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IDA/R2016-0257/1

November 4, 2016

Closing Date: Wednesday, November 23, 2016
at 6 p.m.

FROM: Vice President and Corporate Secretary

Saint Lucia - Disaster Vulnerability Reduction Project

Additional Financing

Project Paper

Attached is the Project Paper regarding a proposed additional credit to Saint Lucia for a Disaster Vulnerability Reduction Project (IDA/R2016-0257), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC and MIGA

Document of
The World Bank

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Report No: PAD1667

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF US$1.62 MILLION

AND A

PROPOSED CO-FINANCING FROM THE EUROPEAN UNION IN A GRANT

IN THE AMOUNT OF €5.74 MILLION
(US$6.42 MILLION EQUIVALENT)

TO SAINT LUCIA

FOR A

SAINT LUCIA DISASTER VULNERABILITY REDUCTION PROJECT

October 24, 2016

Social, Urban, Rural and Resilience Global Practice
Latin America and Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30, 2016)

Currency Unit	=	East Caribbean Dollar
XCD2.68	=	US$1
US$1.12	=	€1

FISCAL YEAR
April 1 – March 31

ABBREVIATIONS AND ACRONYMS

AADT	Annual Average Daily Traffic
AF	Additional Financing
DEDTCA	Department of Economic Development, Transport and Civil Aviation
DRM	Disaster Risk Management
DSD	Department of Sustainable Development
DVRP	Disaster Vulnerability Reduction Project
EA	Environmental Assessment
EDF	European Development Fund
EMF	Environmental Management Framework
EMP	Environmental Management Plan
GDP	Gross Domestic Product
GoSL	Government of Saint Lucia
IDA	International Development Association
MIPEL	Ministry of Infrastructure, Port, Energy and Labor
MIPST	Ministry of Infrastructure, Port Services, and Transport
MoA	Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Cooperatives
MoE	Ministry of Education, Human Resource Development and Labour
MoED	Ministry of Economic Development, Housing, Urban Renewal, Transport and Civil Aviation
MoF	Ministry of Finance, Economic Affairs, Planning, and Social Security
PCC	Project Coordination Committee
PCU	Project Coordination Unit
PDO	Project Development Objective
PPCR	Pilot Program for Climate Resilience
RPF	Resettlement Policy Framework
SCF	Strategic Climate Fund
SLU	Saint Lucia

Vice President:	Jorge Familiar
Acting Country Director:	Sabine Hader
Senior Global Practice Director:	Ede Jorge Ijjasz-Vasquez
Acting Practice Manager:	Ming Zhang
Task Team Leader:	Tiguist Fisseha

SAINT LUCIA

DISASTER VULNERABILITY REDUCTION PROJECT

CONTENTS

ADDITIONAL FINANCING DATA SHEET

Saint Lucia

SLU Disaster Vulnerability Reduction Project (Additional Finance) (P155324)

LATIN AMERICA AND CARIBBEAN

GSU10

Basic Information – Parent			
Parent Project ID:	P127226	Original EA Category:	B - Partial Assessment
Current Closing Date:	31-Dec-2019		

Basic Information – Additional Financing (AF)			
Project ID:	P155324	Additional Financing Type (from AUS):	Scale Up
Regional Vice President:	Jorge Familiar	Proposed EA Category:	B
Acting Country Director:	Sabine Hader	Expected Effectiveness Date:	20-Feb-2017
Senior Global Practice Director:	Ede Jorge Ijjasz-Vasquez	Expected Closing Date:	31-Dec-2019
Acting Practice Manager/Manager:	Ming Zhang	Report No:	PAD1667
Team Leader(s):	Tiguist Fisseha		

Borrower				
Organization Name	Contact	Title	Telephone	Email
Government of Saint Lucia, Ministry of Finance, Economic Growth, Job Creation, External Affairs and Public Service	The Honourable Allen M. Chastanet	Minister, Ministry of Finance, Economic, Growth, Job Creation, External Affairs and Public Service	+ 1 758 468-2122	pm.sec@govt.lc

Project Financing Data - Parent (Saint Lucia Disaster Vulnerability Reduction Project-P127226) (in USD Million)							
Key Dates							
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date

P127226	IDA-54930	Effective	04-Jun-2014	16-Jul-2014	13-Nov-2014	31-Dec-2019	31-Dec-2019
P127226	TF-17101	Effective	04-Jun-2014	16-Jul-2014	13-Nov-2014	31-Dec-2019	31-Dec-2019
P127226	TF-17143	Effective	16-Jul-2014	16-Jul-2014	13-Nov-2014	31-Dec-2019	31-Dec-2019

Disbursements

Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P127226	IDA-54930	Effective	USD	41.00	41.00	0.00	4.97	32.14	12.13
P127226	TF-17101	Effective	USD	15.00	15.00	0.00	0.90	14.10	6.00
P127226	TF-17143	Effective	USD	12.00	12.00	0.00	0.80	11.20	6.67

Project Financing Data - Additional Financing SLU Disaster Vulnerability Reduction Project (Additional Finance) (P155324) (in USD Million)

[ ] Loan [ ] Grant [ ] IDA Grant

[X] Credit [ ] Guarantee [ ] Other

Total Project Cost: 8.04 Total Bank Financing: 1.62

Financing Gap: 0.00

Financing Source – Additional Financing (AF)	Amount
International Development Association (IDA)	1.62
European Development Fund - TF	6.42
Total	8.04

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	Role	Title	Specialization	Unit
Tiguist Fisseha	Team Leader	Senior Disaster Risk Management Specialist	Disaster Risk Management	GSU10

Sonia Cristina Rodrigues Da Fonseca	Procurement Specialist	Senior Procurement Specialist	Procurement	GGO04
Kerry Natelege Crawford	Financial Management Specialist	Financial Management Specialist	Financial Management	GGO22
Cristina Elizabeth Coirolo	Safeguards Specialist	Young Professional	Social Safeguards	GSU04
Denis Jean-Jacques Jordy	Peer Reviewer	Senior Environmental Specialist	Climate Change	GEN2A
Keren Carla Charles	Team Member	Disaster Risk Management Specialist	Disaster Risk Management	GSU10
Kerri Dionne Whittington	Team Member	Consultant	Knowledge Management	GSU10
Lisa Lui	Counsel	Lead Counsel	Legal	LEGLE
M. Yaa Pokua Afriyie Oppong	Safeguards Specialist	Senior Social Development Specialist	Social Safeguards	GSU04
Manju Ghumman	Team Member	Program Assistant	Program Assistant	LEGLE
Michael J. Darr	Safeguards Specialist	Consultant	Environmental Safeguards	GEN04
Michel Matera	Peer Reviewer	Senior Urban Spec.	Disaster Risk Management	GSU13
Nicolas Kotschoubey	Safeguards Specialist	Consultant	Environmental Safeguards	GEN04
Patricia M. Acevedo	Team Member	Program Assistant	Program Assistant	GSU10
Selamawit Getachew Woldetsadik	Team Member	Consultant	Operations Analyst	GSU10
Sofia U. Bettencourt	Peer Reviewer	Lead Operations Officer	SIDS, Climate Change	GFDRR

Extended Team

Name	Title	Location
Daniel Thirion	Senior Engineer	United States
Luz Maria Gonzalez	Senior Economist and Financial Specialist	United States

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
St. Lucia	Choiseul Quarter	Choiseul	X	X	

St. Lucia	Castries Quarter	Castries	X	X	
St. Lucia	Anse-la-Raye	Anse-la-Raye	X	X	

Institutional Data
Parent (Saint Lucia Disaster Vulnerability Reduction Project-P127226)
Practice Area (Lead)
Social, Urban, Rural and Resilience Global Practice
Contributing Practice Areas
Climate Change
Additional Financing - SLU Disaster Vulnerability Reduction Project (P155324)
Practice Area (Lead)
Social, Urban, Rural and Resilience Global Practice
Contributing Practice Areas
Climate Change

I. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide an additional credit in an amount of US$1.62 million to Saint Lucia for the Disaster Vulnerability Reduction Project- DVRP (Credit Number 5493-LC, Strategic Climate Fund (SCF) Grant Number TF17143, and SCF Loan Number TF17101). The proposed Additional Financing (AF) also includes a grant financing from the European Union in the amount of €5.74 million[1] (US$6.42 million equivalent). The proposed AF is for project scale up, which would increase the development impact and results of the DVRP. Upon approval of the proposed AF, the total project financing would increase from US$68 million to US$76.04 million equivalent. In addition, this paper also seeks approval to trigger the safeguards policy for Pest Management (OP/BP4.09), to allow for incidental use of pesticides under the Project.

2. In parallel, the following changes are being undertaken: (a) update of the results framework in view of the expansion in project scope; (b) changes in the project's institutional and implementation arrangements, which resulted from the reorganization of the government following the general elections in June 2016; and (c) amendment to the project description and results indicators under the existing legal agreements for the DVRP in view of the proposed AF. The AF would not require an extension of the project closing date.

3. The Project Development Objective (PDO) – to reduce vulnerability to natural hazards and climate change impacts in Saint Lucia – would not change. However, Component 1 (Risk Reduction and Adaptation Measures) will be expanded to finance the reconstruction and retrofitting of additional infrastructure, while activities under Component 5 (Project Management and Implementation Support) will scale-up overall project management. As a result, a new intermediate results indicator has been added and the target value for one intermediate results indicator has been revised to reflect the scaling-up of project activities. An additional intermediate results indicator has been incorporated to track beneficiary engagement, in line with World Bank requirements.

4. Partnership arrangements. The European Union is providing a grant in the amount of €5.74 million, financed under the EDF,[2] which supports actions in developing countries and territories to promote economic, social, and human development. According to the Action Document for the Saint Lucia Post Trough Emergency Infrastructure Rehabilitation Programme Common External

[1] This grant amount represents the total EDF contributions from the European Union which is pledged for AF activities under the EDF Grant No. TF0A3651, as stated in the Administrative Agreement signed between the EU and the World Bank on September 12, 2016. The Project scope and Results Framework have been appraised as inclusive of this total estimated amount of €5.74 million contributions. The Grant Agreement between the World Bank and Saint Lucia will only include €4.94 million (i.e. 70 percent of the total grant amount pledged), which is the initial installment transferred by the donor to the World Bank, and this amount will be amended upon the EU's transfer of the second installment of its total pledged contributions in accordance with the schedule of transfers specified in the Administration Agreement. As a result, an amendment of the Grant Agreement will be required to bring up the level of funding for the Project. Such an amendment to the Grant Agreement will not be treated as an additional financing requiring another approval.

[2] The EDF is the main instrument for distributing the EU's aid for development cooperation in the African, Caribbean, and Pacific States as well as Overseas Countries and Territories.

Relations Information System (CRIS) number 2015/37923), the project modality for EDF funds has been agreed to be indirect management with the World Bank,[3] through the DVRP.

II. Background and Rationale for Additional Financing and Grant Co-financing

5. ***Country Context***. After experiencing a recession in 2012 and close-to-zero growth in 2013, the Saint Lucian economy is gradually recovering. Gross domestic product (GDP) growth rose from an average of 0.3 percent during 2012-14 to 2.4 percent in 2015.[4] Tourism, the country's most important economic sector, has underpinned the gradual economic recovery. Despite recent uptick in economic activity and the positive short-term outlook, unemployment rose to 24 percent in 2015, while unaddressed vulnerabilities are holding back the pace of the recovery, including the need to improve the country's fiscal position, tackle financial sector weaknesses, improve the business environment, foster higher and more inclusive growth, as well as create buffers against natural disasters to absorb potential recovery and reconstruction costs.[5] Given its geographic location, small land mass, and topography, the entire nation of Saint Lucia is highly vulnerable to all anticipated impacts of global climate change. From 1994 to 2013, Saint Lucia ranked 14th globally, on average annual weather-related losses (as percentage of GDP).[6] According to World Bank analysis,[7] the annual average loss from hurricanes is US$9.50 million (0.7 percent of GDP) and from earthquakes is US$2.60 million (0.2 percent of GDP).[8] It is estimated that if current climactic trends continue, extreme events will become more frequent resulting in greater fiscal impacts.[9] Climate vulnerabilities are further exacerbated by the country's limited human and financial resources as well as highly exposed social and economic infrastructures - much of which are located in low-lying, coastal areas. The considerable economic dependence on primary production and the service industry further contributes to such vulnerabilities as the success of both sectors is heavily influenced by climate.

6. ***Sector Context and Institutional Context.*** Saint Lucia has made considerable efforts to improve national disaster risk management (DRM) capacity. Over the years, the country has been strengthening its institutional, legal and coordination frameworks for DRM, enhancing risk monitoring and early warning systems, improving emergency preparedness and planning, increasing public awareness and capacity of public officials, as well as investing in risk mitigation measures and financial instruments to safeguard against fiscal shocks associated with disaster. Notwithstanding Saint Lucia's progress achieved in DRM over the past two decades, the island still faces challenges in adequately and comprehensively managing natural hazard risk. Development decisions often do not take into account disaster risks and expected climate change impacts due to lack of sufficient information on hazards, risks, and climate change impacts as well

[3] Under the EU processes, funds granted in association with a World Bank project are categorized as indirect management.
[4] OECS AM15 Bi-Annual Economic Briefs. World Bank 22 September 2016
[5] IMF, St. Lucia: Staff Concluding Statement of the 2015 Article IV Mission. November 2015
[6] Global Climate Risk Index (2015). German watch.
[7] World Bank 2016, Saint Lucia Country Disaster Risk Profile Model.
[8] The probable maximum loss for hurricanes, i.e. for a 250 year return period, is US$382 million (27 percent of GDP) and for earthquakes, i.e. for a 250 year return period, is US$148 million (10 percent) of GDP.
[9] Tompkins, Emma L and W. Neil Adger, "Does adaptive Management of Natural Disasters Enhance Resilience to Climate Change?", Ecology and society (2): 10, 2004. http://www.ecologyandsociety.org/vol9/iss2/art10

as limited capacity and weak data sharing among agencies. Underdeveloped and dilapidated infrastructure challenges disaster vulnerability reduction efforts. Oftentimes, designs and construction were carried out without due consideration to disaster hazard and risk, and maintenance has been deferred over multiple years. Beyond its physical vulnerability and need for an improved understanding of risks, Saint Lucia is also fiscally threatened by natural catastrophes, given the significant recovery and reconstruction costs associated with such events. Lack of access to immediate capital for post-disaster recovery and reconstruction represents a major challenge. The fiscal impacts of disasters have thus resulted in unsustainable budgetary deficits and dependence on unreliable funding streams.

7. ***Project Background and Implementation Status.*** The DVRP entailed funding of US$68 million, comprising US$41 million equivalent in credit, including US$17 million from the International Development Association (IDA) Crisis Response Window, US$12 million in a Grant from the SCF through the Climate Investment Fund's Pilot Program for Climate Resilience (PPCR) and US$15 million in a SCF concessional loan. The Project was approved on June 4, 2014, became effective on November 13, 2014, and has a closing date of December 31, 2019. The PDO is to reduce vulnerability to natural hazards and climate change impacts in Saint Lucia. The Project was designed to finance structural risk mitigation and emergency reconstruction interventions prioritized in light of the December 2013 floods[10], as well as technical assistance and capacity building efforts to ensure long-term institutional sustainability. The Project finances the following five project components: (a) Component 1: Risk Reduction and Adaptation Measures, which finances a combination of risk reduction investments and emergency reconstruction activities; (b) Component 2: Technical Assistance for Improved Assessment and Application of Disaster and Climate Risk Information in Decision-Making, which supports institutional strengthening and capacity building to better collect, manage, and apply climate risk and spatial information in development and planning decision-making; (c) Component 3: Climate Adaptation Financing Facility, which is a revolving credit line facility that provides loans to eligible households and private businesses to finance climate adaptation activities; (d) Component 4: Contingent Emergency Response Component, which is a provisional component that would finance emergency recovery and reconstruction subprojects in the event of a disaster;[11] and (e) Component 5: Project Management and Implementation Support, which finances institutional capacity strengthening and operating costs for project management and implementation.

8. The Project has made reasonable progress towards achievement of the PDO. The Project is on track to achieve the first PDO indicator (number of direct project beneficiaries) with 15 percent target achievement to date. The Project is also on track to achieve the second PDO indicator, to reduce the number of days of interrupted traffic due to landslips, flooding and other climate-related events in project area. It is expected that all the activities related to this indicator will be completed and the second PDO indicator will be fully achieved by the target date in

[10] The DVRP was under preparation - with resources from IDA credit and SCF grant and loan - at the time of the 2013 December flooding event, which caused total estimated damages and losses of US$99.8 million (approximately eight percent of national GDP). In response to the Government's request for support, US$17 million was mobilized from the IDA Crisis Response Window, which was combined and processed with the DVRP as a single project.

[11] The contingent component is designed as a mechanism that enables the Government of Saint Lucia to rapidly access IDA funds through a rapid re-categorization and reallocation of project financing, to cover emergency response and recovery costs in the event of a disaster.

December 2019. Specifically, the tender processes for the rehabilitation of Choc Bridge and for the design for the land stabilization and road rehabilitation works along the National Highway are underway, with works expected to begin in the next six and eighteen months, respectively. The technical studies to inform the selection of sites for the drainage improvement and slope stabilization investments along select roads are currently ongoing. The third PDO indicator for the number of public buildings with reduced vulnerability to landslips, flooding and other climate-related events, has been partially achieved with the rehabilitation of two out of the eight planned buildings. Moreover, rehabilitation works are currently ongoing on one of the school buildings (Dennery Infant School), which is expected to be completed in March 2017, and the tender processes are underway for the reconstruction of the two largest buildings, namely the Choiseul Secondary School and the Dennery Policlinic, with completion expected in March 2018 and September 2018, respectively. Lastly, the PDO indicator related to climate risk analysis reflected in transport and drainage infrastructure design has been fully achieved.

9. Progress on implementation is also tangible based on the achievements in Components 1, 2 and 4. The Project has trained fifteen Government officials (the end target is fifty by September 30, 2019) in spatial data management and half of the targeted Government agencies have been connected to a spatial data management platform. Activities related to hydrological and meteorological networks enhancement has been advancing with a comprehensive hydromet sector review completed. The tender process for the LiDAR consultancy will be launched by December 2016, with the survey fully completed by October 2018, as planned. The technical studies, assessments and designs for the roads rehabilitation and drainage works have been completed, and the related physical investments are currently ongoing; it is expected that achievements will be documented under the intermediate results indicators in the Project's result framework following the completion of the activities by the target date of April 2019. The Operations Manual for the provisional Component 4 has been successfully developed. With respect to Component 5, the required additional consultants have been contracted within the PCU and within the implementing agencies for the management of the Project, including a Civil Works Coordinator, a Project Engineer, a Finance Manager, a Climate Change Coordinator, a Communications Specialist and a Social Officer.

10. The Project has generally complied with financial management (FM), procurement and environmental safeguard requirements and guidelines of the World Bank. All the required Social and Environmental safeguards instruments for the Project, including an Environmental Assessment/Environmental Management Framework (EA/EMF) and a Resettlement Policy Framework (RPF), were duly prepared by the Government and approved by the World Bank in January 2014. Through supervision, the need to strengthen the FM and social safeguards capacity was identified. With respect to FM, while there have been enhancements, including the hiring of a financial manager within the Project Coordination Unit (PCU), project financial management performance by the PCU still needs improvement. The chart of accounts set up, which has been revised to properly capture, track and monitor the receipt and use of funds by the specific source of financing, will be examined by the World Bank and enhanced further, if required. The PCU needs to fully meet the FM reporting requirements and ensure that Interim Financial Reports (IFRs) are accurately prepared with minimal revisions by the World Bank. Moreover, the IFRs and audit reports should be submitted in a timely manner. The PCU has agreed to address weaknesses in its FM capacity. Social safeguards has been managed without adequate staffing

within the PCU. To address the safeguards capacity challenge, a Social Officer has been designated in the PCU to ensure compliance with the World Bank's social safeguards policy requirements throughout the lifespan of the DVRP. The World Bank will continue to provide training to PCU staff and work closely with the government to improve its financial management and social safeguards capacities and performance.

11. ***Rationale for Additional Financing***. The activities supported under the proposed AF represent a scale up of two of the original project components (Components 1 and 5) to increase the development impact and results of the DVRP, following the tangible achievements to date and successful implementation of activities. Specifically, the AF activities under Component 1 (US$7.62 million) would finance: (a) the reconstruction of the Piaye bridge; (b) the reconstruction of the Vanard (Venus) – Anse-la-Raye link Road; (c) the retrofitting and rehabilitation of selected schools and health centers; and (d) technical assessments - which include the carrying out of feasibility studies as well as designs - and supervision of the proposed works, while activities under Component 5 (US$0.42 million equivalent) will scale-up overall project management, through: (a) staffing the PCU; (b) building the capacity of the Department of Economic Development, Transport and Civil Aviation (DEDTCA)[12], the Department of Sustainable Development (DSD)[13] within the Ministry of Education, Innovation, Gender Relations and Sustainable Development and the relevant technical implementing agencies; (c) training of DEDTCA and PCU staff, and strengthening the respective capacity for management, supervision, monitoring and evaluation of specific project activities; (d) carrying out technical audits of select subprojects; and (e) carrying out donor visibility activities, all through the provision of technical advisory services, training, operating costs and acquisition of goods.

12. The Government of Saint Lucia (GoSL) requested that the EDF grant (US$6.42 million) that the European Union has committed to Saint Lucia following the December 2013 flooding, be channeled through the World Bank under the DVRP – and used towards financing the reconstruction and rehabilitation of infrastructure that have not been addressed with earlier interventions. In parallel, in anticipation of the closure of the Saint Lucia Hurricane Tomas Emergency Recovery Project, on September 30, 2014, the GoSL requested cancellation and recommitment of outstanding IDA funds towards the DVRP for project scale-up on September 25, 2014. The consolidation of the proposed AF activities under the DVRP will maximize potential synergies, particularly from fiduciary, safeguards and technical support already provided under the DVRP, promote efficiencies and better ensure streamlined overall project management and reporting.

13. ***Climate change co-benefits.*** In line with the objectives of the original Project, sub-activities to be financed under the AF and EDF grant resources will directly address the Saint Lucia Strategic Programme for Climate Resilience[14] goals and their aim to achieve transformative impact

[12] After the June 2016 elections, the National Development Unit which houses the PCU became the Department of Economic Development, Transport and Civil Aviation (DEDTCA).

[13] The Sustainable Development and Environment Division became the Department of Sustainable Development (DSD) following the June 2016 elections.

[14] The SPCR is the national strategy to build the country's resilience to climate change impacts and was developed through a highly consultative process and endorsed by the PPCR sub-committee on June 29, 2011. See the CIF website for more details on the SPCR: https://www.climateinvestmentfunds.org/cifnet/?q=country/saint-lucia

by improving the resilience to adverse natural events and the longer-term impacts of climate change. Investments to build back the Piaye Bridge, the Vanard (Venus) – Anse-la-Raye link Road and the rehabilitation and retrofitting of select education and health facilities will enable these structures to withstand more frequent and intense climate events. Therefore, 100 percent of the proposed AF (i.e. US$8.04 million) would have climate change co-benefits.

III. Proposed Changes

Summary of Proposed Changes

The proposed AF will scale up reconstruction investments in the transport sector and the rehabilitation and retrofitting of education and health facilities. In addition, AF activities will be used to scale up overall project management and in particular will provide support toward financial management, procurement as well as supervision and technical audits of civil works (through consultancies). The Project Results Framework has been revised to reflect the change in project scope. In view of the expanded project scope through the proposed AF, the project description and results indicators under the existing legal agreements for the original Project have been amended accordingly.

The safeguards policy for Pest Management has been triggered to allow for incidental pesticide use under the Project.

The Project's institutional and implementation arrangements have been changed as a result of the reorganization of the Government following the general elections in June 2016.

Change in Implementing Agency	Yes [X] No [ ]
Change in Project's Development Objectives	Yes [ ] No [X]
Change in Results Framework	Yes [X] No [ ]
Change in Safeguard Policies Triggered	Yes [X] No [ ]
Change of EA category	Yes [ ] No [X]
Other Changes to Safeguards	Yes [ ] No [X]
Change in Legal Covenants	Yes [ ] No [X]
Change in Loan Closing Date(s)	Yes [ ] No [X]
Cancellations Proposed	Yes [ ] No [X]
Change in Disbursement Arrangements	Yes [ ] No [X]
Reallocation between Disbursement Categories	Yes [ ] No [X]
Change in Disbursement Estimates	Yes [X] No [ ]
Change to Components and Cost	Yes [X] No [ ]
Change in Institutional Arrangements	Yes [X] No [ ]
Change in Financial Management	Yes [ ] No [X]

Change in Procurement	Yes [ ] No [X]
Change in Implementation Schedule	Yes [ ] No [X]
Other Change(s)	Yes [X] No [ ]

Development Objective/Results

Project's Development Objectives

Original PDO

The Project Development Objective (PDO) is to reduce vulnerability to natural hazards and climate change impacts in Saint Lucia.

Change in Results Framework

Explanation:

While the existing Results Framework and indicators remain valid, the following changes are proposed:

- Change in the target for the intermediate results indicator 'Roads rehabilitated, non-rural', which has been increased from 13 km to 21 km in December 31, 2019 to account for the broadened scope associated with additional project activity.

- Inclusion of two new intermediate results indicators:
  - Number of bridges rehabilitated under the Project, with a target of 2 bridges in December 31, 2019 has been incorporated to capture the additional investment; and
  - Percentage of activities that have incorporated a beneficiary feedback system, with a target of 50 percent in December 31, 2019 has been included to track beneficiary engagement in the Project, in line with requirements under World Bank procedures. (Refer to Annex 2 for further details on this indicator).

Compliance

Change in Safeguard Policies Triggered

Explanation:

The safeguards policy for Pest Management (OP/BP 4.09) has been triggered to allow for incidental pesticide use (for example, termite treatment for building foundations) applied by licensed professional contractors, if needed. Accordingly, the EMF for the original Project, dated January 2014, has been updated to include appropriate procedures for pest management and to reflect the proposed AF activities. Given the small amounts of pesticides expected to be used under the Project, a separate Pest Management Plan would not be required; instead, the EMF includes appropriate procedures in the form of a generic standardized mitigation measures for incorporation into contract clauses for incidental pesticide use. The use or purchase of significant amounts of pesticide will be excluded in the screening process described in the EMF. The revised EMF (dated 17 March 2016) was disclosed in-country on March 17, 2016 and on the World Bank website on March 22, 2016.

The safeguard policies triggered under the original Project, namely Natural Habitat (OP 4.04) and Physical Cultural Resources (OP 4.11) remain triggered. (See further discussion under Appraisal Summary).

Current and Proposed Safeguard Policies Triggered:	Current(from Current Parent ISDS)	Proposed(from Additional Financing ISDS)
Environmental Assessment (OP) (BP 4.01)	Yes	Yes
Natural Habitats (OP) (BP 4.04)	Yes	Yes
Forests (OP) (BP 4.36)	No	No
Pest Management (OP 4.09)	No	Yes
Physical Cultural Resources (OP) (BP 4.11)	Yes	Yes
Indigenous Peoples (OP) (BP 4.10)	No	No
Involuntary Resettlement (OP) (BP 4.12)	Yes	Yes
Safety of Dams (OP) (BP 4.37)	No	No
Projects on International Waterways (OP) (BP 7.50)	No	No
Projects in Disputed Areas (OP) (BP 7.60)	No	No

Covenants - Additional Financing (SLU Disaster Vulnerability Reduction Project (Additional Finance) - P155324)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
				☐		

Conditions

Source Of Fund	Name	Type
IDA	Article IV. 4.01	Effectiveness

Description of Condition

The EDF Grant Agreement has been executed and delivered and all conditions precedent to the effectiveness or to the right of the Recipient to make withdrawals under said EDF Grant Agreement (other than the effectiveness of this Agreement) have been fulfilled, and a legal opinion acceptable to the World Bank has been provided in this respect.

Source Of Fund	Name	Type
EDF	Article IV. 4.01(a) and (b)	Effectiveness

Description of Condition

(a) The execution and delivery of the EDF Grant Agreement on behalf of the Recipient have been duly authorized or ratified by all necessary governmental action.

(b) The Financing Agreement has been executed and delivered and all conditions precedent to the effectiveness of, or to the right of the Recipient to make withdrawals under, the Financing Agreement (other than the effectiveness of this Agreement) have been fulfilled, and a legal opinion acceptable to the World Bank has been provided in this respect.

Risk	
Risk Category	**Rating (H, S, M, L)**
1. Political and Governance	Low
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Low
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Low
9. Other	
OVERALL	Substantial

Finance

Loan Closing Date - Additional Financing (SLU Disaster Vulnerability Reduction Project (Additional Finance) - P155324)

Source of Funds	Proposed Additional Financing Loan Closing Date
EC: European Development Fund (EDF)	31-Dec-2019
IDA recommitted as a Credit	31-Dec-2019

Change in Disbursement Estimates (including all sources of Financing)

Explanation:

Expected disbursement projections have increased due to additional activities to be financed from the AF. The AF funds have more or less been equally distributed across the Project lifespan, with less expected to be disbursed in FY17 due to needed preparation and procurement time for the new activities.

Expected Disbursements (in USD Million)(including all Sources of Financing)

Fiscal Year	2017	2018	2019	2020						
Annual	0.50	2.52	3.02	2.00						
Cumulative	0.50	3.02	6.04	8.04						

Allocations - Additional Financing (SLU Disaster Vulnerability Reduction Project (Additional Finance) - P155324)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement %(Type Total)
			Proposed	Proposed
EC:EDF	EUR	(1) Goods, works, non-	4.94 million[15]	100%

[15] This amount represents the initial installment transferred by the donor to the World Bank under the EDF Grant No. TF0A3651, as stated in the Administrative Agreement signed between the EU and the World Bank on September 12, 2016, and is in line with the Grant Agreement between the World Bank and Saint Lucia. This amount will be amended upon the EU's transfer of the second installment of its total pledged contributions in accordance with the schedule of

		consulting services, consultants' services, Training and Operating Costs under Part A.3 and (excluding goods) under Part E, of the Project		
IDA	USD	(1) Goods, works, non-consulting services, consultants' services, Training and Operating Costs for Parts A.1, A.2, B, and E of the Project	1.62 million	100%
	USD	**Total:**	7.14 million	

Components

Change to Components and Cost

Explanation:

The proposed change to components relates to cost with a proposed increase of US$7.62 million and US$0.42 million for Components 1 and 5, respectively. Specifically, the AF activities under Component 1 would finance (a) reconstruction of the Piaye Bridge (24 m span); (b) reconstruction of the Vanard (Venus) – Anse-la-Raye link Road (8.2 km); (c) rehabilitation and retrofitting of prioritized schools and health centers; and (d) technical assessments, including feasibility studies and designs, and supervision of the proposed works, while activities under Component 5 will scale up overall project management.

Current Component Name	Proposed Component Name	Current Cost (US$M)	Proposed Cost (US$M)	Action
Risk Reduction and Adaptation Measures	Risk Reduction and Adaptation Measures	49.00	56.62	Revised
Technical Assistance for Improved Assessment and Application of Disaster and Climate Risk Information in Decision-Making	Technical Assistance for Improved Assessment and Application of Disaster and Climate Risk Information in Decision-Making	10.00	10.00	No change
Climate Adaptation Financing Facility	Climate Adaptation Financing Facility	5.00	5.00	No change
Contingent Emergency Response	Contingent Emergency Response	1.00	1.00	No change
Project Management and Implementation Support	Project Management and Implementation Support	3.00	3.42	Revised
	Total:	68.00	76.04	

transfers specified in the Administration Agreement. The Project scope and Results Framework have been appraised as inclusive of the total contributions in the amount of €5.74 million.

Other Change(s)

Change in Implementing Agency

Explanation:

The general elections in June 2016 have resulted in government reorganization and subsequent changes in the name and mandate of some ministries and public agencies participating as implementing entities for the DVRP. (See Annex 3 for detail). Notwithstanding the government restructuring, the same departments, divisions, or teams - within the newly established, renamed, or reorganized ministries and government agencies - involved in DVRP implementation will continue to fulfill the same roles and responsibilities as prior to the changes. Specifically: (a) the PCU remains responsible for the fiduciary, safeguards, administration of audits, disbursement, reporting, as well as overall project management, (b) the implementation agencies continue to be in charge of technical inputs in bidding documents and bid evaluation relating to their respective activities, (c) the Sustainable Development and Environment Division, renamed Department of Sustainable Development (DSD) remains responsible for reporting on climate change related project activities, while (d) the National Development Unit, renamed Department of Economic Development, Transport and Civil Aviation (DEDTCA) remains the focal point for DVRP execution and continues to manage inter-agency coordination through the existing Project Coordination Committee (PCC) and overall M&E of the Project.

Implementing Agency Name	Type	Action
Ministry of Finance	Implementing Agency	Marked for Deletion
Project Coordination Unit in the Department of Economic Development, Transport and Civil Aviation	Implementing Agency	New

Change in Institutional Arrangements

Explanation:

The institutional arrangements for the Project have been restructured following the change in government in June 2016, as indicated above. Through the change, (a) the Ministry of Finance, Economic Affairs, Planning, and Social Security, the primary government counterpart, has been split into two Ministries, namely the Ministry of Finance, Economic Growth, Job Creation, External Affairs and Public Service and the Ministry of Economic Development, Housing, Urban Renewal, Transport and Civil Aviation (MoED); and (b) the National Development Unit, which housed the PCU under the former Ministry of Finance, was restructured to become the DEDTCA, and placed in the MoED (together the PCU), while remaining the overarching entity responsible for overall DVRP execution; the composition of the DEDTCA and PCU teams as well as the reporting line have not changed. (For more detail on the reorganization, refer to Annex 3).

Other Change(s)

Explanation:

In view of the expansion in project scope through the proposed AF and the changes in the Project's institutional and implementation arrangements, the existing Legal Agreements for the DVRP will be amended to reflect (a) the revised project description and results indicators, and (b) the restructured implementation organizations and arrangements.

IV. Appraisal Summary

Economic and Financial Analysis

Explanation:

An economic and financial analysis of the interventions foreseen under the AF and EDF grant was conducted using cost-benefit analysis, following the same method as the parent Project. The benefits were measured through an averted loss approach. The magnitude of the losses varies according to the hazard, the exposure, and vulnerability in each of the intervention areas.

Results of the evaluation show that proposed AF and EDF grant activities are worth implementing as they would generate a positive impact on the development of Saint Lucia, with net benefits of approximately US$19 million and 26 percent return. All interventions yield positive returns within a range of 19 percent to 38 percent. The sensitivity analysis has shown that the Project is robust as none of the variables conveys a high risk for the Project.

World Bank value added. Extensive global experience in DRM enables the World Bank to advise the GoSL in the design of interventions as well as mitigation and preparedness measures for reducing the impacts of natural hazards and climate change. In addition, the World Bank's ability to convene key actors, leverage partnerships, and mobilize additional funds to support scaled-up vulnerability reduction and climate resilience activities in Saint Lucia further highlights the value of World Bank involvement. The AF and EDF grant further provide testament to the cooperation between the GoSL as client, the European Union as donor, and the World Bank as provider of implementation support of funds.

Rationale for public sector financing. Public funds are the most appropriate means of financing such projects, as disasters pose a significant shock to government budgets, thereby making vulnerability reduction a high priority. DRM measures and programs reach scale and are most effective when the Government leads such efforts and is closely involved in implementation. DRM activities require the development and strengthening of public institutions, mechanisms, and capacities at all levels that can systematically contribute to building resilience to hazards. (Annex 4 presents further detail on the economic analysis).

Technical Analysis

Explanation:

The AF and EDF grant will finance the reconstruction and rehabilitation of critical public infrastructure and buildings adversely affected by the December 2013 floods. The proposed civil works have been appraised and were found consistent with the short-term and long-term objectives of the DVRP. Specific works have been identified based upon anticipated disaster vulnerability reduction benefits. Prioritized by the GoSL, the proposed activities include (a) Piaye Bridge, (b) Vanard (Venus) – Anse-la-Raye link Road, and (c) select education and health facilities. The proposed civil works can reasonably be completed within the current Project lifespan.

Piaye Bridge (as well as Canaries Bridge) were washed away during the December 2013 floods. Crossing the Balembouche River, Piaye Bridge served as a major connector along the southwest portion of the country's primary road network. The bridge has since been replaced by a temporary bailey bridge. Given the similar spans of both Piaye Bridge and Canaries Bridge (roughly 24 meters), the cost estimates for Piaye are similar to that of Canaries, which is financed by the Caribbean Development Bank. Current plans are to complete construction of a permanent bridge linking Piaye to the primary road network by December 2017.

The Vanard (Venus) – Anse-la-Raye link Road also suffered significant damages resulting from two major landslides in areas with deep lower slopes and a poorly designed road foundation. As a result, the road has become impassable by motor vehicles. AF and EDF grant resources will be used for financing the rehabilitation (and possible path realignment) of 8.2 km of tertiary road, which serves as (a) the only connection between the two communities, (b) main access route between the residential community and the Anse-La -Raye Primary School, and (c) only access to the Water and Sewerage Company storage tank and secondary treatment plant. Soil erosion, unstable slopes, and silting of the drainage systems have contributed to increased risk during the rainy season and will be fully taken into account in project design and works.

While representing a smaller proportion of total damages and losses, public structures in the education and health sectors also suffered from wind- and water-related damages. While also serving as emergency shelters, the recommitted IDA resources will finance the architectural and structural designs of reconstruction as well as rehabilitation (for example, structural retrofits, hurricane-proof roofs, guttering, and reinforced windows) of select education and health facilities. Such works (new or rehabilitative) will include adequate structural stability measures at least on a selection of building structures of each education or health facility.

In line with build-back-better principles to ensure increased resilience of the abovementioned works, AF and EDF grant resources will be used toward ensuring that the needed safeguards and technical due diligence is conducted to inform the design and rehabilitation of Piaye Bridge and Vanard (Venus) – Anse-la-Raye link Road in particular. With regard to the Vanard (Venus) – Anse-la-Raye link Road, provision will be made to ensure reconstruction of a suitable drainage system, stabilization of lateral slopes, redesign of road pavement, installation of traffic safety measures, and possible relocation of some residents (in which event, actions detailed in the Project RPF will be followed). The World Bank will further provide technical and safeguards supervisory support of all works financed with AF and EDF grant resources to ensure investments adhere to build-back-better principles.

Social Analysis

Explanation:

Social Screening. Findings of the social assessment, conducted for the original Project remain valid, given that the activities financed by the AF are similar in nature and extent to those under the DVRP. Overall, there are no large-scale, significant, or irreversible impacts identified from a social perspective. The social impacts of the AF are expected to be positive as improved infrastructure resilience and bridge and road rehabilitations will likely lead to reduced exposure of beneficiaries to natural disaster-related disruptions in the lives of the beneficiary communities, while school and hospital upgrades should promote an increased sense of safety and security. The Policy on Involuntary Resettlement (OP 4.12) was triggered under the original Project and will continue to apply to the AF as a discrete amount of land acquisition is envisaged under the AF; however, the exact scope is unknown and will be determined once detailed designs are completed, which will be financed under the AF. If it is determined that subprojects require land acquisition (permanent and temporary, voluntary and involuntary) or result in impacts to beneficiary assets or access to assets, then site-specific Resettlement Action Plans (RAPs) will be developed accordingly.

Social Safeguards Instruments. The RPF which was commissioned by the Government and approved by the Bank for the original Project, has been updated by the PCU to include the AF investments. The revised RPF dated 14 March 2016, was disclosed in-country and on the World Bank website on March 16, 2016 following its approval by the Bank. The RPF will guide the development and implementation of RAPs and associated compensatory and mitigation measures, as needed. A Remedial Abbreviated RAP was developed under the original Project, which was approved by the Bank and disclosed in-country and on the Bank's external website on June 30, 2016.

Social Safeguards Capacity. Social safeguards management will continue to be handled by the PCU, which has experience with the Involuntary Resettlement Policy (OP 4.12) through the implementation of other World Bank-financed projects. In addition, core members of the PCU have received capacity building in the implementation of OP 4.12, including the Project's Climate Change Coordinator and Communications Officer who are also in charge of direct communication with communities regarding project activities. However, given the PCU's limited experience in managing large infrastructure investments and associated safeguards requirements, social safeguards under the DVRP has been managed without adequate staffing. To address this capacity constraint, a Social Officer has been designated in the PCU to ensure compliance with the World Bank's social safeguards policy requirements throughout the lifespan of the Project. The Social Officer is tasked with community outreach and consultation with project affected persons, and the development and implementation of site-specific RAPs, as needed.

Project funds would not be used for project-related land acquisition, resettlement, or compensation.

Environmental Analysis

Explanation:

Environmental Screening. The safeguards category of the Project will remain 'B' given that there are no large-scale, significant, or irreversible impacts identified under the AF. Environmental safeguards assessments conducted by the Government have confirmed that the nature of proposed AF investments are consistent with activities included under the DVRP, and, as such, the safeguards policies triggered under the DVRP remain relevant. Specifically, the policy on Natural Habitats (OP/BP 4.04) has been triggered as a precaution to ensure the development and inclusion of clear screening criteria related to natural habitats within the EMF; work in reserve areas and along coastlines may activate this policy and require additional assessment. The Physical Cultural Resources (OP/BP 4.11) has also been triggered as a precaution in case of chance finds of historically or culturally significant resources during construction of works, particularly during activities such as major excavations, road realignments or similar works where such assets could be affected. In addition, under the AF, Pest Management policy (OP/BP 4.09) has been triggered to allow for incidental pesticide use (for example, termite treatment for building foundations) applied by licensed professional contractors, if needed. The use or purchase of significant amounts of pesticide will be excluded in the screening process described in the updated EMF. Given the small amounts of pesticides expected to be used under the Project, a separate Pest Management Plan will not be required. While the Project is located on the island of Saint Lucia, which is entirely bounded by the Caribbean Sea, (an international water body), the Bank policy on Projects on International Waterways (OP 7.50) does not apply because the interventions under the AF will not affect any water bodies between neighboring states. The Project will not finance hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial, or similar interventions that involve the use or potential pollution of international waterways as defined by the Policy.

A summary of environmental screening of sub-projects are presented below:

- The Vanard (Venus) – Anse-la-Raye link Road segment traverses interior areas with well-preserved natural habitat, and will therefore require additional environmental impact assessments which will be carried out as part of the works detailed designs and a site-specific EMP will be developed accordingly, both of which will be financed under the AF.

- The Piaye bridge, which will be reconstructed on the old bridge footprint, is a relatively simple intervention, and as such management of the environmental impacts will rely on standard measures already outlined in the EMF. The EMP for the bridge will be commissioned as part of the detailed design funded under the AF.

- For the simpler building retrofit interventions, minor environmental impacts to stakeholders are expected,

which relate to temporary inconveniences associated with construction activities, generic EMPs that are already included in the EMF will be used, once the specific structures are identified during AF implementation. Advanced public notifications will inform potentially affected persons, assisted by the PCU's Social Officer, the Communication Officer and relevant line ministries.

Environmental Safeguards Instruments. The original Project's EMF that the PCU commissioned and the Bank approved in January 2014 remains relevant for the AF. However, the EMF has been updated to reflect the AF activities and the triggering of the Pest Management Policy. The current EMF, dated 17 March 2016, which was disclosed in-country on March 17, 2016 and on the World Bank website on March 22, 2016, will govern the Project.

Environmental Safeguards Capacity. The PCU has the capacity to manage the Project's environmental safeguards and will continue to supervise environmental compliance through its Project Engineer, and in collaboration with the Ministry of Infrastructure, Ports, Energy and Labor (MIPEL)[16], the primary line ministry responsible for technical supervision of civil works. The PCU's capacity to implement environmental safeguards is expected to increase with the eventual addition of a part-time environmental specialist to support the PCU. Continuous training on environmental safeguards will be provided to the PCU, MIPEL and relevant implementing agencies. Moreover, regional safeguards training workshops focusing on practical environmental management for large-scale disaster management projects in the Eastern Caribbean will be conducted annually, to strengthen ties and enhance practice within the region. The PCU will ensure adequate staffing remains in place to support, monitor, supervise and report on environmental safeguards.

Risk

Explanation:

The overall risk rating for the Project is Substantial. The main risks identified are: (a) technical design of project or program; (b) institutional capacity for implementation and sustainability; (c) fiduciary, and (d) environmental and social safeguards. The technical design of project or program is rated substantial due to the build-back-better principles for works to ensure increased resilience of the structures, which require modelling and sophisticated technical studies to inform higher standard designs. To mitigate this risk, the DVRP has invested in developing technical capacity in the country, through various technical training of government officials; it has supported the establishment of a regional engineering association to foster knowledge exchange between the islands, and leveraged grant resources to provide technical assistance in areas such as flood modelling. In addition, the Project is building technical capacity and databases, including institutional strengthening for multiple ministries, across a shared data platform to ensure maximum distribution of analytical capacity and risk information to risk-inform construction designs. Moreover, to ensure increased resilience of the physical investments, the AF resources will be used toward ensuring that the needed technical due diligence are conducted to inform the designs for the works; efforts in this regard will include the integration of key technical consultants into the MIPEL financed under the Project to provide oversight for tendering contracts with complex technical specifications. Moreover, to ensure adequate technical quality control, the Bank will, in the context of Project supervision, support the Government in the development of plans to establish critical path inspection procedures and technical audits that will be integrated into construction contracts. The risk related to institutional capacity for implementation and sustainability is rated substantial due to the multi-sectoral nature of the Project and relatively large project size. The GoSL will manage this risk as the PCU is adequately staffed with two experienced civil engineers

[16] Following the June 2016 elections, the Ministry of Infrastructure, Port Services, and Transport (MIPST) became the Ministry of Infrastructure, Ports, Energy and Labor (MIPEL).

who support the implementing agencies with implementation, including contract management. Moreover, on the project management aspects, the DVRP will continue to fund regional fiduciary, safeguards, and contract management workshops that focus on implementing large infrastructure projects. The PCC will continue to ensure coordination mechanisms across agencies. The fiduciary risk remains substantial due to the nature of the Project and the weaknesses noted in section II above. To mitigate the risk, the PCU has agreed to take measures to address the various noted weaknesses and ensure adequate FM capacity. Additionally, the World Bank task team will continue to provide training of PCU staff and work closely with the Government to ensure compliance with the reporting requirements of the Project, including timely submission of the audit reports and IFRs and improved quality/accuracy of all financial reports. The risk related to environmental and social safeguards has been upgraded to substantial as social safeguards has been managed without adequate staffing within the PCU. The designation of a Social Officer within the PCU will ensure compliance with the World Bank's social safeguards policy requirements throughout the lifespan of the DVRP. The Bank will continue to provide close support to enhance this capacity within the PCU, closely monitor social safeguards management and provide close support to the PCU given the substantial risk rating in this area.

Risk ratings will be revisited and updated as needed during project implementation and mitigation measure established as required.

V. World Bank Grievance Redress

14. Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service. The Grievance Redress Service ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel, which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service, please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Revised Results Framework and Monitoring Indicators

Project Development Objectives
Original Project Development Objective - Parent:
The Project Development Objective (PDO) is to reduce vulnerability to natural hazards and climate change impacts in Saint Lucia.

Results	
Core sector indicators are considered: Yes	Results reporting level: Project Level

Project Development Objective Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
No Change	Direct project beneficiaries	☒	Number	Value	0.00	24000	169000.00
				Date	01-Jul-2014	19-Oct-2016	31-Dec-2019
				Comment			
No Change	Female beneficiaries	☒	Percentage Sub Type Supplemental	Value	0.00	51.00	51.00
No Change	Number of days of interrupted traffic due to landslips, flooding and other climate-related events in project areas	☐	Number	Value	20.00	20.00	5.00
				Date	01-Jul-2014	19-Oct-2016	31-Dec-2019
				Comment			
No Change	Number of school facilities, health centers and emergency shelters with reduced vulnerability to landslips, flooding and other climate-related events as a result of project interventions	☐	Number	Value	0.00	2.00	8.00
				Date	01-Jul-2014	29-Jul-2016	31-Dec-2019
				Comment			
No Change	Climate risk analysis reflected in transport and drainage infrastructure design	☐	Yes/No	Value	No	Yes	Yes
				Date	01-Jul-2014	15-Aug-2016	31-Aug-2018
				Comment			

Intermediate Results Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
New	Percentage of project activities that have incorporated a beneficiary feedback system	☐	Percentage	Value	0.00	0.00	50.00
				Date		19-Oct-2016	
				Comment			Indicator added to track beneficiary engagement, in line with current requirements under World Bank procedures
Revised	Roads rehabilitated, Non-rural	☒	Kilometers	Value	0.00	0.00	21.20
				Date	01-Jul-2014	19-Oct-2016	30-Sep-2019
				Comment			Target increased from 13km to 21.2 km to capture new AF activities, i.e. rehabilitation/re construction of Vanard (Venus) - Anse-La-Raye road segment (8.2 km)
No Change	Storm drains constructed under the project	☐	Meter(m)	Value	0.00	0.00	2000.00
				Date	01-Jul-2014	19-Oct-2016	30-Sep-2019
				Comment			
New	Bridge rehabilitated/reconstructed under the Project	☐	Number	Value	0.00	0.00	2.00
				Date	01-Jul-2016	19-Oct-2016	31-Dec-2019
				Comment			Indicator added to account for increased scope (one more

							bridge - Piaye bridge- under the AF).
No Change	Number of Government ministries/agencies connected to a spatial data sharing platform	☐	Number	Value	0.00	4.00	8.00
				Date	01-Jul-2014	19-Oct-2016	30-Jun-2017
				Comment			
No Change	Number of Government officials trained in spatial data management and data analysis under the Project	☐	Number	Value	0.00	15.00	50.00
				Date	01-Jul-2014	13-Jun-2016	30-Sep-2019
				Comment			
No Change	Meteorological, hydrological, and sea level rise monitoring networks installed and active	☐	Yes/No	Value	No	No	Yes
				Date	01-Jul-2014	19-Oct-2016	15-Dec-2017
				Comment			
No Change	LiDAR mapping of the entire country completed	☐	Yes/No	Value	No	No	Yes
				Date	01-Jul-2014	19-Oct-2016	31-Oct-2018
				Comment			
No Change	CAFF funds are fully disbursed in the form of climate adaptation loans	☐	Percentage	Value	0.00	0.00	100.00
				Date	01-Jul-2014	19-Oct-2016	31-Dec-2019
				Comment			
No Change	Total number of approved Sub-loan Borrowers (CAFF Project beneficiaries)	☐	Number	Value	0.00	0.00	180.00
				Date	01-Jul-2014	19-Oct-2016	31-Dec-2019
				Comment			
No Change	Share of female Sub-loan Borrowers	☐	Percentage Sub Type Supplemental	Value	0.00	0.00	25.00
No Change	Share of business loans	☐	Percentage Sub Type Supplemental	Value	0.00	0.00	40.00
No Change			Percentage	Value	0.00	0.00	95.00

	Percentage of outstanding loans in good standing	☐		Date	01-Jul-2014	19-Oct-2016	31-Dec-2019
				Comment			
No Change	Operations Manual for this component prepared to facilitate disbursement in the event of an emergency	☐	Yes/No	Value	No	Yes	Yes
				Date	01-Jul-2014	16-Mar-2016	31-Dec-2019
				Comment			
No Change	Time taken to disburse funds in the event of an eligible emergency	☐	Weeks	Value	6.00	6.00	4.00
				Date	01-Jul-2014	19-Oct-2016	30-Sep-2019
				Comment			

Note: LiDAR = Light Detection and Ranging
CAFF = Climate Adaptation Financing Facility (component 3 of the Project)

Annex 2: Citizen Engagement Indicator/Beneficiary Feedback Indicator

1. As part of the development of the new citizen engagement indicator, the PCU's Social Officer will work on ways to standardize and further develop the ongoing citizen engagement work - currently managed by the Project's Communication Specialist and Climate Change Coordinator - into a comprehensive Beneficiary Feedback System. More specifically, in addition to managing the social safeguards of the Project, the Social Officer will handle broader social aspects, including: (i) conducting of regular and participatory community consultations during the preparation and implementation phases of sub-projects, (ii) supporting the implementation of the PPCR public awareness strategy, and (iii) management of the Grievance Redress Mechanism of the Project.

2. The comprehensive Beneficiary Feedback System will engage beneficiaries in two-way dialogue at all stages, that is, during preparation, implementation and following completion of works. To bridge the gap between the current citizen engagement work and the requirements of reporting on an indicator, the following next steps have been agreed to:

(a) Standardizing the approach to community consultations;

(b) Thoroughly documenting the community consultation process and reporting on the Beneficiary Feedback System in the social chapter of the quarterly project reports;

(c) Closing the beneficiary feedback loop by undertaking regular post-implementation beneficiary satisfaction surveys; and

(d) Making the results of these and other surveys public in order to improve the quality of works in SLU and disaggregate the results by gender whenever possible.

3. With this in mind, the agreed beneficiary feedback indicator is the 'percentage of activities that have incorporated a Beneficiary Feedback System. To estimate this indicator, the Social Officer, together with the Project's Communication Specialist and the Climate Change Coordinator will perform the following:

(a) **Standardize and enhance ongoing citizen engagement practices.** The Communication Specialist currently undertakes participatory community consultations during preparation and implementation of works at select project sites under the DVRP. These events provide beneficiaries with opportunities to raise questions or concerns about the Project and provide feedback. For the beneficiary feedback indicator, these preparation/implementation phase consultations will ensure that the consultations provide open and transparent methods of generating feedback. Future consultation events will be systematically organized to ensure that participation is representative and reflective of the communities involved, with special attention paid to how the consultations are planned, who is invited, where consultations are held, whether they are held in an accessible place, and the extent to which people are given ample notice to prepare themselves to attend. A guide could be developed with the general type of questions/issues that should be addressed during a community consultation and could also serve

as a template for reporting on the Beneficiary Feedback System in the quarterly reports.

(b) **Thoroughly document existing citizen engagement work (Grievance Redress Mechanism, public awareness campaigns, and community consultations).** The management of the grievance mechanisms and the implementation of the DVRP public awareness campaign and community consultation process should be thoroughly documented and regularly reported in the social chapter of the project's quarterly reports. These will provide updates on the nature and extent of consultations and on the nature and impact of the feedback. The quarterly report (as well as consultation minutes) should use a standardized template, including information on the demographic characteristics of the participants (gender, age, disability status, and so on), as well as information on how the consultation was organized (where was it held, how was it advertised, how much notice was given, and so on).

(c) **Design post-implementation project evaluation survey.** The final step in elaborating the Beneficiary Feedback System will be to close the beneficiary feedback loop by undertaking a post-implementation evaluation for each subproject site, which will also inform the Project's implementation completion and results report. As part of the social assessment undertaken at the beginning of the DVRP, a questionnaire was distributed to intended project beneficiaries to assess perceptions around the benefits of the Project, and this instrument will be used as a basis for developing the post-implementation satisfaction survey.

4. The Social Officer will select sub-project sites to pilot the Beneficiary Feedback System approach. These sites will be selected in consultation with relevant implementing agencies and the Bank.

Annex 3: Reorganization of Government Agencies involved in the DVRP

Government institutions at project approval	Government institutions, with reorganization following June 2016 Elections	Role in the DVRP
Project Management and Coordination		
Ministry of Finance, Economic Affairs, Planning and Social Security (MoF)	MoF was split into 2 : (i) Ministry of Economic Development, Housing, Urban Renewal, Transport and Civil Aviation (MoED), and (ii) Ministry of Finance, Economic Growth, Job Creation, External Affairs and Public Service	Primary Government counterpart
National Development Unit under MoF	Department of Economic Development, Transport and Civil Aviation (DEDTCA) under MoED	DVRP focal point, chair for the Project Coordination Committee, and responsible for M&E
Project Coordination Unit (PCU), under MoF	PCU, under MoED	Project management, FM, procurement, safeguards, reporting
Project Coordination Committee (PCC) under the National Development Unit, within MoF	PCC under DEDTCA within MoED	Project coordination, strategic direction and alignment of DVRP activities with national priorities
Sustainable Development and Environment Division within Ministry of Public Service, Sustainable Development, Energy, Science and Technology	*Department of Sustainable Development (DSD)* in Ministry of Education, Innovation, Gender Relations and Sustainable Development	Focal agency for reporting on climate change activities and Communication aspects
Implementing Agencies		
Ministry of Infrastructure, Port Services and Transport (MIPST)	Ministry of Infrastructure, Ports, Energy and Labor (MIPEL)	Technical agency for the works activities under component 1
Ministry of Agriculture, Fisheries, Rural Development and Food Production: - *Department of Fisheries;* - *Department of Forestry*	Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Cooperatives (MoA): - *Fisheries*; - *Forest & Land Resources Development*	Technical agency for Technical Assistance activities under component 2
Department of Physical Planning within Ministry of Physical Planning, Housing and Urban Renewal	*Department of Physical Planning* under MoA	
Water Resources Management Agency, under Ministry of Public Service, Sustainable Development, Energy, Science and Technology	Water Resources Management Agency, under MoA	
Ministry of Social Transformation, Local Government and Community Empowerment	*Department of Social Transformation* within the Ministry of Equity, Social Justice, Empowerment, Youth Development, Sports, Culture and Local Government	Focal point agency for investments in community centers/ Emergency shelters
Ministry of Education, Human Resource Development and Labour	Ministry of Education, Innovation, Gender Relations and Sustainable Development	Focal point agency for investments in school facilities
Ministry of Health, Wellness, Human Services and Gender Relations	Ministry of Health and Wellness	Focal point agency for investments in health facilities

Annex 4: Economic Analysis

1. The proposed AF and EDF grant have objectives in line with the original DVRP, that is, reduce vulnerability to natural hazards and climate change impacts in Saint Lucia, expecting to scale up outcomes in some areas. The AF and EDF grant would exclusively support Components 1 and 5, focusing on the transport, health, and education sectors. Specifically, the AF and EDF grant activities under Component 1 would further reduce climate change vulnerability by potentially financing (a) reconstruction of a new Piaye Bridge (roughly 24 m); (b) reconstruction of Vanard (Venus) – Anse-la-Raye link Road (8.2 km); (c) rehabilitation and reconstruction of prioritized schools and health centers; and (d) technical assessments and supervision of works.

2. The priority of activities was selected based upon damages and losses resulting from the December 2013 flood event. A Government damage assessment report[17] found that 72 percent of damages were incurred by transportation infrastructure. The intensity and volume of rainfall over the course of only a few hours made the December 2013 floods especially significant. The evaluation of the Meteorological Office estimated that the rainfall intensity may have been in excess of a 1-in-100-year event.

3. The reconstruction of Piaye Bridge and rehabilitation of the Vanard (Venus) – Anse-la-Raye link Road have been selected because of the criticality of these routes to the overall connectivity across Saint Lucia as well as a need to remediate currently used solutions which are only meant to be temporary. Schools and health facilities have also been selected because of their importance in delivering essential public services and providing the much-needed safe shelter and medical attention in the event of a disaster.

4. The methodology used to evaluate the proposed investments under the AF and EDF grant was cost-benefit analysis following the same approach as the parent Project. The Project impact was measured using the averted loss approach. The magnitude of the losses varies according to the hazard, the exposure, and vulnerability in each of the intervention areas. The overall objective of the Project is to contribute to improving disaster resilience of critical infrastructure in Saint Lucia, with a specific objective of improving the delivery of transport services by reconstructing and increasing the resilience of important infrastructure in the west and southwest part of the island.

5. The net benefit of each of the interventions was evaluated through a cost-benefit analysis and was estimated as the difference between the probable loss without the works and the expected loss with the intervention over a 25-year period using a five percent discount rate. Estimation of benefits was a challenge given the stochastic nature of events and the uncertainty around the vulnerability of physical structures. Historical hazard data in the intervention areas was collected from previous events captured by the MIPST.

6. The evaluation was conducted based upon the proposed investments on Piaye Bridge and for rehabilitation of the Vanard (Venus) – Anse-la-Raye link Road. One school out of 23 identified

[17]Government of Saint Lucia and the World Bank. 2014. *Joint Rapid Damage and Needs Assessment Report. Flood Event of December 24–25 2013.*

by the Ministry of Education as being in a critical condition was evaluated as representative of all other schools. No health center was selected for this evaluation as information was not available at time of preparation.

Costs

7. The interventions evaluated consist of Piaye Bridge, the reconstruction of the Vanard (Venus) – Anse-la-Raye link Road, and Entrepot School. The investment cost of the sample is estimated at US$5.5 million, which corresponds to about 69 percent of total AF and EDF grant.

Table 2.1. Evaluated Interventions

	Investment Cost (US$, millions)
Piaye Bridge	1.50
Reconstruction of Vanard (Venus) – Anse-la-Raye link Road	3.50
Entre pot School	0.50
Total	5.50
Investment cost of subprojects evaluated/total AF	69 percent

8. The cost of operation and maintenance was estimated as one percent of investment.

Piaye Bridge Reconstruction

9. Piaye Bridge is 24.38m long, with a 4.2m wide road. It has been destroyed twice in the last 30 years: first by Tropical Storm Debby in 1994 and by the December 2013 floods. The current structure was erected in January 6, 2014, as a temporary, single lane bailey bridge. The bridge is a crucial link located on the Vieux Fort-Castries Highway, which connects the southern, western, and eastern parts of the island.

10. When the bridge suffers from damages, there are two alternatives for drivers of small cars, pickups, and vans: either pass through the river if the water flow allows or use the Saint Jude Highway on the Caribbean side (west), increasing the driving time to Castries by about 40 minutes without heavy traffic. Trucks, buses, and big cars are required to use the second alternative as they are unable to cross the river.

11. To measure the importance of Piaye Bridge, traffic was counted for 24 hours per day from Tuesday, October 27, 2015 to Sunday, October 31, 2015 by Theobalds Consulting Firm under the supervision of MIPST. Results show that the average daily traffic is about 2,800 vehicles; 87 percent of the vehicles are small cars, 11 percent pickups and vans, and the remaining two percent motorcycles and big vehicles (buses and trucks).The average speed registered when passing the bridge is 25 miles per hour.

Table 2.2. Average Daily Traffic on Piaye Bridge

	Total	Motorcycles	Cars - 2 Axles	Pickup-Van	Buses and trucks
Daily average northbound	1,317	8	1,019	254	35
Daily average southbound	1,550	10	1,463	53	24
Total both ways	2,867	18	2,483	308	59

Source: Theoblalds Consulting. Engineering and Management Consultants. Traffic Study Piaye Bridge Choiseul, Saint Lucia. November 2015.

12. When the December 2013 floods affected the island, Piaye Bridge was washed away and the route was closed for 15 days until the temporary bridge was installed and became operational. This bridge has not been replaced and its structure is highly vulnerable to climate change events. According to personnel from the MIPST, the bridge is at high risk from rainfall events of 25-year recurrence period or higher. Tropical storms can deteriorate the infrastructure as well.

13. The proposed intervention consists of the construction of (a) a two-lane bridge to accommodate vehicular and pedestrian traffic, (b) river embankment and riverbed protection works, and (c) bridge approach works. The intervention aims to increase resilience, hydraulic capacity, and road safety for motoring public and pedestrians alike.

14. The identified benefits of the intervention are (a) reduction of travel time when the single lane bailey bridge is replaced by a two-lane permanent bridge; (b) reduction of the risk of destruction caused by climate change events of a 25-year recurrence period or higher; (c) increased safety for pedestrian and motoring public; (d) improved connectivity along the west-south-east corridor, benefiting all road users, including the tour operators (for local and foreign visitors alike); and (e) connectivity improvement for local communities in the area.

15. This evaluation measured the benefits as follows: (a) reduction of travel time of three minutes in off-peak hours and up to 10 minutes in peak hours (2 hours: 8 to 9 a.m. and 1 to 2 p.m.[18]); (b) for tropical storms (10-year recurrence period), the bridge would deteriorate and the traffic would get disrupted for up to one day; (c) for 25-year events or higher, the bridge is expected to be destroyed. Its replacement can last up to 15 days based on facts during previous episodes. The impact on the economic development for local communities was not measured.

16. If the bridge is not replaced and a climate change event destroys it, the installment cost of a temporary bridge is estimated at US$315,000, in addition to clean-up costs of the debris (US$25,000).The installment cost corresponds to the (a) cost of purchasing a temporary bridge (bailey type bridge)—US$180,000; (b) installation of the bridge—US$70,000; and (c) construction of a temporary bypass road through the river (while the bridge is nonoperational)—US$65,000.

17. To estimate the net benefits, two scenarios were projected: with and without the intervention. The 'with project' scenario assumes that the works are implemented and the vulnerability of the bridge reduced, thereby reducing the associated damages caused by climate

[18]Government of Saint Lucia and the World Bank. 2014. *Joint Rapid Damage and Needs Assessment Report. Flood Event of December 24–25 2013.*

change events. The 'without project' scenario assumes that the current situation remains. Net benefits correspond to the difference between both scenarios.

18. Expected benefits with the intervention were estimated as (a) avoided loss of time waiting to cross the bridge or going through the Saint Jude Highway as an alternate route, (b) savings in fuel costs when there is no need to take the alternate route, and (c) lower repair costs of the bridge. For each scenario, the associated costs of time, fuel, and repair were estimated according to the rainfall events associated to their recurrence period. A curve was built for both scenarios versus the probability of occurrence. The area[19] under the curve corresponds to the expected averted cost due to the Project.

19. To estimate the cost of time, a wage of EC$ 5 per hour was used as a proxy of the minimum wage in Saint Lucia, given that there is no regulation for minimum wage in the island. To estimate the cost of fuel, the efficiency of each type of vehicle was estimated and a cost of gasoline of EC$12.35 per gallon and a cost of diesel of EC$ 11.85 per gallon were applied.

Reconstruction of the Vanard (Venus) – Anse-la-Raye link Road

20. This road is a tertiary road that has been severely damaged by the passage of Hurricane Tomas in 2010 and the heavy rains and flooding experienced in December 2013. The road is located in a very mountainous section of the country that receives high precipitation. Each weather-induced disaster triggers landslides along the road, blocks drains and culverts, and causes the carriageway to be severely eroded. The road condition has forced the MIPST to close the road frequently and sometimes for up to several months.

21. The last Project on this road conducted by the MISPT occurred approximately nine years ago where rehabilitation works included road pavement reconstruction, construction of lined drains, the creation of earthen drains, construction of road slabs on sections with steep gradients, culverts, and headwall construction.

22. This road links the communities of Venus/Millet and Anse-La-Raye. Traffic disruptions force community residents to use secondary roads that lead to the primary road network. People from Venus/Millet who want to get to Anse-La-Raye when the road is impassable use the road through the communities of Vanard, Mondor, and Roseau to link to the West Coast Road that passes through the village of Anse-La-Raye. The travel time on this route is approximately 45 minutes, which is 30 minutes more than when the Vanard (Venus)-Anse-La-Raye link Road is used if the conditions are amenable.

23. It is estimated that 6,247 people are affected either by the poor state of the road or when the road becomes impassable. This road is vital to the surrounding communities given that (a) this is the only route for small-scale farmers to access their lands; these farmers, who depend on the land as their sole source of income, are the breadwinners of their immediate family in addition to having numerous dependents in their extended families; (b) the road serves as a link for school children of the Venus Primary School and the Anse-La-Raye Primary School; both institutions are

[19]The area under the curve is calculated as the sum of trapezoids whose areas are equal to the average of the bases times the height. The average of the bases is the average of the damage cost, and the height is the difference between the probabilities.

located adjacent to the road in their respective communities; (c) the road connects the communities of Venus/Millet and Anse-La-Raye where there is strong cultural interaction between the village and where family/relatives reside; (d) some people from the communities work in the quarry and the access would be easier if the road is in a better state; (e) tourists previously visited the area as it has some interesting sites for ecotourism; and (f) the maintenance of vehicles increases with poor road conditions.

24. Benefits were measured as (a) avoided loss of time when travel time improves for local traffic; (b) savings fuel costs when there is no need to take an alternate route; and (c) savings on cost of road repairs, which has been about EC 30,000 per year according to data provided by the MIPST. The assumptions of fuel cost and cost of time were the same as those used for Piaye Bridge.

25. The MIPST provided information from the 2001 annual average daily traffic (AADT) for the Vanard (Venus) – Anse-la-Raye link Road. The figures were projected to 2015 using the annual growth rate of the Saint Lucia population of 0.8 percent.

Table 2.3. AADT Vanard (Venus) – Anse-la-Raye link Road

	Total	Cars - 2 Axles	Pickup-Van	Buses and Trucks
AADT 2001	249	107	92	51
AADT projected 2015	281	120	103	57

Source: 2001: MIPST 2015 Own calculation using 0.8 percent annual growth rate.

Intervention on Schools

26. The Ministry of Education, Human Resource Development and Labour (MoE)[20] provided a list of 23 schools which are designed to double as emergency shelters; yet the structures themselves are not fit to withstand disaster events, thereby requiring either upgrades or rehabilitation. According to the ministry, many of the older school structures are infested with termites, mold, and rodents and suffer from structural problems. In select cases, schools have been placed on shift systems or relocated to repair and correct some of these issues. These arrangements have posed social, instructional, and financial implications. On the social side, the shift system requires that students are dismissed later (5p.m.), with associated safety risk for students at this late hour. In some cases, the MoE has to provide transportation to students to avert possible negative encounters. The cost of transportation, repair, and rental of temporary facilities as well as employment of additional staff to facilitate shift systems is significant to the Government.

27. To evaluate this type of intervention, the former MoE selected the Entrepot Secondary School as representative of the schools for intervention. The school is situated in Entrepot, a densely populated quarter of Castries, and accepts children from various communities, which include Castries City, communities on the outskirts of the city, rural Castries, Gros Islet, Monchy, Babonneau, Marisule, Bois d'Orange, Ti Rocher, Forestiere, Dennery, Anse La Raye, and

[20] Following the June 2016 elections, the Ministry of Education, Human Resource Development and Labour (MoE) became the Ministry of Education, Innovation, Gender Relations and Sustainable Development.

Canaries. The school population consists of 618 students and 41 teachers. The dropout rate is less than five students per year and the graduation rate has been higher than 98 percent in the last 10 years. Academically, the school is measured at the Caribbean Secondary Examination Certificate of the regional examining body, the Caribbean Examination Council, showing a pass rate of 75 percent in the last five years. Additionally, the school offers a variety of extracurricular activities to students and members of the community who want to participate.

28. At present, a major part of the school's structure is in dire need of rehabilitation. Some sections of the school were built over 44 years ago and the materials used in the construction of the units which make up this section have lost their strength. This compromises staff and students' health and safety and is not conducive for the teaching and learning processes. In addition, some classes are not safety compliant due to inadequate exit facilities in the event of an emergency.

29. If the school is not rehabilitated, sections of the school would eventually be condemned for safety reasons; the school would have to keep operating on a shift system to optimize the sections of the school that are in good condition and to serve as many students as possible. This would result in social issues such as an increase of criminal activities when the students head home at the end of the second shift as the route from the school to the city is considered as a crime hot spot after hours. School administrators expressed that eventually the MoE may request a reduction of the annual intake of students because of limited space and lack of facilities. This would impose a strain on the other leading secondary schools in the Castries area, which are unable to accommodate more students.

30. Periodic checks are made on the physical structure of schools by the MIPST officials and the school administration. According to school officials, an inspection undertaken in 2015 revealed that the school is below acceptable standards because of a myriad of issues, including structural integrity of some units; lack of proper facilities (inadequate restrooms, poorly designed classrooms with no emergency exits, unsafe ceilings, untiled classrooms, poorly ventilated classrooms, and inadequate number of showers); and insufficient classroom space.

31. To help mitigate the current challenges, the administration attempts to maintain these structures annually at significant cost. The management continues to struggle with the problem of housing students in the various classes during the school day. The current demands of classroom space on the existing facilities pose a problem; as such, teachers sought to teach students in the corridors of the school, the lunch tables in the gazebo, or outside. The MIPST is primarily responsible for the maintenance and general upkeep of the school's infrastructure; however, the maintenance mechanism is poor due to limited government funds. As such, poor conditions continue to plague this establishment for over two decades.

32. Upgrading the school structure would allow its appropriate use as an emergency shelter, an education facility for students and extracurricular activities at full capacity, and a community center to host meetings and community activities. The school, as a designated emergency shelter, would be better equipped to house people in the case of an emergency. The facility would have adequate shelter for approximately 500 people through the provision of additional classrooms, restrooms, proper showers, a canteen, and a proper food and nutrition lab.

33. Full capacity would be restored by rehabilitating existing classrooms that currently cannot be used because of their risk of structural failure. Adequate space and better conditions would create and enable a safer and more conducive teaching and learning environment. Greater opportunities will be provided for students to reach their full potential, with the inclusion of subjects to foster and enhance skills development to complement the academic subjects (and in the development of well-rounded students). All rooms would be used for teaching and learning as well as the development of students' creativity through the inclusion of new innovative subjects to the curriculum. Greater use of technology will be made for teaching and learning with the inclusion of a resource center or literacy room. Additionally, it would enhance and encourage the development of sports at school.

34. The school's vision is to become a hub for community activities that can improve the lives of residents in the community. In this vein, adult education programs would be encouraged as part of the after-school program. It can also serve to deter deviant youth by creating an avenue where they can come and learn a skill or engage in uplifting and personal growth activities. Moreover, it is projected that the school would have at least 250–500 additional parents/students for the after-school program.

35. For this evaluation, the benefits of adjusting the school as an emergency shelter were not measured due to lack of data; yet they are significant as Saint Lucia is vulnerable to severe climate events and is in need of appropriate shelters. All other benefits related to the impact of better conditions for students, improved facilities, and extracurricular activities on the quality of education were measured by potential increases in revenue for students and adults enjoying better education. No information was available to measure the specific impact, yet results were tested under different assumptions.

36. According to school administrators, extracurricular activities have been reduced by half due to lack of space and facilities. If the school was rehabilitated to its full capacity of 500 persons, additional courses could be provided. Moreover, the 140 students who graduate every year could receive better training and subsequently pursue better postsecondary education or better jobs upon finishing school. School personnel estimate that the annual income of students would increase but were unable to provide precise figures. The sensitivity analysis presents results under different scenarios. The base case scenario assumes an increase of annual revenue of EC 400 per year (about US$6 per month).

37. Once upgraded, the school would also be used as a community center for meetings and social activities. It is expected that people from communities will use the school as a venue for their parties instead of renting externally. Expected benefits were measured assuming that the school would be used thrice a week and the estimated economic price was based on the current payment for venues outside the school. Economic benefits from the community center were estimated at EC 32,000 per year.

38. This intervention was evaluated for a 10-year period.

Results

39. Results show that the Project is economically viable with 26 percent expected returns and expected net benefit of US$19 million. All the interventions yield expected returns higher than the five percent used as discount rate.

Table 2.4. Net Benefits of Select Project Investments

	Present Value of Flows (US$, thousands)			
	Costs	**Benefits**	**Net Benefit**	**IRR (percent)**
Piaye Bridge	1,716	4,728	3,012	21.1
Vanard (Venus) – Anse-la-Raye link Road	3,982	20,024	16,042	38.8
Entrepot School	539	937	398	19.3
Total Sample	6,236	25,689	19,452	26.7

Note: IRR = Internal Rate of Return.

40. The positive net benefits resulting from investing in the rehabilitation of Entrepot School is reassuring, as many benefits resulting from the intervention were not quantified. Moreover, the economic benefits included in the evaluation (that is, quantified as an increase of revenue per year per student) can reduce up to EC 130 per student annually and still yield positive returns. The MoE personnel and the school have estimated that the benefits per student would be higher than that.

Sensitivity Analysis

41. The sensitivity analysis measures the impact on results when changes on assumed values occur. The variables tested for the analysis were (a) cost investment overrun, (b) project delays, and (c) decrease on benefits.

42. Results show that with a five percent discount rate, none of the variables poses a high risk to the Project, as it would generate benefits even if (a) investment cost increases as much as 50 percent, (b) delays are higher than three years, or (c) benefits reduce up to 35 percent.

Table 2.5. Sensitivity Analysis

	Breakeven Point for Economic Results		
	Investment Cost Overrun (percent)	**Project Delay**	**Reduction Benefits (percent)**
Piaye Bridge	100	5	35
Vanard (Venus) – Anse-la-Raye link Road	200	10	70
Entrepot School	50	3	11
Total Sample	100	9	64

43. The situation, however, would be different if the discount rate was higher. For a 12 percent discount rate, the sensitivity analysis shows that results of interventions are sensitive to small changes on variables. Piaye Bridge would be nonviable if investment costs increased by 20 percent or the Project is delayed by two years or more. A similar situation is noted for Entrepot School.

The Vanard (Venus) – Anse-la-Raye link Road is the most robust as changes in variables do not convey high risk to the viability of the intervention.

Table 2.6. Sensitivity Analysis

	Breakeven Point for Economic Results		
	Investment Cost Overrun (percent)	**Project Delay**	**Reduction Benefits (percent)**
Piaye Bridge	20	2	21
Vanard (Venus) – Anse-la-Raye link Road	100	8	66
Entrepot School	30	2	23
Total Sample	70	7	57