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Report No: PAD1233

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN IN THE AMOUNT OF US$30 MILLION

TO

JAMAICA

FOR A

DISASTER VULNERABILITY REDUCTION PROJECT

JANUARY 15, 2016

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

CURRENCY EQUIVALENTS

Exchange Rate Effective January 15, 2016

Currency Unit = Jamaican Dollar (J$)
J$120.25 = US$1

FISCAL YEAR

April 1 – March 31

ABBREVIATIONS AND ACRONYMS

AAL	Average Annual Loss
CAS	Country Assistance Strategy
CBA	Cost Benefit Analysis
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CCT	Conditional Cash Transfer
CERC	Contingent Emergency Response Component
CPS	Country Partnership Strategy
DVRP	Disaster Vulnerability Reduction Project
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EPGFZ	Enriquillo Plantain Garden Fault Zone
FM	Financial Management
FMA	Financial Management Assessment
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GOJ	Government of Jamaica
HEART/NTA	Human Employment and Resource Training Trust/ National Training Agency
HFA	Hyogo Framework for Action
IDB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
ICC	International Code Council
ICDP	Integrated Community Development Project
IFR	Interim Financial Report
IMF	International Monetary Fund
IRR	Internal Rate of Return
ISA	International Auditing Standards
JFB	Jamaica Fire Brigade
JSIF	Jamaica Social Investment Fund
KMA	Kingston Metropolitan Area
M&E	Monitoring and Evaluation

MIND	Management Institute for National Development
MIS	Management Information System
MLGCD	Ministry of Local Government and Community Development
MLSS	Ministry of Labour and Social Security
MOE	Ministry of Education
MOFP	Ministry of Finance and Planning
MTWH	Ministry of Transport, Works and Housing
MWLECC	Ministry of Water, Land, Environment, and Climate Change
NEPA	National Environment Planning Agency
NPV	Net Present Value
NWA	National Works Agency
ODPEM	Office of Disaster Preparedness and Emergency Management
OP/BP	Operational Policy/Bank Policy
PATH	Programme in Advancement Through Health and Education
PDO	Project Development Objective
PIOJ	Planning Institute of Jamaica
PIU	Project Implementation Unit
PPCR	Pilot Program for Climate Resilience
PSC	Project Steering Committee
REDI	Rural Economic Development Initiative
RPF	Resettlement Policy Framework
RVS	Rapid Visual Screening
SORT	Systematic Operations Risk-Rating Tool
SSN	Social Safety Net
UTECH	University of Technology

Regional Vice President:	Jorge Familiar
Country Director:	Sophie Sirtaine
Senior Global Practice Director:	Ede Jorge Ijjász-Vásquez
Acting Practice Manager:	Catalina Marulanda
Task Team Leader:	Eric Dickson

JAMAICA
Disaster Vulnerability Reduction Project (P146965)

TABLE OF CONTENTS

PAD DATA SHEET

Jamaica Disaster Vulnerability Reduction Project (P146965)

PROJECT APPRAISAL DOCUMENT

LATIN AMERICA AND CARIBBEAN

Social, Urban, Rural and Resilience Global Practice

Report No.: PAD1233

Basic Information			
Project ID P146965	EA Category B - Partial Assessment		Team Leader(s) Eric Dickson
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 13-Jun-2016	Project Implementation End Date 11-Feb-2022		
Expected Effectiveness Date 10-May-2016	Expected Closing Date 30-Jun-2022		
Joint IFC No			
Acting Practice Manager Catalina Marulanda	Senior Global Practice Director Ede Jorge Ijjasz-Vasquez	Country Director Sophie Sirtaine	Regional Vice President Jorge Familiar Calderon

Borrower: Ministry of Finance and Planning	
Responsible Agency: Jamaica Social Investment Fund	
Contact: Omar Sweeney	Title: Managing Director
Telephone No.: (876) 968-4545	Email: omar.sweeney@jsif.org

Project Financing Data(in USD Million)					
[X] Loan	[ ] IDA Grant	[ ] Guarantee			
[ ] Credit	[ ] Grant	[ ] Other			
Total Project Cost:	30.00		Total Bank Financing:	30.00	
Financing Gap:	0.00				

Financing Source	Amount
Borrower	0.00
International Bank for Reconstruction and Development	30.00
Total	30.00

Expected Disbursements (in USD Million)

Fiscal Year	2016	2017	2018	2019	2020	2021	2022
Annual	0.94	6.72	8.78	7.55	4.64	0.62	0.75
Cumulative	0.94	7.66	16.44	23.99	28.63	29.25	30.00

Institutional Data

Practice Area (Lead)

Social, Urban, Rural and Resilience Global Practice

Cross Cutting Topics

[X] Climate Change

[ ] Fragile, Conflict & Violence

[X] Gender

[ ] Jobs

[ ] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Public Administration, Law, and Justice	General public administration sector	30		
Transportation	Rural and Inter-Urban Roads and Highways	30	50	
Water, sanitation and flood protection	Flood protection	40	50	
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Social protection and risk management	Natural disaster management	60
Environment and natural resources management	Climate change	40

Total	100

Proposed Development Objective(s)

The Project Development Objective is to enhance Jamaica's resilience to disaster and climate risk.

Components

Component Name	Cost (USD Millions)
Technical Assistance for Improved Disaster and Climate Resilience	3.81
Risk Reduction	23.61
Contingent Emergency Response	0.00
Project Administration	2.50

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Substantial
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	Moderate
8. Stakeholders	Low
9. Other	
OVERALL	Substantial

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	

Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Subsidiary Agreement		15-Apr-2016	

Description of Covenant

The Borrower shall make the proceeds of the Loan available to the Project Implementing Entity through a Subsidiary Agreement, under terms and conditions acceptable to the Bank (Schedule 2, Section I, B1).

Name	**Recurrent**	**Due Date**	**Frequency**
Inter-Ministerial Steering Committee		15-Jul-2016	

Description of Covenant

Within 90 days of Project effectiveness, the Borrower shall establish an Inter-Ministerial Steering Committee to ensure that the Project achieves the Project development objectives (Schedule 2, Section I, A3).

Conditions

Source Of Fund	**Name**	**Type**
IBRD	Effectiveness	Effectiveness

Description of Condition

The Subsidiary Agreement has been executed on behalf of the Borrower and the Project Implementing Entity (Article V, 5.01).

Source Of Fund	**Name**	**Type**
IBRD	Emergency Expenditures	Disbursement

Description of Condition

No withdrawal shall be made for payments made for Eligible Expenditures for Training under Category (2), unless the Building Act has been enacted to enforce the National Building Code. (Schedule 2, Section IV, B1b).

Source Of Fund	**Name**	**Type**
IBRD	Emergency Expenditures	Disbursement

Description of Condition

No withdrawals shall be made for payments under Category (4) for Emergency Expenditures unless the

following conditions have been met:

(i) the Borrower has determined that an Eligible Crisis or Emergency has occurred, has furnished to the Bank a request to include the activities in Component 3 in order to respond to said Eligible Crisis or Emergency, and the Bank has agreed with such determination, accepted said request and notified the Borrower;

(ii) the Borrower has adopted an Emergency Financing Plan in form, substance and manner acceptable to the Bank and the provisions of the Emergency Financing Plan remain - or have been updated in accordance with the provisions of Section I of Schedule 2 so as to be - appropriate for the inclusion and implementation of said activities under Component 3; and

(iii) the Borrower has ensured that no expenditures in the Emergency Financing Plan finances salaries or any activities that are not in compliance with the EMF or any of the Bank Safeguard Policies.

(Schedule 2, Section IV, B1c).

Source Of Fund	Name	Type
IBRD	Retroactive Financing	Disbursement

Description of Condition

No withdrawal shall be made for payments made prior to the date of the Legal Agreement, except that withdrawals up to an aggregate amount not to exceed one hundred thousand Dollars ($100,000) may be made for payments made prior to the date but on or after September 1, 2015, for Eligible Expenditures for Training under Category (2) (Schedule 2, Section IV, B1a).

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Eric Dickson	Team Leader (ADM Responsible)	Sr Urban Spec.	Team Lead	GSU19
Yingwei Wu	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement Specialist	GGO04
Kerry Natelege Crawford	Financial Management Specialist	Financial Management Specialist	Financial Management Specialist	GGO22
Adam Shayne	Counsel	Lead Counsel	Counsel	LEGAM
Asha M. Williams	Team Member	Consultant	Contingent Emergency Response - Social Protection	GSP04
Beatriz Pozueta Mayo	Team Member	Consultant	Coastal Management & Civil Engineering	GSU10
Claudia Lorena Trejos Gomez	Team Member	Consultant	Operations & Contingent Emergency Response	GSU10
Fernando Viana	Team Member	Temporary	Program Assistant	GSU10

Braganca				
Francesca Lamanna	Team Member	Senior Economist	Contingent Emergency Response - Social Protection	GSP04
Jorge Enrique Rodriguez Pinilla	Team Member	Consultant	Civil Works & Building Code	GSU10
Juliana Castano Isaza	Team Member	Consultant	Coastal Management & Natural Resources	GSU10
Junko Onishi	Team Member	Sr Social Protection Specialist	Contingent Emergency Response - Social Protection	GSP04
Kimberly Nicole Burrowes	Team Member	Consultant	Operations & National Risk Information Platform	GSU10
Martin Henry Lenihan	Safeguards Specialist	Senior Social Development Specialist	Social Safeguards Specialist	GSU04
Michael J. Darr	Safeguards Specialist	Consultant	Environmental Safeguards Specialist	GEN04
Patricia M. Acevedo	Team Member	Program Assistant	Program Assistant	GSU10
Roland Alexander Bradshaw	Team Member	Senior Disaster Risk Management Specialist	Civil Works	GSU10
Tatiana Cristina O. de Abreu Souza	Team Member	Finance Officer	Finance Officer	WFALN
Victor Manuel Ordonez Conde	Team Member	Senior Finance Officer	Finance Officer	WFALN
Yaprak Servi	Team Member	Consultant	Civil Works & Building Code	GWADR

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Jamaica	Saint Thomas	Yallahs	**X**		Critical Facilities - Fire Station
Jamaica	Westmoreland	Savanna-la-Mar	**X**		Coastal Management
Jamaica	Saint Mary	Port Maria	**X**		Critical Facilities - Fire

					Station
Jamaica	Saint Mary	Port Maria	**X**		Coastal Management
Jamaica	Clarendon	Portland Cottage	**X**		Coastal Management
Jamaica	Saint Catherine	Old Harbour	**X**		National Infrastructure - Bridges & Urban Drainage
Jamaica	Saint Ann	Ocho Rios	**X**		Coastal Management
Jamaica	Saint Thomas	Morant Bay	**X**		Coastal Management
Jamaica	Saint James	Montego Bay	**X**		Critical Facilities - Fire Station
Jamaica	Portland	Manchioneal	**X**		Coastal Management
Jamaica	Kingston	Parish of Kingston	**X**		Coastal Protection
Jamaica	Saint Andrew	Harbour View	**X**		Critical Facilities - School
Jamaica	St. Elizabeth	Black River	**X**		Coastal Management
Jamaica	St. Elizabeth	Alligator Pond	**X**		Coastal Management

Consultants (Will be disclosed in the Monthly Operational Summary)	
Consultants Required ?	Consultants will be required

I. STRATEGIC CONTEXT

A. Country Context

1. Jamaica is a small island state with a population of approximately 2.72 million (2015) and a Gross National Income per capita of approximately US$4,822 (2015). For the past 30 years real per capita Gross Domestic Product (GDP) increased at an average of just one percent per annum, which has limited the pace of development. The country's progress on poverty reduction and shared prosperity has been hampered in the recent past, due largely to economic shocks that were amplified by structural weaknesses in the economy. Despite significant progress in poverty reduction during the early part of the past decade (between 1997 and 2007, the poverty rate fell from 19.9 to 9.9 percent), the onset of the global economic crisis eroded these gains and in 2012, the poverty headcount returned to 19.9 percent of the population. While overall inequality remains relatively low compared to the rest of the region, people at the bottom 40 percent of the income distribution have suffered more than the average household in recent years. Jamaica has also been among the world's most indebted countries, but in recent years the authorities have achieved a measure of success at fiscal consolidation - running a large primary surplus (7.5 percent of GDP) and reducing public debt from 145 percent in 2012 to 136 percent of GDP in 2015[1].

2. **Jamaica is making progress in addressing economic challenges.** Committed to restoring growth and building an inclusive prosperous country, the Government of Jamaica (GOJ) embarked on a comprehensive and ambitious program of reforms to tighten spending and increase tax revenue, for which it has garnered national and international support: a four-year Extended Fund Facility (EFF) by the International Monetary Fund (IMF) providing a support package of US$932 million (2013-2017); World Bank Group and the Inter-American Development Bank (IDB) programs providing US$510 million each to facilitate the GoJ's economic reform agenda to stabilize the economy, reduce debt and create the conditions for growth and resilience. Together, the three multilateral organizations are supporting a set of structural reforms designed to stabilize the economy, reduce public debt, and create the conditions for growth and resilience[2]. The GOJ continues to demonstrate a clear commitment to reforms and in September 2015 concluded its ninth review under the EFF. Business and consumer confidence have improved. Inflation is at historically low levels. In the first quarter of 2015, the country reached a major milestone by registering a current account surplus for the first time in over a decade.

3. **Despite a mild recovery since 2013, growth prospects remain fragile.** Real GDP grew by 0.2 percent in FY2014/15, partly a result of a long drought that led to a 5.1 percent contraction in the agricultural sector. Services grew at an average of 0.6 percent over FY2014/15, mainly due to an increase in tourist arrivals. Manufacturing, industry and fixed capital investment remained stagnant for the fiscal year, but have started to display some positive

[1] IMF Country Report No. 15/343

[2] Throughout this PAD, the term 'resilience' refers to 'the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (United Nations International Strategy or Disaster Reduction-UNISDR, 2009).

growth in the second quarter of 2015 (1.4 percent). The World Bank expects GDP growth to recover to 1.5 percent in FY2015/16 as the effects of the drought dissipate. Growth will continue to be driven by the services sector, especially tourism, though other services (e.g., business process outsourcing) are beginning to show dynamism. The outlook is for GDP growth to rise gradually to 2.7 percent per year by FY2018/19. Downside risks to this outlook stem from the island's vulnerability to natural disasters and the challenges of maintaining high primary fiscal surpluses.

B. Sectoral and Institutional Context

4. **Adverse natural events in Jamaica regularly impact livelihoods, destroy infrastructure and disrupt the provision of essential services.** Primary risks are linked to natural hazards including hurricanes, floods, droughts, earthquakes, storm surges, and landslides. High exposure to hazards can be attributed to the country's geographical location on the Atlantic Hurricane Belt, and geophysical orientation with low-lying coastal zones and mountainous topography. The Jamaican territory is also crossed by five major fault lines, and in particular the Plantain Garden Fault Zone that triggered the 2010 Haitian earthquake. The dense network of fault lines is mostly oriented in the eastern region of the island, where over 50 percent of the country's population resides. Hurricane risk is also appreciable as approximately 82 percent of Jamaica's population lives within five kilometers of the coast, which exacerbates the relative vulnerability of residents, major infrastructure and the housing stock. The coastal zone contains an estimated 75 percent of productive industries and service sectors and is responsible for contributing an estimated 90 percent to the country's GDP. The Kingston Metropolitan Area (KMA) has a population of approximately 0.67 million people[3] and is located on the coast and in the most active fault zone. Furthermore the majority of the country's Government functions, commercial districts, and trade and industry are located in the KMA, underscoring the relative concentration of the country's exposure to disasters.

5. **Jamaica is one of the most at risk countries in the world with high percentages of GDP and population at risk to two or more hazards**[4]. Jamaica's damages and losses from hydro-meteorological disasters and earthquakes were estimated at US$3.04 billion between 1988 and 2013[5]. The number of recorded disasters between 2001 and 2010 was three times as high as any other decade. During this period 10 major events impacted the island with far-reaching impacts affecting approximately two million people and causing nearly US$1.21 billion (2010) in damages. Hurricane Ivan in 2004 alone resulted in over US$351 million (2010) in damages; an amount equivalent to eight percent of the GDP. From a sectoral perspective, infrastructure bore the highest economic impact at 45 percent of the overall costs, largely in the transportation sub-sector (roads and bridges). Although less frequent, seismic hazards also pose severe risk to Jamaica's economic performance. Scientists predict Jamaica has a high likelihood of being

[3] Statistical Institute of Jamaica, 2012.
[4] Global Rank of Countries at High Economic Risk from Two or More Hazards. *Data from World Bank Natural Disaster Hotspots – a Global Risk Analysis, 2008*.
[5] Planning Institute of Jamaica. PPCR Socio-economic and Environmental Disaster Impact Assessment Handbook for Jamaica, 2012

impacted by a 7.0-7.5 magnitude earthquake[6]. An extreme earthquake or tropical storm event in Jamaica could produce losses estimated between US$7-10 billion[7].

6. **Climate change models[8] project that Jamaica could be impacted by an increased frequency of adverse natural events (e.g. droughts, storms, tropical cyclones, hurricanes and floods) as a result of heightened surface temperatures and global sea level rise[9].** The Intergovernmental Panel on Climate Change (IPCC) suggests that Jamaica will undergo a warming and drying trend and endure more frequent heat waves and droughts, rainfalls and hurricanes with increased intensity, and heightened storm surge. The impact of sea level rise and intensified storm surges in Latin America and the Caribbean will be highest in Jamaica – noting a rise in sea level of between 30-35cm between 2008 and 2058[10]. About 50 percent of the country's economic assets, including commercial and industrial facilities and tourism infrastructure which contribute to 90 percent of the GDP, are located on the coast. Additionally, over two million people reside in coastal areas[11]. Primarily, the patterns of accelerated sea level rise are expected to put approximately 2,500 people or 14 percent of the total coastal population at risk of storm surges and flooding during a 50-year return storm event[12]. Increased incidence of sea level rise and storm surges would lead to displacement of 25 percent of Jamaicans who inhabit coastal areas. Densely populated urban areas like Portmore in St. Catherine, which is a drained low lying coastal area would be at risk from flooding[13].

7. **There are 827 communities in Jamaica, of which 32 percent are flood-prone.** Climate change investments will have to be spatially dispersed to meet the risks associated with the locations of these communities. The effects will only worsen with the projected effects of climate change in Jamaica (see Table 1).

8. **Natural disasters represent a significant contingent liability for Jamaica comparable to others such as commodity price fluctuations and exchange rate volatility.** Using simulated data from the Caribbean Catastrophe Risk Insurance Facility (CCRIF) as of August 2013, the fiscal cost (e.g. explicit public sector liabilities) of natural disasters in Jamaica is estimated at approximately US$120 million for hurricanes (wind), US$62 million for floods and US$42 million for earthquakes on average per year (Average Annual Loss – AAL). The probable maximum loss for a 100-year hurricane (i.e. 0.01 percent likelihood of occurring in any given

[6] Professor Eric Calais, Purdue University, 2013 UNDP exploratory mission
[7] Caribbean Catastrophe Risk Insurance Facility, 2013
[8] Hadley Center Coupled Model, Version 2 (HADCM2), as reported in Mulligan (2003). Same modeling data as used by the Intergovernmental Panel on Climate Change (IPCC).
[9] Climate Studies Group, Mona (CSGM), 2012: State of the Jamaican Climate 2012: Information for Resilience Building (Summary for Policymakers). Planning Institute of Jamaica (PIOJ), Kingston, Jamaica
[10] Hadley Center Coupled Model, Version 2 (HADCM2).
[11] Allison Richards, Development Trends in Jamaica's Coastal Areas and the Implications for Climate Change, Planning Institute of Jamaica, March 2008
[12] Risk and Vulnerability Assessment Methodology Development Project (RiVAMP), "Linking Ecosystems to Risk and Vulnerability Reduction"
[13] Climate Studies Group, Mona (CSGM), 2012: State of the Jamaican Climate 2012: Information for Resilience Building (Summary for Policymakers). Planning Institute of Jamaica (PIOJ), Kingston, Jamaica

year) could be in the region of 20 percent of GDP[14]. The losses resulting from natural hazards are correlated to the high exposure of the country's assets. The total exposure value of infrastructure assets in Jamaica is calculated at approximately US$18 billion in 2014[15]; this accounts for urban construction, rural construction, and national infrastructure. The latter, represented in the GOJ's portfolio, has an exposure value of US$3.3 billion, underscoring the public sector's vulnerability to the impacts of natural hazards. To drill down geographically, the Kingston, St. Andrew and St. Catherine region, which houses over 40 percent of the population, has as a risk exposure (physical, economic and human) of US$10.1 billion[16].

Table 1. The potential impacts of Climate Change threats on Jamaica[17]

Climate Change Threats	Impact on Jamaica	Affected Sectors
Sea level rise	Flooding of coastal areas Loss of coastal habitats Loss of coastal infrastructure – houses, hotels, roads, bridges, utility lines Loss of beaches Coastal subsidence/Reduction of land mass Reduction in freshwater quality due to saline intrusion	Tourism Agriculture Infrastructure Water Resources Natural Environment
Increase in extreme events – precipitation	Increased flooding leading to: loss of lives, property, and income, particularly for small farmers on hillsides and slopes Damage to houses (especially poor quality in marginal or environmentally sensitive areas) Increased soil loss Increased sedimentation of coastal waters	Agriculture Water Resources Tourism Fisheries Health Built and Natural Environment
More intense storms and storm surges	Damage to coastal infrastructure Loss of coastal ecosystems Increased incidence of landslides and flooding Coastal aquifer saline contamination Increased run-off and decreased recharge	Agriculture and Fisheries Tourism
Increased temperature	Loss of coral reefs from coral bleaching Loss of agricultural productivity – fisheries, crops and livestock Increased water demand	Agriculture and Fisheries Tourism Water Resources
Longer and more intense droughts	Reduced availability of water especially in dry seasons for agriculture, domestic consumption Lower soil productivity impacting agricultural output Loss of heat sensitive crops/animals	Agriculture Water Resources

[14] Caribbean Catastrophe Risk Insurance Facility, 2013
[15] Country-specific Risk Evaluation for Jamaica, Inter-American Development Bank, March 2014
[16] Ibid
[17] Ibid.

9. **The Government of Jamaica has developed national strategies and policies to promote more resilient development planning**. These include the Natural Hazard-Risk Reduction Policy (2005), the Building Code Bill (2013), and the Disaster Risk Management Act (2015). Jamaica also adopted the recommendations of the strategic objectives and priority actions of the "Hyogo Framework for Action" (HFA) [18]. The climate and disaster risk reduction sections of the country's National Development Plan 'Vision 2030 Jamaica' (2009-2030) is aligned with goals and objectives outlined in the HFA. 'Vision 2030 Jamaica' identifies Hazard Risk Reduction and Adaptation to Climate Change as a national outcome to improve mitigation and response while decreasing risk vulnerabilities in Jamaica on a national scale. Jamaica's 2012 renewed National Adaptation Planning Process addresses climate change impacts as national development priorities. This led to the creation of a new Ministry of Water, Land, Environment, and Climate Change (MWLECC), and of the Climate Change Advisory Committee and the Climate Change Division within that Ministry. The GOJ has also established a National Disaster Fund to finance some emergency response and rehabilitation activities after a disaster, which complements their participation in the CCRIF.

10. **The Government of Jamaica and is also actively working to reduce the country's vulnerability to disaster and climate risk through a number of initiatives.** Jamaica is one of six Caribbean countries participating in the Strategic Climate Fund through the Pilot Program for Climate Resilience (PPCR). The program provides support for integrating climate risk and resilience into national planning. Supported by the World Bank and the Inter-American Development Bank (IDB), the PPCR is engaging with Jamaica under three Projects: (i) Improving Climate Data and Information Management Project (IBRD, P129633); (ii) Community-based Climate Resilience in the Fisheries Sector (IBRD, P151302); and (iii) Funding Water Adaptation in Jamaica's New Housing Sector (IDB), which are consistent with the Jamaica Strategic Programme for Climate Resilience (SPCR) developed under the PPCR.

C. Higher Level Objectives to which the Project Contributes

11. **Increasing National Climate and Disaster Resilience:** The proposed operation supports the Government in implementing a program that promotes climate and disaster risk management in the wider context of sustainable development. This will be achieved through: i) improving the capacity of Government institutions to generate and use hazard and risk information to shape local and national development; and, ii) reducing disaster and climate vulnerability by making infrastructure more resilient.

12. **Promoting Shared Prosperity and Ending Extreme Poverty:** The Project directly supports the Bank's objectives of reducing poverty and boosting shared prosperity by supporting the Government to proactively address disaster risk, rather than treating a disaster as an exogenous shock to development. The Project will also, in the event of a major disaster triggered

[18] The Hyogo Framework for Action (2005–2015) was an outcome of the Second World Conference on Disaster Reduction (Kobe, 2005). The HFA set five specific priorities for action: (1) Making disaster risk reduction a priority; (2) Improving risk information and early warning; (3) Building a culture of safety and resilience; (4) Reducing the risks in key sectors; and, (5) Strengthening preparedness for response. The HFA offers guiding principles, priorities for action, and practical means for achieving disaster resilience for vulnerable communities.

by a natural event, enable a quicker response to address emergency needs and thus reduce the risk of the GOJ having to halt or divert resources from the implementation of the other development priorities. As noted, 'Vision 2030 Jamaica' identifies natural hazards as one of the external factors that most affects economic development. Climate change and adverse natural events are recognized to have the greatest impact on the poorest populations who generally live in higher-risk areas and have a diminished capacity to recover from disaster. In the case of Jamaica, even frequent, low-intensity events such as a heavy rainfall can have crippling and cumulative effects on livelihoods and communities. Impediments to development gains as a result of climate hazards particularly impacting the poorest communities can be minimized by reducing the exposure to hazard events and by decreasing the vulnerability of the poor to climate disturbances.

13. **Relationship to Country Partnership Strategy:** The proposed operation is fully aligned with the Bank's strategic engagement with Jamaica. The Project supports the climate-related and disaster risk management objectives highlighted in the Country Partnership Strategy (CPS) for Jamaica FY2014-2017 (Report No. 85158-JM, discussed by the Executive Directors on April 29, 2014). In the CPS FY2014-2017, which aims to support Jamaica in laying the foundations for sustainable inclusive growth, the proposed Project falls under Outcome 6 of the Sustainability Pillar, Increased Resilience to Climate Change and Natural Disasters.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

14. The Project Development Objective is to enhance Jamaica's resilience to disaster and climate risk.

B. Project Beneficiaries

15. The proposed Project will directly benefit the following groups:

a) Eight communities[19] that will benefit from improved knowledge of coastal vulnerabilities and recommended climate adaptation measures.
b) 450 building professionals who will be trained in the National Building Code.
c) Staff within 20 GOJ entities engaged in disaster risk planning will also directly benefit from the development of systems to improve the collection of climate risk information and its usage in decision-making.
d) The 26,000 residents in Old Harbour who will be able to utilize the resilient infrastructure (bridges and drainage), and those who utilize the infrastructure for connectivity.
e) The users of the 30+ assets in and around Port Royal Street, including the Norman Manley International Airport.
f) In the event of being impacted by a disaster, the poorest and most socioeconomically vulnerable segments of society enrolled in social protection programs.

[19] Morant Bay, Alligator Pond, Savannah-la-mar, Black River, Ocho Rios, Manchioneal, Portland Cottage, Port Maria.

The Project will indirectly benefit the entire population of Jamaica (approximately 2.72 million) by improving disaster preparedness and response, and reducing risk of key infrastructure failure as a result of natural hazards.

C. PDO Level Results Indicators

16. The achievement of the objective will be measured using the following key indicators:
    i. Improved risk identification: Use of risk information for investment planning in the built and non-built environment (Number of Plans)
    ii. Reduction in vulnerability: Population benefitting from improved critical facilities and infrastructure (Number of People)

III. PROJECT DESCRIPTION

A. Project Components

17. The proposed Project will finance four components, which will be implemented over a period of six years (details in Annex 2). Complementary activities will be carried out through grant financing that will leverage the Loan. These activities are related to i) disaster risk financing and insurance; ii) disaster response and recovery; iii) safer schools; and iv) risk reduction.

18. **Component 1: Technical Assistance for Improved Disaster and Climate Resilience (US$3.815M).** This includes improving the generation and collection of targeted hazard and risk information, its analysis and use in monitoring systems and decision making. In order to improve the ability of Government officials to generate and use hazard and risk information for decision-making and policy development, this component will finance the following activities: (i) equipment and facilities to strengthen the seismic monitoring network; (ii) the establishment of a National Risk Information Platform and Coastal Risk Atlas; (iii) multi-hazard risk assessments for coastal areas, including ecosystems-based analyses and microzonation studies; and (iv) a training program to support the implementation of the National Building Code. In addition, this component will finance workshops to promote public awareness raising relating to climate and disaster risk management.

19. **Component 2: Risk Reduction (US$23.61M).** This includes the retrofitting or construction of key assets given that the infrastructure sector is one of the most severely impacted after a major disaster event. To reduce Jamaica's physical vulnerability to adverse natural events, this component will finance structural mitigation measures. The sub-components and activities to be financed under this component are: (i) retrofitting, construction and/or rehabilitation of national and sub-national priority infrastructure (bridges and urban drainage); (ii) retrofitting, construction and/or rehabilitation of critical public facilities (schools and fire stations); and (iii) establishing or improving coastal protection measures.

20. **Component 3: Contingent Emergency Response (US$0M).** The proposed operation will include a contingent 'zero component', which in the event of a disaster caused by a natural hazard would enable the Government to quickly reallocate Project funds to disaster response and

recovery purposes under streamlined procedures. This Contingent Emergency Response Component (CERC) will support Jamaica's emergency preparedness and response capacity to the impact of natural hazards, including financing of post-disaster critical emergency goods or emergency recovery and associated services, as well as targeted provision of post-disaster Social Safety Net (SSN) support to affected households and individuals. Following an adverse natural event, the Government's declaration of disaster in accordance with national law, and subject to the Bank's activation policy, the contingent component would be triggered.

21. **Component 4: Project Administration (US$2.5M).** This component will finance costs associated with program management, including Project related audits, monitoring, mid-term and end-of-project evaluation, equipment and training to strengthen the Project Implementation Unit (PIU), as well as individual consultants, motor vehicle and operating costs. The component will also finance the core professional and technical staff for Project management, including a Program Manager, Supervision Engineers and specialists in the areas of disaster risk management, safeguards compliance, finance, procurement and related Project management areas. Core staff will be recruited on time-bound basis.

B. Project Financing

22. **The lending instrument is Investment Project Financing in the amount of US$30million through an IBRD Flexible Loan to the Government of Jamaica.**

Table 3: Project Cost and Financing

Component	Project Costs (US$)	IBRD Financing	Financing (%)
Component 1. Technical Assistance for Improved Disaster and Climate Resilience	3,815,000	3,815,000	100
Component 2. Risk Reduction	23,610,000	23,610,000	100
Component 3. Contingent Emergency Response	0	0	100
Component 4. Project Administration	2,500,000	2,500,000	100
Total Project Costs	29,925,000	29,925,000	100
Front-end Fees	75,000	75,000	100
Total Financing Required	**30,000,000**	**30,000,000**	**100**

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

23. **A Project Steering Committee (PSC) will have overall responsibility for Project coordination and management,** and will be co-chaired by the Planning Institute of Jamaica (PIOJ) and Jamaica Social Investment Fund (JSIF). Membership will include high-level representatives from relevant ministries and associated technical agencies. Members of private

sector and civil society may be invited as required. The PSC will oversee the Project, provide overall policy guidance, and facilitate broad communication and coordination across the GOJ.

24. **The PIOJ serves as the statutory body within the Ministry of Finance and Planning (MoF) with a high level of experience coordinating and implementing Bank projects.** The PIOJ is responsible for preparing and executing the National Development Plan 'Vision 2030 Jamaica' and is the focal point for the PPCR and Phase 2 of the Strategic Programme for Climate Resilience (SPCR). Therefore, PIOJ collaboration with the JSIF will help ensure proper establishment and implementation of the World Bank's program for resilience in Jamaica.

25. **As Project implementing entity, the JSIF is the responsible agency for overall Project coordination and execution.** The JSIF was established in 1996 as a limited liability company to reduce poverty and help create an environment for sustainable development. The JSIF has recognized executing capacity for projects spanning multiple sectors, including climate and disaster risk management and emergency response, and institutional capacity relating to procurement, safeguards and financial management.

26. **The JSIF is well positioned to undertake implementation of the proposed Project given its experience implementing numerous Bank financed projects.** In particular, the JSIF is currently executing the Integrated Community Development Project (ICDP, P146460) and the Rural Economic Development Initiative (REDI, P105122) financed by the World Bank and the GOJ. Similarly, the JSIF has been involved in the Caribbean Catastrophic Risk Insurance Initiative Fund (CCRIF, P108058), whereby it was responsible for overall procurement of international and national consulting services to support an in depth assessment of the viability of pooling climate-induced disaster risks in the Caribbean. In addition, the JSIF previously implemented the Hurricane Dean Emergency Recovery Loan (P109575) and the Inner City Basic Services for the Poor Project (ICBSP, P091299). The approaches and tools, which came out of the Emergency Recovery Loan, continue to be utilized in all the JSIF's projects.

27. **In addition to the JSIF and the PIOJ, there are multiple stakeholders associated with the proposed operation that will contribute to Project coordination and implementation.** These include: the Ministry of Local Government and Community Development (MLGCD), the Ministry of Transport, Works and Housing (MTWH), the Ministry of Finance and Planning (MOFP), the University of Technology (UTECH), the Human Employment and Resource Training Trust/National Training Agency (HEART/NTA), the National Environment Planning Agency (NEPA), the Ministry of Education (MOE), the Ministry of Water, Land, Environment and Climate Change (MWLECC), and the Ministry of Labour and Social Security (MLSS). A detailed description of each entity and their respective role in the Project is contained in Annex 3.

B. Results Monitoring and Evaluation

28. **The JSIF assumes overall responsibility for Monitoring and Evaluation (M&E) as a part of the agency's governance and accountability framework.** The JSIF ensures effective tracking of Project outcomes throughout implementation by instituting constant Project monitoring and evaluation with recommendations and subsequent necessary actions being carried out in a timely manner. The M&E system has been prepared based on the implementation

progress indicators identified in the Results Framework presented in Annex 1. Particular attention has been paid to establishing realistic and useful indicators that can be regularly collected and maintained in the JSIF's Management Information System (MIS).

29. **The JSIF M&E Unit is responsible for providing critical oversight to ensure funds are targeted efficiently.** The Unit is staffed with an M&E Coordinator and an M&E Analyst. Responsibilities include providing qualitative and quantitative information on the execution of selected interventions, procurement and contractual decisions, accounting and financial recording, progress toward outcomes and outputs, as well as other operational and administrative matters. Frequent process evaluations will be undertaken, as well as mid and end of Project assessments. The Unit will be assisted in the overall process by other institutions involved in the execution of the Project: MLGCD, MOFP, MTWH, UTECH, HEART, NEPA, MOE, MLWECC, MLSS and specialized consultants, as required. The Project Operational Manual will provide specific details regarding monitoring and evaluation responsibilities, including data collection requirements, timing and use of the information. Details on the monitoring and evaluation in Annex 3.

C. Sustainability

30. **Physical Sustainability:** The structural investments under the proposed Project are designed to increase Jamaica's resilience to the impacts of adverse natural events and climate change. Using best practices for engineering studies and designs, along with construction supervision at the sites and technical audits will ensure a high quality.

31. **Financial Sustainability:** The fiscal impacts of disasters require significant capital expenditures for repairing and reconstructing damaged public/state-owned infrastructure as well as, in particular cases, implicit liabilities to the Government. The proposed Project will build capacity within the GOJ to better manage these fiscal burdens.

32. **Institutional Sustainability:** Through the Project, provisions will be made for enhancing the institutional capacity of the line-Ministries that have key roles in the disaster vulnerability reduction process. The Project stakeholders will benefit from institutional strengthening to support their preparedness and response, mitigation and management capacities of disasters in order to ensure long term resilience planning and maintenance of the Project's infrastructure investments.

V. KEY RISKS

33. **The overall risk rating of the Project is considered to be 'Substantial'.** This is driven by a number of factors including:

a) **Technical design and Institutional Capacity for Implementation:** The Project has complex design as the first multi-hazard and multi-sectoral Bank financed disaster and climate resilience operation in Jamaica. The implementing agency, the JSIF, has a strong track record in implementing World Bank projects; however the agency's institutional capacity to adequately address safeguard and fiduciary requirements may be strained by the intricate design of the Project. There are multiple stakeholders participating in

coordination, implementation and monitoring of activities and the JSIF will have to navigate the execution of each sub-activity. If the CERC, a unique disaster response instrument is triggered under the Project, cash grants and transfer would add to the complexity of the fiduciary aspects. To support the implementation of the Project, and as noted above, a PSC will be established and will include high-level representatives from concerned ministries and associated technical agencies. The PSC will oversee the Project, provide overall policy guidance, and facilitate broad communication and coordination across the GOJ.

b) **Macroeconomic:** Despite improvement in macroeconomic fundamentals, growth remains fragile and the economy faces a number of risks. Consecutive droughts in 2014 and 2015 have constrained growth in Jamaica's GDP and underscore the economy's vulnerability to weather and climate shocks. Additional appreciation of the U.S. dollar would increase Jamaica's cost of servicing external debt and possibly reverse the decline in the debt/GDP ratio. Despite the current strong demand for Jamaica's exports, an increase in world oil prices or an adverse change in Jamaica's arrangements for financing oil imports would deepen the current account deficit as well as push up domestic prices. Limited fiscal space reduces the Government's ability to respond to unforeseen shocks. To mitigate these risks the Government is pursuing a structural reform agenda designed to improve the business environment, boost competitiveness and streamline the public sector. These initiatives are detailed in a new development strategy paper presented to Parliament earlier in 2015. This plan includes strategic investments designed to boost growth combined with regulatory reforms to promote job creation and improve the business climate. A new Growth sub-committee of Cabinet has been established, and a monitoring mechanism has been put in place to track progress on the reform program. A downturn in the macreconomic conditions of the country could strain fiscal space across GOJ entities and their financial capacity to implement the Project.

c) **Fiduciary:** Although JSIF has experience in managing World Bank projects, there are still Financial Management issues that need to be addressed. The Project design is complex due to the nature of the general activities and the CERC component, which includes cash transfers. JSIF will maintain responsibility for the fiduciary arrangements if the CERC is triggered even though the MLSS processes of identifying and making payments to beneficiaries will be used for the cash grants and supplemental payments. The Bank will work with JSIF to ensure that high risk financial management areas are clearly documented, addressed and monitored throughout implementation (see Annex 3, Table 6).

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

34. Accounting for approximately 50 percent of the estimated Project financing, the economic evaluation was conducted for the following subprojects: a) Urban Drainage: Big Pond including Myton Gully b) National Infrastructure Bridges: Myton Gully Bridge, Church Pen #1 and Church Pen #2; c) Fire Stations: Port Maria, Montego Bay and Yallahs; d) Schools: St.

Benedict's Primary; and e) Coastal Protection: Port Royal Street. All data has been collected for the evaluation and a cost-benefit analysis is the tool of analysis being used.

35. Given the uncertainty of occurrence of events and associated damages, a Monte Carlo simulation[20] was conducted. Probability functions were estimated for most of the variables in order to account for the uncertainty of the values and to ensure that the calculation of the rate of return was robust. Results show that the expected Internal Rate of Return (IRR) of the selected interventions in the sample is 17 percent and expected present value of net benefits of approximately US$ 16.85 million. Expected benefits will surpass the costs in 40 percent. Overall, the probability that the benefits of any of the selected interventions fall below 12 percent is between 0 percent and 7 percent.

Table 4: Internal Rate of Return (IRR) and Net Present Value (NPV)

	IRR				Total Sample	
	Big Pond	Bridges	Port Royal Street	St Benedict	IRR	NPV (M US$)
Expected Value	15.9%	15.0%	17%	15.0%	16.9%	8.29
Standard deviation	2.0%	2.1%	1%	1.7%	1.0%	1.70
Minimum	10.4%	9.9%	15%	10.1%	13.7%	2.68
Maximum	22.4%	20.8%	18%	20.2%	20.2%	14.14
Coefficient of Variance	12.7%	14.1%	3%	11.3%		0.21
Prob low* outcome	1.9%	7.3%	0%	4.3%	5.8% 0.0%	0.0%

*low: < 12% IRR, < 0 NPV

B. Technical

36. A comprehensive approach to increasing Jamaica's resilience requires coordinated, long-term investment to ensure that the country be better prepared to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner. The technical framework for the Project draws from the World Bank's international experience, notably various disaster vulnerability reduction projects from Colombia, St. Lucia, St. Vincent and the Grenadines, Dominica, and Bangladesh. The proposed Project will serve as an important entry point for Jamaica to strengthen its capacity for disaster risk management and climate resilience and will lay the foundations for future key investments by identifying risks in the built and non-built environment, and developing the necessary designs and plans to respond accordingly.

37. The proposed Project therefore relies on approaches, methodologies, technical designs and technologies appropriate for the Jamaican context. Proposed works and institutional

[20] Monte Carlo simulation, or probability simulation, is a technique used to understand the impact of risk and uncertainty in financial, project management, cost, and other forecasting models.

strengthening activities have been evaluated to ensure consistency with the short and long-term objectives of the Project. During the Project preparation all proposed activities were reviewed for technical merit, evaluated based on both climate-related and seismic disaster risks and a detailed assessment was conducted with each respective Ministry or agency to prioritize and refine the financed activities. In all cases, clear relationships between proposed activities and the Project objective were identified, and supporting engineering and safeguard activities have been accounted for in the proposed budget.

C. Financial Management

38. **JSIF will be responsible for the Project's financial management function.** A Financial Management (FM) capacity assessment of JSIF was conducted by the task team. Subject to the JSIF satisfactorily addressing the FM Action Plan points noted in Annex 3, the FM arrangements will be considered adequate as per the requirements of the Bank's Operations Policy 10.00. A segregated US$ designated account will be opened by the MOFP at the Bank of Jamaica, and be maintained by the Debt management branch in the MOFP. A segregated JMD bank account will also be opened by the Project for processing local currency payments. Annual external audits of the Project's financial statements covering the periods ending March 31st are required to be submitted to the World Bank within six months after each fiscal end. Quarterly Unaudited Interim Financial Reports (IFRs) are also required to be submitted to the World Bank within 45 days after each calendar quarter period end.

D. Procurement

39. **The Bank conducted an assessment of the capacity of the JSIF as the entity to implement procurement actions under the Project and found that there is adequate capacity to carry out the procurement in a satisfactory manner.** The assessment reviewed the organizational structure for implementing the Project and the interaction between the JSIF with related Project agencies in terms of organizing evaluation committees for each type of contracts under Project implementation. The findings of the assessment are supported by the satisfactory implementation completion by the JSIF of the ICBSP.

40. **The Project procurement will be managed by the experienced JSIF procurement team composed of the procurement manager and officers, financial manager, legal officer, quantity surveyor, evaluation officer and administrative assistant, who work with several international funding agencies, including the World Bank.** With the increased responsibilities for this new Project (DVRP), while currently implementing two other projects (ICDP and REDI), an additional procurement officer shall be recruited to support the Jamaica DVRP.

E. Social (including Safeguards)

41. ***Resettlement.*** Because the Project will finance the construction of civil works there is the possibility that land acquisition or resettlement will be necessary. Therefore, the World Bank's Policy on involuntary resettlement (OP/BP 4.12) is triggered. During Project preparation a comprehensive screening process was applied to the sub-projects identified, which determined that there would be no permanent land acquisition or resettlement impacts resulting from the

current sub-project designs. However, it is possible that temporary land acquisition will be necessary during implementation. Also, the Project may finance civil works under the Contingency Emergency Response Component that could result in land acquisition or resettlement. Because of the likely temporary nature of the impacts, or the possibility that they will result from activities that will be defined during implementation as part of the CERC, it was not possible to identify sub-project land acquisition or resettlement requirements during Project preparation. Therefore, a Resettlement Policy Framework (RPF) will be used in lieu of site-specific resettlement plans. To this end, the Resettlement Policy Framework currently used by the JSIF for the other World Bank financed projects was updated to include possible impacts that might result from the Jamaica DVRP. The RPF was disclosed on March 26, 2015 and March 27, 2015 on JSIF's and World Bank's external websites, respectively.

42. ***Gender.*** Gender considerations have been incorporated in the design of critical facilities. For instance, fire stations designs will include separate dormitory and bathroom facilities for men and women firefighters, while schools which serve as emergency shelters also provide separate bathroom facilities, as well as separate sleeping and changing facilities. For all sub-projects involving construction works, the JSIF will closely monitor the degree to which women will benefit both directly (in terms of employment and training) and indirectly (as community members) from each of the sub-projects. The JSIF social officers will promote the role of women as potential employees with contractors and in the beneficiary communities. The JSIF social appraisal process, which includes gender considerations, will be applied to monitor these impacts.

43. ***Citizen Feedback and grievance redress.*** The JSIF as the main Project counterpart will ensure there is sufficient space for citizen feedback during Project implementation. Because the JSIF will be applying its system of social appraisal and social management, each sub-project will be socialized in the beneficiary community, and a community meeting will be held prior to the commencement of works. This meeting includes representatives from the community, the contractor, and the agencies responsible for implementing the Project. The community meeting serves to notify community members of possible disruption that could be caused by construction works, allows them to voice their concerns in front of the contractor, and to provide information on who to contact should a problem arise. Any complaints that do arise during implementation are entered into the fund manager system, on submission to the JSIF, and subsequently, a corrective action form outlines the resolution of the problem. Opportunities will also arise for stakeholder engagement in the preparation of studies supported by the Project which will address coastal zone management.

F. Environment (including Safeguards)

44. **The Project has been classified as Category B in accordance with the Bank policy on Environmental Assessment (OP/BP 4.01), as proposed activities under Component 2 involve primarily rehabilitation works with potential environmental or social impacts that are short-term, not significant, and that can be readily prevented or mitigated with standard measures.** The environmental safeguards triggered by the Project are outlined below.

- **Environmental Assessment (OP 4.01)**. The JSIF has prepared an Environmental Management Framework (EMF), adapting and strengthening its existing environmental

program to meet the DVRP activities and sub-projects. While the specifics of program activities and projects were not fully identified at the time of Project appraisal, the EMF includes a preliminary program-wide impacts assessment of the sub-projects under Components 1 and 2, which are expected to be chiefly small works with relatively minor environmental impacts that can be readily mitigated with standard construction environmental mitigation and monitoring procedures. The EMF also provides procedures for the application of Bank safeguards including information on subproject screening and categorization, and additional assessment studies as necessary for subprojects such as Environmental Impact Assessments (EIAs) for complex projects (e.g. coastal defense works) as necessary. The EMF has in place procedures to screen for impacts on natural habitats, forests and pest management and physical cultural resources and to develop proposed mitigation measures as required.

- **The Natural Habitats Policy (OP 4.04)** is triggered as a precaution due to potential Project activities which may occur in river valleys, coastlines and/or marine areas. The EMF accounts for natural habitats when screening both known works and any future activities currently undefined through the screening of future subprojects to determine if additional assessment and specialized mitigation measures would be required for these Projects, once detailed designs are known during implementation.

- **The Physical Cultural Resources Policy (OP/BP 4.11)** has been triggered as a precaution. The Project is unlikely to impact physical cultural resources, but given the possibility of affecting historic buildings or encountering artifacts during excavation or clearing, this policy has been triggered as a precaution, and a "chance-find" procedure has been included in the EMF.

45. **The Forests Policy (OP/BP 4.36) and the Pest Management Policy (OP/BP 4.09) have not been triggered.** There are no works which aim to bring about changes in the management, protection, or utilization of forests, nor are there any projects considered for harvesting or converting forest resources. There are no works such as greenhouses, crop management, or others likely to involve the use of pesticides and herbicides. Standard measures will be specified for incidental use of pesticides (e.g. termite treatments for buildings, or safe use of pesticides for vector control) and will be built into a generic standardized EMP already developed by JSIF and referenced in the EMF.

46. The EMF also includes a section with clear safeguards guidelines for emergency investments and works including types of activities, responsibilities for screening and environmental management, and for preparation of any safeguards studies prior to works as pertinent under OP 10.00 and consistent with the Project category, as may be considered under Component 3.

47. Key individuals and agencies have been consulted during preparation of the EMF. It was disclosed to the public on the government's website and delivered to community groups, agencies and ministries for comment, an inter-institutional workshop was conducted, and additional comments solicited before finalizing and disclosing the EMF on November 23, 2015. The final EMF includes a record of these consultations.

G. World Bank Grievance Redress

48. 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 World Bank's Grievance Redress Service (GRS). The GRS 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 World Bank'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 (GRS), 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: Results Framework and Monitoring

JAMAICA: Disaster Vulnerability Reduction Project (P146965)

The Project Development Objective is to enhance Jamaica's resilience to disaster and climate risk.

Indicator Name	Unit of Measure	Baseline	Target Values						Data Collection and Reporting			Description
			YR1	YR2	YR3	YR4	YR5	YR 6	Frequency and Reports	Data Source	Responsibility for Data Collection	
Project Outcome Indicators												
1. Use of risk information for investment planning in the built and non-built environment	Number of Plans	480	480	480	480	590	820	1200	Annual	Applications Log	MWLECC	Indicator provides a measure for the use of risk information in investment planning to ensure that information generated in the Project is adopted and operationalized
2. Population benefitting from improved critical facilities and infrastructure	Number of People	0	0	74,020	130,392	199,771	178,322	247,271	Bi-annual	Annual Report	JSIF	Indicator provides an numerical count of population benefiting from Project investments
Intermediate Outcome Indicators												
Component 1: Technical Assistance for Improved Disaster and Climate Resilience												
3. Multi-hazard risk assessments for coastal areas completed	#	7	7	7	7	8	8	9	Bi-annual	Completion Report/ Review of Documents	ODPEM	Indicator provides a measure for risk information provided as part of this Project for subsequent use in planning and design of coastal areas.
4. Ecosystems-based studies completed	#	0	0	0	3	5	7	8	Bi-annual	Completion Report/Field Validation	NEPA	Indicator provides a measure for scientific studies provided as part of this Project for subsequent uses in planning and design.
5. Microzonation studies completed	#	3	3	3	5	7	9	11	Bi-annual	Completion Report/Field Validation	EQU	Indicator provides a measure for scientific studies provided as part of this Project for subsequent uses in planning and design.

Indicator Name	Unit of Measure	Baseline	Target Values						Data Collection and Reporting			Description
			YR1	YR2	YR3	YR4	YR5	YR 6	Frequency and Reports	Data Source	Responsibility for Data Collection	
6. Increased vertical and horizontal resolution in measuring seismic events	km	+/- 5	+/-5	+/-4	+/-3	+/-3	+/-3	+/- 2.5	Bi-annual	Technical Review of Seismic Data	EQU	Indicator provides a measure for the increased accuracy of measuring and monitoring earthquakes.
7. Government ministries/agencies providing data to the National Risk Information Platform	#	0	0	0	0	4	15	20	Bi-annual	Review of Records	ODPEM	Indicator provides a measure for the operationalization and the functioning of business processes for information flow between Government agencies.
8. Certificates of Completion in IBC Training issued*	#	0	80	125	175	345	400	450	Bi-annual	Record Of Graduation Obtained Through Service Provider	MLGCD	Indicator provides a measure of academic achievement thus demonstrating dissemination of new knowledge and subsequent application within the built environment.
9. Public and private new constructions assessed for structural compliance with JBC	%	80.7	88.3	92	94	96	98	99	Bi-annual	Audit of Building Permit Process	MLGCD & BSJ	Indicator provides a measure for the successful adoption of JBC thus providing evidence that it is operationalized.
Component 2: Risk Reduction												
10. Days (per event) of interrupted traffic due to flooding in Project areas	#	26	26	26	26	13	9	0	Annual	Review of Incident Reports	NWA	Indicator provides a quantified measure for everted losses due to disaster risks.
11. Storm drains retrofitted/constructed under the Project	m	0	0	150	4,000	5,000	6,000	8,350	Bi-annual	Completion Report and Site Inspection	NWA	Indicator provides a measure of physical assets retrofitted/constructed which provides increased flood resilience and reduced risk of asset failure.
12. Bridges retrofitted	m	0	0	25	50	115	125	140	Annual	Completion Report and Site Inspection	NWA	Indicator provides a measure of physical assets retrofitted/constructed which provides increased flood resilience and reduced risk of asset failure.

Indicator Name	Unit of Measure	Baseline	Target Values						Data Collection and Reporting			Description
			YR1	YR2	YR3	YR4	YR5	YR 6	Frequency and Reports	Data Source	Responsibility for Data Collection	
13. Population benefiting from newly constructed fire stations	# (‘000)	0	0	20	50	100	150	218	Annual	Population Survey, Completion Report and Site Inspection	MLGCD	Indicator provides a numerical count of beneficiaries with improved access to fire and emergency services.
14. Student population benefiting from retrofitted/newly constructed schools	#	0	0	0	711	711	711	711	Annual	Completion Report and Site Inspection	MOE	Indicator provides a numerical count of beneficiaries with improved access to education in a safe environment.
15. Coast line protected through risk reduction works	m	0	0	500	1,000	1,500	2,000	2,321	Annual	Completion Report and Site Inspection	NEPA/NWA	Indicator provides a measure of physical assets retrofitted/constructed through protective measures which provide increased resilience to storm surges and coastal erosion.
16. Project Information Meetings (PIMs) or Consultations organized with Project stakeholders during Project implementation	#	0	2	5	9	13	14	14	Annual	Meeting Minutes and Report	JSIF	Indicator provides a count of stakeholder consultations organized to demonstrate citizen and community collaboration.
17. Direct Project beneficiaries (of which female)*	#	0	0	33,871 (49%)	70,546 (49%)	265,572 (49%)	244,123 (49%)	313,072 (49%)	Annual	Annual Report	JSIF	Indicator provides a count of Project beneficiaries. A beneficiary in the broadest sense is anyone who is benefiting from a project/program.

*Core Indicator

Annex 2: Detailed Project Description

JAMAICA: Jamaica Disaster Vulnerability Reduction Project (P146965)

1. **Under Components 1 and 2 of the Project, specific activities have been pre-selected and prioritized for studies and physical investments.** If, however, during the course of the Project any planned activity cannot be implemented for any reason, then another suitable site could be named in keeping with the selection criteria applied to the preselected activities and after consideration and clearance from by the World Bank.

2. **Component 1: Technical Assistance for Improved Disaster and Climate Resilience (US$3.815M).** Jamaica has high exposure to natural disasters. Therefore it is critical to contribute to understanding and assessing the country's risk in order to reduce the potential human and fiscal impacts. Having a better understanding of risk will enable Jamaica to become more resilient through improving its ability to resist the effects of hazards. Hence, activities under this component are aimed to improve the ability of Government officials to generate and use hazard and risk information for decision-making and policy development. This relates to the generation and application of targeted hazard and risk information, and the implementation of Jamaica's National Building Code through training. By improving the GOJ's capacity to collect and analyze risk information for purposes of disaster and investment planning, the preservation and restoration of the country's basic structures and functions during and after an event will be enhanced. Likewise, this component will finance activities to promote public awareness related to climate change and disaster risk management.

Sub-Component 1.1: Risk Information

3. **Seismic Monitoring:** Jamaica's exposure to seismic risk is well established based on both the historical record of past damaging events and scientific research which indicates that the island (like its neighbours in the Greater Antilles) is located on the dynamic Northern Caribbean Plate Boundary and that its territory is crossed by active faults including the Enriquillo Plantain Garden Fault Zone (EPGFZ).

4. Earth scientists in the region at the 2008 Caribbean Geological Congress presented information suggesting that a major tectonic fracture, which crosses Jamaica and Hispaniola had accumulated sufficient stress to possibly be capable of a seismic event of significant magnitude at either end (i.e. in Jamaica or Hispaniola) at any time. In 2010, an event closely matching the prognosis occurred physically close to Port-au-Prince, Haiti. The event resulted in over 200,000 casualties and very significant damage. It is anticipated that recovery from that event may take up to two decades. Since the Haiti event, significant scientific attention has been concentrated on unravelling the dynamics of the shared EPGFZ.

5. In recent years, Jamaica, like many of its Caribbean neighbours, has attempted to modernize and update systems for reducing risks and losses, from hydro meteorological extremes associated with climate change and climate variability. To date, systems and processes related to geological hazards do not appear to have received similar systematic, urgent or focused attention. With the majority of fault lines being located in the most populous areas of the country, the probability of an earthquake with a 50-year return rate is high, and an estimated 40

percent – 70 percent of the building stock is susceptible to failure. There have been few seismic-focused interventions in Jamaica and although there is an established seismic monitoring network, additional stations are needed for improved resolution and accuracy.

6. Therefore, and in support of Jamaica's Road Map to Seismic Risk Reduction prepared by the United Nations Development Programme's (UNDP), the Project will support the Earthquake Unit in strengthening the seismic monitoring network to allow for increased coverage and prediction capabilities. This will encompass the procurement and installation of broadband seismograph stations, accelerograph stations, microzonation studies, solar power system upgrade and laboratory test equipment. Locations have been identified for the installation of new equipment and confirmation received that all land is Crown owned.

7. **National Risk Information Platform (NRIP):** Presently only the Parish of St. Catherine possesses a unified information platform for spatial data on risk. Data sharing between Government agencies and their partners is also often cumbersome and expensive due to the fact that some agencies rely on the sale of data to finance operating budgets. As such there is an identified need to enhance data sharing capacities to facilitate the integration of hazard risk information for spatial planning and development to better inform decision-making. The Project will therefore support the development of a NRIP whereby all the risk data can be located and updated in a centralized platform accessible to Government agencies and the public. The NRIP will require hardware, software and human resources to implement a stable and efficient infrastructure and also develop a robust system that is scalable and able to satisfy the needs of all the stakeholders. Through creating a platform for Government agencies to share risk information and a quantitative baseline against which to track progress, the Project will facilitate a strategic risk reduction approach led by the GOJ and incorporating broader national stakeholders – including the business community and civil society – centered on the National Development Plan. The Coastal Risk Atlas (CRA) will be integrated as a part of the NRIP providing data and tools to support improved decision-making and planning of coastal resilience measures.

8. **Coastal Management:** Jamaica's coastal areas play a vital role in the social and economic life of the country. This is reflected in the fact that over 50 percent of economic assets including air and sea port facilities and tourism infrastructure are concentrated in coastal areas. Additionally, approximately 70 percent of the population resides in coastal areas. In particular, over the past 10-15 years, the demand for coastal space has intensified considerably, resulting in a proliferation of both planned and unplanned developments. This demand has persisted despite the fact that Jamaica's coastal areas are highly vulnerable to natural hazards such as hurricanes and storm surges. This poses a dilemma for development planners as the intensity and frequency of the hazard events has increased in recent years, and the continued trend towards development in coastal areas is reducing the ability of these areas to withstand their impact. These repeated storm events have affected coastal settlements and infrastructure, resulting in loss of lives, livelihoods, and damage amounting to billions of dollars[21]. To improve risk information in coastal management, the Project will be financing investments for two activities: (i) Multi-

[21] Source: Richards (2008). Development Trends in Jamaica's Coastal Areas and the Implications for Climate Change. PIOJ.

Hazard Risk Assessments (including Ecosystems-based Analysis and Microzonation studies) and (ii) Coastal Risk Atlas.

9. **Multi-Hazard Risk Assessments:** Strengthening disaster risk management in Jamaica requires a comprehensive understanding of the risk exposure of national infrastructure assets from a multi-hazard approach. A number of priority communities have been selected in the recent years for the development of multi-hazard mapping and vulnerability assessments. Under a World Bank executed grant financed by the Global Facility for Disaster Reduction and Recovery (GFDRR), the following three communities were assessed: Portland Cottage in Clarendon, Morant Bay in St. Thomas, and Manchioneal in Portland. Applying the same methodological approach, subsequently, the communities of Ocho Rios in St. Ann, Black River in St. Elizabeth, and Savanna-la-mar in Westmoreland were selected for the development of multi-hazard mapping and vulnerability assessments as well as Disaster Risk Management Plans, under an Inter-American Development Bank (IDB) grant executed by the Office of Disaster Preparedness and Emergency Management (ODPEM). To build upon this existing work, the Project will finance additional coastal studies.

10. **Three separate types of assessments will be undertaken in selected communities throughout the island: Ecosystem-based Assessments, Micro-zonation Studies and Multi-Hazard Vulnerability and Risk Assessments.** For completion purposes, micro-zonation studies and ecosystem-based assessments will be conducted in the six communities for which Multi-hazard assessments were developed in the past, namely, Savanna-la-mar (Westmoreland), Black River (St. Elizabeth), Portland Cottage (Clarendon), Morant Bay (St. Thomas), Manchioneal (Portland), and Ocho Rios (St. Ann).Additionally, two areas are being selected for full multi-hazard risk assessments, including ecosystem based adaptation assessments and micro-zonation studies: Port Maria (Saint Mary) and Alligator Pond (Saint Elizabeth). The studies will also include the development of preliminary design solutions and associated preliminary budgets for potential hard, soft and/or hybrid mitigation measures. This will provide the GOJ with the necessary readiness for quick implementation under this or future projects.

11. **Coastal Risk Atlas:** Recognizing that coastal hazards, adverse climatic factors and sea level rise pose a potential risk to the human population in many coastal communities around the island, a decision system to reduce risk in vulnerable communities is necessary. To complement studies and detailed designs, the Project will also support the GOJ in developing a CRA, which will be developed as an integral part of the NRIP, and will provide a suite of useful decision support tools to address adaptation and risk in coastal communities. The CRA module within the NRIP, will be a visualization toolbox that will be used for the broad-based visualization, identification, analysis and dissemination of information on coastal hazards and risks primarily at the national and where available, local scale information for communities and towns across the island will also be included. The Atlas will also contribute to: (i) informing and improving national planning policies, development orders, guidelines, and other priorities to incorporate coastal hazard risk reduction strategies and mechanisms; (ii) informing the design and placement of coastal defense systems, both natural and engineered, to enhance the reduction of socio-economic and ecological risks in coastal communities through delineating critical coastal resources, assessing potential impacts of sea level rise, and identifying at risk habitats; and (iii) augmenting national development priorities for the construction of hard, soft, or hybrid coastal management and protection measures. The CRA will be built on existing spatial datasets but will

allow for the integration of new data products that may be developed in the future, with functionality to facilitate data use and incorporate data linkages to other national and regional initiatives such as the National Spatial Data Infrastructure and the Caribbean Marine Atlas.

Sub-Component 1.2: Building Code Implementation

12. In Jamaica public and private construction represents the highest proportion of annual averages losses due to disasters compared with other sectors. This can largely be attributed to the fact that approximately 70 percent of Jamaica's building stock has had no professional or regulatory input[22]. As a result, when a natural disaster occurs, the built environment suffers significantly from the impacts. Jamaica has developed a much needed update to the 1908 National Building Code in accordance with the International Code Council (ICC). The associated Building Code Bill, which is pending legislative approval as of late 2014, will usher in 11 legally mandated codes that have been specifically adapted to the Jamaican context. The Project will therefore support the development and delivery of a related training program on the National Building Code for professional, technical and support personnel in the construction industry. The training program will coordinate the effective use, integration, regulation and overall enforcement of the Building Code. As a necessary first step, the ICC and University of Technology are collaborating to deliver a Training of Trainers which will include approximately 35 individuals based on their professional and/or academic background. Three mutually reinforcing sets of stakeholders will be included in the training program: i) local Government officials responsible for enforcement of the code (building inspectors, engineers) will participate in courses offered by the University of Technology; ii) contractors/masons ("artisans") who are responsible for construction in both the formal and informal sector will participate in courses offered by HEART/NTA; and iii) Government decision takers/policy makers will participate in courses offered by the Management Institute for National Development **(**MIND). Changing practices across the construction industry requires mobilizing behaviour change on the part of builders, masons, bricklayers, construction professionals, home and business owners, and local officials. The long-term objective of the program takes into account issues of sustainability, and will seek to decrease Project financing throughout the lifetime of the Project in order to foster a financially self-sustainable and market-driven process driven by the generation of certified professionals.

13. **Component 2: Risk Reduction (US$23.61M).** The infrastructure sector is one of the most severely impacted after a major disaster event. Between 2001 and 2010, there were nine hazard events and the infrastructure sector received 46 percent of the damage and loss (approx. US$4.6 billion). To reduce Jamaica's physical vulnerability to adverse natural events, structural mitigation measures need to be put in place to protect the national infrastructure assets and critical facilities. These measures will enable the country to enhance its resilience through the ability to resist, absorb and accommodate hazard events. The improvements to the national infrastructure will increase the GOJ's capacity to manage disaster risk and advance post-disaster resilient recovery in a timely and efficient manner without compromising national development. The sub-components and activities to be financed under this component relate to:

[22] Franklin McDonald, former head of the Institute for Sustainable Development at the University of the West Indies, Mona

Sub-Component 2.1: Rehabilitation/Construction of National Infrastructure

14. Past disaster events have physically impacted Jamaica's national infrastructure, some of which include flooding, landslides and storm surge. Addressing the undermining of primary roads, bridges and drainage networks is key in protecting the communities located in these areas, as well as, the users of the infrastructure. Moreover, these sites serve as connectors between large towns and in some cases provide the sole route between the communities and Kingston, the capital. The Project will finance physical interventions for bridges, drainage and coastal sites.

15. **National Bridges:** The Old Harbour area is the largest fishing community in Jamaica and also one of the most rapidly growing populations outside of Kingston. The town connects Kingston and Spanish Town, the two largest cities in southern Jamaica by a four-lane highway and the Old Harbour Road. There are over 15,000 vehicles that travel the Old Harbour Road every day and some sections of the road are in poor condition; only permitting single lane traffic, no pedestrian walkways, and suffer frequent flooding. The Project will be targeting three bridges located along this road: Old Harbour/ Myton Gully Bridge, Church Pen 1 Bridge and Church Pen 2 Bridge. The proposed bridge infrastructure meets the criteria for readiness as designs have already been prepared. Equally, the criteria for selection identified by the GOJ included traffic volume, structural integrity, and socio-economic impact.

16. **Urban Drainage:** The anticipated higher frequency and intensity of rainfall events has the risk of overburdening urban drainage systems, leading to increased flooding, economic disruption and health risks to urban residents. The Comprehensive Drainage and Flood Control Report[23] identifies historical extent, context and potential causes of localized flooding throughout Jamaica's drainage system. The areas the Report prioritizes include: i) number of buildings impacted by flooding; ii) number of persons indirectly impacted by flooding; and iii) severity of flooding. The Report dually conducts a rainfall analysis and the design frequency of the drainage systems, which includes the hydraulic capacity. The Big Pond/Myton Gully in Old Harbour, St. Catherine urban drainage network, assessed in the Report, will have interventions financed under the Project. The location is highly susceptible to flooding and is connected to the three bridges also targeted for civil works under this Project.

17. **Coastal Protection**: The majority of Jamaica's infrastructure assets are located in close proximity to the coast, hence are vulnerable to storm surge and the impacts of hydro-metrological hazards in particular. A prioritization process was performed during the Project preparation stage, in order to identify the most vulnerable coastal communities for inclusion in the Project. This prioritization was done on the basis of the following criteria and sub-criteria: i) hazard profile (rate of coastal erosion; spatial/areal extent of coastal inundation (actual or modelled) and frequency of coastal flooding); ii) vulnerability (percentage of population in flood zone; percentage of dependent population in flood zone; the number of critical facilities located in the flood zone, including, schools, hospitals, health centers, police stations, fire stations, ports;

[23] National Works Agency, 2013

as well as the presence of the primary transportation network[24] and economic contribution); iii) environmental significance (protected area; and ecosystem impacted in flood zone); iv) readiness for implementation (availability of data on the targeted area); and v) level of intervention received (existing or previous projects within the last three years). The outcome of this process was a ranking of vulnerable coastal communities that should be targeted for hard interventions. Specifically, segments of Port Royal Street; a coastal road in Downtown Kingston have been selected for interventions under the Project. Port Royal Street is an integral part of the east-west corridor transportation network in the Kingston Metropolitan Area (KMA), connecting the Norman Manley International Airport and the Downtown Kingston area. Its coastline has experienced considerable amount of erosion in the last decade, due to the impact of successive storm surge and extreme wave events, making the situation critical for several sections of the road. Furthermore, there are numerous critical facilities located in the vicinity including, the Bank of Jamaica, the Jamaica Constabulary Force Commissioner's Office, and the Urban Development Corporation. The Project will be supporting coastal defense measures (rock revetments) to protect the road infrastructure in three sections along the corridor.

Sub-Component 2.2: Retrofitting/Construction of Critical Public Facilities

18. There are a number of services that are critical for the country. If the buildings that house these services were to fail in times of disaster, it would not only disrupt the services provision, but also hinder Jamaica's emergency response capacity. Two types of these critical facilities are being targeted for retrofitting/construction under the Project: schools and fire stations. These facilities were selected through an assessment process that considered two criteria: facility vulnerability and population vulnerability, each of which was comprised of different variables depending on the type of facility. Variables included: critical functionality, land ownership, seismic vulnerability, building typology, readiness (those with designs), population served, seismic hazard, use as a shelter after disaster, and geographical location.

19. **Schools:** ODPEM has worked with the Ministry of Education (MOE) to prioritize school buildings that serve as emergency shelters for the surrounding communities during and after a disaster. Some of these shelters are designated by the ODPEM and regularly managed and inspected, however some are identified by community members and are considered unofficial shelters. Under the Project, St. Benedict's Primary School in Harbour View, St. Andrew was selected for retrofit/reconstruction to better serve community members during and after disaster.

20. **Fire Stations:** The Jamaica Fire Brigade (JFB) currently operates a network of 33 fire stations throughout the country. These are grossly inadequate to provide effective fire and rescue service for Jamaica based on the size of the country, the level of development and the nature of the terrain. The inadequacy of fire stations has resulted in the Brigade operating with emergency response times well outside of what is considered international best practice. The aim of the JFB in respect to emergency response is to be able to respond within a range of 5-10 minutes in urban and other built-up areas. These response times cannot be achieved with the available stations and instead, the Brigade is experiencing response times of up to 35-40 minutes

[24] This refers to the primary road network maintained by the National Works Agency of Jamaica.

in some areas[25]. The Project will support the construction of three fire stations to enable the JFB to better response to emergencies in Port Maria, Montego Bay and Yallahs. Tankers, pumpers, administrative, rescue and response equipment will also be provided to facilitate operations and functionality.

21. **Component 3: Contingent Emergency Response (US$0M).** Due to Jamaica's high exposure to natural disasters, the Project will include a contingent component, which in the event of a disaster will enable the Government to reallocate Project funds to disaster response and recovery. The Contingent Emergency Response Component (CERC) is intended to strengthen the country's immediate response capacity, therefore safeguarding against levels of disaster vulnerability. This provisional "zero-component" is designed as a mechanism that would allow rapid access to Project funds for response and recovery purposes under streamlined procedures during an emergency. The CERC will be used for two purposes: i) the procurement of goods, works and services in response to the urgent needs; and ii) to increase targeted application of post-disaster Social Safety Nets (SSN).

22. This component would support carrying out of disaster response and recovery interventions under an agreed Action Plan of Activities. This plan includes recommended coordination, implementation and procedural arrangements related to procurement, financial management, disbursement, safeguards, monitoring/evaluation and reporting. The CERC would be implemented following the rapid response procedures governed by OP/BP 10.00 – Investment Project Financing. Once triggered, OP/BP 10.00 facilitates rapid utilization of loan proceeds by minimizing the number of processing steps and modifying fiduciary and safeguard requirements so as to support rapid implementation. Disbursements are expected to be in the form of a number of types of expenditures, including: i) critical emergency goods (e.g. imports, domestically-manufactured goods and goods already imported); ii) rehabilitation activities, including civil works and related goods and services; iii) cash grants to priority households in affected geographic areas; iv) supplemental cash transfers to Conditional Cash Transfer (CCT) Programme of Advancement Through Health and Education (PATH) households; and v) provision of relief items to affected households and persons in shelter care.

23. Disbursements would be made against a positive list of pre-identified eligible critical imports or the procurement of goods, works, and consultant services needed for the country's economic recovery. In addition to reallocation of funds from other components in this Project, the contingent component may also serve as a conduit for additional financing from IBRD in the event of a disaster.

24. This is the first time that a CERC of a Bank's operation includes SSN transfers. Further details on the implementation arrangements and procedures governing the use of the CERC funds are provided in a standalone CERC annex within the Project Operations Manual.

Sub-Component 3.1: Procurement of goods, works and services

[25] Jamaica Fire Brigade. Fire Service Report (2009).

25. A positive list has been identified for goods, works and services to be procured, for Standard Bidding Documents to be prepared, thresholds for each procurement method need to be established, and contracting and implementation arrangements.

Sub-Component 3.2: Provision of Social Safety Nets to Affected Households

26. Social Safety Nets plays a critical role in disaster response in Jamaica, particularly in supporting poor and vulnerable individuals and households, through tested procedures that could be channeled quickly after adverse natural events. In the aftermath of a disaster, the most common SSNs used by Jamaica and in other countries in the region are cash and in kind transfers. The Jamaica DVRP will support the financing of SSN transfers to provide support to the most vulnerable/affected people and households following a disaster. This support follows established arrangements for damage assessment at the household level, through administering an assessment instrument which evaluates and quantifies the level of damage to households. Efforts are implemented by the MLSS according to nationally established protocols. Jamaica's experience in using SSN instruments over the past decade includes: i) supplemental cash transfers to the national CCT program PATH[26] beneficiaries and National Insurance Scheme pensioners (Hurricane Dean, 2007); ii) cash grants to affected households (Hurricane Dean, 2007 and Hurricane Sandy, 2012); iii) vouchers for home repair materials (Hurricane Dean, 2007); and iv) home repair and housing assistance to affected households (Tropical Storm Gustav, 2008 and Hurricane Sandy, 2012). SSN support following disasters also includes the provision of services to improve the resilience of poor and vulnerable households.

27. The proposed options are also in-line with strategies noted in the Jamaica Social Protection Strategy to respond to crises, and build on existing arrangements for disaster relief and response, established in the National Disaster Plan for Jamaica (1997). The options therefore include established coordination arrangements with key agencies such as ODPEM, JSIF, PIOJ, MLSS and MOFP. The options for post-disaster social safety net which could be financed in the aftermath of a disaster under the CERC would be the following:

i. Cash transfers: Cash transfers have been a significant response tool employed after previous disasters to assist affected households and other vulnerable populations. The GOJ has been working with the World Bank through the Jamaica Social Protection Project (P105024) and its additional financing to support the country CCT program PATH, for which the mechanisms and instruments used for targeting and delivering payments have been satisfactorily assessed for fiduciary compliance. This option would facilitate the provision of cash transfers to different categories of affected households.

[26] The Program began its operation over a decade ago and continues remaining the largest and best targeted social safety net intervention in Jamaica. Most PATH beneficiaries belong to groups that are highly vulnerable to poverty and require critical assistance during disasters. Approximately 73 percent of PATH's 374,653 registered beneficiaries are children 0-18, while elderly and disabled registered PATH beneficiaries total 64,782 and 10,865, respectively. (Social Protection Project, Progress Report, December 2014 – March, 2015)

- *A supplemental cash transfer to CCT-PATH households:* This option would be triggered to provide a supplemental benefit to affected PATH households in the event of a large-scale disaster with national impact, and would therefore facilitate fast-disbursing cash to the poorest households. The amount of the transfer will be subject to Cabinet approval.

- *Cash grants to priority affected households in affected geographic areas:* This option would facilitate the provision of a one-time cash grant to households affected by disasters. Identification of affected households and amount of support will be based on national and Parish-level damage assessment and the amount of the grant will be subject to Cabinet approval. The delivery mechanism for payment of the grant would be the same as the one utilized by the MLSS for the CCT program.

ii. Provision of relief items to affected households and persons in shelter care: The provision of relief items is the initial disaster response method employed by MLSS in collaboration with partner agencies and NGOs. This option would facilitate the stocking and delivery of relief items to affected households and persons in shelter care as part of the immediate relief following a disaster.

28. The implementation of the SSN sub-component of the CERC will be supported by existing arrangements for damage assessment and safety net response that are already in place and tested. In the event that the CERC is triggered and safety net response is selected as an option for reallocation of funds, identification of eligible households that could receive grants will take place according to the following established processes. Following the occurrence of a disaster, an initial assessment of affected communities is carried out by trained community assessors, who provide preliminary data on affected households to MLSS and Parish committees. MLSS then leads a multi-agency team that is deployed to affected areas and administers an assessment instrument to measure and quantify the level of damage to households. Data collected is then digitized by the MLSS MIS Unit and used to generate reports which are sent to relevant agencies including ODPEM, PIOJ, the MOFP and disaster sub-committees. Reports are then used to assess the level of support to be provided to households. A submission is made to Cabinet requesting approval for the recommended types and level of support to affected households, which will be the basis for relocation of funds for safety net response under the CERC. Households are prioritized for assistance and quantities of support based on the level of damage established during the assessment.

29. *Arrangements for provision of cash grants and transfers*: The payment mechanisms utilized by the PATH program at the MLSS are used to facilitate the provision of cash grants and supplemental transfers. This is the case for both PATH and non-PATH households. Payments are principally made via an MLSS-issued check, which is distributed at local post offices at the Parish level. For PATH households, MLSS is able to quickly issue a supplemental payment to these categories of households, given established payment arrangements. For non-PATH beneficiaries affected by disasters, payment would be made following the administration of the household assessment and generation of a payment list linked to the MLSS' accounting system.

30. *Arrangements for provision of relief*: Relief items (comfort items, food, and sanitary items) are usually the first category of support provided to affected households in the event of a

disaster. Prior to disasters, stocking of relief items is usually done. Relief items are distributed at locations within communities, such as schools, community centers, or directly to households. Relief is provided based on the impact of the event and on-demand, due to the fact that household assessments involve time constraints. Households that receive relief items are still able to apply for, and receive, other safety net support if eligible.

31. **Component 4: Project Administration (US$2.5M)**. This component will finance costs associated with program management, including Project related audits, monitoring, mid-term and end-of-project evaluation, motor vehicle, equipment and training to strengthen the Project Implementation Unit (PIU), as well as individual consultants and operating costs[27]. The component will also finance the core professional and technical staff for Project management, including a Program Manager, Supervision Engineers and specialists in the areas of disaster risk management, safeguards compliance, finance, procurement and related Project management areas. Core staff will be recruited on time-bound basis.

[27] These are (i) costs for utilities, maintenance and consumable office supplies, printing services, communication services, commercial banking charges and fees, vehicle operation and maintenance, and salaries of core professional and technical staff for Project management, including a Program Manager, Supervision Engineers and specialists in the areas of climate and disaster resilience, safeguards compliance, finance, procurement and related project management areas; and (ii) transportation costs, travel and per diem costs for Project staff who will carry out supervisory activities under the Project.

Annex 3: Implementation Arrangements

JAMAICA: Jamaica Disaster Vulnerability Reduction Project (P146965)

Project Institutional and Implementation Arrangements

1. **The Planning Institute of Jamaica (PIOJ)** leads processes of policy formulation on economic and social issues and external co-operation management to achieve sustainable development. As part of its broader responsibilities, the PIOJ is responsible for initiating and coordinating plans and programs for economic, financial, social, cultural and physical development of Jamaica. The PIOJ will operate as the Project coordinating entity overseeing the progress of the Implementing Unit, which is responsible for the individual Project components.

2. **The Jamaica Social Investment Fund (JSIF)** was established in 1996 to reduce poverty and help create an environment for sustainable development. The JSIF is a limited liability company established as a component of the GOJ's national poverty alleviation strategy. The Fund has recognized executing capacity for projects spanning multiple sectors including disaster risk management and emergency response, and has institutional capacity relating to procurement, safeguards and financial management. The JSIF has been involved in the Caribbean Catastrophic Risk Insurance Initiative Fund (CCRIF, P149670) and previously implemented the Hurricane Dean Emergency Recovery Loan (P109575). The Project Implementing Entity will operate and maintain, throughout the implementation of the Project, a Project Implementation Unit ("PIU"), with functions, staffing, and responsibilities satisfactory to the Bank as set forth in the Project Operational Manual. In addition to the JSIF, there are multiple stakeholders associated with the proposed operation that will contribute to Project coordination and implementation.

3. **The Ministry of Local Government and Community Development (MLGCD)** has portfolio responsibility for national disaster management through the Office of Disaster Preparedness and Emergency Management (ODPEM) (which relates to the Earthquake Unit within the Office of the Prime Minister), response agencies, which includes the Jamaica Fire Brigade (JFB), and local authorities (Parish Councils). The ODPEM is a Government agency responsible for all climate-related disaster risk reduction and management functions in Jamaica, and plays a coordinating role in the execution of emergency response and relief operations in major disaster events, as well as, promoting national awareness and hazard identification. The Earthquake Unit collaborates with a number of other institutions focused on disaster risk reduction and climate resilience and works to improve their capacity to predict and provide seismic hazard assessments. The JFB is a first responder to minimize loss of lives, injury to persons and damage to property from fires, natural disasters, accidents and other emergencies. In coordination with the JSIF, the MLGCD and ODPEM will support the risk identification and risk reduction activities specifically, the development and implementation of training on the application of the National Building Code, and the enhancement of the seismic risk reduction capacity.

4. **The Ministry of Transport, Works and Housing (MTWH)** has the mandate of maintaining the country's road networks and drainage structures. Before an event, the Ministry along with the National Works Agency (NWA) positions the equipment required for repairs and

cleaning strategically and after an event, they provide support for widespread road rehabilitation, cleaning, and recovery. The NWA will support the retrofitting and maintenance of national infrastructure, particularly bridges, urban drainage and coastal hard interventions.

5. **The Ministry of Water, Land, Environment and Climate Change (MWLECC)** is responsible for all major water and sewage operations and undertakes surface water monitoring for waste water systems (gullies). Through the National Spatial Data Management Division (NSDMD) they disseminate nationwide geospatial data on hurricane path predictions and house a repository/platform of most geospatial data. The NSDMD will work closely with the ODPEM to help coordinate the National Risk Information Platform to increase the data sharing capabilities of the GOJ and integrate the hazard risk information into planning and development.

6. **The Ministry of Finance and Planning (MOFP)** assists the GOJ in developing the financial strategies for climate adaptation and risk mitigation into the budgetary process. This incorporates the leveraging of resources and investments for climate vulnerability reduction and in turn serving as a primary recipient of technical assistance in strengthening the MOFP's capacity in allocating recovery and reconstruction costs. The MOFP will help coordinate the activation of the Contingent Emergency Response Component (CERC).

7. **The National Environmental Planning Agency (NEPA)** is responsible for promoting sustainable development and ensuring environmental protection across Jamaica. NEPA is primarily concerned with natural resource management and supports the planning of key national environmental strategies and policies for advancing conservation. NEPA will support the site-specific multi-hazard assessments including micro-zonation studies and detailed designs for coastal management activities under the Jamaica DVRP.

8. **The University of Technology (UTECH)** was established in 1958 and offers University accredited professional and work-based programs. The UTECH will support the dissemination of training on the National Building Code for professionals working in the field of construction in the GOJ.

9. **The Human Employment and Resource Training Trust/National Training Agency (HEART/NTA)** provides workforce training through technical vocational education and specialized skills training focused on stimulating economic growth and job creation. The HEART provides training for local artisans in the field of construction and will work with the UTECH to integrate the Building Code education into the training program.

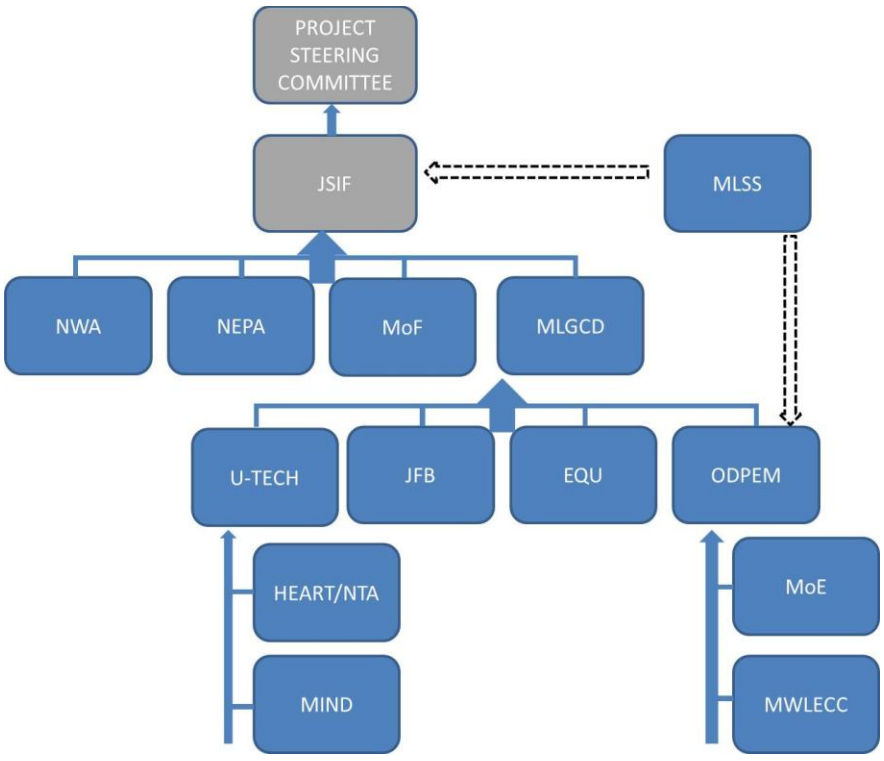
10. **The Management Institute for National Development (MIND)** is Jamaica's public sector training and leadership development institute. The agency is mandated to provide trainings for public sector employees in order to enhance their service delivery and competencies. The MIND will be working with the UTECH and the HEART in disseminating the Building Code training particularly through sensitization of non-technical public servants involved in strategic planning to encourage behavioral change.

11. **The Ministry of Labour and Social Security (MLSS)** will be responsible for implementing the Social Safety Net (SSN) sub-component of the CERC. MLSS currently holds

responsibility for the delivery of the country's principal SSN programs, including the flagship Conditional Cash Transfer (CCT) Programme of Advancement through Health and Education (PATH), and emergency relief support to households. The administrative, management and payment tools used by PATH provide well-established mechanisms for collecting data on a vast number of vulnerable households across the country and for providing support to these groups. These include MLSS Parish offices located across the country; a PATH Beneficiary Management Information System (BMIS) with data on registered PATH households; and established payment mechanisms that provide monthly payments to PATH households. A planned national database of persons with disabilities under the Jamaica Council for Persons with Disabilities will also provide information on this vulnerable population. Within the MLSS under the Public Assistance Division, the Director of Disaster and Emergency Management will be charged with the coordination of all the SSN disaster relief interventions implemented under the Project.

12. **The Ministry of Education (MOE)** is the Government entity responsible for the management and administration of public education in Jamaica. The MOE will work with the ODPEM to provide designs and maintain the school facilities dually being utilized as emergency shelters.

Figure 1: Jamaica DVRP Program Management Structure



Note: Dotted arrows for when the CERC is triggered

Financial Management, Disbursements and Procurement

Financial Management

13. *FM Risk:* The overall FM risk of this Project is assessed as Substantial. Although the JSIF has experience in managing World Bank projects, there are still FM issues noted that need to be addressed (Table 5). The Bank will work with the JSIF to ensure that high risk areas are clearly documented, addressed and monitored throughout implementation as noted in the FM Action Plan (Table 6).

Table 5: Financial Management Risk Rating

Financial Management Risk	***Risk Rating***	***Risk Issues***
Inherent Risk		
Country level	S	
Entity and Project level	S	FM arrangements are in place but need improvement
Control Risk		
Budgeting	M	
Internal controls	S	Various controls need to be strengthened
Accounting/Financial Reporting	S	Reports are consistently late and have errors
Funds Flow/Disbursement	M	
Staffing	M	
External audits	M	

14. *Staffing:* The Finance department of the JSIF will be responsible for the accounting and reporting functions of this Project. The department currently has 6 staff: a General Manager of Finance, a Finance Manager, 3 Financial Analysts, and an Administrative Staff. All projects (currently 4, including 2 other projects by other IFIs) implemented by the JSIF has been allocated amongst the financial analysts. The most senior finance analyst will be responsible for the Jamaica DVRP. The staff in the unit are relatively new to the JSIF and require capacity building in the Project financial management area. The staff qualifications range from bachelor's degrees to ACCA (professional accounting designation) and Masters in Accounting. The JSIF has sufficient staff to ensure that this Project is effectively supported.

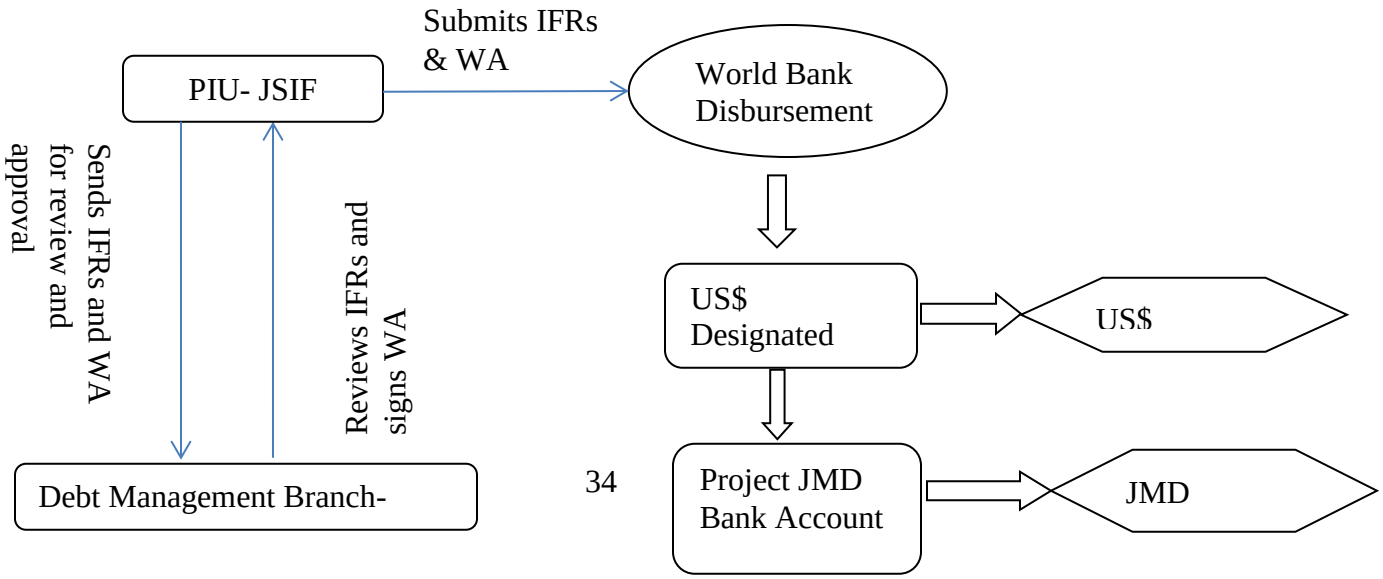
15. *Budgeting:* The JSIF will ensure that fiscal space is requested for the DVRP in the GOJ FY16-17 fiscal year budget. The JSIF should prepare a budget for the life of the Project, broken out annually and classifying activities by major components, based on the inputs of all executing agencies, procurement officer, Project manager and the finance team. This should be monitored and revised periodically. A variance analysis should be performed and material variances investigated and explained. Currently, a yearly budget is prepared for each project and included

in the overall JSIF budget. The JSIF Budget is submitted to the Board of Directors for review and approval and then submitted to the Office of the Prime Minister (OPM), the line ministry that the JSIF reports to. OPM then submits their budget, inclusive of the JSIF, to MOFP. Once the budget is tabled in Parliament, the JSIF can only spend what has been approved in that budget unless additional fiscal space is granted via supplements. The JSIF Management, Finance Committee and Board of Directors reviews the budget execution and controls it monthly.

16. *Accounting and Information Systems:* The JSIF uses the AccPac accounting software which interfaces with an in-house developed system, Fund Manager (used to monitor sub-contracts and consultant services). Currently, the JSIF has been unable to provide financial position (sources and uses of funds, including by components and categories) by project from AccPac without manual intervention. As a result, the Bank is unable to reconcile each project's sources and uses of funds with the World Bank's information in Client Connection. This inability to separate financial information by project is a direct result of how the chart of accounts are established. As such, the JSIF needs to revise the chart of accounts so that all accounts are linked to a specific project so that funding sources and expenses can be categorized by project component and disbursement categories.

17. *Financial Reporting and Monitoring:* The JSIF uses International Financial Reporting Standards as guidance in its accounting and reporting. This is also the prevailing standard in Jamaica. For the Project management purposes and in accordance to legal requirements, the JSIF will prepare quarterly Unaudited Interim Financial Reports (IFRs) covering each quarter in line with the implementing entity's fiscal year (Apr – Jun, Jul – Sep, Oct - Dec and Jan – Mar). These IFRs will be due within 45 days after each quarter end.

18. Disbursements and Funds Flows: Disbursement of Project funds will be based on IFRs. Funds should only be used for implementation of the components as set out in the loan agreement and withdrawals must comply with the disbursement categories of eligible expenditures, the allocation of amounts to each category and in accordance with the additional instructions provided (Disbursement Letter) to the Borrower. A segregated US$ Designated Account will be opened upon effectiveness of the Project and will be held at the Bank of Jamaica. The Project manager will provide details of the account as soon as available. A local currency Project account will also be opened by the Project upon Project effectiveness. The Debt Management Branch in the MOFP will maintain the US$ account and review and sign the IFRs and Withdrawal Applications before submission to the Bank.



19. Internal Audit: The JSIF's Internal Audit Department prepares a Risk-based Internal Audit Plan annually, which is reviewed and approved by the Audit Committee. The audit team currently comprises of the Audit Manager and an Audit Staff. The Finance and Audit Committee is responsible for reviewing these reports. The Bank recommends that the Internal Audit reports are shared with the Bank and the Bank will review and determine if reliance can be placed on these reports.

20. External Audit: An external audit is required annually, covering the period up to March 31st, on the Project's financial statements and will be due to the Bank within six months after the fiscal year end. The audit TOR should be presented to the Bank for review and the selected auditor should be of a satisfactory quality and be acceptable to the Bank.

21. Supervision Strategy: The supervision strategy for this Project is based on its FM risk rating, which will be evaluated on regular basis by the FMS in line with the FMSB's FM Manual and in consultation with relevant task team leader.

22. CERC Component: The JISF will be responsible for the financial management of all funds relating to this Projects including the CERC. The MLSS payment and beneficiary systems will be used to identify eligible beneficiaries and make relevant payments for the Cash grants and supplemental payments to eligible PATH beneficiaries. Other CERC activities will go through the JSIF's normal systems and payments will be made by the JSIF.

23. Once the CERC is triggered the following process will occur for the Cash Grants and Supplemental payments:

a. The MLSS will send a list of beneficiaries to be paid and the total amount required for the (i) cash grants and (ii) PATH supplemental payments based on in-house verification process. List with names and amounts should be signed off by the PATH program director (for supplemental) and Permanent Secretary at the MLSS.
b. The JSIF will transfer the amount requested in local currency to the MLSS based on list received to a bank account at the MLSS
c. The MLSS should send documentation evidencing payments that have been made to the JSIF so that the accounting system at the JSIF can be updated. Original records and files of beneficiaries should be retained at MLSS
d. The MLSS should provide a bank reconciliation to the JSIF and return any unused funds (whether not paid out, uncollected, or unpresented) as soon as possible to the JSIF, This should be agreed on between the JSIF and the MLSS and placed in the CERC operations manual.
e. The JSIF will report all expenditures relating to the CERC using the normal reports as per the disbursement letter.

Table 6: Financial Management Action Plan

Issues	Agreed Actions	By Whom	By When
1. Improper Set-Up of Accounting System	Revise Chart of Accounts to ensure: • that all accounts are linked to the relevant Funding Source • Accounting transactions are captured by component and Category (relevant reporting requirements as it may be for other funding agents)	JSIF	Mar-31-2016
2. No defined methodology to allocate general administrative costs amongst Projects implemented by JSIF	• Determine bases or methodology to be used in allocating general administrative costs. • Update Operations Manual to reflect agreed on methodology	JSIF	Nov-30-2015 *(Completed)*
3. Budgeting process should be improved	• Ensure that budgets are reviewed at least quarterly and updated to reflect the current implementation position as needed. • Variance Analysis should be performed and material variances should be investigated and explained	JSIF	Nov-30-2015 *(Completed)*
4. Timely submission of Audit Reports	• Provide complete audit package (Key audit schedules, trial balance, and draft financial statements) for each project in a timely manner to auditors. • Strengthen the internal audit process and include in the Ops manual	JSIF	Dec-30-2015

Disbursements

24. The project will follow reports-based disbursements procedures and the following methods will be used: Advance, Reimbursement and Direct Payment. The JSIF will open a dedicated Designated Account in US$ for the Project. Additionally, a local currency account will also be opened in a local commercial bank acceptable to the Bank. All payments in foreign currency will be paid from the Designated Account. Funds will be transferred to the local currency account as needed and all payments in local currency will be paid from the local currency account. Advances to the Designated Account will be based on a forecast of six (6) months as provided in the Quarterly Interim Financial Report. The minimum value of application for Reimbursement and Direct Payment proposed for the Project is US$ 100,000.

25. The Internal Audit Unit of the JSIF reviews all IFRs and Withdrawal Application to ensure their accuracy before these are submitted to the MOFP and later on to the Bank. The Internal Audit unit will also review the documentation of expenditures by the JSIF in the Bank's system.

26. **Disbursements under CERC:** With respect to contingent financing in the event of an Eligible Crisis or Emergency, initial disbursement would be made through advance to the Designated Account up to an amount that does not exceed 25 percent of the aggregate amount of financing indicated in the Emergency Finance Plan, but limited to the total amount of the loan uncommitted balance, to cover defined expenses (Positive List) as described in CERC Operational Manual procedures. Subsequent disbursements would be made according to the disbursement procedures indicated in the Disbursement Letter

27. The expenditures will be documented through regular IFRs including a list of payments made for Social Safety Net transfers and Bank reconciliation showing amounts paid for SSN transfers as defined in Section III of the additional instructions (Disbursement Letter).

28. The Ministry of Labor and Social Security payment and beneficiary systems will be used to identify eligible beneficiaries and make relevant payments for the cash grants and supplemental payments to eligible PATH beneficiaries. Other CERC activities will be made through the Borrower's regular financial system and Project's account.

29. The Borrower may pre-finance Emergency Expenditures required for the activities set forth in the Emergency Financing Plan in accordance with the provisions established in Loan Agreement as of the date the emergency has been triggered. Reimbursements will be available after the reallocation of loan proceeds have been processed by the Bank. The total amount disbursed under Category 4 through both Disbursement Methods (Advances and Reimbursement) cannot exceed the total amount allocated to such Category.

Procurement

30. The Bank conducted an assessment of the capacity of the Jamaica Social Investment Fund as the entity to implement procurement actions under the Project. The assessment reviewed the organizational structure for implementing the Project and the interaction between the JSIF with related Project agencies in terms of organizing evaluation committees for each type of contracts under Project implementation. The findings of the assessment confirm there is adequate capacity to carry out the procurement in a satisfactory manner. These findings are supported by the satisfactory implementation by the JSIF of the already closed Inner Cities Basic Services for the Poor Project (P091299).

31. The Project procurement will be managed by the experienced JSIF procurement team composed of the procurement manager and officers, financial manager, legal officer, quantity surveyor and the administrative assistant, who work with several international funding agencies, including the World Bank. With the increased responsibilities for two new World Bank projects (ICDP-under implementation) and DVRP, while currently implementing another (Rural Economic Development Initiative), additional procurement staff may be needed to support the Jamaica DVRP.

32. *Procurement of works*: Works procured under this Project will include infrastructure such as retrofitting of bridges, retrofit/reconstruction of a school, fire stations, and coastal protection works etc. The procurement will be done following International Competitive Bidding (ICB) and National Competitive Bidding (NCB). Shopping for small value contracts shall be applied as agreed with the Bank.

33. Prequalification: Bidders for large contracts shall be prequalified in accordance with the provision of paragraphs 2.9 and 2.10 of the Bank Procurement Guidelines.

34. *Procurement of Goods and non-consulting services*: would include equipment for seismic data collection, water tankers and pumper trucks etc. Goods contracts will be grouped, to the extent possible, into bidding packages of more than US$1,000,000 equivalent, using the Bank's Standard Bidding Documents (SBD) and following ICB procedures. NCB and shopping for small value contracts shall be applied as agreed with the Bank.

35. *Selection of Consultants*: Consulting services will be required under this Project for technical assistance for improved disaster and climate resilience, as well as for design and supervision of activities and supervision of civil works. Individual consultants would be selected following the procedures set forth in Section V of the Guidelines, whereas consulting firms would be selected following Quality and Cost Based Selection (QCBS), Least-Cost Selection (LCS), Selection Based on Consultant's Qualifications (CQS) etc. Short lists of consultants for services estimated to cost less than US$500,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

36. *Operating Costs*: mean the following reasonable operational expenses, which would not have been incurred absent the Project, related to Project implementation, management, and supervision and incurred by the Borrower: (i) costs for utilities, maintenance and consumable office supplies, printing services, communication services, commercial banking charges and fees,

vehicle operation and maintenance, and salaries of core professional and technical staff for Project management, including a Program Manager, Supervision Engineers and specialists in the areas of climate and disaster resilience, safeguards compliance, finance, procurement and related Project management areas; and (ii) transportation costs, travel and per diem costs for Project staff who will carry out supervisory activities under the Project.

37. *Procurement arrangements under Component 3 'CERC'*. In the case of urgent assistance needed as a result of a natural disaster, the simplified procurement procedures outlined in the Bank guidance note: "Situations of Urgent Need of Assistance or Capacity Constraints, Simplified Procurement Procedures", may be used. The procurement arrangements and procedures under Component 3 will be elaborated in further detail in the Operations Manual. For the positive list of critical emergency goods which may be acceptable to the Bank and agreed upon by the Borrower and the Bank, the modified ICB may be followed for large value contracts of imports, or the procedures and commercial practices of the private sector in handling the smaller contracts for critical emergency goods and rehabilitation activities, including civil works and related goods and services may be followed, provided they are acceptable to the Bank.

Procurement Assessment

38. **The Procurement Risk Assessment and Management** of the capacity of the Implementing Agency was carried out in June 2014 and updated in November 2015 for the Project by the Bank's procurement accredited staff in line with the Procurement Risk Assessment and Management System (PRAMs) Module. The questionnaire for PRAM was shared with the JSIF, and the officials in the JSIF team were interviewed as part of the Procurement assessment. The following are the summarized findings:

a) All procurement is done in keeping with the GOJ Handbook of Public Sector Procurement Procedures, which refers to additional specific provisions as agreed with external funding agencies. The World Bank's procurement guidelines are included in the Appendices of the JSIF Operational Manual.

b) Procurement to be conducted by JSIF shall be carried out in compliance as agreed in the Project Operations Manual, Project Appraisal Document (PAD) and Financial Agreement.

39. An Action Plan for strengthening the capacity to implement procurement actions was agreed and included the following points:

a) The JSIF Procurement Department, given its management of various Bank financed projects, shall be strengthened through the recruiting of an additional procurement officer for the DVRP within ninety (90) days of Project effectiveness.

b) The procurement department staff in the JSIF and the technical implementation staff shall attend training for procurement at the World Bank's regional workshop in 2016. Other technical assistance shall be provided under Component 4 of the Project for training on procurement.

c) Tender/selection documents for the first year's procurement under ICB and QCBS/QBS in the procurement plan should be prepared by the JSIF and submitted to the Bank for review by the effectiveness of the Project.

40. **Procurement Plan**: The procurement plan for implementation of the proposed Project for the first 18 months was agreed between the Borrower and the Project Team on December 10, 2015 (Table 7). The plan shall be made available at web address http://www.worldbank.org/procure within 30 days of the signature of the Financing Agreement. It would be updated annually and disclosed at this site after clearance by the Bank. The recommended thresholds for the use of the procurement methods specified in the Financing Agreement are identified in Table B as the basis for the agreed procurement plan.

41. **A General Procurement Notice (GPN)** would be published in the UN "Development Business" online around the period of Loan Negotiation. For ICB goods and works contracts and large-value consultants contracts under international competition, Specific Procurement Notice would be advertised in the Development Business online and national press.

42. **Frequency of Procurement Supervision.** Supervision of procurement would be carried out through prior review supplemented by supervision missions with post review at least once a year.

Table 7: Procurement Plan (for the first 18 months)

Associated Group	Contract Type	Description of Contract	# of Contracts	Estimated Total Cost (US$)	Procurement Method	Review by Bank	Estimated Date of Award
Component 1: Technical Assistance for Improved Disaster and Climate Resilience							
Seismic Data Collection	Goods	Procurement of Equipment	Multiple	673,000	NCB	Post	Nov-16
Seismic Data Collection	Works	Minor Preparation Works for Equipment	1	25,000	Shopping	Post	Mar-17
Seismic Data Collection	Consulting Services	Consultant Services (Training)	1	122,000	CQS	Post	Jun-17
Risk Information Platform (NRIP)	Consulting Services	Procurement of Consultant - Project Management (DRR Specialist)	1	85,000	CQS	Post	Oct-16
Risk Information Platform (NRIP)	Consulting Services	Procurement of Consulting Firm for NRIP Development	1	210,000	CQS	Post	Nov-16
Risk Information Platform (NRIP)	Goods	Procurement of IT Equipment	1	215,000	NCB	Post	Dec-16
Risk Information Platform (NRIP)	Goods	Procurement of Software & Licenses	1	38,000	DC	Post	Sep-16
Risk Information Platform (NRIP)	Non Consulting Services	Procurement of Data (incl. Data for Risk Atlas)	1	100,000	DC	Post	Sep-16
Coastal Risk Atlas	Consulting Services	Procurement of Consultant - Project Management (DRR Specialist)	1	100,000	CQS	Post	Nov-16
Coastal Risk Atlas	Goods	Procurement of IT Equipment	1	50,000	Shopping	Post	Nov-16

Coastal Risk Atlas	Goods	Procurement of Software & Licenses	1	20,000	DC	Post	Nov-16
Coastal Micro-zonation Studies & EBA (Six - 6 Locations)	Consulting Services	Procurement of Consulting Firm for Coastal Assessments & Preliminary Designs (Micro-zonation & EBA)	1	900,000	QBS	Prior	Dec-17
Multi-Hazard (incl. Micro zonation) & EBA (Two - 2 Locations)	Consulting Services	Procurement of Consulting Firm for Coastal Assessments & Preliminary Designs (Multi-hazard, Micro-zonation & EBA)	1	730,000	QBS	Prior	Sep-17
Building Code Training	Non Consulting Services	UTECH/HEART/MIND	Multiple (<100,000 per contract)	600,000	Shopping	Post	Jul-16
Social Awareness and Environmental Development	Non Consulting Services	Training & Awareness	Multiple (<100,000 per contract)	300,000	Shopping	Post	Jul-16
Component 2: Risk Reduction							
Montego Bay Fire Station	Works	Civil Works	1	2,500,000	NCB	Post	Apr-17
Port Maria Fire Station	Works	Civil Works	1	1,500,000	NCB	Post	Mar-17
Yallahs Fire Station	Works	Civil Works	1	1,300,000	NCB	Post	Jul-17
Design Reviews & Supervision of Works for Montego Bay Fire Station	Consulting Services	Consultancy for Engineering Services	1	140,000	LCS	Post	Sep-16
Design Reviews & Supervision of Works for Port Maria Fire	Consulting Services	Consultancy for Engineering Services	1	147,500	LCS	Post	Sep-16

Station							
Design Reviews & Supervision of Works for Yallahs Fire Station	Consulting Services	Consultancy for Engineering Services	1	140,000	LCS	Post	Sep-16
Port Royal Street	Consulting Services	Consultancy for Coastal Engineering Services	1	100,000	SSS	Prior	Jun-16
Port Royal Street - Section 1	Works	Civil Works	1	2,000,000	NCB	Post	Sep-17
Water Tanker Trucks	Goods	Procurement of Water Tanker Trucks (Two - 2)	1	400,000	ICB	Post	Sep-17
Pumper Trucks	Goods	Procurement of Pumper Trucks (Four - 4)	1	2,000,000	ICB	Prior	Sep-17

Table 8: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value (Threshold) US $ thousands	Procurement Method	Contracts Subject to Prior Review
1. Works	>7500	ICB	All
	<7500	NCB	None
	<200	Shopping	None
2. Goods and Non Consulting Services	>1000	ICB	All
	<1000	NCB	None
	<100	Shopping	None
	Regardless of value	Direct Contracting	Approve in the PP
4.Consulting Services			
-4.A Firms	≥300	QCBS,QBS,FBS, LCS	All
	<300	QCBS,QBS,FBS,LCS, and CQS	None
	Regardless of value	Single Source	Approve in the PP
-4.B Individuals	Regardless of value	Comparison of 3 CVs in accordance with Chapter V of the Guidelines	None
	Regardless of value	Sole Source	Approve in the PP

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

Environmental and Social (including safeguards)

Environmental

43. The environmental safeguards instrument is an Environmental Management Framework (EMF) which contains comprehensive protocols for screening and monitoring the subproject activities. Proposed subproject sites are subject to field visits by the JSIF project officers, and projects requiring Environmental Permits from the NEPA are also flagged during screening and assessment. Updates and revisions of the EMF have been prepared by the JSIF based on discussions with World Bank Environmental Specialist and have been reviewed and cleared, and the final EMF was disclosed in-country and on InfoShop. Changes in the EMF were made to

reflect the typology of DVRP project and the continuous improvements in environmental management resulting from JSIF's ISO certification and increased JSIF capabilities and staffing, including improved program management, staff development and training in environmental matters.

44. Supervision for environmental compliance would be managed by the JSIF in close coordination with the relevant Ministries and agencies. As with other World Bank projects, the JSIF would be responsible for ensuring environmental compliance in accordance with procedures detailed in the Project's Operations Manual and would be responsible for including these requirements in associated works contracts. Periodic supervision by Word Bank's Environmental Specialist would be conducted to provide additional support.

45. No issues relating to the Project were identified requiring specific attention that are not addressed under the Bank safeguard policy structure. Finally, no exceptions from Bank safeguard policies are being sought under this Project.

Social

a. Land acquisition and resettlement

46. During the World Bank financed ICBSP, the JSIF developed significant capacity in the application of the World Bank's Operational Policy on Involuntary Resettlement having successfully implemented the land acquisition and policy framework, and prepared three abbreviated resettlement plans that were acceptable to the World Bank. Furthermore, the JSIF conducted the necessary due diligence to ensure that land donated or leased for community sub-projects had an up-to-date and un-encumbered title, and that the transaction had been co-signed by the local Justice of the Peace. A number of the JSIF specialists participated in the two-week training course on Resettlement for the Caribbean, which took place 2012. Currently, the JSIF has an environmental and social safeguards specialist, and a legal specialist who are responsible for overseeing the implementation of the Resettlement Policy Framework (RPF). During the preparation of the Jamaica DVRP, the JSIF took the lead in screening the sub-project locations for resettlement impacts and advising other project counterparts on measures for minimizing land acquisition and resettlement requirements.

47. Based on this screening process it was concluded that the sub-projects which may be financed by the Project will not result in permanent land acquisition or resettlement. It is likely that at least two of these sub-projects prioritized will result in temporary land acquisition. Therefore, the World Bank's Operational Policy on Involuntary Resettlement is triggered. However, it is also possible that activities to be financed under the Contingency Emergency Response Component result in civil works that may also require land acquisition. It was therefore not possible to identify the exact location of these impacts during the preparation stage of the Project. This means that site-specific resettlement plans could not be prepared prior to appraisal, and instead it was decided to update the existing RPF to ensure it takes into account the types of activities to be financed under the Jamaica DVRP, along with potential resettlement impacts. This framework was reviewed and accepted by the World Bank, and subsequently disclosed in World Bank Infoshop and on the JSIF's website.

48. Key elements of the RPF updated by the JSIF are as follows: i) a comprehensive overview of the legal framework for land acquisition and resettlement in Jamaica, the differences between this framework and the requirements of OP4.12, and measures necessary to bridge the gap between the legal framework in Jamaica and OP4.12; ii) measures to screen out sub-projects that may result in significant resettlement impacts (more than 10 families); iii) procedures for the preparation and approval of abbreviated resettlement plans; iv) details on the overall institutional arrangements for resettlement plan preparation, implementation, monitoring and community consultation; v) an entitlement matrix highlighting the types of compensation and assistance that will be provided to different categories of affected people, along with details on what valuation techniques will be used to calculate the value of assets affected; and vi) a description of grievance redress arrangements, including the use of community based conflict resolution mechanisms.

b. Social Screening

49. The JSIF has a comprehensive social screening process in place for all infrastructure sub-projects. This process includes a review of the demographic and social characteristics of the beneficiaries, participation by community members in needs identification, potential employment impact, and the accessibility of the Project to people with disabilities. These topics are captured in the social appraisal report prepared by the social officer (with technical officer input) following multiple field visits. This report then becomes the basis for subsequent reviews within the JSIF.

c. Gender Analysis and Actions

50. One of the topics addressed through the social screening process, is the analysis of the impact of Project on gender relations. During the social screening process, social officers from the JSIF are expected to record how many men and women participate in Project planning meetings, and estimate how many men and women will be direct (in terms of employment and training) and in-direct (as community residents) beneficiaries of the Project. Social officers and members of the Project also seek to actively promote the role of women as workers in construction contracts, challenging their traditional role in the workplace.

51. It was also apparent during Project preparation that Project counterparts were aware of the need to incorporate basic gender considerations in the design of critical facilities. For instance, Fire Stations designs will include separate dormitory and bathroom facilities for men and women firefighters, while schools which serve as emergency shelters also provide separate bathroom facilities, as well as separate sleeping and changing facilities.

d. Grievance Redress and Civic Engagement

52. During the construction of infrastructure projects there is significant scope for complaints regarding the impact of the works on foot and vehicular traffic, noise and dust levels, as well possible damage to property. The procedures for voicing these complaints are highlighted during the pre-implementation meetings held prior to the commencement of the sub-project in each community. These meetings serve to notify community members of possible disruption that

could be caused by construction works, allows them to voice their concerns in front of the contractor, and to provide information on who to contact should a problem arise. Any complaints that do arise during implementation are entered into Fund Manager (JSIF's MIS), on submission to the JSIF, and subsequently, a corrective action form outlines the resolution of the problem.

53. For ongoing problems related to infrastructure in operation, the National Works Agency has an online complaints form on the quality of the infrastructure they are responsible for. For other facilities, responsibility for maintenance is vested in those Ministries and agencies. For instance, the Ministry of Education for school management and NEPA for soft and hybrid interventions.

54. Opportunities will also arise for stakeholder engagement in the preparation of studies supported by the project which will address coastal zone management. These studies normally involve an extensive process of stakeholder consultation.

Monitoring & Evaluation

55. Monitoring and evaluation will be part of the JSIF's core functions and will follow all agreed upon Project indicators. All such indicators and corresponding sources, baselines and targets have been defined. Information for indicators will mostly be collected by the support agencies and checked, processed, analyzed and disseminated by the JSIF's Monitoring and Evaluation Unit. All processes and reports are mentioned in the Project Operational Manual.

Annex 4: Implementation Support Plan

JAMAICA: Jamaica Disaster Vulnerability Reduction Project (P146965)

Strategy and Approach for Implementation Support

1. The Strategy for Implementation Support was developed based on the nature of the proposed Project and its risk profile. This Strategy aims to support the GOJ in achieving the Project Development Objective. Furthermore, the Implementation Support focuses on risk mitigation measures identified in the SORT and standard Bank implementation support (including technical, institutional, environmental and social safeguards) and fiduciary aspects (financial management and procurement).

Implementation Support Plan

2. For the execution of the Implementation Support Plan, the Bank team will provide timely, efficient, and effective support to the implementing partner. The Task team and key social and environmental specialists will also conduct semiannual implementation support missions and field visits to follow up on the Project implementation. Implementation support details are outlined below.

- ***Strategic.*** Formal implementation support missions will meet with the PIOJ to: i) review Project activities; ii) reconfirm strategic alignment of the Project's multi-sector aspects; and iii) ensure the necessary coordination across respective stakeholders.

- ***Technical.*** Priority will be placed on the implementation of the civil works, hazard risk assessments, and institutional strengthening defined under Components 1 to 3. Regular field visits will serve to verify compliance with the Project Operational Manual and encourage required adjustments to Project activities, as needed, given results on the ground. The Bank team may be supplemented with additional technical support as needed, by short-term external technical experts. The Bank team will review technical inputs including terms of reference and bidding documents to ensure adequate technical specifications. In addition, support on procurement aspects will ensure proper preparation of requests for proposals, bidding documents, and eventual evaluation of bids and proposals.

- ***Safeguards.*** The Bank worked with and advised the GOJ on the preparation of, and consultation for, the social and environmental safeguards instruments for the proposed Project. This support will continue throughout Project implementation with regard to the investments financed under the Project. The Project is required to fully implement the social and environmental management plans/systems per World Bank safeguard policies and in-line with the Project Operational Manual. There will be multiple construction contracts and associated works that require adequate supervision.

- ***Fiduciary.*** The Bank evaluated the capacity and found sufficient capabilities on FM aspects. During implementation, continued guidance and specific targeted training will be provided on procurement aspects as needed, as well as support through permanent technical support and semi-annual field visits by the Bank team.

- ***Client relations.*** The Task Team Leader (TTL) will: i) coordinate Bank support to ensure consistent Project implementation, as specified in the Legal Agreement and Project Operational Manual; and ii) meet regularly with the GOJ's senior representatives to gauge Project progress (including the mid-term review) in achieving the PDO and address implementation roadblocks, as they may arise.

3. The main focus in terms of support to implementation during the first twelve months and thereafter is described below.

Focus	***Skills Needed***	***Resource Estimate (Staff Weeks)***	
		First 12 months	*After month 13*
Procurement training*, Procurement review of bidding documents	Procurement Specialist	3	2
Technical review of the terms of reference, technical reports and bidding documents	Technical Specialists	4	5
FM training and implementation support	FM Specialists	3	2
Social safeguards – implementation support and training	Social Specialist	2	2
Environmental safeguards – implementation support and training	Environmental Specialist	2	2
Project management and Project implementation support coordination	Task Team Leader	10	8

*Procurement training will only be provided during the first 12 months

Annex 5: Economic Analysis

JAMAICA: Jamaica Disaster Vulnerability Reduction Project (P146965)

Summary

1. A comprehensive economic evaluation was conducted for a sample of interventions to be implemented under the Jamaica Disaster Vulnerability Reduction Project. The efficiency and benefits of such interventions were studied to evaluate the rate of return of capital investments and hence the economic viability of the Project. Cost-benefit analysis was used to measure costs and benefits associated with the Project.

2. Averted losses approach was conducted to measure the Project impact on the economic development of Jamaica. The magnitude of the losses varies according to the hazard, the exposure and vulnerability in each of the intervention areas. The hazard impact is seen on properties, transport connectivity, shelters, fire stations, other infrastructure, and the economy in general. The Project will implement physical investments in some areas that will reduce the disaster vulnerability and so the damage associated with the hazard.

3. A sample representative of the works to be implemented was selected. The cost of these interventions corresponds to about 50 percent of total cost of the Project. The sample consisted of five interventions in areas in need of support for disaster risk reduction, such as drainage, coastal protection, and reinforcement of facilities: two national bridges, an urban drainage network, a coastal protection intervention, a school used as a shelter, and a fire station.

4. Given the uncertainty of occurrence of events and associated damages, a Monte Carlo simulation was conducted. Probability functions were estimated for most of the variables in order to account for the uncertainty of the values and to ensure that the calculation of the rate of return was robust. Results show that the expected IRR of the selected interventions in the sample is 17 percent and expected present value of net benefits of approximately US$16.85 million. Expected benefits will surpass the costs in 40 percent. Overall, the probability that the benefits of any of the selected interventions fall below 12 percent is between 0 percent and 7 percent.

Table 9: IRR an NPV for each of the components of the Project

	IRR				Total Sample	
	Big Pond (Urban Drainage)	National Bridges	Port Royal Street (Coastal Protection)	St. Benedict' s Primary School	IRR	NPV (M US$)
Expected Value	15.9%	15.0%	17%	15.0%	16.9%	8.29
Standard deviation	2.0%	2.1%	1%	1.7%	1.0%	1.70
Minimum	10.4%	9.9%	15%	10.1%	13.7%	2.68
Maximum	22.4%	20.8%	18%	20.2%	20.2%	14.14
Coefficient of Variance	12.7%	14.1%	3%	11.3%	5.8%	0.21
Prob low* outcome	1.9%	7.3%	0%	4.3%	0.0%	0.0%

*low: < 12% IRR, < 0 NPV

5. **Rationale for public sector provision/financing.** The Project aims to make Jamaica more resilient to natural hazards by strengthening priority infrastructure and institutional capacity to understand and use risk information for developing planning. The Project is requested by the Government as part of its program to modernize and transform its public sector in its 'Vision 2030 Jamaica' development objectives. Public financing is crucial to strengthen, reconstruct, and rehabilitate key economic and social infrastructure and facilities, following disasters; and also to strengthen the country's institutional capacities to prepare for and respond to disaster emergencies in an efficient and effective manner.

6. **World Bank Value Added.** The relationship between the Bank and the GOJ is strong, and the proposed Project is directly in line with the GOJ's priority to reduce their vulnerability to natural hazards, and increase their capacity to adapt to the adverse effects of climate change. At the same time the proposed operation is fully aligned with the Bank's strategic engagement with Jamaica. The Project represents the expansion of activities financed under previous projects, it is in-line with the current Jamaica Country Partnership Strategy (CPS) 2010-2013, and it is informed by ongoing consultations on the forthcoming 2014-2017 CPS to ensure continued alignment with sustainable inclusive private sector driven growth. The Bank's global expertise in this type of projects gives the GOJ assurance that the activities being planned are comprehensive, pragmatic and will yield on-the-ground results in terms of improved disaster risk management.