Regardless of value	Direct Contracting	All
2. Goods	>150	ICB	All
	>100<150	NCB	First
	100<	Shopping	First
	Regardless of value	Direct Contracting	All
3. Consulting Services			
-3.1 Firms	>100	QCBS,QBS,FBS, LCS	All
	<100	QCBS,QBS,FBS, LCS and CQS	First
	Regardless of value	Single Source	All
-3.2 Individuals	Regardless of value	Comparison of 3 CVs in accordance with Chapter V of the Guidelines	First five and then TORs

Note: ICB= International Competitive Bidding; NCB = National Competitive Bidding; QCBS = Quality and Cost Based Selection; QBS = Quality Based Selection; FBS = Fixed Budget Selection; LCS = Least-Cost Selection; CQS = Selection Based on Consultant Qualifications.

Appraisal Summary

Economic and Financial Analysis

Explanation:

The activities to be financed are a scale-up of current activities that would reduce macroeconomic vulnerabilities and have significant benefits on the local economy. A detailed economic cost-benefit analysis was conducted to determine the economic viability of the new sub-projects to be financed by the proposed AF. These sub-projects represent new physical interventions where data availability permitted a thorough cost-benefit analysis. The goods proposed to be purchased under the AF were not included in the economic analysis. The additional satellite warehouses were also not included as they provide an emergency support function in which the economic return cannot

¹⁰<http://intranet.worldbank.org/WBSITE/INTRANET/OPSMANUAL/0,,contentMDK:20064659~menuPK:51456940~pagePK:51457169~piPK:51457175~theSitePK:210385,00.html>

be calculated. Additionally, the sub-projects in which the scope of the originally designed works would be expanded under the proposed AF that are currently included in the original project were not analyzed – as the analysis conducted and economic return calculated under the original project would remain valid with likely additional benefits. The Economic Internal Rate of Return (EIRR) of the sub-projects evaluated in the analysis is 30.2 percent and, using a discount rate of 12 percent, the Net Present Value (NPV) is US\$74.9 million. These figures confirm the sizable economic benefits that would result from the activities outlined in the AF. The detailed economic and financial analysis can be found in Annex 4.

Public sector financing is the appropriate funding vehicle as the Ministry of Transport and Works (MoTW) has a legal obligation to build and maintain all public infrastructure in SVG. In addition, SVG does not have toll roads and the transportation infrastructure is accessible for all public use. Finally, all activities are designed to improve national capacity for disaster risk management and climate change monitoring to support improved integration of risk management principles into national development.

The World Bank has experience working on climate resilience and vulnerability reduction infrastructure projects in SVG, the Caribbean and globally. The Bank has proven capacity to provide technical assistance and guidance as SVG continues to build capacity and become more resilient. Lessons learned and best practices from across the world were applied during project design and will be applied during implementation. In addition, the Bank has the convening power to leverage partnerships with donor partners and additional funds to support scaled up vulnerability reduction and climate resilience activities in SVG.

Technical Analysis

Explanation:

The proposed civil works, institutional strengthening, capacity building and project management activities have been evaluated and were found consistent with the short term and long term objectives of the program. Specific works have been included based on economic benefits and priorities identified by the GoSVG. The sites of the proposed works were visited and the detailed technical reviews were conducted in order to refine the proposed work program. In all cases, clear relationships between work and PDO were identified and the supporting engineering, environmental and safeguard activities are being prepared. Works would generally involve the construction of public satellite warehouses, slope stabilization, river defense, promoting airport safety, rehabilitation and risk reduction of transportation infrastructure including highways and bridges. The proposed civil works can be reasonably completed within the increased lifespan of the Project.

Social Analysis

Explanation:

No additional safeguards were triggered for the AF, as such it has the same safeguards as the Parent Project, including: (i) Physical Cultural Resources OP/BP 4.11; and (ii) Involuntary Resettlement OP/BP 4.12.

Social safeguards. The sub-projects and activities proposed under the AF are similar in nature and scope to the sub-projects proposed under the original project. As a result, the anticipated social benefits are likely to be positive with impacts at country level. Some of the proposed works (for example Maroon Hill) may trigger the application of the Involuntary Resettlement Safeguard Policy (OP 4.12). Therefore, the Resettlement Policy Framework developed and disclosed under the original project was updated to include additional activities proposed under the AF and re-disclosed in-country on February 25, 2014.

Poverty reduction. The proposed activities would target geographical areas with the highest levels of poverty in SVG, such as Georgetown 55.6 percent and Sandy Bay 55.6 percent - where income generating activities are dominated primarily by agriculture and fishing. The map in Annex 5 highlights that poverty is concentrated in the northern parts of the island, and the further a community is from the urban center of Kingstown the higher the poverty rates. The proposed interventions would improve the infrastructure along key transportation routes, which would allow the poorer communities of the north to continue to have access to Kingstown's markets and public services.

Shared prosperity. Agriculture is the primary income generating activity for a majority of the population – in particular, the poor. The roads at Maroon Hill and Ginger Village are feeder roads for the small farmers in SVG's major agricultural basin. Without the access from these roads, farmers have to increase transportation costs to get their produce to the major markets located in Kingstown. In addition, the tertiary roads are in poor condition, so there is increased chance of bruising of crops en route to the market. This has resulted in reduced revenues for many farmers.

Gender. Shelter Management plans developed under the original project included special considerations for privacy, health and personal needs of women, the elderly and the disabled. The lessons learned from this exercise would be applied in the context of the additional M&E activities financed under the AF to develop gender-specific publications that provide guidance to women and men on disaster preparedness, tools to adapt to a changing climate, and basic gender-specific guidelines for response to climate impacts and tools for a speedy and more resilient recovery.

Environmental Analysis

Explanation:

No additional safeguards were triggered for the AF, as such it has the same safeguards as the Parent Project, including: (i) Environmental Assessment OP/BP 4.01; and (ii) Natural Habitats OP/BP 4.04.

The project remains classified as Category B. No new environmental safeguards were triggered - as the project portfolio has not fundamentally changed. Existing safeguard instruments were updated and disclosed in-country on January 27, 2014 and re-disclosed on April 9, 2014 - including a comprehensive Environmental Management Framework (EMF) for which an interagency consultation workshop was conducted in December 2013. The EMF was updated and re-disclosed to include an inventory and preliminary scoping of all potential activities and sub-projects. Additionally, screening procedures to: (i) generate standardized Environmental

Management Plans (EMPs); and (ii) identify conditions where more complex or sensitive environmental conditions exist will be defined through sub-project specific Environmental Impact Assessments (EIA). Specific EMPs will be developed during implementation, and the Operations Manual will be modified to reflect the improved screening and management procedures. The CPD's capacity to implement environmental safeguards has been increased by practical experience in management of the Hurricane Tomas Emergency Project (P124939), for which a field engineer has provided on the ground oversight with visible results. Line ministry capacity has also recently improved with staffing of a new Senior Engineer with broad experience in Eastern Caribbean countries. Finally, a regional safeguards training workshop will also be conducted in order to strengthen ties and enhance practical environmental management practices in the Eastern Caribbean.

Risk

Explanation:

As referenced in Annex 2: Operational Risk Assessment Framework (ORAF), key risks to achieving the PDO were identified along with mitigation measures to minimize the potential impacts of these risks for each activity under the Project. The ORAF would also be used to monitor, re-assess and review mitigation measures during Project implementation.

The identified risks fall into the following four broad categories: (i) Project Stakeholder Risks; (ii) Operating Environmental Risks; (iii) Implementing Agency Risks including Fiduciary Risks; and, (iv) Project Risks. This information along with specific risk mitigation measures can be referenced in Annex 2.

The size of SVG limits its' in-country human capital, which can lead to concentrated capacity transfer for a few individuals and a risk of losing this capacity in the case of staff turn-over. The Project would therefore aim to train existing Government staff as well as new staff to ensure that climate and disaster risk management capacity is adequate.

Implementing Agency risks would include inadequate capacity to handle the large number of contracts under the Project and inadequate coordination, quality control and information sharing mechanisms across various agencies and levels (regional and national). The project would finance additional project management capacity through appointments of technical assistance staff. In order to improve Government coordination and promote data and information sharing the Bank is providing technical assistance in data management and risk modeling to the relevant Government institutions. To ensure quality control, the Bank would, in the context of Project implementation support , carry out physical inspections and prepare action plans to establish critical path inspection procedures and integrate them into construction contracts.

Sustainability of project activities after the lifespan of the Project is likely as there is strong national ownership over the Project and the government is committed to fulfilling the objectives and activities outlined in the SVG SPCR.

Annex 1: Revised Results Framework and Monitoring Indicators

Project Development Objectives

Original Project Development Objective - Parent:

The Program aims at measurably reducing vulnerability to natural hazards and climate change impacts in the Eastern Caribbean Sub-region. The objective of the Project in Saint Vincent and the Grenadines is to measurably reduce vulnerability to natural hazards and climate change impacts in Saint Vincent and the Grenadines and in the Eastern Caribbean Sub-region.

Proposed Project Development Objective - Additional Financing (AF):

Same.

Results

Core sector indicators are considered: Yes

Results reporting level: Program Level

Project Development Objective Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
No Change	Reduced risk of SVGs population to failure of public buildings due to natural hazards or climate change impacts ¹¹	<input type="checkbox"/>	Number Sub Type Breakdown	Value	320	320	0
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018?
				Comment: No change	320 people at risk in unsafe public buildings		
No Change	Number of Government officials in Saint Vincent and the Grenadines able to produce location specific exposure maps	<input type="checkbox"/>	Number Sub Type Breakdown	Value	2	23	8
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	2 technical officials with specific training on	23 government officials have been trained to produce location	

¹¹ Aligned with PPCR Core Indicator #5: Number of people supported by the PPCR to cope with the effects of climate change.

					GIS analysis tools	specific maps, far exceeding the end target of 8	
Intermediate Results Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
No Change	Percentage of public buildings geo referenced in a national exposure database in SVG	<input type="checkbox"/>	Percentage	Value	0	100	100
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	0 percent of public buildings in national exposure database	All 366 public buildings in SVG have been included in a national exposure database	
No Change	Public building geo spatial information collected in SVG	<input type="checkbox"/>	Number	Value	0	366	366
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	0 public buildings in which geo-spatial information has been collected	Geo-spatial information for 366 public buildings in SVG has been collected.	
No Change	Number of gabion baskets used in construction of flood mitigation works	<input type="checkbox"/>	Number	Value	0	0	8,400
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	0 gabion baskets have been used at the start of the project		
No Change	Designs and Pre	<input type="checkbox"/>	Number	Value	0	0	6

	engineering/geotechnical studies completed for roads and bridges rehabilitated under the Project in SVG			Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	0 designs and Pre-engineering/geotechnical studies are complete		
Revised	Reduced risk of SVG's population to failure of roads and bridges due to natural hazards or climate change impacts ¹²	<input type="checkbox"/>	Number	Value	32,156	32,156	0
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: Revision to target only	Daily users currently at risk: 1) Fenton (2) - 500 2) South River Rd Bridge - 10,000 3) Spring - 9,800 4) Carriere, Maroon Hill & Ginger Village - 10,200 5) Coulls Hill - 1,656		
No Change	Number of Government officials who complete training on producing location specific exposure maps in SVG	<input type="checkbox"/>	Number	Value	2	23	8
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	2 technical officials have completed	23 government officials have been trained, far	

¹² Aligned with PPCR Core Indicator #5: Number of people supported by the PPCR to cope with the effects of climate change.

					training on producing location-specific exposure	exceeding the end target of 8	
No Change	Number of location specific exposure maps completed by staff trained under the Project in SVG	X	Number	Value	0	9	20
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: No change	0 exposure maps completed by staff trained under the Project	9 exposure maps have been completed by staff trained under the Project	
Revised	Reduced risk of SVG s population to flooding in areas with flood mitigation works financed by the Project in SVG ¹³	X	Number	Value	1,275	1,275	0
				Date	23-Jun-2011	31-Dec-2013	31-Dec-2018
				Comment: Revision to target only	425 households with an average of 3 people per household for a total of 1,275 people		

¹³ Aligned with PPCR Core Indicator #5: Number of people supported by the PPCR to cope with the effects of climate change.

New	Increased capacity of communities to respond to disaster events ¹⁴	<input type="checkbox"/>	Number of fully operational satellite warehouses located within vulnerable communities	Value	0	0	6
				Date	17-Dec-2013	31-Dec-2013	31-Dec-2018
				Comment: New target	0 fully operational satellite warehouses located within vulnerable communities		

¹⁴ Aligned with PPCR Core Indicator #3: Quality and extent to which climate responsive instruments/investment models are developed and tested.

Annex 2

Operational Risk Assessment Framework (ORAF)

Saint Vincent and the Grenadines: Regional Disaster Vulnerability Reduction Project (Additional Finance) (P146768)

Risks

Project Stakeholder Risks

Stakeholder Risk	Rating	Low				
Risk Description: SVG: The risk that users of public buildings and infrastructure are dissatisfied with the civil works financed under the Project..	Risk Management:					
	SVG: The activities to be financed under the AF have been chosen based on observed deficiencies and vulnerability and in processes involving the beneficiary communities. The communities are likely to be supportive of the interventions since they perceive and actually benefit directly from them.					
	Resp: Client	Stage : Implementation	Recurrent :	Due Date:	Frequenc y:	Status: In Progress

Implementing Agency (IA) Risks (including Fiduciary Risks)

Capacity	Rating	Moderate				
Risk Description: SVG: There is a risk that the addition of the scaled up project will overburden the Central Planning Division (CPD) staff, and if additional support is not provided, the quality of procurement output and coordination across various	Risk Management:					
	SVG: The project team is sufficiently staffed, and targeted training has facilitated capacity development to manage Bank-supported projects. In order to ensure that the Public Sector Investment Program Management Unit (PSIPMU) has the appropriate staff required to implement the scaled up project, the AF would provide financing for a Senior Quantity Surveyor and an additional Procurement and Contract Management Specialist to increase the procurement capacity in the unit. Additionally, there is strong government ownership of the					

<p>agencies and levels (regional and national) may be compromised.</p>	<p>project, which has helped to enhance the climate resilience and disaster risk management agenda in the country. The PSIMPU has also contracted a Field Engineer with proven in-country environmental supervision experience.</p>					
	Resp: Client	Stage Implementation	Recurrent:	Due Date:	Frequency:	Status: In Progress
Governance	Rating	Moderate				
<p>Risk Description: SVG: Risk of inadequate mechanisms to ensure quality control, transparency and accountability.</p>	<p>Risk Management: SVG: The project would continue to be implemented through established implementation and internal quality control mechanisms. In addition, the PSIPMU would submit a progress report, which includes updates on the results framework and the unaudited interim financial report, every three months. To ensure quality, the Bank implementation support team would continue to carry out technical audits on a routine basis and monitor the adherence to the World Bank's procurement guidelines. Finally, a supervision mission would go to SVG at least once every six months.</p>					
	Resp: Both	Stage Implementation	Recurrent:	Due Date:	Frequency:	Status: In Progress
Project Risks						
Design	Rating	Moderate				
<p>Risk Description: SVG: Physical environmental data is insufficient for design of climate-resistant infrastructure projects; Project activities are located in numerous areas spread over a wide but accessible geographical area; Scope of rehabilitation works grows with</p>	<p>Risk Management: SVG: The Project team would provide for detailed inspections at the pre-engineering stage to minimize hidden damage impacts.</p>					
	Resp: Both	Stage Implementation	Recurrent: <input checked="" type="checkbox"/>	Due Date:	Frequency: Quarterly	Status: In Progress
	<p>Risk Management: SVG: Project works activities would be constructed in compliance with current adopted</p>					

discovery of hidden damages during construction; and Rehabilitation of older infrastructure may put improvements at risk due to existing design deficiencies.	International Building Code standards. The PSIMPU Senior Project Engineer would review engineering assessments produced for rehabilitation works and MoTW would provide trained inspectors in accordance with current code enforcement procedures.						
	Resp: Both	Stage Implementation	Recurrent : <input checked="" type="checkbox"/>	Due Date:	Frequency:	Quarterly	Status: In Progress
	Risk Management: SVG: The Project would seek to build capacity at both regional and national levels, including institutional strengthening for multiple Ministries across a shared data platform to insure maximum distribution of analytical capacity.						
	Resp: Both	Stage Implementation	Recurrent : <input checked="" type="checkbox"/>	Due Date:	Frequency:	Quarterly	Status: In Progress
	Risk Management: SVG: The Project would build country and regional capacity for strengthening the understanding of climate change adaptation needs throughout the lifetime of the Project.						
	Resp: Both	Stage Implementation	Recurrent : <input checked="" type="checkbox"/>	Due Date:	Frequency:	Yearly	Status: In Progress
	Risk Management: SVG: The Project would build country and regional capacity for strengthening the understanding of climate change adaptation needs throughout the lifetime of the Project.						
	Resp: Both	Stage Implementation	Recurrent : <input checked="" type="checkbox"/>	Due Date:	Frequency:	Yearly	Status: In Progress
Social and Environmental	Rating	Moderate					
Risk Description: SVG: Purchase of private lands for Project works would require application of resettlement safeguards as it relates to land acquisition.	Risk Management: SVG: The Bank team composition includes a Senior Social Development Specialist who would provide training and technical assistance in the application of Bank safeguard on Involuntary Resettlement in a timely and on-going manner during project preparation and implementation. The PSIPMU already has experience with these requirements from a previous project (P124939).						
	Resp: Bank	Stage Implementation	Recurrent : <input checked="" type="checkbox"/>	Due Date:	Frequency:	Yearly	Status: In Progress

		ation				ss
Risk Management:						
SVG: In order to boost the capacity of the PSIPMU, and the social specialist, to handle land acquisition, targeted capacity building training is planned in FY14. In addition, the Bank will continue to pay close attention to the implementation of safeguards through frequent supervision missions.						
Resp: Bank		Recurrent :	<input checked="" type="checkbox"/>	Due Date:	Frequenc y: Yearly	Status: In Progre ss
Risk Management:						
SVG: Projects would also emphasize compliance with national environmental policies in addition to Bank safeguards.						
Resp: Both	Stage Imple : ment ation	Recurrent :	<input checked="" type="checkbox"/>	Due Date:	Frequenc y: Yearly	Status: In Progre ss
Risk Management:						
SVG: An EMF is in preparation that would define criteria and triggers for additional assessment work (project-specific EIAs) if necessary for river defense, coastal defense, and road realignment works due to project complexity, sensitive environmental conditions, or presence of factors triggering the Natural Habitat or Physical Cultural Resource policies. In addition, these screening mechanisms would be incorporated into the Operations Manual for the project.						
Resp: Both	Stage Imple : ment ation	Recurrent :	<input checked="" type="checkbox"/>	Due Date:	Frequenc y: Yearly	Status: In Progre ss
Delivery Monitoring and Sustainability	Rating	Moderate				
Risk Description:	Risk Management:					
SVG: Future funding is not secured as	SVG: The Pilot Program for Climate Resilience is a multi-phased donor-funded Project that					

<p>the Government has not fully established monitoring and evaluation systems designed to capture quantitative climate and disaster risk reduction, representing a risk to the sustainability of the model.</p>	<p>would support Project activities after the life of the Project; thereby improving the sustainability of the activities. In addition, a commitment would be sought from the Government to cover Project activities after the Project closes.</p>				
<p>Resp: Both</p>	<p>Stage Implementation</p>	<p>Recurrent : <input checked="" type="checkbox"/></p>	<p>Due Date:</p>	<p>Frequency: Yearly</p>	<p>Status: In Progress</p>

Annex 3: Detailed Description of Modified or New Project Activities

1. The proposed AF to the SVG RDVRP would meet the GoSVG's most critical emergency recovery and rehabilitation needs following the recent December 2013 flood event, scale up investments of the same type and meet an unanticipated financing gap in Component 1- prevention and adaptation investments and Component 2 - regional platforms for hazard and risk evaluation, and applications for improved decision making; replenish Component 3 - natural disaster response investments; and allocate additional funds to Component 4 - project management and implementation support.

2. The activities identified for inclusion under the proposed AF include emergency recovery river training, bridge rehabilitation and reconstruction, road realignment, coastal defenses and replenishment of the emergency contingency component. The activities would rehabilitate and reconstruct the infrastructure that were damaged in the floods to be more disaster resilient. The proposed AF would also include additional and expanded slope stabilization works, expansion of river defense works, the construction of additional satellite warehouses to support community disaster preparedness, augmented institutional strengthening activities to address disaster preparedness, disaster risk reduction and climate change, pre-engineering studies and support to monitoring and evaluation (M&E) capacity development in SVG. AF proceeds would also be allocated to meet sub-project specific shortfalls and to hire additional project management staff. Collectively, these activities would aim to increase national resilience to the impact of natural disasters and improve the capacity of government ministries to identify and manage the impacts associated with climate change.

3. **Emergency Procedures.** Given the emergency nature of the proposed AF, special procurement procedures enabled under OP/BP 10.00's Special Considerations would be utilized for the implementation of remaining activities under Components 1, 2 and 3 of the original project (RDVRP-P117871) as well as for all new activities financed under the AF. The urgency of the activities identified under these components either directly address the GoSVG's emergency recovery needs or address activities with increased urgency as a result of the December 2013 disaster.

4. With the exception of the emergency response activities, a program level Environmental Management Framework (EMF) was disclosed in-country on January 27, 2014 and re-disclosed on April 9, 2014 and covers new activities to be financed under the AF, with the exception of the emergency response activities, in addition to activities covered in the already disclosed Environmental Assessment (EA) prepared under the original project. The Bank team together with the client visited all sub-project sites to assess potential environmental and social implications of the proposed activities. For sub-projects that would require a stand-alone EIA and/or resettlement plan, requisite environmental requirements and resettlement action plans would be completed prior to the commencement of any civil works activities. These requirements are included in the current Project Operations Manual, and would be updated as necessary. As required under the current Project, all sub-projects that require a stand-alone EIA or resettlement plan would be subject to prior review by the Bank.

Emergency Challenge

5. **Overview of Disaster Impacts.** A rapid Damage and Loss Assessment (DaLA) carried out by a World Bank team from January 6 – 15, 2014, estimated that the combined physical damage and economic losses, from the December 2013 disaster, were approximately US\$108.4 million (15 percent of GDP). The vast majority of damages were in the transport and infrastructure sector (including the housing sector) and amounted to total damages and losses of approximately US\$104 million¹⁵. Over 38 bridges (21 percent of SVG's bridge infrastructure) were affected - of which 24 were damaged and 14 were completely destroyed. Numerous landslides blocked key transportation routes throughout the country and substantial interventions would be required to stabilize affected slopes. Rehabilitation and reconstruction efforts will require an estimated 1 – 2 years to complete.

6. **Poverty Assessment of the Disaster.** The impact was concentrated in zones with the highest levels of poverty such as Georgetown and Sandy Bay (55.6 percent poverty headcount¹⁶), where the focus of economic activity is on agriculture, fishing and services. An estimated 44 percent of the people affected are classified as living in poverty. Agricultural losses are estimated at US\$1.4 million and while the losses represent only 1 percent of the GDP, the impact is disproportionately felt by low-income families whose agricultural production is primarily for personal consumption and local sales (i.e. farmers markets). Although a more detailed social analysis is required, preliminary observations indicate that vulnerable families, dependent on agricultural production, may be at risk of falling below poverty line as a result of the disaster.

7. **Macroeconomic Impact of the Disaster.** Prior to the disaster, modest economic growth was expected in SVG over the next two years due to increases in the agriculture sector, large-scale public sector investment into construction, and growth in the tourism industry - in particular, growth in the construction of new hotels and the new airport. Due to the disaster, the likelihood of economic growth has drastically decreased - as due to the infrastructure damages, tourism and agriculture are two of the most devastated sectors in the country. According to the World Bank database, on average 74,000 tourists come to SVG annually, especially during the peak season from November to April, and tourism expenditures account for 48 percent of total exports. While the financial impact of tourism is still unknown, it is expected that the number of tourists going to the key tourism sites would decrease due to the poor road conditions as a result of the disaster.

8. **Fiscal Impact of the Disaster.** While the current event is estimated to represent a combined damage and loss total of approximately 15 percent of GDP, the flash flooding event comes at a time of a global recession, a significant downturn in worldwide tourism and high fuel prices which further constrain national growth. The GoSVG does not retain sufficient resources to deal with the fiscal shock from the disaster. With SVG's public external debt relative to GDP ratio estimated at 70 percent in 2012 (IMF WEO, 2013), the GoSVG has limited capacity to manage the fiscal impact of any exogenous shocks. SVG's debt-to-GDP ratio was projected to

¹⁵ The focus of the assessment was on physical damages to the infrastructure sector – including the housing sector.

¹⁶ SVG Country Poverty Assessment, 2008

level off at 66.2 percent by 2017¹⁷; however, due to the disaster, public debt levels are now expected to continue to increase.

Description of Modified or New Project Activities

9. **Selection Criteria.** The activities in the AF were selected by the GoSVG based on prioritization criteria that included: (i) the level of infrastructure vulnerability; (ii) the connectivity of the road segments; (iii) the criticality of the road network for economic flows; and (iv) a cost-benefits analysis, where applicable. Detailed technical audits were conducted for the proposed sites for civil works.

10. **Component 1: Prevention and Adaptation Investments** (Original allocation US\$7.3 million, increase by US\$23.6 million to US\$30.9 million). The proposed AF would support carrying out of selected infrastructure investments and related supporting studies, including: (a) retrofitting and rehabilitation of selected public buildings and emergency shelters and construction of selected satellite warehouses; (b) rehabilitation of selected transportation infrastructure; and (c) rehabilitation of selected bridges, slope stabilization, and related supporting studies; (d) improvement of selected roads and coastal defense infrastructure; and (e) support for the preparation of future sub-projects all through the provision of works, technical advisory services, operating costs and acquisition of goods. It would be used to cover emergency response activities, financing gaps and scale up to increase the impact of RDVRP in terms of building disaster and climate resilience of the built infrastructure in the proposed Project locations. Specific sub-projects and activities identified under this component are summarized as follows:

Activity	Total (USD millions)	CRW (USD millions)	IDA (USD millions)	PPCR (USD millions)	Scale-up or Cost Overrun
Slope Stabilization and road re-alignment: Ginger Village, Mt. Greenan, Maroon Hill, Spring, Dark View, Troumaca, Petit Bordel, Rose Bank, German & English Gutters Coull's Hill, Belle Isle	\$15.60	\$5.58	\$7.72	\$2.30	Scale-up & Emergency: expanding scope of sub-project in Parent
River Training and Bridge Rehabilitation: North River and South River	\$2.36	\$2.36	\$0.00	\$0.00	Emergency
Satellite Warehouses: Bequia, Mesopotamia, (Rose Hall, Sandy Bay)**, Georgetown, Union Island	\$3.10	\$0.00	\$2.60	\$0.50	Scale-up
Milton Cato Memorial Hospital: Technical Designs	\$2.00	\$0.00	\$2.00	\$0.00	Cost overrun
Paget Farm Pre-engineering studies and design	\$0.50	\$0.00	\$0.50	\$0.00	Scale-up
Component 1 Sub-Total	\$23.56	\$7.94	\$12.82	\$2.80	

¹⁷ IMF Projections.

Slope Stabilization and Road Re-alignment Sub-projects

Ginger Village –Belmont Landslide sub-project

11. **Background.** On September 2, 2013, a large landslide occurred on the Belmont main road in the area of Ginger Village – rendering the road impassable. The road is the main inland arterial road that connects several large communities between Mt. Pleasant/Peruvian Vale and Arnos Vale viz Fairhall, Belmont, Mesopotamia, Ginger Village, Evesham, Hopewell, Calder and Richland Park. This road is also the main inland route to the new international airport at Argyle, which is scheduled for completion in late 2014. Accordingly, the route is being developed under phased program and its Phase 1 (beginning at Arnos Vale) is currently under construction. As a result of the landslide, the road has been blocked and the traffic is not able to use the road over half of its length. This has caused significant disruption in the movement of traffic and great difficulties for the road users.

12. **Sub-project Rationale.** The failure of the slope at Ginger Village has resulted in complete failure of the Belmont main road in the area of Ginger Village - affecting the normal life and significant economic losses in the areas. The objective of this activity would be to stabilize the slope to facilitate the re-construction of the road in order to restore connectivity of the main road. Several technical options of using alternate routes have been considered, but they have not been found technically and economically viable due to increased distances, difficult road alignments and higher costs. Under the present situation, the most appropriate option would be to reconstruct the affected sections of road by improving road alignments and better design standards to reduce current disaster vulnerability as well as long-term climate risk. The geo-technical studies for the slope stabilization will also inform the full technical design for the road re-alignment that will be prepared in house.

Mt. Greenan, Spring and Maroon Hill Sub-project

13. **Background.** Vulnerability analysis of the national road infrastructure network has identified three critical locations, which require either preventative or rehabilitative work to vulnerable slopes adjacent to road infrastructure. Mt. Greenan is a village located on the Windward Highway. Immediately north of Mt. Greenan, the Windward highway follows a coastal route cut from an unstable slope bordering the sea. The upper slope varies up to 40 feet in height and is comprised of alluvial and reworked deposits, as well as loose pyroclastic (ash-fall) deposits. This 0.5 km stretch of road has suffered from continuous small-scale landslides over the years causing temporary blockage – particularly during the rainy season. The Windward Highway is the main route on the east coast of the island and provides access to approximately 54,000 people, 17,000 of which are directly affected by recurrent slope failures and resulting road blockage north of Mt. Greenan.

14. South of Mt. Greenan is an area called Spring where the Windward Highway road alignment borders the sea and where there is undercutting on the lower slope as a result of sea erosion. Although the area is comprised of hard material (lava flows and associated deposits), there has been steady erosion over the years to the road edge despite previous stabilization

interventions. Approximately, 23,000 persons would be affected if the road was to fail at this location.

15. Maroon Hill is located inland and is along the main road connecting the valleys of three communities viz Richland Park, Charlotte and Greiggs. Both the upper and lower road slopes are comprised of alluvial and reworked deposits and have registered failures along a 0.5km stretch over the years.

16. ***Sub-project Rationale.*** Landslides are common in Saint Vincent and the areas referenced above suffer from recurrent slope instabilities that result in road blockage and are likely to fail completely, which would result in a major road blockage along the identified routes. These slopes require long-term stabilization measures to avoid further economic losses. The objective of this activity would be to ensure that the Windward Highway remains always open to traffic. Several technical options of using alternate routes have been considered but they have not been found technically and economically viable as they are secondary and tertiary roads and would require longer road lengths, difficult road alignments and higher costs.

17. Each site requires a combination of slope stabilization, road re-alignment, construction of bypasses across weak sections, and improved drainage systems in order to reduce current vulnerabilities. The geo-technical studies at each of these sites is underway and the full technical designs are expected to be ready by January 2015.

Slope Stabilization and Road Re-alignment Sub-project Beneficiaries

18. Maroon Hill and Ginger Village - Over 9,600 people (9 percent of the total population) would benefit from interventions at these sites. In particular, small farmers would be major beneficiaries from these sub-projects as the roads are feeder roads for the agricultural basin and small farmers depend on them to get their crops to market in Kingstown. Without access to these roads, small farmers may have increased transportation costs.

19. Mt. Greenan and Spring – Over 9,800 people (9 percent of the total population) would benefit from the interventions along the Windward highway. The beneficiaries comprise of people in communities with the highest poverty levels, such as Sandy Bay (55.6 percent) and Georgetown (55.6 percent) whose major economic activities are agriculture and fishing. If the Windward Highway were to fail at these sites, many communities would effectively be cut off from emergency services that require use of the transportation network such as ambulances and fire trucks.

20. At the national level, stabilizing the airport access road would benefit the entire population through the promotion of economic development, employment creation opportunities and advancing social life. Indirectly, these interventions would help the general population due to improved mobility and access to critical services.

Slope Stabilization and Road Re-alignment Proposed Investments

21. The design of proposed interventions would ideally follow a three-pronged approach. Firstly, there would be a technically viable design approach based on several field studies (i.e. soil testing and geotechnical investigations - including an analysis to determine the cause of the landslide), followed by the detailed design of an appropriate intervention to ensure longer life and road traffic safety. Secondly, there would be a community-based approach in identification of relevant causes and solutions. Finally, there would be strict quality control and adherence to design standards in the implementation of the final solution. An EIA and EMP would also be carried out with an adequate M&E framework.

Road Rehabilitation – Belle Isle - Coulls Hill Road Sub-project

22. ***Background.*** In the disaster event on December 2013, some sections on Leeward Highway in the areas of Coulls Hill and Belle Isle, were washed off and the road was closed to traffic, cutting off road access to a significant section of the Leeward side of the island for about two to three days. The areas were temporarily cleared, but remain in an unstable condition.

23. ***Sub-project Rationale.*** The Leeward Highway is the only access to the Western side of the island. The Belle Isle – Coulls Hill section of the highway provides the only access to (i) communities with population of 12,500; (ii) two hydro power stations; (iii) several local water supply systems; and (iv) the western slopes of the La Soufriere volcano. The rehabilitation of this road is critical to provide access to communities and to ensure proper functioning of the water supply system. Local communities in these areas were without water for as long as three weeks after the disaster. Moreover, if the La Soufriere volcano, which last erupted in 1979, were to erupt, the communities north of the Belle Isle Coulls Hill area would be trapped if the road failed. Tourist sites, such as the Dark View Falls and the La Soufriere trails, lie beyond this stretch of highway. Loss of this roadway will have limit access to tourism sites, which will have a negative impact of SVG's economy.

24. ***Sub-project Beneficiaries.*** The affected population of 12,500 will be the primary beneficiaries. The rehabilitation of road will promote economic development through improving transportation system and advancing social life. Direct beneficiaries will also include the National Security, National Emergency Management Organization (NEMO), Power Company (VINLEC) and the Water Supply Company.

25. ***Proposed Investments.*** The rehabilitation of the affected sections of the road including gabion baskets, retaining walls, benching of slopes, surface water control and tree planting.

River Training and Bridge Rehabilitation: North River and South River Sub-projects

26. ***Background.*** The North River and the South River breached at various points causing extensive flooding in the commercial and administrative areas in Kingstown. Due to high rainfall intensity and severe flooding, the following damages occurred: (a) abutments of a number of

bridges suffered scouring; and (b) bridge decks were overtopped on account of inadequate bridge openings and water above the design flood level.

27. **Sub-project Rational.** The North River Channel, suffered erosion during the event. The South River breached its banks in the lower reach in the Middle Street area. Over a length of approximately 1 km the river has approximately 15 bridges that serve the city road network. These bridges generally remained functional. However, due to overflow two bridges in the Middle Street and Bay Street areas were affected due to abutment scouring, and this will require immediate repairs. Parts of the main hospital on the island located in West Kingstown, were flooded causing evacuation of patients as well as damage and loss to the medical records, equipment (CT Scan machine and others), medical supplies and building finishes. The hydraulic study for North and South Rivers was carried out in 2005 by DLN consultants, which need to be updated.

28. **Sub-project Beneficiaries.** Direct beneficiaries would be the population who will have savings in the travel costs and enhance safety. Hospital authorities will also be the beneficiary.

29. **Proposed investments.** The proposed investments for the North River and South River areas include Bridge replacement, embankment protection and hydraulic design improvements. To prevent flooding of the hospital site, it requires a diversion of water from the existing drain to a new larger conduit into the North River. This will increase the flood levels in the lower reaches, which in turn will require the rehabilitation of the North River bridges. Additionally, the existing plan to relocate the Kingstown docks to the Western end of the bay will impose increased traffic loading on the old bridges, which in turn will require rebuilding or upgrading the existing drainage structures over the North River.

Additional Satellite Warehouses at Mesopotamia, Georgetown, Bequia and Union Island sub-projects

30. **Background.** Aging and unmaintained infrastructure coupled with changing climatic conditions have deteriorated existing public infrastructure, resulting in high levels of vulnerability to natural hazards. Existing vulnerabilities of the road infrastructure related to landslides and rock falls, while currently being addressed, would continue to provide uncertainties related to their functionality following significant climatic and seismic events. Under the proposed AF, additional satellite warehouses in Mesopotamia, Georgetown and the islands of Bequia and Union Island, some of the most isolated communities in SVG, would be constructed to improve community resilience and increase localized capacity to respond to a disaster event.

31. **Sub-project Rationale.** SVG is a multi-island state, and due to its rugged topography, communities on vulnerable sections of its road infrastructure such as Georgetown and Mesopotamia can easily be cut off from services in the event of a major disaster. The islands of Bequia and Union by virtue of their isolation from the mainland would be required to be first responders to disasters in isolation of assistance from the mainland. The objective of this activity would therefore be to construct satellite warehouses in specific vulnerable communities to provide immediate access to emergency equipment following a significant disaster related event,

and to provide them with the capacity to respond to the crisis immediately following its occurrence.

32. **Sub-project Beneficiaries.** Direct beneficiaries of the proposed satellite warehouses would include the members of the communities in the various catchment areas of Georgetown (approx. 6,500 persons) with an estimated 55.6 percent poverty headcount, Mesopotamia (approx. 3,000 persons) with an estimated 29.2 percent poverty headcount, Bequia Island (approx. 4,000 persons) with under 20 percent poverty headcount and Union Island (approx. 3,000) with under 20 percent poverty headcount.

33. **Proposed Investments.** The satellite warehouses (reinforced concrete and block work structures) would primarily provide storage capacity for essential disaster response equipment and supplies. Also included, would be a small office, toilet and shower. It is anticipated that the office space would be used for meetings or converted into a Community Emergency Operations Center should the need arise. The building would be wired to receive power from the electric grid, generator and photovoltaic supply systems and have a limited water storage capacity. The warehouses would be managed by the local or district disaster committees.

34. **Component 2: Regional Platforms for Hazard and Risk Evaluation, and Applications for Improved Decision Making** (Original allocation US\$10.8 million, increase by US\$15.4 million to US\$26.2 million). The proposed AF would support building the regional capacity for assessment of natural risks and integration of such assessment into policy and decision making process for the development of investments, disaster risk mitigation and disaster response across sectors, through the provision of technical advisory services, training and acquisition of goods. In addition, it would facilitate regional collaboration, including knowledge sharing and learning process to develop coastal defenses, including the construction of coastal protection, designation and delineation of drainage channels and buffer zones all through the provision of works, technical advisory services, training and acquisition of goods. Funds would be used to cover financing gaps and scale up for the following sub-projects and activities, summarized as follows:

Activity	Total (USD millions)	CRW (USD millions)	IDA (USD millions)	PPCR (USD millions)	Scale-up or Cost Overrun
River Defense: Buccament, Carriere	\$2.05	\$0.00	\$0.55	\$1.50	Scale-up
Fords and River Defense: Arnos Vale/Warrawarrow River Watershed Pilot area: (i) South River Bridge; (ii) Green Hill Bridge; (iii) Dauphine Bridge; and (iv) Fenton River Fords	\$1.40	\$0.00	\$0.90	\$0.50	Scale-up: expanding scope of sub-project in Parent
Coastal Defense: Georgetown	\$1.03	\$0.00	\$1.03	\$0.00	Cost overrun
Coastal Defense: Dark View and Sans Souci	\$10.46	\$10.46	\$0.00	\$0.00	Emergency
Capacity Building to support emergency response in the Ministry of Transport and Works	\$0.50	\$0.50	\$0.00	\$0.00	Emergency
Component 2 Sub-Total	\$15.44	\$10.96	\$2.48	\$2.00	

Buccament and Carriere River Defense Sub-projects

35. **Background.** The lower sections of the Buccament and Carriere rivers pose potential threats to significant property and road infrastructure. In recent years, the Buccament valley has witnessed the development of a significant number of residential houses and a major hotel development. As a result, clearing and other poor land use practices in the development process have led to flooding of the river in its lower sections - requiring an intervention. The road through Carriere follows a vertical embankment of the Yambou River over a short (0.1km) stretch at a height of approximately 15m. The road is vulnerable to erosion at this point and requires an intervention on the river embankment.

36. **Sub-project Rationale.** According to climatic and development trends, flood events experienced in recent years by both rivers would continue to be exacerbated. Hydrological and hydraulic studies (DLN 2006) have been completed for several rivers including the Buccament River with similar studies underway on the Yambou River (among others) by the IBI Group.

37. The current project seeks to implement the most critical flood mitigation measures proposed by the hydraulic studies. This would involve a combination of both academic and permanent remedial measures and that would comprise part of an integrated watershed management plan.

38. The technical design and construction of risk mitigation works and adaptation measures to mitigate flooding and promote river erosion control would reduce damage to public and private property, improve the mobility of the target population during and after a flood event, and offset other socio-economic effects due to road blockage caused by flood waters. Moreover, the implementation of comprehensive river management plans would improve river flows and its biodiversity.

39. **Sub-project Beneficiaries.** The direct beneficiaries of proposed interventions (approx. 2,600 people) would include affected residents and users of at risk public buildings and roads. Along the Buccament River, there are two public schools (1 primary and 1 secondary) that frequently flood during times of heavy rainfall. The students and faculty of these institutions would be some of the primary beneficiaries of the proposed sub-projects. Additionally, population statistics indicate a population growth of 6 percent in the Layou District (which includes Buccament) over the past two decades¹⁸; this emphasizes the growing importance of investing in vulnerability reduction interventions in these areas. In the Buccament and Carriere areas, the poverty headcount is just above the national average at 32.4 percent and primary economic activities include agriculture, fishing, construction and services.

40. **Proposed Investments.** The sub-project would include the appointment of a consultancy firm to design and implement recommendations derived from previous watershed studies - targeting the most critical vulnerable sections of the river, which the budget can support. This would include river defense measures that include a combination of reinforced concrete works,

¹⁸ Government of Saint Vincent and the Grenadines Census Division Statistics.

gabion baskets, realignment, levees, tributary drainage improvements, vegetation, and any other proven complementary efforts to improve past designs.

41. The integrated watershed management activities would involve both technical studies and permanent remedial measures. With regard to the technical studies, this sub-project would inform the existing management plan for the Arnos Vale watershed by providing critical field data. The activities associated with this aspect of the sub-project would include workshops and knowledge management support, which would be organized to facilitate regional collaboration around integrated watershed management. Additionally, a maintenance plan would be prepared, which would include activities related to periodical drainage cleaning and educational programs to change human behavior in relation to land use and waste disposal management.

Coastal Defense Dark View Sub-project

42. **Background:** In the disaster event on December 24-25, 2013, some sections on Leeward Highway in the areas of Dark View were washed off and the road was closed to traffic. The coastal erosion in the area of Dark View may be due to a process of coastal retreat in recent years, probably as a result of a combination of sea level rise, storm surge and human activities.

43. **Project Rationale.** The Dark View sub-project has two components, the upper and lower slope protection. For the upper slope protection, the funding of the geotechnical studies is covered under RDVRP, and is scheduled to commence in the 2nd quarter of 2014. For the lower slope protection, the funding of the coastal studies for the sea erosion is covered under the Caribbean Development Bank and the studies are currently in progress. The technical reports on the concept designs and the preliminary investigations have been submitted and are being reviewed by the MoTW.

44. The recent storm event caused landslides in the area and unfortunately five persons died in Rose Bank. As a result, the road was closed to traffic for two days and the vulnerability of the road structure increased significantly. Therefore, it is critical to carry out immediate planning, design and implementation of remedial measures on an emergency basis. For the upper slope interventions, the funds are available under RDVRP; however, for the lower slope interventions no funds are available. The damages that occurred have created a major risk to the stability of all coastal infrastructure and particularly this section of the coastal infrastructure is vulnerable to disaster events and currently under serious threat of stability. Furthermore, the interventions proposed for the remedial works of the lower slope protection, has tremendous potential for economic development on account of planned improvement of amenities in the area, which has an expected outcome of increased tourism, local recreation and commercial activities.

45. **Sub Project Beneficiaries.** The affected population of about 9,500 will be the primary beneficiaries. The rehabilitation of road will promote economic development through improving transportation system and advancing social-economical life.

46. **Proposed Investment.** The proposed investment for the sub-project will include engaging consultants for carrying out feasibility studies, field surveys, soil investigations, engineering design, and preparation of bidding documents. This will also include awarding civil works

contracts to execute urgently needed interventions of slope protection, retaining walls, gabions, rehabilitation and reconstruction of roads, bridges and other drainage structures to ensure safety of traffic on the road.

Coastal Defense- Sans Souci Sub-project

47. **Background.** Sans Souci is located in the southern end of the Mt Greenan slope stabilization project on the Windward coastline. This area, including the Mt Greenan stretch north of Sans Souci, has been subjected to steady erosions over the decades. Anecdotal information indicates an erosion rate of approximately 3 feet per year, similar to that of the Georgetown area to the north.

48. **Project Rationale.** The Mt Greenan slope stabilization project is primarily designed for interventions in the upper slopes along the Windward road. The geotechnical investigation about to be launched on the upper slope is anticipated to provide a solution, which is likely to involve the reduction of the slope angle. This will produce between 60,000 and 100,000 cubic yards of material that will have to be transported and placed elsewhere with substantial haulage costs. To identify location for the placement of such a huge quantity of material will impose a serious technical problem. The proposed Sans Souci coastal defense project would provide the following benefits: (a) an ideal location taking into account the economic and social development considerations; (b) providing opportunities for increased land area; and (c) ensuring protection of the foot of the lower slope of the Windward highway, which is currently being eroded along the Mt Greenan stretch. Furthermore there are four properties (combined value of approximately USD 100,000), which have been directly affected by the erosion in the Sans Souci area. These buildings are now vulnerable and under serious threat of collapsing, if the current rate of erosion continues. The proposed Sans Souci project will have synergy with the Mt Greenan Slope Stabilization project resulting in reduced construction costs and increased coastal defense, and will ensure safety of road with both upper and lower slopes well protected.

49. **Sub Project Beneficiaries.** The affected population about 11,500 will be the primary beneficiaries. The rehabilitation of road will promote economic development through improving transportation system and advancing social life.

50. **Proposed Investments.** The proposed investment for this sub-project will include engaging consultants for carrying out a coastal erosion study, environmental impact assessment, design review and its updating based on recent field surveys, soil investigations, coastal erosion and geo-technical studies. Consultant will also update bidding documents, bill of quantities, works requirements and technical specifications based on which the bids will be invited, and civil work contract awarded. The anticipated interventions will include rock or concrete armor protection on geotextile fabric on the seaward side of the landfill, and the civil works, which will comprise of slope protection, retaining walls, gabions, rehabilitation and reconstruction of roads, bridges and other drainage structures to ensure safety of traffic on the road.

51. **Component 3: Natural disaster response investment (Original allocation US\$1.0 million, increase by US\$1.0 million to US\$2.0 million).** The proposed AF would support carrying out of Emergency Recovery and Reconstruction Subprojects under an agreed action plan of

activities designed as a mechanism to implement the Recipient's rapid response to an Emergency. Funds will be allocated to support the GoSVG's future emergency response capacity, which can be reallocated to other components if not utilized by December 2016. The original allocation was mobilized in response to the December 2013 disaster event.

Component 4: Project Management and Implementation Support (Original allocation US\$1.8 million, increase by US\$0.6 million to US\$2.4 million). The AF would support strengthening and developing the institutional capacity for Project management, and improving the capacity for disaster risk management and climate change monitoring, including (a) recruiting a Senior Quantity Surveyor ,and Procurement and Contract Management Specialist; (b) recruiting a monitoring and evaluation (M&E) specialist; and (c) provision of training to the Public Sector Investment Management Unit (PSIPMU) staff and the staff of relevant key agencies in Project management, implementation support, coordination of disaster risk management and climate resilience activities under the Project, all through the provision of technical advisory services, training, operating costs and acquisition of goods. The AF would also support M&E training, including the PPCR program level M&E, for the PSIPMU and staff of key implementing agencies. Project management and implementation support activities may include training and capacity building through participating in regional workshops and seminars. These activities are designed to improve national capacity for disaster risk management and climate change monitoring to support the integration of risk management principles into national development planning. In addition, the activities would strengthen the capacity of the PSIPMU to coordinate disaster risk management and climate resilience activities under the Project. (CRW: \$100,000; IDA: \$300,000; PPCR: \$200,000).

Annex 4: Economic and Financial Analysis

1. The activities proposed in the RDVRP AF would reduce the country's macroeconomic vulnerabilities and benefit the local economy. The Project would limit the loss of economic output, lessen the fiscal shock, and ease balance of payment risks caused by violent weather patterns. The proposed sub-projects would reduce the likelihood of damage to transportation networks, lessening the need for post-disaster borrowing. Additionally, they improve the ability of the Government to provide vital services in the wake of disasters, reducing loss of life and allowing economic activity to return to normal levels quicker.
2. A cost-benefit analysis was applied to a representative sample of sub-projects, which were selected because they represent the new physical interventions where data availability permitted a thorough cost-benefit analysis. The goods proposed to be purchased under the AF were not included in the economic analysis. The additional satellite warehouses were also not included as they provide an emergency support function in which the economic return cannot be calculated. Additionally, the sub-projects in which the scope of the originally designed works would be expanded under the proposed AF that are currently included in the original project were not analyzed – as the analysis conducted and economic return calculated under the original project would remain valid with likely addition benefits.
3. The approach compared the costs of the interventions against estimated economic benefits. The analysis estimated cost savings of lower commute times and lower fuel expenditures that result from the project, as well as the cost savings of not having to repair or replace damaged infrastructure. The Economic Internal Rate of Return (EIRR) of the sub-projects evaluated in the analysis is 30.2 percent. Using a discount rate of 12 percent, the Net Present Value (NPV) is US\$74.9 million for an initial investment of US\$20.9 million. Previous research found that the average return on road construction in the developing world is 29 percent.¹⁹ These figures attest to the sizable economic benefits that would result from the activities outlined in the proposed AF.
4. Public sector financing is the appropriate funding vehicle as all activities are designed to improve national capacity for disaster risk management and climate change monitoring to support improved integration of risk management principles in national development. In addition, the Ministry of Transport and Works (MoTW) has a legal obligation to build and maintain the public infrastructure, so the physical works of the AF are under their purview. Finally, SVG does not have toll roads and the transportation infrastructure is accessible for all of the public.
5. The World Bank has experience working on climate resilience and disaster risk management (DRM) infrastructure projects in SVG, the Caribbean and globally. The Bank can provide technical assistance and guidance as SVG continues to build capacity and becomes more resilient. Lessons learnt and best practices from across the world can be applied to the Project in SVG. In addition, the Bank can support SVG in trying to leverage additional funds to support decreasing vulnerability disasters and the fiscal shocks of disasters.

¹⁹ World Bank (1994), *World Development Report 1994, Infrastructure for Development*, New York, Oxford University Press.

6. The proposed sub-projects and activities are designed to mitigate climate change risks and boost economic activity. In general, there are three types of losses incurred by a country due to natural disasters: (i) macroeconomic risks prompted by the event - namely a sharp increase in indebtedness and worsening of the balance of payment situation; (ii) direct loss and damage to physical property caused by the event; and (iii) loss of economic activity that is displaced by the event. The methodology used here addresses each level of loss.

7. Natural disasters pose a serious risk to SVG's macroeconomic stability. According to the International Monetary Fund, one of the main economic challenges facing Caribbean states is vulnerability to natural disasters.²⁰ Additionally, the economic losses and the sudden inflow of international aid that tends to occur immediately following a natural disaster, creates balance of payments risks as exports drop and imports rise. The government debt of SVG relative to GDP was 70 percent in 2012 (IMF WEO, 2012), giving the country little fiscal space to deal with exogenous shocks. Similarly, the country faces large current account deficits, which would only be exacerbated by another natural disaster.

8. The interventions proposed in this project help mitigate macroeconomic risks by increasing the resilience of public structures to natural disasters. This reduces the likelihood of damage to public buildings and transportation networks and improves the ability of the government to provide vital services in the wake of disasters. Disaster preparedness measures reduce the long-term economic costs of disasters, as it allows activity to more quickly return to normal levels. Furthermore, the capital stock is less likely to be damaged, reducing the need for post-disaster borrowing. This improves the country's long-term macroeconomic outlook keeping debt levels and current account deficits lower than they would be in the absence of such interventions.

9. The economic analysis assessed the economic returns of specific interventions proposed by the AF. A detailed economic cost-benefit analysis was conducted to determine the economic viability of four sub-projects. These sub-projects represent physical interventions where data availability permitted a thorough cost-benefit analysis, and comprise US\$21.1 million of the total allocated budget under the AF. The sub-projects analyzed include: (i) slope stabilization and road realignments, including Ginger Village, Spring, Mt. Greenan, Maroon Hill, and Coulls Hill; (ii) river training and bridge rehabilitations, including North River and South River; and (iii) coastal defenses including Dark View and Sans Souci.

10. The methodological approach compares the costs of the interventions against estimated economic benefits. The benefits analyzed as averted costs due to the interventions proposed in the AF. The benefits are estimated by the averted costs of, as appropriate: (i) the opportunity cost of time spent in longer commutes due to detours and traffic congestion; (ii) the fuel expenditures that a driver would potentially spend due to longer commute times; (iii) the costs of landslide clean-ups; (iv) the costs of replacement of damaged infrastructure; and (v) the costs of property damage from landslides. The benefits, or cost savings, would be a direct result of the project activities. Other economic benefits may result from the interventions, for example the

²⁰ International Monetary Fund. *Caribbean Small States: Challenges of High Debt and Low Growth.* February, 2013.

avoidance of loss of agricultural economic activity as the Maroon Hill road is a feeder road for agricultural basin in Marriqua, but they are not captured in this analysis due to lack of data. The two main results of the analysis are the EIRR and the NPV. Both figures capture the estimated economic returns of the project, rather than the financial returns used in traditional cash flow analyses. The high rates of return are in large part due to the yearly timesaving associated with the sub-projects, which are aggregated over a 50-year period. The low levels of road redundancy and the high levels of highway use mean that any road failure results in significant increase in commute times. Thus, the largest source of benefits is the opportunity cost of time, followed by fuel savings.

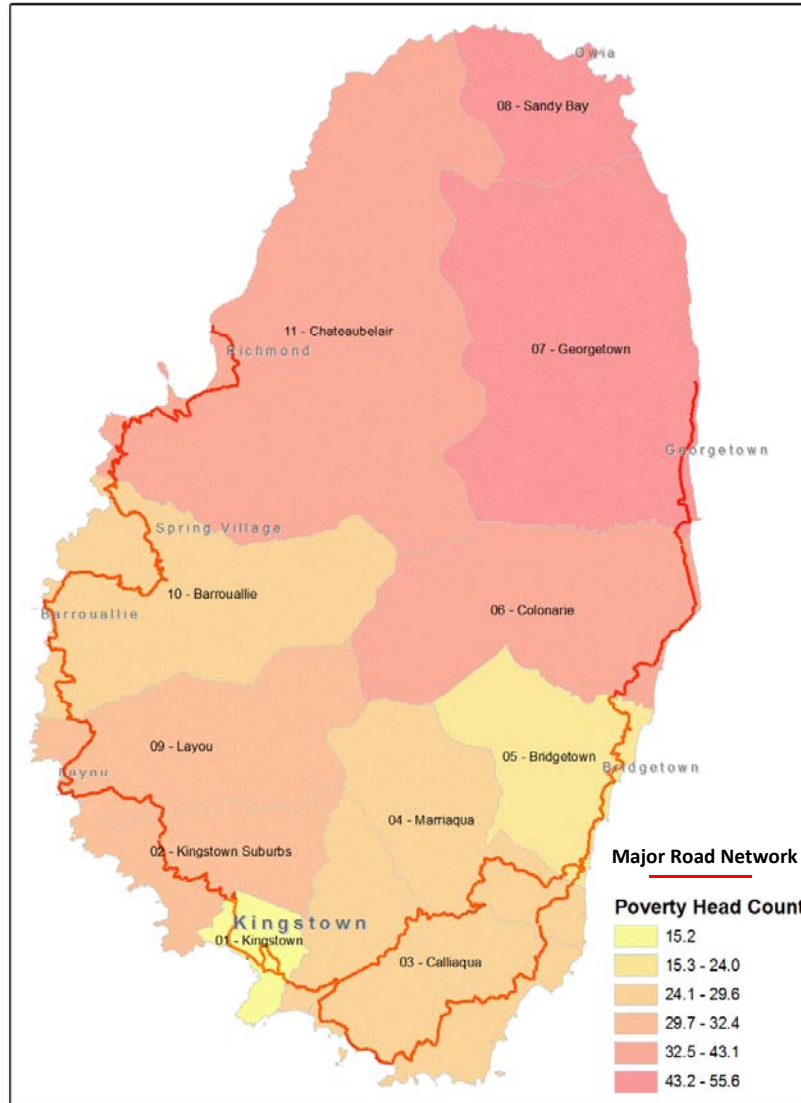
11. The results are based on data related to traffic flows, local fuel costs, fuel efficiency rates of local vehicle fleets, passenger counts, and average wage rates. The data was collected during a field mission and verified by several country experts. The analysis accounts for the risks of infrastructure failure that increase over time due to weather patterns and erosion. Future economic benefits were adjusted using a discount rate of 12 percent, which roughly equates to the country's cost of capital. All sub-projects were assessed using an appraisal period of 50 years. The table below breaks down the EIRR for the analyzed sub projects.

Table 1: Result of the Economic Analysis

Sub-project	Original Investment (USD millions)	NPV (USD millions)	EIRR (USD millions)
Slope Stabilizations and Road Realignment			
Ginger Village	\$3.6	\$15.1	55.0%
Spring	\$0.5	\$15.7	81.7%
Mt Greenan	\$0.9	\$1.9	33.9%
Maroon Hill	\$0.5	\$1.4	25.4%
Coulls Hill	\$2.7	\$2.1	16.3%
River Training and Bridge Rehabiliations			
North River	\$1.8	\$8.0	20.9%
South River	\$0.6	\$6.0	26.7%
Coastal Defenses			
Dark View Coast	\$5.6	\$4.4	17.3%
Sans Souci Coast	\$4.9	\$20.3	32.8%
Total	\$20.9	\$74.9	30.2%

Annex 5: National Poverty Map Showing the relationship between Poverty and the Major Road Network

Figure 1: Poverty Headcount 2008



Source: Country Poverty Assessment 2008