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Report No: PAD712

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$ 30 MILLION

TO

BELIZE

FOR A

CLIMATE RESILIENT INFRASTRUCTURE PROJECT

July 9, 2014

Urban, Rural and Social Development Global Practice
Caribbean Country Unit
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 13, 2014)

Currency Unit	=	Special Drawing Rights
SDR	=	US$1
US$	=	SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ACP	Africa Caribbean Pacific Program of the European Community
BCRIP	Belize Climate Resilient Infrastructure Project
BMDP	Belize Municipal Development Project
BSIF	Belize Social Investment Fund
CAPF	Culturally Appropriate Participation Framework
CAPP	Culturally Appropriate Participation Plan
CPS	Country Partnership Strategy
DRM	Disaster Risk Management
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EMF	Environmental Management Framework
EU	European Union
FM	Financial Management
FY	Fiscal Year
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIS	Geographic Information System
GNI	Gross National Income
GoB	Government of Belize
IBRD	International Bank for Reconstruction and Development
IFI	International Financial Institution
IFR	Interim Financial Report
IMF	International Monetary Fund
ISP	Implementation Support Plan
LIC	Land Information Center
M&E	Monitoring and Evaluation
MCE	Multi-Criteria Evaluation

MNRA	Ministry of Natural Resources and Agriculture
MoFED	Ministry of Finance and Economic Development
MoWT	Ministry of Works and Transport
NCRIP	National Climate Resilient Investment Plan
NEMO	National Emergency Management Organization
NGO	Non-Government Organization
NPV	Net Present Value
NSDI	National Spatial Data Infrastructure
OAS	Organization of American States
OP/BP	Operational Policy/Bank Procedure
ORAF	Operational Risk Assessment Framework
PAD	Project Appraisal Document
PDO	Project Development Objective
PMU	Project Management Unit
PPA	Project Preparation Advance
PPCR	Pilot Program for Climate Resilience
PPF	Project Preparation Facility
RMS	Road Maintenance Strategy
RMU	Road Maintenance Unit
SA	Social Assessment
SAO	Senior Accounts Officer
SLR	Sea Level Rise
UDP	United Democratic Party
UNFCCC	United Nations Framework Convention on Climate Change

Regional Vice President:	Jorge Familiar
Country Director:	Sophie Sirtaine
Senior Practice Director:	Ede Jorge Ijjász-Vásquez
Practice Manager:	Anna Wellenstein
Task Team Leader:	Yoonhee Kim

BELIZE
Climate Resilient Infrastructure Project

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PAD DATA SHEET

Belize

Climate Resilient Infrastructure (P127338)

PROJECT APPRAISAL DOCUMENT

LATIN AMERICA AND CARIBBEAN

Urban, Rural and Social Development Global Practice (GURDR)

Report No.: PAD712

Basic Information			
Project ID	EA Category		Team Leader
P127338	B - Partial Assessment		Yoonhee Kim
Lending Instrument	Fragile and/or Capacity Constraints [ ]		
Investment Project Financing	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Project Implementation Start Date	Project Implementation End Date		
17-Nov-2014	31-Aug-2019		
Expected Effectiveness Date	Expected Closing Date		
15-Nov-2014	31-Aug-2019		
Joint IFC			
No			
Practice Manager	Senior Global Practice Director	Country Director	Regional Vice President
Anna Wellenstein	Ede Jorge Ijjasz-Vasquez	Sophie Sirtaine	Jorge Familiar

Borrower: Ministry of Finance							
Responsible Agency: Ministry of Finance							
Contact:	Yvonne Hyde			Title:	CEO		
Telephone No.:	(501) 822-2362			Email:	ceo@med.gov.bz		

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	2015	2016	2017	2018	2019	2020	0000	0000
Annual	1.00	2.00	7.00	11.00	9.00	0.00	0.00	0.00
Cumulative	1.00	3.00	10.00	21.00	30.00	30.00	0.00	0.00

Proposed Development Objective(s)

The objectives of the Project are: (a) to enhance the resilience of road infrastructure against flood risk and impacts of climate change; and (b) to improve the Borrower's capacity to respond promptly and effectively in an Eligible Crisis or Emergency, as required.

Components

Component Name	Cost (USD Millions)
Climate Resilient Infrastructure	21.50
Technical Assistance for Improved Climate Resilience Management	4.92
Project Management and Implementation Support	2.00
Contingent Emergency Response	1.00

Institutional Data

Practice Area / Cross Cutting Solution Area

Social, Urban, Rural and Resilience Global Practice

Cross Cutting Areas

[X] Climate Change
[ ] Fragile, Conflict & Violence
[ ] 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 %
Agriculture, fishing, and forestry	Irrigation and drainage	20	100	

Public Administration, Law, and Justice	Central government administration	20	100	
Transportation	Urban Transport	30	100	
Water, sanitation and flood protection	Flood protection	30	100	
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	%
Environment and natural resources management	Climate change	50
Social protection and risk management	Natural disaster management	25
Environment and natural resources management	Land administration and management	25
Total		100

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 [X]
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
Project Management Unit	√		Continuous

Description of Covenant

The Belize Social Investment Fund shall maintain the Project Management Unit satisfactory to the Bank. (Schedule 2, Section I, A. 2)

Name	Recurrent	Due Date	Frequency
Operations Manual	√		Continuous

Description of Covenant

The Borrower and the Belize Social Investment Fund will carry out the project in compliance with the Operations Manual (Schedule 2, Section I, A. 3)

Conditions

Source Of Fund	Name	Type
IBRD	BSIF Subsidiary Agreement	Effectiveness

Description of Condition

The Subsidiary Agreement has been executed on behalf of the Borrower, through the Ministry of Finance and Economic Development (MoFED), and the Belize Social Investment Fund (BSIF). (Article V, 5.01)

Source Of Fund	Name	Type
IBRD	Contingent Emergency Response Component	Disbursement

Description of Condition

No withdrawal shall be made until the following conditions are met: (i) the Govt has determined that an eligible crisis or emergency has occurred and has furnished to the Bank a request to include said activities in the CERC for emergency response; (ii) the Govt has prepared and disclosed all safeguards instruments required for said activities; (iii) the Borrower's Coordinating Authority has adequate staff and resources for purpose of said activities; (iv) the Borrower has adopted the CERC Operations Manual in a form acceptable to the Bank. (Schedule 2, Section IV. B. b)

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Noreen Beg	Senior Environmental Specialist	Senior Environmental Specialist	GENDR
Keren Carla Charles	E T Consultant	Disaster Risk Management Specialist	GURDR
Ana F. Daza	Language Program Assistant	Language Program Assistant	GURDR
Laisa Daza Obando	Junior Professional	Junior Professional	LCC3C

	Associate	Associate	
David I	Senior Financial Management Specialist	Senior Financial Management Specialist	GGODR
Melanie Simone Kappes	E T Consultant	Disaster Risk Assessment Specialist	GURDR
Yoonhee Kim	Senior Urban Economist	Team Lead	GURDR
Bradley Michael Lyon		Knowledge Management Specialist	GURDR
Marta Elena Molares-Halberg		Legal Consultant	LEGLE
Pierre Nadji	Senior Country Officer	Senior Country Officer	LCC3C
Victor Manuel Ordonez Conde	Senior Finance Officer	Senior Finance Officer	CTRLN
Bishwa Raj Pandey	E T Consultant	Senior Data Management Specialist	GURDR
Julie Rieger	Senior Counsel	Senior Counsel	LEGLE
Maria Angelica Sotomayor Araujo	Lead Specialist	Sector Leader	GURDR
Kimberly Vilar	Social Development Specialist	Social Development Specialist	GURDR
Yingwei Wu	Senior Procurement Specialist	Senior Procurement Specialist	GGODR

Non Bank Staff

Name	Title	City
Stephen Brushett	Lead Transport Specialist-Consultant	
Marion Cayetano	National Focal Point-Consultant	

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Belize	Toledo	Toledo District	**X**		
Belize	Corozal	Corozal District	**X**		
Belize	Cayo	Belmopan	**X**		
Belize	Belize	Belize District	**X**		

I. STRATEGIC CONTEXT

A. Country Context

1. **Belize is a small, middle income country with an estimated population of 330,000 and a GDP per capita of US$4,247 (2012)[1].** The country is endowed with the largest barrier reef in the Americas and pristine tropical forests. Although the economy has traditionally been oriented towards agriculture, it has undergone a significant transformation over the last decade resulting from the first commercial oil discovery in 2005 and emergence of the tourism industry[2]. The service sector has become the largest contributor to GDP accounting for 54 percent, while the agricultural sector accounts for 13 percent of GDP with exports primarily dominated by the sugar and citrus industries[3].

2. **Since gaining independence in 1981, Belize has experienced a peaceful and democratic transition.** The governing party, United Democratic Party (UDP), came to power in 2008 and was re-elected in 2012 for a subsequent five-year term, which ensured political stability and continuity for policy priorities. The Government has worked to establish a transparent and accountable government and has taken concrete steps to address governance issues including the passage of the Freedom of Information Act, term limits for elected officials (including the Prime Minister), and empowering the Senate's oversight abilities. After suspending its program for several years due to deteriorating fiscal conditions and fiduciary concerns, the World Bank re-engaged in 2009, through the preparation of the Interim Strategy Note (ISN) 2009-2011[4]. Under this ISN, the Belize Municipal Development Project (BMDP) was approved by the Executive Directors on September 16, 2010. Since the approval of the BMDP and the successful implementation of the ISN, the relationship between the Bank and the Government of Belize (GoB) has improved and there is a clear commitment from the GoB to the lending and technical assistance programs outlined in the World Bank Group Country Partnership Strategy (CPS) 2012-2015 (Report # 63504-BZ, discussed by the Executive Directors on July 29, 2011).

3. **Fiscal space remains limited in Belize and the public debt trajectory vulnerable to various shocks.** The Belizean economy is estimated to have grown by only 0.7 percent in 2013 mainly because of continued decline in oil production and weak agricultural output, especially sugarcane and citrus. In March 2013, the GoB completed the restructuring of the US$550 million 'Super-Bond', which was issued in the international market in 2007. Over the medium-term, real GDP growth is expected to hover around 2.5 percent a year as declining oil production would be offset by higher output of other commodity exports, tourism and construction. The authorities' medium-term policy plans would maintain the primary surplus around 1 percent of GDP, as in 2013, which could lead to significant increases in public debt as a share of GDP, especially if a court decision calls for the payment of compensation to the former owners of the recently

[1] World Bank Development Indicators 2012.
[2] Total tourist arrivals reached 833,952 in 2012 compared to 216,932 in 2001. Source: Central Bank of Belize, Key Tourism Indicators 2001-2012.
[3] Central Bank of Belize, Economic Indicators 2001-2012.
[4] World Bank, "Interim Strategy Note for Belize", Report No. 47282-BZ, February 4, 2009.

nationalized companies. There are risks of economic downturn as additional external vulnerabilities could arise from a protracted period of weak growth in advanced economies or complications with *PetroCaribe* financing[5]. The authorities have, however, been proactive in developing programs to mitigate the potential impact of these risks[6].

4. **Poverty in Belize substantially increased in recent years, in part due to the stagnating economic situation and impact of natural disasters.** After a gradual decline in unemployment levels during the past decade, these figures increased drastically from 8 percent to 16 percent between 2008 and 2012[7]. During the 2002-2009 period[8], the overall poverty rate increased from 34 percent to 41 percent, and extreme poverty increased from 11 percent to 16 percent. Rising poverty has affected all districts; for example, poverty rates have more than doubled in the Corozal District, from 26 percent to 56 percent[9], and extreme poverty tripled from 6 to 21 percent[10]. Corozal was also repeatedly impacted by hurricane and flooding, underscoring the population's vulnerability to disasters. As of 2009, income inequality also remains high with a Gini coefficient of 0.42, and the highest rate of economic inequality is concentrated among indigenous Mayan communities.

B. Sectoral and Institutional Context

5. **The history of Belize has, in large part, been shaped by its vulnerability to natural disasters.** Belize has experienced frequent natural disasters of catastrophic proportions over the last half century. Hurricane Hattie destroyed half of Belize City in 1961, killing 400 people and submerging Turneffe Island and Caulker Caye in 13-feet storm surges. The economic damages estimated at over 600 percent of GDP prompted the GoB to build a new administrative capital 50 miles inland in Belmopan[11]. In 2000, Hurricane Keith caused damage exceeding 45 percent of GDP, and one year later Hurricane Iris submerged Belize City in 14-feet storm surges and destroyed about 4,000 homes. Tropical Storm Arthur in May 2008 caused extensive damages to critical infrastructure and the agriculture sector[12]. The fiscal impacts of disasters required significant capital expenditures to repair and reconstruct damaged infrastructure, resulting in frequent budgetary deficits.

6. **Belize's vulnerability to natural disasters is exacerbated by the effects of climate change, as natural hazards are expected to intensify both in terms of frequency and severity.** The United Nations Framework Convention on Climate Change identified Belize as

[5] *Petrocaribe* is an oil alliance of many Caribbean states with Venezuela to purchase oil on conditions of preferential payment.
[6] International Monetary Fund (IMF), Statement at the Conclusion of the IMF Article IV Consultation Mission to Belize, Press Release No.14/212, May 9, 2014.
[7] International Monetary Fund (IMF) World Economic Outlook Database, April 2014.
[8] The last Country Poverty Assessment is from 2010. Halcrow Group Limited et al, "Government of Belize and Caribbean Development Bank: Country Poverty Assessment Final Report", August 2010
[9] International Monetary Fund (IMF) World Economic Outlook Database, April 2014..
[10] Halcrow Group Limited et al, "Government of Belize and Caribbean Development Bank: Country Poverty Assessment Final Report", August 2010.
[11] EM-DAT, The International Disaster Database, accessed January 2013.
[12] World Bank, "Belize Housing Policy: Diagnosis and guidelines for action", June 2011, and World Bank, "Country Partnership Strategy", July 2011.

one of the countries that is most vulnerable to the adverse impacts of climate change. More than 50 percent of the population and business centers are on or near the long low lying coastline, most of which is at or near sea-level. The Belizean economy is highly sensitive to climate variability due to its dependence on natural resources. Projections suggest that frequent heat waves and droughts are expected, including high intensity rainfalls, and rising sea levels[13], which would lead to increased storm surges and riverine flooding. Due to climatic events in 2008 massive flooding across Belize paralyzed economic activity in large parts of the country for weeks and resulted in the loss of lives and property. The floods affected 50,000 people, roughly one sixth of Belize's population in over 100 communities in the Eastern Cayo, Belize, Orange Walk, and Corozal Districts[14]. These impacts are expected to increase as a result of climate change.

7. **Underdeveloped and dilapidated infrastructure, particularly in the transport sector, is a key constraint to reduce vulnerability to disasters.** Throughout Belize, critical infrastructure, such as public building and roads, are in need of rehabilitation or reconstruction. The road network is particularly vulnerable due to the lack of redundancy. Furthermore, roads have not adequately incorporated hazard and risk into detailed road designs and this, coupled with inadequate preventive maintenance and rehabilitation, results in unsafe road conditions during flooding events[15]. With 70 percent of the population living near primary and secondary road networks, flooding of one section of roadway can cut access and severely disrupt the flow of economic and social movement. The GoB has therefore prioritized the transport sector in their medium-term investment planning, considering its vulnerability and socio-economic importance[16].

8. **Belize has also recently experienced rapid urbanization, which underscores the importance of managing urban resilience and proactively planning for future urban growth.** According to United Nations estimates[17], between 2005 and 2010 Belize had the third highest urban population growth rate in Central America at 3.1 percent per annum. The experiences from the BMDP demonstrate that much of the urbanization process in Belize has taken place in the absence of proper land use planning and adequate infrastructure provisions, often resulting in urban settlements in high risk areas with insufficient infrastructure. In addition, the current land use plan does not incorporate disaster risks or climate resilience considerations. The GoB prepared and endorsed a national land use policy and integrated planning framework in 2013, but it has not yet been operationalized.

[13] Chen et al. (2008).
[14] Ibid.
[15] During an extended period of rainfall in 2008 an estimated US$11 million in damages where incurred, of which US$5 million were to road infrastructure. Source: Inter-American Development Bank, "Belize: IDB Country Strategy (2008-2012), May 2009. Section 2.6, p 5.
NEMO, "Initial Damage Assessment Report: Tropical Depression #16", October 29, 2008.
[16] Of the 3,281 km of road network only 20 percent are paved and the quality of road infrastructure is poor and deteriorating at an increasing rate. The proportion of road systems considered to be in poor or bad condition increased from 12 percent (2007-2008) to almost 60 percent (2012-2013). Source: Inter-American Development Bank, "Transport Sector in Belize" Technical Note No. IDB-TN-607, December 2013.
[17] U.N. Population Division, 2007.

9. **Another challenge is the absence of sustainable mechanisms for infrastructure maintenance.** The recently adopted Road Maintenance Strategy (RMS), developed with the support of the European Union (EU), offers a good opportunity to introduce more sustainable and workable measures. The GoB expressed commitment to undertake institutional reforms, in view of the chronic insufficiency of budgetary resources for road maintenance. According to the RMS, US$17 million is required to maintain the roads in Belize, but on average only US$8 million has been allocated. The RMS was adopted by Cabinet and now requires the implementation of specific measures, including a road maintenance fund[18]. The Ministry of Works and Transport (MoWT) has a RMU in place and is in need of technical support to fully operationalize it.

10. **Against this backdrop, the GoB developed the National Climate Resilient Investment Plan (NCRIP) to address the impacts of climate change on social and economic development**. This plan was elaborated with support from the Bank and financial support from the Africa Caribbean Pacific (ACP) European Union (EU) Natural Disaster Risk Reduction Program, received through the Global Facility for Disaster Recovery and Reconstruction (GFDRR). Adopted in October 2013, this multi-sectoral plan lays out priority investments by sector, integrating physical interventions with capacity building activities and policy actions. In addition, it has identified approximately US$430 million in physical investment needs, of which there is a US$125 million financing gap. The NCRIP engaged all relevant stakeholders, including, representatives from ministries, municipalities, private sector, civil society, NGOs, academic institutions, and international financial institutions (IFIs). It was based on two considerations: (a) socio-economic criticality of the road network; and (b) flood susceptibility of the primary and secondary road networks. Criticality of the roads was assessed through a participatory multi-criteria evaluation (MCE) process, while the flood susceptibility was carried out using a data-driven analysis. Details on the methodological approach and results of the analyses are provided in *Annex 2*.

11. **The NCRIP road prioritization analysis identified four geographical areas of socio-economic importance and high susceptibility to disaster risk for potential investments under the Belize Climate Resilient Infrastructure Project (BCRIP)**: Greater Belize City area, west of Belmopan, northern area around Corozal, and southern area around Independence. Poverty levels in the last three areas reach above 40 percent as indicated in Table 1, with 50 percent of the population living in extreme poverty in the southern area around Independencia. *Annex 2* has more details on these areas.

[18] Maintenance funded directly by road user charges.

Table 1: Socio-economic statistics of the potential investment areas[19]

Broad Area	**District (major)**	**Population (2013)**	**Major Economic Activity – Employment per District (2009)**	**2009 Total Poverty as % of Pop'n (Indigent)**
Greater Belize City area	Belize City	95,291 (30%)	Retail (22%), Personal Services (19%)	29% (6%)
West of Belmopan	Cayo	75,046 (23%)	Personal Services (18%) Agriculture (18%)	41% (12%)
Northern area around Corozal	Corozal	41,061 (13%)	Agriculture (32%), Retail (23%)	56% (21%)
Southern area around Independence	Toledo	30,785 (10%)	Agriculture (46%) Personal Services (10%)	60% (50%)

C. Higher Level Objectives to which the Project Contributes

12. **The proposed BCRIP supports the World Bank's twin goals to end extreme poverty globally within a generation, and promote shared prosperity in the poorer segments of society.** The Project will support enhancing climate resilience in the selected road infrastructure critical for economic connectivity and disaster risk mitigation. The road networks under the NCRIP were prioritized considering economic importance, especially for the country's main agricultural products and tourism activities. The prioritization also factored in the access of relief services to communities in the event of natural disaster events. In addition, the Project's intervention will benefit poor and vulnerable populations. Poor communities are disproportionately vulnerable to economic shocks and reduced mobility – particularly minority groups in the southern and northern parts of the country. In fact, three of the four potential project areas under the NCRIP have higher poverty incidence than the national average of 41 percent. For instance, in the Corozal area, 56 percent lives in poverty and in Toledo with a predominantly indigenous population, the poverty level goes up to 60 percent. Making investments in these areas will help to protect the limited assets of poor communities from natural disasters and climate change related events and to improve the access and the economic livelihoods of poor and vulnerable communities.

13. **The BCRIP is fully aligned with the World Bank Group's Country Partnership Strategy (CPS) 2012-2015** (Report # 63504-BZ) discussed by the Executive Directors on July 29, 2011; focused on one pillar aimed at supporting the GoB to achieve inclusive and sustainable natural resource-based growth and enhanced climate resilience. The project supports the three results areas under the CPS: 1) policies and strategies for mainstreaming of natural resource management and climate resilience; 2) institutional capacity strengthening for natural resource management and climate change; and 3) investments to strengthen climate resilience.

14. **The BCRIP is also in line with the Bank's Strategic Framework for Development and Climate Change (2008) and the World Development Report on climate change (2010**); which outlines the World Bank's operational response to enhance the resilience of client countries. The Strategic Framework emphasizes a demand-driven process to support country-led climate actions and focuses the WB's response on providing additional financing, facilitating

[19] Data from the 2010 Population Census and Country Poverty Assessment August 2010.

technology transfer, and building knowledge and capacity[20]. The proposed Project will provide much needed financing for critical infrastructure to enhance climate resilience and bring knowledge and capacity to help Belize address the impacts of climate change on social and economic development.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

15. The objectives of the Project are: (a) to enhance the resilience of road infrastructure against flood risk and impacts of climate change; and (b) to improve the Borrower's capacity to respond promptly and effectively in an Eligible Crisis or Emergency, as required.

B. Project Beneficiaries

16. The BCRIP investments will focus on one or more of the four geographical areas. The Project will take a framework approach, since the actual investments will only be known once detailed feasibility studies are completed. The *direct* beneficiaries of the project will include people living in the immediate vicinity of the road networks. The initial number of direct beneficiaries was estimated to include two most likely areas of intervention in the Greater Belize City area and Belmopan. During project implementation, these estimates will be reassessed and updated.

17. *Total* beneficiaries of the Project are expected to be the entire population of the country, about 330,000 for the following reasons. The four geographical areas were selected due to their socio-economic importance as well as high susceptibility to natural disaster. The Greater Belize City and Belmopan areas are the two most important urban centers and their roads are the most frequently traveled roads. The economic flow on the proposed roads is high. The Greater Belize City area is adjacent to the national airport and Port of Belize, which are the largest ports and most of the country's imports and exports pass through them. In addition, there is limited redundancy of road networks throughout the country. In particular, the four potential project areas under the NCRIP lack alternative routes to allow travel to different parts of the country. For instance, the Northern Highway is the only way to travel from Belmopan to Corozal in the northern part of the country. Furthermore, there is a lack of alternative modes of transportation within Belize and movement of goods and people across the country require use of the roads identified by the Project.

18. The gender-specific indicators will be collected throughout project implementation. Once sub-projects are identified, social assessments will be conducted to include, among others, gender-disaggregated data on the project-affected population as well as for the Technical Assistance activities. It will assess the link between road usage and gender and support mainstreaming gender into climate resilience.

[20] World Bank, "Development and Climate Change: a Strategic Framework for the World Bank Group", June 2012.

C. PDO Level Results Indicators

19. The achievement of the Project Development Objective will be monitored and measured through the following key results indicators:

i. Direct project beneficiaries: disaggregated by gender;
ii. Number of days per year, in which roads under the project are interrupted, due to flood events; and
iii. Availability and access of flood related data and risk information for the use of all stakeholders to incorporate into national development and planning.

III. PROJECT DESCRIPTION

A. Project Components

20. **The BCRIP investment framework in the four selected areas is based on the NCRIP.** As the investment needs in the four areas exceeds the project's financing envelope, additional criteria will be used to select the specific investments under the BCRIP. The criteria for sub-project selection: (i) take an integrated and comprehensive approach to address climate resilience in the transport infrastructure incorporating hazard mapping, flood risk management and data-informed decision making; (ii) have high impact on socio-economic activities in Belize, increasing both productivity and service delivery; (iii) take into account ongoing or planned investments by the GoB or other International Financial Institutions or bilateral donors; (iv) classification as Category B or less for the environmental safeguards; and (v) demonstrate economic viability through an economic analysis. These additional criteria were determined by the Ministry of Finance and Economic Development (MoFED), MoWT and other key ministries, and endorsed by Cabinet in February 2014. The MoWT and MoFED have identified a section of the Philip Goldson Highway, from the Philip Goldson International Airport Junction to Mile 20 as the first potential sub-project site. Additional sub-projects will be reviewed and agreed by year two of implementation.

21. **Project Components.** The BCRIP will finance climate resilience activities under the following four mutually reinforcing components:

22. **Component 1: Climate Resilient Infrastructure (US$21.500 million).** This component will reduce physical vulnerability of critical infrastructure through the retrofitting and rehabilitation of existing infrastructure within the primary and secondary road network including associated drainage and flood mitigation systems in order to strengthen their resilience to natural hazards and the anticipated impacts of climate variability. This component will also finance studies required to support engineering design options and final detailed designs solutions.

23. **Component 2: Technical Assistance for Improved Climate Resilience Management (US$4.925 million).** This component aims to strengthen the capacity of relevant technical line ministries, MoWT and Ministry of Natural Resources and Agriculture (MNRA), to mainstream climate resilience considerations into core physical and investment planning and asset maintenance. The component will aim to strengthen the capacity available to the MNRA and

MoWT through targeted training, as well as equipment and knowledge acquisition. Specifically, the proposed component will support:

24. *Component 2A – Support to the Ministry of Natural Resources and Agriculture (MNRA).* This component will provide technical support for improved land-use and territorial planning, as well as the development of an information baseline and complimentary data management platform. It will support the Land Information Center to consolidate existing geographic information system databases, to establish data sharing protocols and management platform, to provide training programs tailored to the center and other staff needs for data management. In addition, it will support the Physical Planning Unit in mainstreaming climate resilience considerations and disaster risk information into land use and territorial planning.

25. *Component 2B – Support to the Ministry of Works and Transport (MoWT).* Targeted technical assistance and training will be financed under this component to strengthen the ministry's infrastructure maintenance and asset management capacities. In particular, Component 2B will support the implementation of the RMS including specific measures to enhance the operations and maintenance capacity of the MoWT, such as the operationalization of the RMU. In addition, this component will finance the development of technical standards for capital investments to take into account climate risk and incorporate appropriate mitigation strategies, which would be applied to all publicly financed capital investments.

26. **Component 3: Project Management and Implementation Support (US$2.000 million).** Activities under this component would support strengthening and developing, where needed, the institutional capacity for Project management, including: (a) strengthening the PMU and line ministries, through staffing, training, and operating costs; (b) preparation of Project reports; (c) procurement and financial management; (d) coordination of participating line Ministries; (e) compliance with social and environmental safeguards; (f) training of staff in Project management and implementation technical support; (g) monitoring and evaluation of Project progress and results; and (h) related activities to support efficient Project management and implementation, through the provision of training, operating costs, and acquisition of goods.

27. **Component 4: Contingent Emergency Response (US$1.000 million).** This component will provide support for immediate response to an eligible crisis or emergency, as needed. A crisis or emergency eligible for financing is: an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact to the Borrower, associated with a natural or man-made crisis or disaster. Rapid disbursement of funds will allow the GoB to request a reallocation of project funds to partially cover emergency response and recovery costs. This component will be triggered if: (i) the GoB has determined that an eligible crisis or emergency has occurred and has furnished to the Bank a request to include said activities in the CERC for emergency response; (ii) the GoB has prepared and disclosed all safeguards instruments required for said activities; (iii) the Borrower has adopted the CERC Operations Manual (OM) in form, substance and manner acceptable to the Bank. A specific OM for this component will be prepared detailing financial management, procurement, safeguards, and any other necessary implementation arrangements. While Components 1, 2 and 3 focus on pre-crisis disaster risk mitigation and climate resilience enhancement measures, Component 4 will help to strengthen the GoB's capacity to respond effectively to an eligible crisis or emergency.

B. Project Financing

28. The project will be financed by a US$30 million IBRD loan. The lending instrument will be an Investment Project Financing (IPF), and the implementation period for the project is five years. An IPF provides the requisite flexibility to build human and institutional capacity, support technical studies, rehabilitate and construct infrastructure and purchase goods. An IPF also allows for close supervision of defined activities and procedures allowing to make adjustments where necessary – both by the GoB and the Bank.

29. The following table summarized the project financing arrangements.

Project Components	Project cost	IBRD Financing	% Financing
1. Climate Resilience Infrastructure	21.500	21.500	100%
2. Technical Assistance for Improved Climate Resilience Management	4.925	4.925	100%
3. Project Management and Implementation Support	2.000	2.000	100%
4. Contingent Emergency Response	1.000	1.000	100%
Total Costs			
Total Project Costs	29.425	29.425	
Refund of the Preparation Advance	0.500	0.500	100%
Front-End Fees	0.075	0.075	100%
Total Financing Required	30.000	30.000	

C. Lessons Learned and Reflected in the Project Design

30. The following key lessons learned were incorporated into the project design. Lessons were drawn from many projects, including, but not limited to: (i) the Disaster Vulnerability Reduction Projects in the Caribbean; (ii) the Municipal Development Project; and (iii) projects under the Pilot Program for Climate Resilience.

31. *Importance of data/evidence based decision-making process*. Information and data related to hazard and vulnerability should be readily available and easily accessible by key decision makers. A centralized database system of hazards and exposures should be created and key stakeholders need to be able to use it to make an informed decision and understand the risks to their investment decision.

32. *An integrated approach to flood management is critical to reduce long-term risk*. Experience from countries within the Caribbean and from low-lying countries around the world show that an integrated (combination of physical and non-physical measures) design of flood mitigation systems – both in the transport sector and flood mitigation structures, is critical to effectively manage flood risk.

33. *Preventive maintenance can significantly reduce risk and operational/maintenance costs in the long-term.* Experience proves that proactive maintenance of infrastructure can significantly reduce the medium and long-term operation and maintenance costs of most infrastructure. Additionally, effective preventive maintenance can prolong the design life and reduce the risk of infrastructure failure.

34. *The fundamental role of women in creating effective management strategies both at the local and national levels.* The WDR 2012 highlighted that this proven fact was not only due to their disproportional vulnerability to natural disasters, but also their singular agency both at the community-level efforts as well as national level policy-making. There are countless examples where empowering women to exercise leadership within their communities, as well as within government agencies, contributes to climate resilience. The BCRIP has reflected these lessons in its commitment to mainstream gender in climate resilience planning.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

35. **The MoFED will be the main GoB counterpart**, and the overarching institution in charge of overall project implementation and oversight, similar to all the other Bank-financed projects. MoFED is mandated to ensure the successful implementation of all externally funded projects and is responsible for coordinating with high-level line ministries and stakeholders.

36. **A Project Steering Committee (PSC) has been created to provide project oversight**. The PSC, under the chairmanship of MoFED, will provide the setting for coordination and oversight as well as for the participation of key agencies involved in project preparation and implementation. The Committee will be responsible for ensuring that the Project is in line with national development priorities. The Committee includes members from the following agencies: BSIF, MoWT, MNRA, National Emergency Management Organization (NEMO), and the Ministry of Forestry, Fisheries and Sustainable Development (MFFSD).

37. **The BSIF will be the project management agency responsible for overall coordination of the BCRIP.** Established in 1996 as an autonomous institution, BSIF is a statutory body under MoFED. It is currently managing the Bank financed BMDP and is familiar with Bank procedures and requirements for lending operations. A Project Management Unit (PMU) was created within BSIF. The main role of the PMU is to provide daily project management and take responsibility for all fiduciary aspects and safeguards compliance. In particular, the PMU will have overall responsibility for the following areas: (i) procurement management; (ii) financial management and audit; (iii) monitoring and evaluation; (iv) requisite reporting to the Bank; (v) maintenance of management information systems; (vi) compliance of safeguards policies with support from the technical line ministries MoWT and MNRA; and (vii) ensuring compliance with agreed implementation procedures and other Bank guidelines. The PMU is staffed by a project coordinator and will maintain: a financial accountant, a procurement specialist, a contract management specialist, an environmental specialist, as well as a social development specialist.

38. **The relevant technical line ministries will be the implementing agencies for specific components.** MoWT and MNRA will take the lead role in technical implementation and each have a focal point, who will work closely with the PMU within the BSIF. *MoWT* – will be the implementing agency for Component 1 and related TA activities. The Project will finance one or two project engineer(s) to be housed in MoWT to liaise with BSIF for all technical aspects. *MNRA* – Land Information Center (LIC) and Physical Planning Unit (PPU) will be responsible for technical implementation of the national spatial data infrastructure (NSDI), data management

related to sub-projects, and for the land use planning TA components. The Inter-Ministerial Agreement with MoWT and the Memorandum of Understanding with MNRA delineate the roles and responsibilities of the two line ministries vis-à-vis BSIF and MoFED. *Annex 3* provides a full description of the implementation mechanisms and of the flow of funds.

B. Results Monitoring and Evaluation

39. The results framework, presented in *Annex 1*, was developed in coordination with the GoB. The Bank's core indicators have also been included where applicable. The PMU will be responsible for monitoring and reporting of the performance indicators defined for the Project, which will be reported to the Bank semi-annually. The PMU will assign a dedicated staff responsible for M&E coordinating with line ministries to keep track of progress and outcomes of the Project activities. Component 3 will finance monitoring and reporting activities.

C. Sustainability

40. **Physical and Financial Sustainability.** The GoB recognizes that the sustainability of infrastructure investments and physical development planning is dependent on an improved understanding of adaptation options to strengthen resilience to disaster and climate risks. For flood control, reinforcement of roads and bridges and improvement of culverts and drainages is important. Good quality infrastructure works will be ensured by using best practices for preparation and engineering designs, construction supervision, and technical audits. More importantly, the Project will support the implementation of the recently adopted RMS which will include considerable TA resources for Operations & Maintenance (O&M).

41. **Institutional Sustainability.** A key outcome of the project will be improved capacity of BSIF and line ministries to engage in long term planning to build and maintain climate resilient infrastructure investments. Of particular emphasis is analytical and technical support to improve the GoB's approach to flood risk management from an ad hoc system of rehabilitation to a data driven decision making approach that involves long term planning while improving the understanding of the effects of short term events. In addition, line ministries will benefit from further institutional strengthening, such as the fully operational RMU, establishment of the NSDI and implementation of a climate and disaster risk informed land-use policy. Finally, the BSIF/PMU will also receive institutional support to enhance project management capabilities, in particular in fiduciary and safeguards and developing staff capacity.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	Rating
Stakeholder Risk	**M**
Implementing Agency Risk	
- Capacity	**M**
- Governance	**M**
Project Risk	
- Design	**H**
- Social and Environmental	**M**
- Program and Donor	**L**

- Delivery Monitoring and Sustainability	**M**
Overall Implementation Risk	**S**

B. Overall Risk Rating Explanation

42. The overall project risk is rated as 'Substantial' and the main risk and mitigation measures are summarized below. The risks identified in the ORAF that could substantially affect the achievement of the PDO are provided in *Annex 4*.

i. *Sector and Multi-Sector Risks*. There are risks associated with the implementation of this multi-sectoral approach and adoption of integrated measures to mitigate flood risk in the country's road infrastructure, which could result in delays in the decision making process and overall project implementation. This risk will be mitigated by strengthening the role of the PSC. The Project will also emphasize the need to coordinate and create synergies across relevant line ministries, with local communities and development partners funding complimentary activities where investments are being proposed.

ii. *Implementation Risks*. Through the Bank financed BMDP, BSIF has gained experience as a PMU. However, under the existing implementation arrangements there could be delays due to the separation between technical execution by the line ministries and overall project management led by the PMU (including fiduciary and safeguard aspects). To mitigate these risks, detailed implementation arrangements have been prepared, including roles and responsibilities for each stage in the project cycle. The institutional agreements have been signed by the line ministries, BSIF and the MoFED. In addition, the Bank will provide ongoing support to the line ministries on technical training as well as on the Bank's fiduciary and safeguards aspects, and a subsidiary agreement will be signed between MoFED and BSIF.

iii. *Design Risks.* There is risk associated with the innovative nature of the project design which aims to integrate better design standards for climate resilience and hazard/risk analysis in infrastructure investments, which is a relatively new concept for the MoWT. Furthermore, the technical capacity of the MoWT is limited and it is also understaffed. This risk will be mitigated by training of staff, recruiting consultants and Bank technical support which will be provided throughout project implementation. In addition, the Project will finance one or two project engineers for the MoWT.

43. Despite mitigation measures, a Substantial level of risk at implementation will remain based on the multi-sectoral nature of the Project and limited capacity.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

44. **Economic Analysis Results**. A cost-benefit analysis framework that incorporates climate change scenarios was prepared and applied to the first potential sub-project site in the Belize

City District. Each sub-project will require an economic analysis as part of feasibility studies. The analysis compared the costs of the interventions against estimated economic benefits for selected climate scenarios. The Economic Internal Rate of Return of the illustrative case ranges from 23 to 26 percent with different climate scenarios. Using a discount rate of 12 percent, the Net Present Value ranges from US$25.7 to US$35.1 million for an initial investment of US$13.0 million. These figures attest to the sizable economic benefits that would result from the activities outlined in the Project. See *Annex 6* for the full Economic Analysis.

45. **Public sector financing is the appropriate funding vehicle**. All activities are designed to improve national capacity for disaster risk management (DRM) and climate change monitoring to support the integration of risk management into national development. Moreover, the Project will illustrate how integrated, data driven, climate resilience interventions could be applied to the transportation network. The Project would present a demonstrative case for which potential public/private options could be considered in the future

46. **World Bank Added Value.** The World Bank has international experience working on climate resilience and DRM infrastructure projects, in particular in the Caribbean and Central America. Lessons learnt and best practices can be applied to this Project. The Bank mobilized resources from the GFDRR to inform the investment decisions for the Project. The Bank will continue to support Belize in trying to leverage additional funds to decrease vulnerability and improve climate resilience in order to lessen the socio-economic and fiscal shocks of disasters.

B. Technical

47. Under the Project, appropriate and established methodologies for the construction and rehabilitation of roads, shoulders and structures will be employed. Designs will integrate improved road design standards. Currently, there is no harmonized design and technical standards for the country. Rather design standards are used on an ad-hoc basis and the application of these standards is neither monitored nor enforced, which creates further problems for the quality of public assets. Additional climate considerations will also be added to the design and technical specifications taking into account probable severity of weather conditions. For each intervention, a feasibility study and detailed engineering design will be carried out. From the technical and environmental perspectives alternatives to reduce flood risk vulnerability and improve road safety will be assessed. It will also take into account cost and economic viability of the chosen option.

C. Financial Management

48. The BSIF is currently responsible for implementing the ongoing BMDP and has experience with Bank-financed projects. The Financial Management (FM) capacity assessment identified the main risk to be that BSIF's financial unit will be required to work closely with line ministries in the implementation of BCRIP activities. This is a challenge given that these agencies will be responsible for the technical aspects of the project while BSIF will be responsible for the fiduciary functions. The following mitigation measures have been agreed upon: (i) training to BSIF and line ministries on the Bank's fiduciary requirements; and (ii) defining roles and responsibilities of BSIF and the line ministries in the OM and in the

institutional agreements. With the implementation of the proposed actions, the FM arrangements will satisfy the Bank's minimum requirements under OP/BP 10.00. *Annex 3* provides additional information on financial management.

D. Procurement

49. An assessment of BSIF to implement procurement actions for the Project was conducted under Procurement Risk Assessment and Management System (PRAMs). Risk mitigation measures include: (i) creating an action plan to strengthen procurement capacity; (ii) recruiting a procurement officer for the PMU; (iii) training the PMU and relevant line ministries staff on procurement in the Bank regional workshops; and (iv) setting up a new Procurement Unit in the BSIF, given its increased procurement responsibilities. *Annex 3* provides additional information on procurement arrangements.

E. Social (including Safeguards)

50. Regarding the social impacts of Component 1's climate resilient infrastructure on the primary and secondary road network, the main permanent adverse impacts will be: (1) loss of property and assets due to displacements and relocation of individuals/families occupying road reserves related to road widening, diversion of existing road and/or drainage purposes; and (2) loss of land and other assets (buildings, fences, crops, vendor stalls, driveways, signs etc.) from expropriation, removal, acquisition and demolition. The cost of potential resettlement will be covered by the GoB. For this reason, a Resettlement Policy Framework (RPF) was prepared by the GoB to provide step-by-step guidance for actions to be taken during implementation, namely the preparation and implementation of the abbreviated Resettlement Action Plans (RAPs).

51. The findings of the project's social assessment indicate that no adverse impacts are foreseen to affect the Mayan and Garifuna communities in the project areas. Moreover, the BCRIP-financed investments and activities are not expected to affect collective lands including those claimed in the Mayan Land case now at the Caribbean Court of Justice. Nonetheless, in order to secure culturally appropriate consultation and access to project benefits, a Culturally Appropriate Participation Framework (CAPF)[21] in full compliance with OP/BP 4.10 on Indigenous Peoples, was prepared and disclosed to establish protocols for on-going consultation, participation and monitoring by indigenous communities during implementation. The spirit of the policy will also be applied to other affected populations in order to ensure culturally appropriate inclusion. The MoWT together with BSIF will apply the CAPF and carry out any required Culturally Appropriate Participation Plan (CAPP) if needed.

52. Proposed project activities aim to mainstream gender dimensions into Belize's DRM planning processes through actions such as gender-disaggregated data and indicators in monitoring and evaluation, as well as fostering women as participants and champions to increase the effectiveness of DRM policies and efforts.

[21] The Culturally Appropriate Participation Framework (CAPF) is in full compliance with OP 4.10 and is the equivalent of the Indigenous Peoples Planning Framework (IPPF).

F. Environment (including Safeguards)

53. Potential adverse environmental impacts on human populations or environmentally important areas are site-specific, and are related to retrofitting, rehabilitation, and reinforcement works. The Project will not support or lead to the conversion of natural habitats. The provision of climate resilient infrastructure will limit loss of biodiversity, protect mangroves and wetlands, and maintain the quality of freshwater resources. The Environment Management Framework (EMF) will explicitly forbid any project activities in areas supporting critical natural habitats or inducing significant conversion or degradation of critical natural habitats. Based on site visits to two of the proposed areas, Belize City and Belmopan, and discussions held with the GoB, it appears no sub-projects will have an impact on the health and quality of forests, affect the rights and welfare of people living in forests, or bring about changes in the management, protection, or utilization of natural forests or plantations. The Project is not expected to have negative impacts on cultural property. However, "chance finds" during implementation of activities could be possible. Chance finds procedures will be incorporated into Environment Management Plans (EMPs) and construction contracts.

54. As the project is using a framework approach, the exact location and/or nature of potential small investments to be financed under this project have not yet been determined, an EMF was prepared that conforms to Bank safeguard policies. This provides the framework within which EIAs and/or EMPs will be developed prior to commencing any works. The specific objectives of the EMF are: (i) to assess the potential environmental and social impacts of the BCRIP, whether positive or negative, and propose mitigation measures which will effectively address the impacts; (ii) to inform the project preparation process of the potential impacts of different alternatives, and relevant mitigation measures; and (iii) to establish clear directives and methodologies for the environmental and social screening of subprojects to be financed under the proposed Project.

55. A high quality EMF, RPF and CAPF have been prepared for the Project, which provide a comprehensive set of guidelines for the preparation and monitoring of sub-project environmental, culturally appropriate participation, and resettlement plans. While both environmental specialist and social specialist will need to be recruited under the PMU, BSIF has experience implementing Bank's safeguards policies and compliance through the BMDP. The new safeguards specialists will be provided with training on the Bank's environmental and social management practices.

56. The Project is a Category B rating –Partial Assessment - assigned to projects that are likely to have impacts that are site-specific, limited in number, and mitigation measures are readily identifiable. The list of safeguard policies triggered is in the PAD Data Sheet.

57. The EMF, after in-country consultations were held with project affected people and key stakeholders, was cleared by the Bank and disclosed in the Bank's website on March 19, 2014 and in Belize on March 21, 2014. The RPF, CAPF and Social Assessment, after in-country consultations were held with national authorities and Mayan leaders, were cleared by the World Bank and disclosed on the Bank's website and in Belize on April 15, 2014.

G. Other Safeguard Policies Triggered

58. **Projects in Disputed Areas (Policy OP/BP 7.60).** This policy is applicable to the Project because of the longstanding territorial dispute between Belize and Guatemala. Some of the four geographical areas that have been identified and prioritized for potential infrastructure investments under the Project fall within the general area known to be in dispute. The Project does not prejudice the position of either the Bank or the two countries involved. It is emphasized that by supporting the Project, the World Bank does not intend to make any judgment on the legal or other status of the territories concerned or to prejudice the final determination of the parties' claims. In line with OP/BP 7.60, the Bank has ensured compliance with the requirements of the policy.

Annex 1: Results Framework and Monitoring
Country: Belize
Project Name: Climate Resilient Infrastructure (P127338)
Results Framework

Project Development Objectives

PDO Statement

The objectives of the Project are: (a) to enhance the resilience of road infrastructure against flood risk and impacts of climate change; and (b) to improve the Borrower's capacity to respond promptly and effectively in an Eligible Crisis or Emergency, as required.

These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	YR5			
Direct project beneficiaries	☒	Number	0	0	0	95,000[22]	130,000	170,000[23]	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from MoWT
Female beneficiaries	☒	Percent Sub-Type Supplemental	0%	0%	0%	51%[24]	51%	51%	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from MoWT
Number of days per year, in which roads under the project are interrupted, due to flood events	☐	Number	20	20	20	20	15	10	Twice a Year	- Semi Annual Project Progress Reports - MoWT Supervision Reports - Traffic Reports	PMU with support from MoWT
Availability and access of flood related data and risk	☐	Yes/No	No	Yes	Yes	Yes	Yes	Yes	Twice a year	- Semi Annual Project Progress Reports	PMU with support from

[22] Population in Belize City District. (Source: 2010 National Population Statistics)
[23] Population in the Belize City District and the Cayo District. (Source: 2010 National Population Statistics)
[24] Total number of beneficiaries less direct beneficiaries.

information for the use of all stakeholders to incorporate into national development and planning											the MNRA

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	YR5			
Component 1 – Climate Resilient Infrastructure											
Number of river crossings/culverts improved under the Project	☐	Number	0	0	5	8	10	12	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from the MoWT
Roads rehabilitated, Non-rural[25]	☒	Kilometers	0	0	5	11	16	30	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from the MoWT
Component 2 – Technical Assistance for Improved Climate Resilience Management											
Number of trainings on GIS analysis, spatial data management and sharing within the public sector (NSDI)	☐	Number	2	4	8	12	16	20	Twice a year	- Semi Annual Project Progress Reports	PMU with support from the MNRA
Number of localized hazard maps generated and shared	☐	Number	1	4	8	14	20	26	Twice a year	""	""
Progress towards the operationalization of the National Land Use Policy and the Integrated Planning Framework for land resources, which incorporates climate resilience and DRM in	☐	Percent	0%	20%	40%	60%	80%	100%	Twice a year	- Semi Annual Project Progress Reports	PMU with support from the MNRA

[25] Note: In Belize, it costs US$0.5 million to build/reconstruct 1km or road.

infrastructure planning											
Progress towards a functional, fully financed road maintenance Unit in MoWT	☐	Percent	0%	20%	40%	60%	75%	100%	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from the MoWT and MoFED
Number of men and women trained on road maintenance/ road maintenance fund	☐	Number	0	5	10	20	50	100[26]	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from the MoWT
Progress towards the development and implementation of methodologies to track flood risk reduction actions and investments within MoWT in design, construction, and maintenance	☐	Percent	0%	5%	15%	40%	100%	100%	Twice a year	- Semi Annual Project Progress Reports - MoWT Supervision Reports	PMU with support from the MoWT
Number of men and women trained in Flood Risk Analysis/Disaster Risk Mitigation	☐	Number	0	3	6	8	10	15	Twice a year	- Semi Annual Project Progress Reports	PMU with support from the MoWT and MNRA
Component 4 –Contingency Emergency Response											
CERC Operations Manual prepared to facilitate disbursement in the event of an emergency	☐	Yes/No	No	Yes	Yes	Yes	Yes	Yes	Twice a year	- Semi Annual Project Progress Reports	PMU

[26] Includes individuals outside of the Ministry of Works and Transport.

Results Framework Indicator Descriptions

Project Development Objective Indicators	
Indicator Name	**Description (indicator definition etc.)**
Direct project beneficiaries	Number of people directly affected by the improved road infrastructure. The direct beneficiaries are the number of people living in the areas directly affected from the potential civil works. The numbers come from the 2010 National Census Data. The numbers are based on the expected selection of the Civil Works Sites, (i) the Philip Goldson site in the Belize City District to be completed in Yr 2 – 3 of the Project and (ii) the Mount Pleasant Creek site in the Cayo District to be completed by the end of the Project. The numbers are from the 2010 National Census Data. Note: as the project is using a framework approach and the actual interventions will be identified during implementation, these numbers will be re-calculated during the mid-term review.
Female beneficiaries	The percent of female beneficiaries. The numbers are from the 2010 National Census Data. Note: as the project is using a framework approach and the actual interventions will be identified during implementation, these numbers will be re-calculated during the mid-term review.
Number of days per year, in which roads under the project are interrupted, due to flood events	This indicator measures the progress towards decreased risk of users to roads and bridges failure due to natural hazards or climate change impacts. In order to smoothen out inter-annual variability, the baseline is calculated as average interruption for the last 3 - 5 years. In the design studies, the required Rainfall IDF curves (intensity-duration-frequency curves for precipitation) and studies should be developed that would enable the classification of any event happening in the future.
Availability and access of flood related data and risk information for the use of all stakeholders to incorporate into national development and planning	This indicator measures the progress towards decreased risk of users to roads and bridges failure due to natural hazards or climate change impacts. If flood related data and risk information is available and accessible to the relevant stakeholders, (including emergency preparedness plans -if Belize regulations allow for these to be made publicly available- if any works are downstream of the two of the four priority areas of the BCRIP that are located

	within the Belize River Watershed area, where the country's three hydroelectric facilities are situated. hydroelectric facilities then the target has been achieved. Inter-agency coordination is required to ensure that the data is produced, standardized, and shared.

Intermediate Results Indicators	
Indicator Name	**Description (indicator definition etc.)**
Component 1 – Climate Resilient Infrastructure	
Number of river crossings improved under the Project	This indicator measures the progress towards decreased risk of users to roads and bridges failure due to natural hazards or climate change impacts. River crossings include both bridges and culverts on the roadway. This indicator is based on the Project interventions. The numbers are based on the potential project sites at the Philip Goldson Highway and the Mount Pleasant Creek Highway. Note: as the project is using a framework approach and the actual interventions will be identified during implementation, these numbers will be re-calculated during the mid-term review.
Roads rehabilitated, Non-Rural	This indicator measures the progress towards decreased risk of users to roads and bridges failure due to natural hazards or climate change impacts. This indicator is based on the Project interventions. The numbers are based on the potential project sites at the Philip Goldson Highway and the Mount Pleasant Creek Highway and includes the km of waterway improvements Note: in Belize, it costs US$0.5 million to build/reconstruct 1 km of roadway. Note: as the project is using a framework approach and the actual interventions will be identified during implementation, these numbers will be re-calculated during the mid-term review.
Component 2 – Technical Assistance for Improved Climate Resilience Management	
Number of trainings on GIS analysis, spatial data management and sharing within the public sector	This indicator measures the increased national capacity to capture and manage hazard and climate risk data. This indicator measures local and regional training for National Spatial Data Infrastructure (NSDI) stakeholders based on both Project interventions and other national initiatives.
Number of localized hazard maps generated and shared	This indicator measures the increased national capacity to capture, manage and share hazard and climate risk data. Through Project interventions and other national initiatives, various hazard related data layers will be

	captured, managed and shared for better decision-making such as data on sea level rise, rainfall, floods, shelters, schools and other community resources, population, and built-up areas, building footprints. Data layers at different will be considered as separate data layers.
Progress toward the operationalization of the National Land Use Policy and the Integrated Planning Framework for land resources, which incorporates inclusive climate resilience and disaster risk management in infrastructure planning	Measures progress toward adoption of a plan of action to implement the land use policy. Year 1: Consensus is built on the way forward and the road map and action plan to implement the National Land Use Policy is prepared (20%) Year 2: Road map submitted to Cabinet for approval (40%) Year 3: Coordination on implementation has begun with the relevant ministries (60%) Year 4: The integrated planning framework is functional and a national zoning strategy is in place (80%) Year 5: National Land Use Policy and Integrated Planning Framework operational (100%)
Progress towards a functional, fully financed road maintenance unit in MoWT	This indicator measures the increased national capacity to capture and manage hazard and climate risk data. The measurements are as follows: Baseline: Road Maintenance Unit (RMU) established and staffed with four key members including a planning engineer (10%) Year 1: Key members of RMU/MoWT trained in Road Maintenance Fund (RMF) structure etc and roll out RMU responsibility for 330 miles Hwy and 80 miles of rural roads (25%) Year 2: RMU to complete inventory of road assets (40%) Year 3: Key members of RMU/MoWT /GoB to be trained in RMF structure etc and roll out RMU responsibility to 374 miles of Hwy and 100 miles of rural roads. Additionally, consultancy contract for Study signed. Road condition survey is undertaken and the results reported. The survey will be GIS based and the data will be used to update the Road Exposure Database (60%) Year 4: Training of MoWT/RMU/GoB/Contractors continues for appreciation of RMF structure, expectations etc. Study completed public consultations undertaken and present recommendations on further road maintenance improvements. Sustain the fully functional RMU with adequate funding (75%) Year 5. Re-training of MoWT staff and full implementations of recommendations that are adopted by GoB. RMU to be legally established with requisite responsibility and authority (100%)
Number of men and women trained on road maintenance/ road maintenance fund	The number of men and women trained and the type of trainings should result in increased capacity in MoWT, the Road Maintenance Fund (RMF), and local contractors who are providing service to the RMF. Lead administrative officers/decision makers within the Ministry of Finance, Economic Development, NEMO, MNRA will also be trained in issues related to road maintenance. It is envisaged that while some

	officers may go abroad for training, much of the road maintenance training will be delivered in country. Trainers will likely come from outside of Belize.
Progress towards the development and implementation of methodologies to track flood risk reduction actions and investments within MOWT in design, construction, and maintenance	This indicator measures the increased national capacity to capture and manage hazard and climate risk data. The measurements are as follows: Baseline: No tracking (0%) Year 1: Tracking methods developed and tested (5%) Year 2: Tracking methods is disseminated and applied (15%) Year 3: Lessons learned used to modify and expand the methodology for tracking incremental investments in disaster risk reduction. The methodology will inform the development of an estimate as a percent of investment that should go into flood risk/disaster risk reduction measures (40%) Year 4: Incremental investments are being identified and reported as part of the MoWT workflow (100%) Year 5: (100%)
Number of men and women trained in climate change adaptation measures and gender mainstreaming flood risk management within the MoWT	This indicator measures the increased national capacity to integrate flood risk management in design, construction and maintenance of road infrastructure assets and capture and manage data associated with Flood hazard and climate risk data. It tracks investment in capacity building through local and regional/international training in aspects of Flood Risk Management, Climate Change Adaptation and Asset Management to improve the effectiveness of MoWT with national initiatives to properly manage Road Assets and reduce impact from Climate Change. MoWT envisages some in depth and intense training for the staff of MoWT, the RMF, and NEMO that will enable detailed planning, data collection, and analysis to support flood risk reduction. Here the MoWT is looking to build deep capacity in few technical people over a five-year period. It is expected that a number of people will go abroad for courses lasting 6 to 10 weeks and return with capacities that will bring significant improvements to the abilities of the MoWT.
Component 4 –Contingency Emergency Response	
CERC Operations Manual prepared to facilitate disbursement in the event of an emergency	This indicator measures the capacity of the Belize to respond to an emergency.

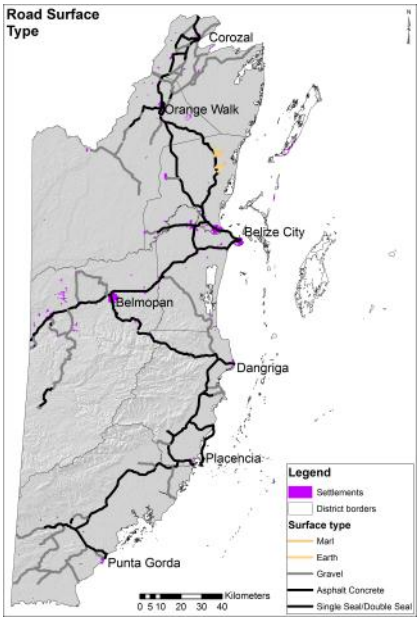
Annex 2: Detailed Project Description
BELIZE: Climate Resilient Infrastructure Project

1. **The GoB developed the National Climate Resilient Investment Plan (NCRIP) to address the impacts of climate change on social and economic development.** This plan was elaborated with support from the Bank and financial support from the Africa Caribbean Pacific (ACP) European Union (EU) Natural Disaster Risk Reduction Program, received through the Global Facility for Disaster Recovery and Reconstruction (GFDRR). Adopted on October 2013, this multi-sectoral plan lays out priority investments by sector, integrating physical interventions with capacity building activities and policy actions, to quantifiably reduce vulnerability and build climate resilience in the country. In the past, Belize's legislation and policy measures to mainstream disaster risk management (DRM) were fragmented and lacked ownership and participation of ministries. To address this disconnect, the NCRIP engaged all relevant stakeholders from the beginning to devise holistic and participatory approaches to address climate resilience. Through the NCRIP, the GoB has articulated a medium-term plan that seeks to fully integrate climate change adaptation, climate variability, and comprehensive disaster management into national development planning processes and actions.

2. **The Belizean Road Network** consists of over 3,000 km (1,900 miles) of roads, of which approximately 575 km (357 miles) is paved[27] (see Figure 1). Belize has four major asphalt-paved two-lane roads:

a. Phillip Goldson Highway (formerly Northern Highway) between Belize City and the Mexican border north of Corozal (95 miles)
b. George Price Highway (formerly Western Highway) between Belize City and the Guatemalan border near Benque Viejo del Carmen (81 miles)
c. Hummingbird Highway from Belmopan to Dangriga (55 miles)
d. Southern Highway from Dangriga to Punta Gorda

Figure 1: Belize Road Network



3. **Through the NCRIP, the GoB made great strides to prioritize road infrastructure investments for enhanced climate resilience** based on two considerations: (a) socio-economic criticality of the road network; and (b) flood susceptibility of the primary and secondary road networks. Criticality of the roads was assessed through a participatory multi-criteria evaluation (MCE) process with government and key stakeholders such as NGO representatives and private

[27] http://en.wikipedia.org/wiki/Roads_in_Belize.

sector, while the flood susceptibility was carried out using a data-driven analysis. The results from the MCE process[28] and the flood susceptibility evaluation were used to identify priority areas for investments. This investment prioritization serves as a basis to inform sub-project selection and components of the proposed Belize Climate Resilient Infrastructure Project (BCRIP).

4. **The NCRIP road prioritization analysis identified four main geographical areas for potential BCRIP investments that represent both socio-economic importance and high susceptibility to disaster risk**: Greater Belize City area, west of Belmopan, northern area around Corozal, and southern area around Independence. Poverty levels in the last three areas reach above 40 percent, with 50 percent of the population living in extreme poverty in the southern area around Independencia.

5. **The BCRIP investment framework in the four selected areas is based on the NCRIP.** As the investment portfolio articulated in the NCRIP exceeds the project's financing envelope, additional criteria will be used to select the specific investments under the BCRIP. The criteria for sub-project selection are: (i) take an integrated and comprehensive approach to address climate resilience in the transport infrastructure incorporating hazard mapping, flood risk management and data-informed decision making; (ii) have high impact on socio-economic activities in Belize, increasing both productivity and service delivery; (iii) take into account ongoing or planned investments by the GoB or other International Financial Institutions or bilateral donors; (iv) classification as Category B or less for the environmental safeguards; and (v) demonstrate economic viability through an economic analysis. These additional criteria for sub-project selection were determined by the Ministry of Finance and Economic Development (MoFED), the Ministry of Works and Transport (MoWT) and other key ministries, and endorsed by Cabinet on February 2014. The MoWT and MoFED have identified a section of the Philip Goldson Highway, from the Philip Goldson International Airport Junction to Mile 20 (just beyond the Junction with the Old Northern Road), as the first potential sub-project site.

Methodology to Prioritize Road Infrastructure Investments under the NCRIP

6. Given that the proposed Project aims to enhance climate resilience in road infrastructure, the prioritization of the road infrastructure investments was carried out through two main analytical processes: (1) the socio-economic criticality of the road through a Multi Criteria Evaluation (MCE) process, and (2) an evaluation of the flood susceptibility of the transport network.

[28] More specifically, seven criteria were used to prioritize road investments; (1) economic connectivity, (2) access to socially vulnerable population, (3) access of relief services to communities, (4) road conditions, (5) demand and level of use, (6) dependency/redundancy of the road, and (7) essential evaluation network.

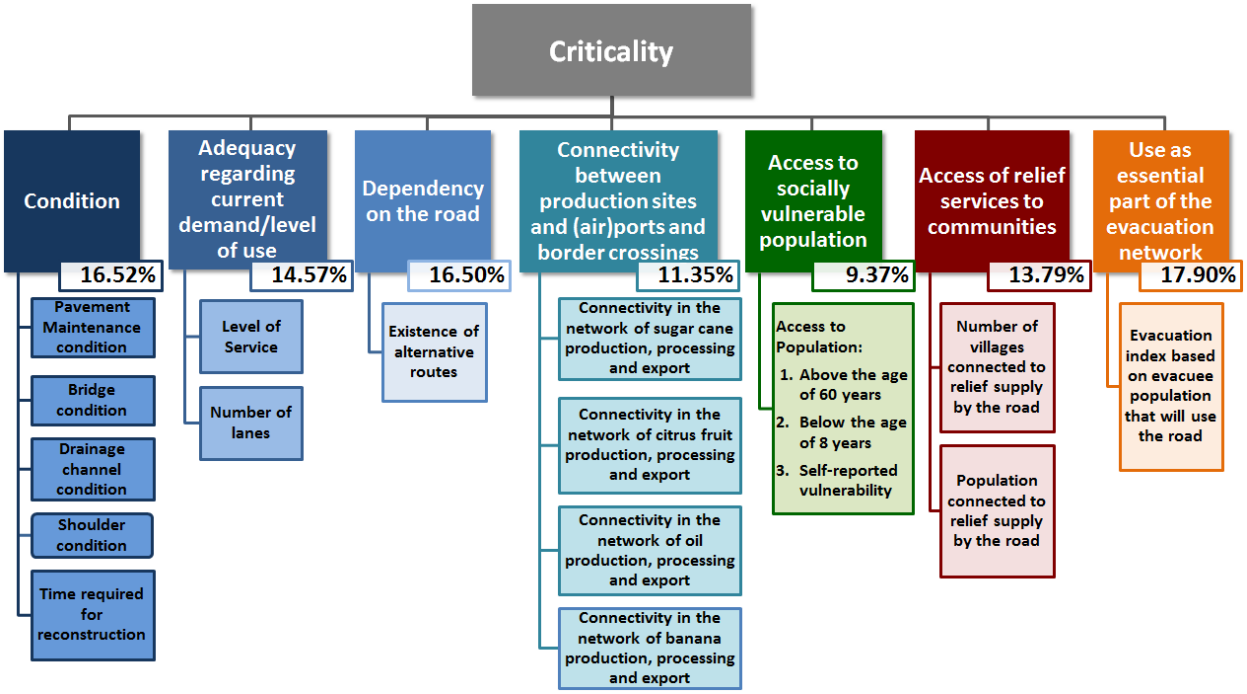
(1) Identifying Socio-Economic Criticality of the Road Network - a Multi Criteria Evaluation (MCE) approach

7. **Multi-Criteria Evaluation:** This assessment assessed the relative importance of different road network sections in the country by engaging with key stakeholders, identifying priority issues for current road network, and quantifying the criticality of road infrastructure for primary and secondary road networks. The assessment ranked the relative importance of specific links or nodes in the transportation network and their connectivity to socio-economic activities. It also assessed connectivity during emergency evacuations and relief service provision, support in the movement of freight and access to socially vulnerable populations. In order to carry out this analysis, a Multi Criteria Evaluation (MCE) approach was used – it is participatory and allows for the inclusion of a large number of stakeholders, and considers quantitative and qualitative aspects in the decision-making process. The MCE consists of establishing a ranking of options based on an explicit set of objectives that stakeholders have identified, and for which they have established measurable criteria to assess the extent to which the objectives have been achieved. The major steps carried out in the MCE are explained below.

8. The first step in developing an MCE methodology is establishing the context. Workshops held with different level stakeholders in Belize (CEOs and technical representatives from various sector ministries and technical agencies) helped to establish the context and resulted in: i) identification of key stakeholders to be involved in the development of the MCE; ii) identification of principles and priority issues that would drive and be addressed in the MCE process; iii) knowledge of historic hazard events that impacted the road network; and iv) identification of critical road stretches and sectoral issues related to road infrastructure, road closures, and how use typologies are affecting road risk levels. The next stage was to decide on the criteria that would define the MCE. The criteria are used as measures of performance against which the investment options are judged. A weight was attributed to each criterion according to their level of importance. The criteria were based on the outcome of participatory workshops held with a technical team of stakeholders – which were later endorsed by public sector CEOs. The first proposal on weights was elaborated by the team of technical stakeholders, and then public sector CEOs made adjustments accordingly.

9. In addition, indicators were required to measure each of the criteria. A first set of proposed indicators was elaborated by the World Bank and these were discussed and vetted with representatives from different ministries (whom also provided data to inform and calculate the indicators). For the criticality assessment a total of 7 criteria were selected out of 20 initial criteria identified by stakeholders (see Figure 2). The seven criteria of highest importance selected were; (i) condition of the road, (ii) adequacy regarding current demand/level of use, (iii) dependency on the road, (iv) connectivity between production sites and (air)ports and border crossings, (v) access to socially vulnerable population, (vi) access of relief services to communities, (vii) use as essential part of the evacuation network. Based on the framework shown in Figure 2. the criticality of each road segment was calculated by; (1) scoring the indicators, (2) creating the criterion value by averaging the indicators, (3) assigning weights to each criterion, and (4) summing up all the weighted criteria.

Figure 2: Criticality Assessment



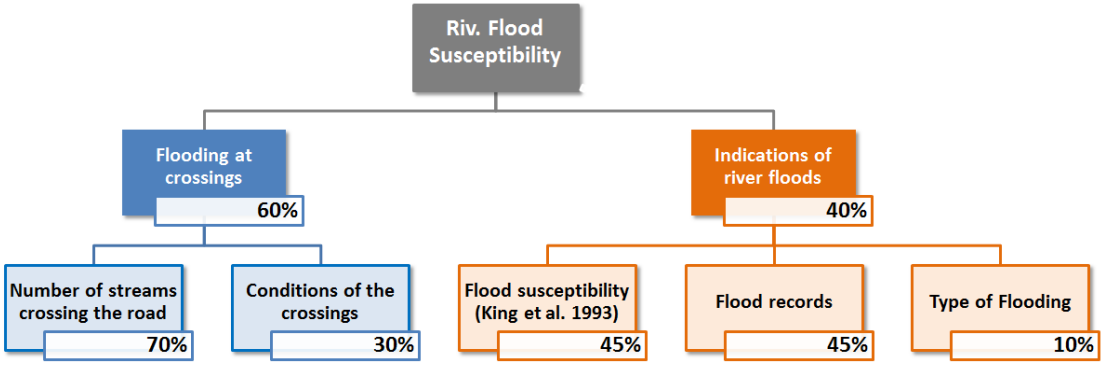
Criticality is a result of the seven criteria (boxes in top row), weighted by the attributed relevance of each one (percentage figures). Thereby, each criterion is calculated by means of a set of indicators (light colored boxes).

(2) Flood Susceptibility Evaluation

10. Using an indicator-based approach a flood susceptibility analysis was carried out through field visits and qualitative methods, including interviews with engineers from the MoWT. A detailed flood hazard analysis including hydrological and hydraulic analyses was not feasible due to the fact that hydro-meteorological, topography and bathymetry data was not available at the country level.

11. **Methodology:** The modeling approach took into account two criteria, *Flooding at (Stream) Crossings* and *Indications of River Floods*, which affect the segments of the road network (see dark blue and dark orange boxes in Figure 3). For each criterion multiple indicators were identified in order to measure the criteria (see light blue and light orange boxes in Figure 3). Finally, weights were attributed to each of the criteria and indicators according to their level of contribution to flood susceptibility.

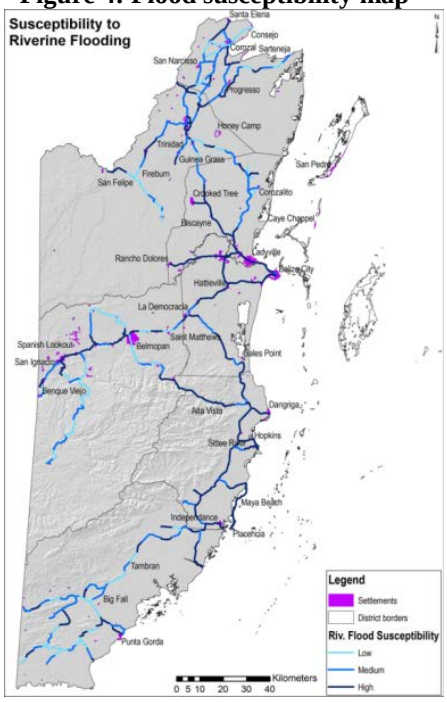
Figure 3: Flood susceptibility analysis approach



Susceptibility is composed of two criteria (dark blue and dark orange boxes), which are composed of multiple indicators (light blue and light orange boxes). The weights are presented by the percentages on the lower right side of each criterion/indicator.

12. **Result:** The flood susceptibility map (Figure 4) shows road segments with high flood susceptibility, especially around Belize City in the North-west, West and South-west directions; around Dangriga in the North as well as North-west directions; between Dangriga and even south of Independence; and from Belmopan in the Western direction. In the Northern part of the country a small-scale mosaic of high, medium and low hazard expands, while the roads south of Tambran seem to be generally less prone to floods.

Figure 4: Flood susceptibility map[29]

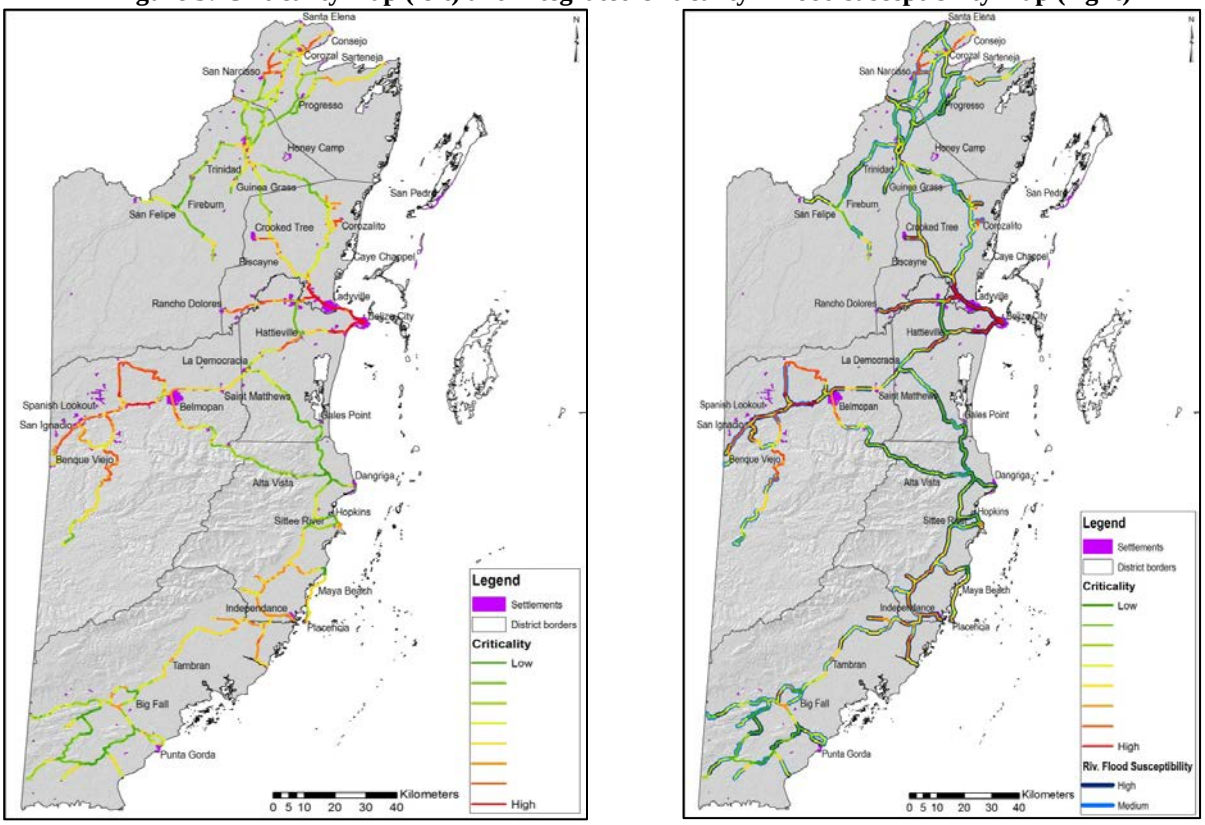


(3) Integration of Criticality and (Flood) Hazard Levels

13. The final step combined the results of the criticality assessment and flood analysis. For each road segment both rankings were overlain, and those stretches with the highest criticality and flood susceptibility levels were selected as priority for vulnerability reduction and climate change adaptation investments. Four "priority areas" were identified for potential BCRIP investments (Figure 5). These priority areas are characterized in detail below:

[29] Figure 4 and Figure 5 are based on the MCE analysis.

Figure 5: Criticality map (left) and integrated criticality - Flood susceptibility map (right)



14. **Greater Belize City area:** The primary and secondary roads ranked high in the criticality analysis and the flood susceptible assessment. This area includes the George Price Highway from Belize City to Mile 20, the Philip Goldson Highway from Belize City to just beyond the junction with the Old Northern Road in San Hill Village, and the Bermudian landing Road from the Junction with the Burrel Boom Road to Ranch Dolores. The existing road safety project on the George Price Highway from Belize City to Belmopan does not currently include any flood mitigation works. The Caribbean Development Bank will have a road works investment on the Philip Goldson Highway from Belama in Belize City to the Philip Goldson International Airport. It is anticipated that the works will include flood mitigation and climate resilience measures. No project has been identified for the road segment from the Airport Junction to the Old Northern Road or for the Bermudian Landing Road.

15. **West of Belmopan:** The roads with high criticality and flood susceptibility include the George Price Highway from Mount Pleasant Creek west towards San Ignacio, and the Guatemalan border; La Gracia Road, Valley of Peace Road, San Antonio Road, and Pine Ridge Road starting at the Georgeville Junction. An investment is being planned for the section of the George Price Highway, from the Agricultural Show Grounds to the Western Border - works are expected to include flood mitigation and climate resilience measures. No investments have been identified for the other roads in this area.

16. **Northern area around Corozal:** In this area, the roads with the highest criticality and flood susceptibility include roads near San Narciso Village, the road to Consejo Village and the

road to Sarteneja. There are investments on the road to Sarteneja from Orange Walk Town but not on the road from Corozal. The San Narciso - San Victor Road is currently being upgraded to paved standard with EU Grant Funds.

17. **Southern area around Independence:** The roads in this area have medium criticality and medium to high flood susceptibility. These include the Southern Highway from Maya Centre to Bladen, the Trio Road, the Independence Road, and the road to Monkey River. There are currently no on-going projects in the area, and most of the roads are paved with the exception of the segment connecting the highway to Monkey River and the Trio Road.

18. The first indicative sub-project that has been identified is located in the Greater Belize City area and covers the Philip Goldson Highway from the Airport Junction up to mile 20. This proposed intervention was endorsed by Cabinet, and procurement of the feasibility study will be initiated soon. Feasibility studies is being advanced utilizing funds from the PPF and detailed technical designs will be completed by the first year of implementation. Additional sub-project sites will be reviewed and agreed by year two of implementation.

INVESTMENT COMPONENTS FOR BCRIP

19. The objectives of the Project are: (a) to enhance the resilience of road infrastructure against flood risk and impacts of climate change; and (b) to improve the Borrower's capacity to respond promptly and effectively in an Eligible Crisis or Emergency, as required.

20. **Project Components.** The BCRIP will finance climate resilience activities under the following four mutually reinforcing components:

21. **Component 1: Climate Resilient Infrastructure (US$21.500 million).** This component aims to reduce physical vulnerability of infrastructure through the retrofitting and rehabilitation of existing infrastructure within the primary and secondary road network including associated drainage and flood mitigation systems in order to strengthen their resilience to natural hazards and the anticipated impacts of climate variability. Activities will be comprehensive in nature and include key risk reduction investments such as, river bank strengthening, small scale flood mitigation improvements, rehabilitation and replacement of critical small-scale bridges, slope stabilizations and road improvements[30].

22. This component will also finance supporting studies required for the development of physical works packages such as; in-land flood studies related to the design of specific river defenses, hydrologic/hydraulic investigations, geotechnical investigations and associated pre-engineering and engineering efforts required to support engineering design options and final detailed designs solutions. During the execution of the proposed physical works, climate resilient design standards and hazard/risk analysis will be integrated into each sub-project, including specific preparation processes to ensure the design and construction of climate resilient infrastructure.

[30] Most of road networks in Belize are single lane.

23. **Component 2: Technical Assistance for Improved Climate Resilience Management (US$4.925 million).** This component aims to strengthen the capacity of relevant technical line ministries, Ministry of Works and Transportation (MoWT) and Ministry of Natural Resources and Agriculture (MNRA), to mainstream climate resilience considerations into core physical and investment planning. The Component will explore mainstreaming and incorporating gender inclusiveness into the design and implementation of various TA activities and indicators will be disaggregated and collected by gender. Technical assistance provided under this component will include four mutually-reinforcing core activities: 1) mainstreaming climate variability considerations into the existing land-use and territorial planning decision making process; 2) support the deployment of an information platform and complimentary data management infrastructure; 3) strengthen (preventive) infrastructure maintenance and asset management; and 4) strengthen institutional coordination and capacity to implement the DRM and climate resilience policy framework. The component will aim to strengthen the human resource capacity available to the MNRA and MoWT through targeted training, and equipment and knowledge acquisition. Specifically, the proposed component will support:

24. *Component 2A – Support to MNRA. a) Provide support to strengthen and implement NSDI Policy*: Through a cabinet decision, on August 2012, the Government of Belize (GoB) passed a policy to implement the National Spatial Data Infrastructure (NSDI). The Land Information Center (LIC), within the MNRA, is responsible for implementation and management of NSDI. The NSDI policy envisioned that geo-spatial data would be collected and housed in a repository, would be made available to different government agencies and individuals, and be manipulated and disseminated through a transparent digital spatial data management system. The GeoNode platform, one component of NSDI, has already been adopted in Belize. Activities to sustain and successfully implement NSDI will be supported through technical support for improved land-use and territorial planning as well as the development of an information baseline and complimentary data management platform. It will target relevant technical staff within the MNRA - notably the Land Information Center (LIC) and the Physical Planning Unit (PPU) - and include technical and gender training to enhance human capacity. This component builds on the technical assistance under the GFDRR/EU-ACP grant. Specific activities will include assistance to the LIC in the following areas; listing, consolidation and availability of the existing GIS databases, establishment of data sharing protocol, acquisition of relevant hardware and software, and development of training programs tailored to the needs of LICs and other government staff.

25. b) *Mainstreaming climate resilience into land use planning*: The proposed component will support the PPU to promote the use of geospatial information and open-source technology in land-use and territorial planning processes for the new Land Use Policy Framework. In particular, it will enhance the use of hazard maps and disaster-informed decision making tools. This will help to visualize current and future hazards and amplified impacts associated with climate change.

26. The GoB prepared and endorsed a national Land Use Policy and Integrated Planning Framework that needs to be made operational. The planning framework is generally accepted and it is being used informally to guide the preparation of municipal development plans under the Belize Municipal Development Project (BMDP). However, action is required to formalize its adoption. This component will review the policy and framework to look at the way it is being

applied under the BMDP, and begin to prepare a plan to fully formalize and operationalize them. In particular, the component will incorporate climate resilience and risk management into the land use planning framework, which is currently absent. As part of the efforts to make them operational the review could lead to some modifications in both the policy and the framework. Additionally, this component will support the development of an information baseline and complimentary data management and sharing platform. This platform will underpin the technical assistance activities by promoting the use of geospatial technology in the land-use and territorial planning processes. It will also establish data sharing protocols to facilitate sharing and accumulation of knowledge relevant to land-use, territorial planning, and disaster risk management. These activities will help the GoB to establish the required institutional capacity and analytical foundation to create an information platform and integrate risk analysis into the land-use and territorial planning decision-making processes, disaster risk management and resilience building.

27. *Component 2B – Support to MoWT.* Targeted technical assistance and training will be financed under this component to strengthen the ministry's infrastructure maintenance and asset management capacities. In particular Component 2B will support the implementation of the road maintenance strategy (RMS), recently adopted by the MoWT, and the creation of the road maintenance unit (RMU). The component will finance technical assistance to help the GoB elaborate a specific time bound action plan for implementation of the RMS and creation of the RMU. The action plan may cover legal and institutional reforms, such as the creation of a road maintenance fund, to address chronic underfunding of road maintenance. This component will also finance the development of improved road design standards that take into account climate risk and incorporate appropriate mitigation strategies, which would be applied to all publicly financed capital investments in the transportation sector. The road design standards would incorporate socio-economic parameters and take into consideration measures to build resilience in the infrastructure for a 1 in 50 year rainfall event. Finally, the component will support the development and implementation of specific measures to enhance the operations and maintenance capacity of the MoWT. Under the PPA, an institutional assessment of MoWT will be carried out to take stock of the organizational and equipment requirements to support the ministry in their role.

28. To this end technical assistance will be provided through the following activities: develop TOR and help train a representative steering group; organize study tour and other knowledge transfer/dissemination activity; support to develop action plan and modalities for review and approval; accompany early stages of implementation of recommendations, including drafting of any key legal or institutional reforms. Key outputs for the TA are expected to be delivered during the first two years of the project.

29. **Component 3: Project Management and Implementation Support (US$2.000 million).** The Belize Social Investment Funds (BSIF) will be responsible for all fiduciary and safeguard controls and their application. All technical and coordination responsibility will be managed by MoWT and MNRA. The project will finance a safeguard specialist, a financial management specialist and a procurement specialist to be housed within BSIF. The project will also finance a Project Coordinator and a Senior Project Engineer, who will be housed within MoWT. This component will finance activities that relate to institutional support and capacity

development for project management and execution to ensure compliance with fiduciary controls, supervision, monitoring and reporting, and compliance with social and environmental safeguards. The component will fund the provision of technical advisory services, training, operating costs, and acquisition of goods. Activities will include training, staffing and development activities associated with project execution such as coordination, evaluation, supervision and implementation. The component will also support the strengthening of BSIF's fiduciary capacity. In particular, mainstreaming sustainable public procurement functions and setting up a department with adequate staff.

30. **Component 4: Contingent Emergency Response (US$1.000 million).** The absence of a sufficient and readily available funding mechanism in the aftermath of disasters has hindered the GoB's ability to respond rapidly, and has slowed down long term reconstruction efforts. Designed as a mechanism to implement the GoB's rapid response to an emergency, this component would enable the project to finance emergency recovery activities and reconstruction sub-projects under an agreed CERC OM. This component will enable the immediate disbursement of funds and allow the GoB to request a reallocation of project funds to partially cover an eligible crisis or emergency. A crisis or emergency eligible for financing is: an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact to the Borrower, associated with a natural or man-made crisis or disaster. However, if no adverse natural event occurs during the lifetime of the Project, the component will not be activated.

31. **Conditions to trigger the CERC**. This emergency component may be triggered if the following conditions are met: (i) the GoB has determined that an eligible crisis or emergency has occurred and has furnished to the Bank a request to include said activities in the CERC for emergency response; (ii) the GoB has prepared and disclosed all safeguards instruments required for said activities; (iii) the Borrower has adopted the CERC OM in form, substance and manner acceptable to the Bank. A specific OM for this component will be prepared detailing financial management, procurement, safeguards, and any other necessary implementation arrangements.

32. **Implementation of the CERC**. Disbursements are expected to be in the form of two types of expenditures, namely critical imports and rehabilitation or reconstruction activities - including civil works and related goods and services. Disbursements would be made against a positive list of eligible critical imports or the procurement of goods, works, and consultant services needed for the Borrower's economic recovery. The final arrangements would be part of the written agreement between the Borrower and the Bank that is a condition for disbursement of this component. 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 an emergency.

33. **CERC Operations Manual (OM)**. The OM would describe: (i) the actions to be taken by the GoB when a crisis or emergency occurs; and (i) the monitoring and evaluation, and reporting arrangements on the emergency response. In addition, the OM draws together in one place information about: (i) the country Coordinating Authority for the CERC; (ii) the roles and responsibilities of implementing and oversight bodies in the context of the CERC; (iii) the arrangements on procurement, financial management, safeguards, and disbursement for the activities financed under the CERC; (iv) eligible expenditures under the CERC; (v) a positive list

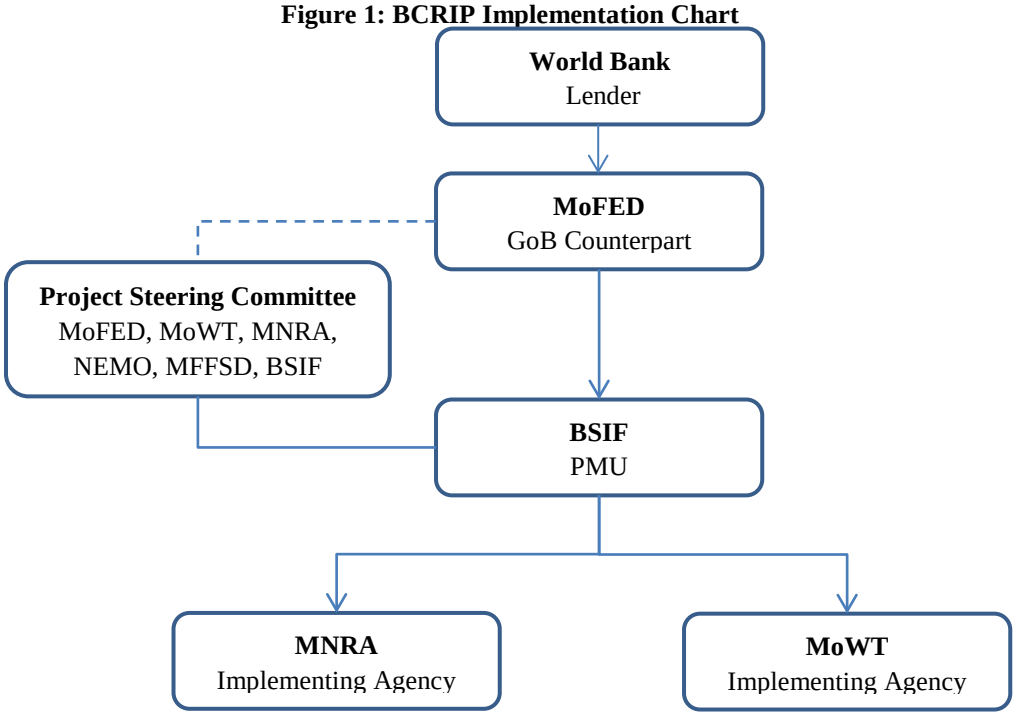
of goods, if applicable; and (vi) criteria to determine that a crisis or emergency has occurred. Approval of the CERC OM by the Bank and adoption by the Borrower is required for the CERC to be effective.

Annex 3: Implementation Arrangements
BELIZE: Climate Resilient Infrastructure Project

1. The BCRIP is a multi-sectoral project with a unifying theme focused on building climate resilience and mitigating climate risk (especially related to potential for flood damage) through infrastructure investments and capacity building of key public sector institutions. Given the nature of the Project, more than one agency will be involved – it will require a number of institutions to work together effectively (some of which may have not worked together in the past), and combine their respective mandates and comparative advantages to move the project forward.

2. The implementation arrangements will include the participation of institutions at four levels; (i) the Ministry of Finance and Economic Development (MoFED) will be the main GoB counterpart, and the overarching institution in charge of executing the project, (ii) a Project Steering Committee (PSC), under the chairmanship of MoFED, will provide project oversight, (iii) the Belize Social Investment Fund (BSIF) will be the project management agency responsible for overall coordination of the BCRIP, a Project Management Unit (PMU) was created within BSIF, and (iv) technical line ministries, MoWT and MNRA, will be the implementing agencies for specific components of the project. In addition several institutions will be involved through an advisory or supplementary capacity, such as National Emergency Management Organization (NEMO), and the Ministry of Forestry, Fisheries and Sustainable Development (MFFSD). All of these institutions are represented in the Project Steering Committee (PSC) which has been in place since November 2013. The figure below shows the implementation arrangement of the Project.

Figure 1: BCRIP Implementation Chart



3. The justification for this organizational structure is as follows:

(i) Ensures the active participation and leadership of MoFED. MoFED has the ultimate responsibility in the delivery of the country's strategy and climate resilience program, and is the point of contact with the World Bank in Belize;

(ii) Provides a place for BSIF to be the management agency for the project. BSIF is currently managing the Bank financed BMDP and is familiar with Bank procedures and requirements, in areas such as procurement, financial management, social and environmental safeguards;

(iii) Leaves the principal responsibility for implementation to technical agencies. The MoWT, responsible for road infrastructure, construction, maintenance and management. The MNRA, responsible for land use and physical planning. The project will also support these agencies to improve their capacity to carry out these functions;

(iv) Allows other agencies to be involved, as potential providers of technical advice/support or as consumers/users of the products and services generated through the project, such as NEMO which has an overarching national responsibility in emergency management.

Roles and Responsibilities

4. *PSC,* chaired by MoFED, will provide general oversight to ensure project objectives are being met and annual work plans for the project are approved and implemented. It is the main decision-making body for the project and has to approve all matters relating to, inter alia: the use and allocation of funds, bid evaluation and contract awards, and project audits.

5. *MoFED* will ensure the project conforms to all obligations in the Loan Agreement and any other subsidiary agreements during project implementation. MoFED was responsible for setting up the PMU within BSIF, and will oversee its performance.

6. *BSIF* will be the project management agency, with overall control of, administration and management related to procurement and finance, including preparation of required reports for the GoB and World Bank. It will ensure safeguard requirements are being followed and will conduct regular planning and monitoring of activities jointly with the implementing agencies. Regarding procurement, BSIF participates in but does not chair bid evaluation committees, and endorses contracts for goods, works and services signed by MoWT and MNRA for their respective activities. A PMU was created within BSIF (in place since September 2013) and includes a Project Coordinator, administrative staff and specialist such as – financial accountant, procurement specialist, contract management specialist, environmental specialist, and a social development specialist. During project implementation the PMU will also be able to call on other BSIF staff, as required, especially those with knowledge of Bank policies and procedures. The PMU has prepared the Operations Manual and will ensure that all institutions participating in the project will be able to access it, as well as any future updates.

7. *MoWT* is generally responsible for the construction, supervision and maintenance of public roads in Belize. It will have the responsibility to take over and maintain public road assets created or rehabilitated through the project. The Inter-Ministerial Agreement outlines specific

responsibilities for MoWT as an implementing agency, it was formally signed and adopted in January 2014. Under the Inter-Ministerial Agreement MoWT has the following main responsibilities: conduct and approve feasibility studies, designs and cost estimates for works; chair bid evaluation committees, approve any procurement activity carried out by BSIF and sign contracts for goods, works and services; carry out technical supervision of works, facilitate MoFED and BSIF access, manage and resolve disputes related to the works and their impact on affected populations. To support MoWT to manage the project related work load it was agreed that a senior project engineer will be recruited to work as a ministry focal point. The Focal point will liaise with the Chief Engineer to ensure obligations in the agreement are carried out and will act as a link to BSIF on all technical matters.

8. *MNRA* is generally responsible, inter alia, for the management of public lands, land registration, physical planning and land-use control. It will play a critical role in improving the information base to carry out these functions – for example in terms of accuracy, accessibility and linkages to be created with NEMO, and any other uses of information related to building climate resilience and mitigating risks. As with MoWT, there is an Inter-Ministerial Agreement which outlines specific responsibilities for MNRA, it was signed in April 2014.

Review Mechanism

9. The proposed implementation arrangements are intended to cover the full life of the project, and it was included in the ToR for the PSC and in the respective Inter-Ministerial Agreements. However, it would be prudent to provide a mechanism to periodically review that arrangements are complete and effective, particularly as the project moves forward with implementation and new challenges arise. To this end the PSC, under the leadership of MoFED, will carry out an annual review in the final quarter of the year. This will be done in conjunction with the preparation and approval of the annual work plan to identify any changes that might be required.

Financial Management, Disbursements and Procurement

10. Financial management, disbursement, and procurement of the Project will be undertaken by BSIF, which has experience implementing Bank-financed projects. Financial management and procurement capacity assessments of BSIF were carried out during project preparation to ensure that the relevant systems satisfy the Bank's minimum fiduciary requirements under OP/BP 10.00 and 11.00.

Financial Management

11. The FM capacity assessment identified the following risks: a) although BSIF has experience in managing Bank-funded projects, BSIF's financial unit will be required to work closely with other line ministries/agencies such as MoWT, MNRA and NEMO in the implementation of BCRIP activities that fall under the responsibility of these line ministries/agencies. This is a challenge given that these agencies will be responsible for the technical aspects of the project while BSIF will be responsible for the fiduciary functions and (b)

BSIF's financial unit is also responsible for supporting procurement activities but have not received any procurement-related training.

12. Mitigation measures to address the above risks have been agreed to include: (a) Training to BSIF and line agencies on the Bank's fiduciary requirements, (b) clearly defined roles and responsibilities of BSIF and the various line agencies in the Operations Manual, and (c) procurement, risk assessment and internal control framework training to relevant BSIF staff to improve overall project monitoring and coordination.

13. Overall, the residual financial management risk after mitigation measures for the project is assessed as Moderate.

Budgeting

14. BSIF will prepare an annual work plan and budget which will identify the detailed project activities. The annual work plan and budget will be submitted to the Project Steering Committee for approval, and thereafter to the Bank, for no objection. The annual work plan and budget will be consistent with the agreed format of the project IFRs. BSIF is required to conduct regular budget vs. actual variance analysis, report them on the semi-annual IFRs, provide reasons why differences occur between the planned (budget) and actual expenses if any, and take necessary actions to ensure the project is implemented as planned.

Funds Flow

15. The Bank loan proceeds will flow from the Bank into a project Designated Account (DA), denominated in USD, at the Central Bank of Belize. All bank withdrawal applications will need to be signed off by the authorized representatives from MoFED via the Bank's Client Connection. The ceiling of the DA was discussed and agreed between the Bank and the borrower during the project negotiation and will be specified in the Bank's Disbursement letter.

16. Further advances will be made from the DA to an operating account (OA) to be opened at the Scotia Bank. The OA will be managed by BSIF and transfers from the DA to OA will be reviewed and approved by MoFED. The payments to be made from the OA will be verified and approved by the BSIF Accountant and the BSIF Executive Director. The OA will be maintained in BZ$ by BSIF, and the ceiling of the OA should be an equivalent of [US$1,500,000]. Uses of the advance to the OA should be reported and reconciled with the DA on a monthly basis. The outstanding balance of the OA should be reported as a separate line item on the DA reconciliation statement that is submitted together with the withdrawal applications from the DA

Accounting and Financial Reporting

17. Administration, accounting, and reporting of the Project will be set up in accordance with the Bank requirements, which obligate Borrowers to prepare financial statements in accordance with acceptable accounting standards. BSIF uses the cash basis of accounting for preparing financial statements. BSIF uses QuickBooks computerized accounting software for recording and reporting the project activities. The Unaudited Interim Financial Reports (IFRs) are due

within 45 days following each calendar semester. The format of the IFRs is the same as the annual project financial statements except without the notes to the financial statements. The annual project financial statements will include the following:

- Balance Sheet of the Project;
- Statement of Sources and Uses of Funds by Project Components;
- Statement of Implementation of Loan Proceeds;
- Statement of Designated Account for the Loan; and
- Notes to the financial statements

Internal Control

18. In order to mitigate the project's potential risks in the area of internal controls, regular oversight by MoFED, periodic supervision from the Bank, and annual external audits will serve as the mechanism to ensure that financial management controls are functioning appropriately. In addition, proper authorization for payment requests, segregation of duties, and other relevant internal control mechanisms is clearly defined in the Operations Manual.

External Audit

19. BSIF's consolidated financial statements will be subject to annual external audits by an independent audit firm acceptable to the Bank. Details of the project will be included and disclosed within these annual consolidated financial statements. The annual audit report will be due to the Bank within 4 months after the end of each fiscal year. The Bank will make them available to the public in accordance with the Bank's policy on Access to Information.

Disbursements

20. Four disbursement methods: advance, reimbursement, direct payment, and special commitments are all available for the Project. Supporting documents required for Bank disbursements under different disbursement methods will be documented in the Disbursement Letter issued by the Bank.

21. The Bank loan proceeds would be disbursed against eligible expenditures (inclusive of taxes) as shown in the following table:

Category	**Amount of the Loan Allocated (expressed in USD)**	**Percentage of Expenditures to be financed (inclusive of Taxes)**
(1) Goods, works, non-consulting services, and consultants' services for Part 1 of the Project	21,500,000	100%
(2) Goods, works, non-consulting services, consultants' services, and Training for Part 2 of the Project	4,925,000	100%

(3) Goods, works, non-consulting services, consultants' services, Training and Operating cost for Part 3 of the Project	2,000,000	100%
(4) Emergency Expenditures under Part 4 of the Project	1,000,000	100%
(5) Refund of the Preparation Advance	500,000	Amount payable pursuant to Section 2.07 (a) of the General Conditions
(6) Front-end Fee	75,000	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
(7) Interest Rate Cap or Interest Rate Collar premium	0	Amount due pursuant to Section 2.07(c) of this Agreement
TOTAL AMOUNT	30,000,000	

22. Retroactive financing will be applied for eligible expenditures effective May 13, 2013 up to US$1,500,000 in accordance to the Bank policy and specified in the loan agreement.

23. Disbursement conditions for Component 4. As described in *Annex 2*, paragraph 31.

Procurement Arrangements

24. *Procurement of works*: Works procured under this project will include the retrofitting and rehabilitation of existing infrastructure such as primary and secondary road networks, drainage systems, as well as flood mitigation measures at a total cost of around USD 21.5 million for construction cost. The procurement will be done using the Bank's Standard Bidding Documents (SBD) following International competitive bidding (ICB) and National competitive bidding (NCB). Shopping for small value contracts shall be applied as agreed with the Bank.

25. 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.

26. *Procurement of Goods and non-consulting services*: would include improving the existing GIS databases etc. Goods contracts will be grouped, to the extent possible, into bidding packages of more than US$100,000 equivalent, using the Bank's Standard Bidding Documents (SBD) and following ICB procedures. National Competitive Bidding (NCB) and shopping for small value contracts shall be applied as agreed with the Bank.

27. *Selection of Consultants*: Consulting services would be required under this project for studies required for the development of physical works packages and associated pre-engineering, design and supervision, integration of climate resilient design standards, hazard/risk analysis and climate change impact analysis as well as technical assistance and capacity building to mainstream climate resilience considerations into development planning. 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$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

28. *Operating Costs* mean the following reasonable incremental operational costs (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, and communication services; and (ii) transportation costs, travel and per diem cost for project staff which will carry out supervisory activities under the Project.

29. *Procurement arrangements under Component 4*. 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 4 will be elaborated in further detail in the Operations Manual. Possible list of critical imports eligible under the component include, inter alia: (i) construction materials; (ii) water, land, and air transport equipment, including spare parts; (iii) agricultural equipment and inputs (excluding pesticides); (iv) school supplies and equipment; (v) medical supplies and equipment; (vi) petroleum and fuel products; (vii) construction equipment and industrial machinery; Communications equipment; Seeds and fertilizer; and (viii) food and water containers and any other items which may be acceptable to the Bank and agreed to by the Borrower and the Bank. For Goods on the Positive List, 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 may be followed, provided they are acceptable to the Bank.

Procurement Assessment

30. *Procurement Risk Assessment and Management* of the capacity of the Implementing Agency was carried out in May-December 2013 for the Project by the Bank's procurement accredited staff in line with the Procurement Risk Assessment and Management System (PRAMs) Module. The PRAM Questionnaire was completed by BSIF as the project management unit responsible for the fiduciary aspects to implement procurement actions under the project. The assessment further reviewed the inter-ministerial organizational structure for implementation of procurement under the Project, and the interaction between the procurement staff in BSIF with MoWT in the procurement cycle and contract management (detailed in Matrix of Procurement Actions in the OM). The overall Project risk for procurement is rated as moderate. This is based on the assessment of the capacity of BSIF and MoWT, after taking mitigation arrangement for procurement implementation under this project as agreed below:

31. Procurement to be conducted by BSIF and MoWT shall be carried out in compliance as agreed in the project Operations Manual, Appraisal Documents (PAD) and Loan Agreement.

32. *Action Plan in Strengthening the Capacity to Implement Procurement Actions:*

a. The BSIF procurement teams for the Bank-financed projects will explore evolving to the Procurement Department in BSIF, composed of a procurement officer (PO) for each Bank-financed project, a contract management clerk, a legal officer and an administrative assistant, who work across several international funding agencies, including the World Bank. The PO positions shall be selected competitively at national or regional levels. A short term international procurement adviser shall be selected and hired to supervise the BCRIP procurement.

b. The procurement department staff in BSIF and the technical implementation staff in MoWT shall attend training for procurement in the WB regional workshop in 2014. Other technical assistance shall be provided under Component 3 of the project for the institutional setting up and training.

c. The procurement plan for the implementation of the project during the first 18 months shall be agreed at project preparation and included in the PAD.

d. Tender/selection documents for the first year's procurement under ICB and QCBS in the procurement plan should be prepared by BSIF and MoWT and submitted to the Bank for review, by the Effectiveness of the Project (not a condition for effectiveness).

33. **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 May 16, 2014. The full version of PP is filed in the PMU with major packages subject to international selection included in Table A below. The plan shall be made available at the web address http://www.worldbank.org/procure within 30 days of the signature of the Loan Agreement. It will be updated annually and the updated procurement plan shall be disclosed on this site after clearance by the Bank. The recommended thresholds for the use of the procurement methods specified in the Loan Agreement are identified in Table B as the basis for the agreed procurement plan.

34. A General Procurement Notice (GPN) would be published in the UN "Development Business" on -line around the period of Loan Negotiation. For ICB goods and works contracts and large-value consultants contracts (more than US$200,000), Specific Procurement Notice would be advertised in the Development Business on -line and national press.

35. **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 A: Procurement Plan (for the first 18 months)

No.	Contract Category and Type	Description of Contract	Procurement Method	Review by Bank (Prior/Post)	Estimated Date of Award
COMPONENT 1: CLIMATE RESILIENCE INFRASTRUCTURE					
C11	Consultancy Services	Feasibility Study for Rehabilitation of Pavement Failure between Ladyville and Mile 24.5 on Philip Goldson Highway	QCBS	Prior	December-2014
C14	Consultancy Services	Design, cost estimates and bid documents - Rehabilitation of Pavement Failure between Ladyville and Mile 24.5 on Philip Goldson Highway	QCBS	Prior	November-2015
C15	Consultancy Services	Supervision Consultant - Rehabilitation of Pavement Failure between Ladyville and Mile 24.5 on Philip Goldson Highway	QCBS	Prior	April-2016
W1A, W1B	Works	Rehabilitation of Pavement Failure between Ladyville and Burrel Boom on Philip Goldson Highway – Lot A Rehabilitation of Pavement Failure between Burrel Boom Junction and Mile 24.5 on Philip Goldson Highway – Lot B	ICB (pre-Q)	Prior	September-2016
C16	Consultancy Services	Feasibility Studies – Flood Alleviation – Mt Pleasant Mile 46, George Price Highway	QCBS	Prior	July-2016
C17	Consultancy Services	Design, cost estimates and bid documents - Flood Alleviation – Mt Pleasant Mile 46, George Price Highway	QCBS	Prior	June-2017
C18	Consultancy Services	Supervision Consultant - Flood Alleviation – Mt Pleasant Mile 46, George Price Highway	QCBS	Prior	September-2017
W2	Works	Flood Alleviation – Mt Pleasant Mile 46, George Price Highway	ICB (pre-Q)	Prior	September-2017
COMPONENT 2: TECHNICAL ASSISTANCE FOR IMPROVED CLIMATE RESILIENCE MANAGEMENT					
2A – MINISTRY OF NATURAL RESOURCES and AGRICULTURE (MNRA)					
G8	Goods	Provide specialized Hardware/ software & Training – LIC in MNRA	ICB	Prior	July-2015
C6/C7	Consultancy Services	Consultancy to provide technical assistance for the National Land Use Management Plan I&II	QCBS	Prior	August-2014
G9	Goods	Provide specialized Hardware/ software & Training – PPU in MNRA	ICB	Prior	April-2015
2B – MINISTRY OF WORKS and TRANSPORT (MoWT)					
G10	Goods	Provide specialize hardware/software and training - MoWT	ICB	Prior	February-2017
G6	Goods	Technical equipment, including engineering test and field equipment, multiple equipment purchases of various types package I – RMU MoWT	ICB	Prior	February-2017
G7	Goods	Technical equipment, including engineering test and field equipment, multiple equipment purchases of various types package II - MoWT	ICB	Prior	April-2018

Table B: Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value (Threshold) US $ thousands	Procurement Method	Contracts Subject to Prior Review
1. Works	>1500	ICB	All
	<1500	NCB	First contract and above USD800K
	<150	Shopping	None
2. Goods and Non Consulting Services	>100	ICB	All
	<100	NCB	First contract
	<50	Shopping	None
	Regardless of value	Direct Contracting	All
3.Consulting Services			
-3.A Firms	≥100	QCBS,QBS,FBS, LCS	All
	<100	QCBS,QBS,FBS,LCS, and CQS	First contract
	Regardless of value	Single Source	All
-3.B Individuals	Regardless of value	Comparison of 3 CVs in accordance with Chapter V of the Guidelines	None
	Regardless of value	Sole Source	All

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

Social (including safeguards)

36. Regarding the social impacts of Component 1's climate resilient infrastructure on the primary and secondary road network, the main permanent adverse impacts will be; (1) the loss of property and assets due to displacements and relocation of individuals/families occupying road reserves related to road widening, diversion of existing road and/or drainage purposes. Most of the encroachments on road reserves, and thus the highest proportion of related impacts, are in Greater Belize City Area; and (2) Loss of land and other assets (buildings, fences, crops, vendor stalls, driveways, signs etc.) from expropriation, removal, acquisition and demolition. For this reason, a Resettlement Policy Framework was prepared by the Borrower to provide step-by-step guidance for actions to be taken during implementation. During implementation, feasibility studies on different road alignment design options or alternatives will include social criteria related to physical impacts to influence the final decision of which works will be financed. Once defined, the PMU will carry out specific social assessments, by collecting specific gender-disaggregated baseline data on the project-affected population through qualitative methods like same-sex focus groups to identify potential gender-differentiated needs, concerns, usage patterns and participation expectations. The data will include analysis of potential impacts of the project's physical infrastructure under Component 1 and a census of affected persons in the subproject site to define the types of impacts and exact number and location of affected third parties. Abbreviated resettlement action plan(s) will propose actions based on this data and according to

the disclosed framework. All compensation costs and land acquisition will be covered by the Government of Belize, while other related resettlement costs can be covered with loan proceeds.

37. The findings of the project's social assessment indicate that no adverse impacts are foreseen to affect the Mayan and Garifuna communities in the project's sphere of influence, especially in the Southern Area around Independence. Moreover, the BCRIP-financed investments and activities are not expected to affect collective lands or the lands included in the Mayan Land case now at the Caribbean Court of Justice. However, in order to secure culturally appropriate consultation and access to project benefits, a Culturally Appropriate Participation Framework was prepared and disclosed to establish consultation protocols for on-going consultation with indigenous communities during implementation if subprojects within the Southern Area around Independence are proposed for financing. Precise guidelines to carry out free, prior and inform consultation are outlined and the need to achieve broad community support for subprojects affecting indigenous communities is stated. Moreover, the framework provides guidance on the preparation of Culturally Appropriate Participation Plan (CAPP). The CAPP is prepared in consultation with affected communities and sets out measures that ensures, a) project affected communities receive culturally appropriate social and economic benefits; and b) when potential adverse effects are identified, those adverse effects are avoided, minimized, mitigated or compensated.

38. Proposed project activities aim to mainstream gender dimensions into Belize's DRM planning processes through actions such as discrete *gender in DRM* training for the MNRA and the MoWT, gender-disaggregated data and indicators in monitoring and evaluation, as well as fostering women as participants and champions to increase effectiveness of DRM policies and efforts.

Environmental (including safeguards)

Environmental and Social Assessment Management Framework

39. Potential adverse environmental impacts on human populations or environmentally important areas are site-specific, and are related to small-scale retrofitting and rehabilitation works which are expected to be mainly localized, temporary and readily manageable. Since the exact location and/or nature of potential small investments to be financed under this project have not yet been determined, an Environmental Management Framework has been prepared to conform to Bank safeguard policies. This will provide the framework within which EIAs and/or EMPs will be developed. The EMF includes a process for sub-project screening and a delineation of the Environmental Assessments (EAs) and/or Environmental Management Plans (EMPs) appropriate to the types and scale of the impacts. Environmental and Social safeguard documentation complies with both World Bank safeguards policies and the national policies and regulations of Belize. Sub-project EAs, EMPs, RAPs will be prepared, implemented, and monitored during the project implementation phase.

Anticipated Impacts

40. In general, impacts for the type of work anticipated under the project are expected to be moderate in nature and will be managed through the application of appropriate engineering and management measures.

41. The EMF provides a screening mechanism for screen sub-projects to ensure that no significant degradation or conversion of natural habitat will occur. In cases where sub-projects are located in the vicinity of natural habitats (without imposing significant degradation or conversion) appropriate mitigation measures will be adopted, and will be described in the EMF and subsequent EAs. In such cases, consultations will be held with local conservation NGOs and the Ministry of Environment to ensure that care will be taken to schedule civil works to avoid key breeding and nesting periods, should the projects be located in the vicinity of nature reserves or Protected Areas. All construction sites will be rehabilitated and re-vegetated with native shrubs and trees. Re-vegetation will be undertaken along embankments and contiguous areas after works are completed. In areas that the project may affect roads and bridges, road safety measures and traffic diversion plans will be adopted, and any construction waste will be disposed of appropriately, following measures delineated in the EMF.

Applicable Safeguards Policies

42. The following World Bank safeguards policies were triggered, and are likely to apply to individual subprojects: Environmental Assessment (OP/BP 4.01); Natural Habitats (OP/BP 4.04); Indigenous Peoples (OP/BP 4.10); and Involuntary Resettlement (OP/BP 4.12) are likely to apply to individual subprojects. In addition, Physical Cultural Resources (OP/BP 4.11) is triggered. While activities to be carried out under the Project are not expected to impact any known cultural heritage sites, technical specifications for works will include "chance find procedures" to be followed in the event that culturally significant materials are discovered during the execution of civil works.

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[X]	[ ]
Pest Management (OP 4.09)	[ ]	[X]
Indigenous Peoples (OP/BP 4.10)	[X]	[ ]
Physical Cultural Resources (OP/BP 4.11)	[X]	[ ]
Involuntary Resettlement (OP/BP 4.12)	[X]	[ ]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Disputes over Defaults on External Debt, Expropriation, and Breach of Contract (OP/BP 7.40)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[X]	[ ]

Safeguards Compliance Procedure during Implementation

43. As subprojects are finalized, the following process will be undertaken:

44. Environmental and Social Baseline Assessment: For each of the subprojects, an assessment will be undertaken based on an analysis of impacts, World Bank safeguards policies and the national legislation of Belize. On that basis, requirements for an Environmental Impact Assessment (EIA) and/or an Environmental Management Plan (EMP), Resettlement Action Plans (RAP) and Culturally Appropriate Participation Plans (CAPPs) will be identified.

45. Preparation of Documentation*:* After the assessment of the subproject, the EMP, EIA RAP and/or CAPPs will be prepared in order to develop and implement mitigation measures for any impacts identified. These will need to be submitted and cleared by the Bank, and completely implemented (associated compensation paid), prior to sub-project works.

46. Review and clearance: In Belize, protection of the environment from degradation is primarily the responsibility of the Department of the Environment (DOE) under the portfolio of the Ministry of Forests, Fisheries and Sustainable Development (MFFSD). Notwithstanding this, environmental protection also lies within the purview of other agencies. The Forest Department has responsibility for protection of terrestrial ecosystems generally and provides management oversight through the issuance of licensing, monitoring and enforcement of the pertinent local laws. The Geology and Petroleum Department is legally tasked with oversight for dredging, mining and oil exploration activities. The BCRIP subprojects will abide by the relevant laws, guidelines and licensing processes of each of these Government of Belize agencies In addition to the issuance of the environmental permit by the DOE, SIF will be in charge of assessing whether the draft EIA/EMP responds adequately to the requirements of this framework. The World Bank will undertake review of the implementation of the framework including the quality of the EIAs/EMPs as part of the regular supervision.

47. Implementation: The applicable mitigation measures identified in the EIAs/EMP(s) will be incorporated into the bidding and contract documents. SIF and the contracted construction supervisor will supervise the implementation of the provisions related to the mitigation measures. RAPs and CAPPs will be implemented by the BSIF together with the technical line ministry. Projects will commence works only after sub-project RAPs and CAPPs have been cleared by the Bank, fully executed and any compensation has been paid.

48. Consultation and Disclosure: Consultations on the EMF were held in February 2014 with key stakeholders including: Sarteneja Alliance for Conservation and Development, Corozal Sustainable Future Initiative, the Belize Audubon Society, Toledo Institute for Development and Environment (TIDE Belize), the Cayo District Association of Village Councils. Their concerns and suggestions will be incorporated into the environmental management procedures during project implementation (for example, public awareness campaigns, sustainable management of construction camps, need to avoid or take appropriate mitigation measures in RAMSAR[31] sites, etc).

[31] Secretariat of the Convention on Wetlands of International Importance (RAMSAR)

49. The EMF was disclosed in the Bank's website on March 19, 2014 and in Belize on March 21, 2014.

50. Consultations will be undertaken as part of the development of the subproject documentation, and consultations will be held with concerned stakeholders prior to approval of the individual EA/EMP. In addition, a mechanism for grievance redress will be included in the EMP to allow for feedback during its implementation. The individual EMPs as they become available will be made available to the public through ASDU.

51. Monitoring and Reporting: Supervision reports for individual works and consolidated bi-annual reports will be developed. The Bank team will supervise implementation of the agreed plans during regular missions to Belize.

52. A high quality EMF, RPF and CAPF has been prepared for the project, which provides an excellent set of guidelines for the preparation and monitoring of sub-project environmental and social documents. Although the environmental specialist for the project has just been hired, and as such the level of in-house capacity for environmental compliance remains somewhat limited, environmental specialists and project managers from SIF took part in a workshop on World Bank safeguards and best environmental/social management practices for disaster risk management held in St Lucia in May 2014.

Consultations and Disclosure of Safeguards Documents

53. Consultations on the EMF were held with concerned stakeholders in February 2014. Minutes of these consultations were incorporated into the EMF. The EMF, including any EIAs/ EMPs for identified sub-projects, (after in-country consultations are held with project affected people and key stakeholders including civil society organizations, community leaders, research and academic institutions and Government authorities) were cleared by the World Bank and disclosed in the Bank's website on March 19, 2014 and in Belize on March 21, 2014. The Resettlement Planning Framework, Culturally Appropriate Consultation and Participation Framework (CAPF) and Social Assessment were consulted on March 26th (in Belmopan with national authorities) and March 29th (in Stann Creek with Mayan leaders), disclosed on the Bank's website on April 15, 2014 and in country on April 15, 2014.

Monitoring & Evaluation

54. The results framework, presented in *Annex 1*, was developed in coordination with GoB. The Bank's core indicators have also been included where applicable. The PMU will be responsible for monitoring and reporting of the performance indicators defined for the Project, which will be reported to the Bank semi-annually. The PMU will assign a dedicated staff responsible for M&E coordinating with line ministries to keep track of progress and outcomes of the Project activities. Component 3 will finance monitoring and reporting activities.

Annex 4: Operational Risk Assessment Framework (ORAF)
Belize: Climate Resilient Infrastructure (P127338)

Project Stakeholder Risks		
Stakeholder Risk	**Rating**	**Moderate**
Risk Description: Given the large number of stakeholders and the multi-sectoral nature of the project, certain groups (government agencies, local communities, and citizens) may potentially be dissatisfied with Project activities and/or feel negatively affected by, or excluded from the project's financing scope. Experiences from the Belize Municipal Development Project (BMDP) highlight the importance of managing expectations on the project implementation from key political stakeholders over Bank-financed projects. While the relationship between the World Bank and the Government of Belize (GoB) in general has improved since the re-engagement in 2009, there was a period in time in which the GoB expressed dissatisfaction over the progress of BMDP, especially before the General Election in 2012.	**Risk Management:** The relationship between the Bank and the Government of Belize (GoB) has improved significantly in recent years, which is also evident in the ownership over the BMDP. In order to better manage expectations from political constituents on the BMDP, the implementing agency, the Belize Social Investment Fund (BSIF), successfully strengthened their communication strategy with the key political stakeholders. BSIF's efforts together with considerable progress in the BMDP resulted in improvements in the perception of Bank-financed projects by the political constituents. The earlier experiences of BMDP demonstrated the importance of managing expectations with key political stakeholders, especially communicating the efforts required to deliver a project, time table, etc. During project preparation, the Bank team clearly explained to the political constituents the project requirement and key milestones. More importantly, the PMU and the Bank team, with the support from a Global Facility for Disaster Reduction and Recovery (GFDRR) Trust Fund, worked closely with key stakeholders to prepare the National Climate Resilient Investment Program (NCRIP) in the past 12 months and brought key policy consensus and discussion around climate resilience and infrastructure investment. As for the proposed project's ownership, as outlined in the County Partnership Strategy (CPS) FY12-FY15, the GoB has prioritized climate resilience and the proposed project is directly in line with this priority. In particular, the GoB demonstrated a strong ownership and leadership throughout the NCRIP preparation and has shown full commitment to the BCRIP.	

	Furthermore, two institutional agreements have been signed between the Ministry of Finance and Economic Development (MoFED), BSIF and (1) the Ministry of Works and Transport (MoWT) and (2) the Ministry of Natural Resources and Agriculture (MNRA), to determine the implementation arrangement and reduce dissatisfaction of the MoWT.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Both	☐		

Implementing Agency (IA) Risks (including Fiduciary Risks)						
Capacity	**Rating**	**Moderate**				
Risk Description: Weak institutional and technical capacity to coordinate and implement integrated and multi-sectoral climate resilience program could undermine the progress towards the development objectives and result in poor quality control and delay in project implementation. In addition, given the novelty of the integrated intervention to mitigate flood risk for the transport sector, it is possible that initial technical designs and investment preparation would require additional technical support. The BSIF has gained experience as a PMU through the Bank financed BMDP. However, the existing implementation arrangement in which there is a separation between technical execution and overall project management (including fiduciary and safeguard aspects) could result in implementation delays, particularly because this type of implementation arrangement has not been tested.	**Risk Management:** The PMU will be staffed with adequate technical personnel who can dedicate their time and provide technical quality control and coordination. In addition, the Project will support project engineers at the Ministry of Works and Transport. In addition, the Bank has discussed with the main counterpart a need to carry out a comprehensive review of current salary level for consultants recruited to support and implement IFI funded projects and further assess if the enumeration package is attractive and sustainable at the current level, in particular compared to private sector level. The Project design is also being simplified and detailed project guidelines are being developed to strengthen the implementation capacity during the Project preparation. Finally, during project implementation, the proposed Project will provide for independent inspections/technical audits through contracts and training for the PMU and relevant ministries in inspection and quality control practices. It will also establish critical path inspection procedures and integrate these into construction contracts.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	In Progress	Both	☐		
Governance	**Rating**	**Moderate**				
Risk Description: One of the reasons why the Bank suspended its program for several years was due to fiduciary concerns within the country as well as perceived governance problems. There	**Risk Management:** BSIF is a well-regarded institution without a strong political interest and has worked with different stakeholders from national and local entities. Under the BMDP, there have been significant capacity improvements of the BSIF in fiduciary aspects. It has recently					

are still perceived risks of accountability and transparency in the country.	introduced measures to enhance its fiduciary performance and safeguards capacity as part of institutional efforts to improve transparency and effectiveness in managing donor funded projects. More specifically, BSIF has institutionalized similar procurement and safeguards guidelines as the Bank's.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	In Progress	Both	☐		
Project Risks						
Design	**Rating**	**High**				
Risk Description: There is a risk associated with the project design since the proposed Project will aim to better integrate design standards for climate resilience and hazard/risk analysis in infrastructure investments, which is a relatively new approach for the implementing agency.	**Risk Management:** Technical consultants will accompany the technical counterpart at the GoB and carry out the assessments together with the key stakeholders, frequent workshops and other dissemination efforts will also help guide the decision-making process. Implementing Agencies and PMU technical staff are being recruited during project preparation utilizing the PPA facility and the proposed activities will also be coordinated closely with the PSC. In addition, the Project will finance one or two project engineers for the MoWT to work on the proposed project.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Both	☐		
Social and Environmental	**Rating**	**Moderate**				
Risk Description: Risk of potential environmental and social impacts related to location of projects prone to natural disasters (flooding, erosion, etc, especially considering the objectives of this project to enhance climate resilience) or not suitable to subproject development due to slopes, potential need to resettle houses and/or businesses on the road reserves or in close proximity, water quality of proposed source, geological characteristics of the area, etc. Limited capacity and experience of the Ministry of Works to apply the guidelines established by the project's RPF and IPPF, given the identified gaps between the national law/practice	**Risk Management:** Sub-Projects screening procedures in the Environmental Management Framework (EMF) would ensure that technical design will respond to the environmental risks associated to the selected site for construction. Sub-projects Environmental Management Plans (EMPs) will require the inclusion of contingency plans, grievance and communication mechanisms. The EMF prepared for the project defines responsibilities safeguards supervision roles of all involved parties including BSIF, line ministries and participating municipalities. Finally, additional training will be provided as needed to strengthen the PMU and Implementing Agency technical staff's knowledge of the Bank's environmental and social operational policies. The technical staff attended a workshop on environmental					

<table>
<tr><td rowspan="2">and the WB’s operational policies.</td><td colspan="6">and social management best practices, and Operational Policies, held in St Lucia in May 2014.</td></tr>
<tr><td>Resp:
Client</td><td>Status:
In Progress</td><td>Stage:
Both</td><td>Recurrent:
☐</td><td>Due Date:</td><td>Frequency:</td></tr>
<tr><td>Program and Donor</td><td>Rating</td><td colspan="5">Low</td></tr>
<tr><td rowspan="2">Risk Description:
Weak coordination among donors could result in potential overlap and duplication in the efforts. Several bilateral and multi-lateral donors are currently supporting climate change adaptation and mitigation programs, however, the systematization and coordination among these interventions are currently not being carried out.</td><td colspan="6">Risk Management:
Under the National Climate Resilient Investment Plan (NCRIP), the Bank has coordinated with the GoB and the key donors in order to systematize the various interventions and approaches currently being implemented by the GoB and the donors. Additional efforts were made to consult with the key multilateral organizations, IDB and CDB to discuss their ongoing programs and to minimize the risk of duplicating efforts.</td></tr>
<tr><td>Resp:
Both</td><td>Status:
In Progress</td><td>Stage:
Both</td><td>Recurrent:
☐</td><td>Due Date:</td><td>Frequency:</td></tr>
<tr><td>Delivery Monitoring and Sustainability</td><td>Rating</td><td colspan="5">Moderate</td></tr>
<tr><td>Risk Description:
Weak monitoring, evaluation, and data collection capacity within the GoB present challenges for the creation of information-based decision making process for investment decision.</td><td colspan="6">Risk Management:
The proposed Project supports establishing an information baseline and data management platform, to assist the GoB in making evidence-based decisions for their infrastructure investment to enhance climate resilience. In addition, the proposed Project supports complementary technical assistance to the key line ministry to promote the use of geospatial technology in the land use and territorial planning process, and for database maintenance and information sharing requirements.

To support BSIF to sustain their efforts beyond the project, a key outcome of the project will be improved capacity of the line ministries to engage in long term planning to build and maintain climate resilient infrastructure investments. Of particular emphasis is analytical and technical support to the MoFED and key line ministries to improve their approach to flood risk management– from an ad hoc system of rehabilitation to a data driven decision making approach that involves long term planning while improving understanding of short term events. In addition, MoWT and MNRA will benefit from further institutional strengthening. Finally, the BSIF/PMU will also receive significant institutional support to enhance its project management capabilities, in particular in the</td></tr>
</table>

	areas of fiduciary and safeguards capacity.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	In Progress	Both	☐		

Overall Risk		
Overall Implementation Risk:	**Rating**	**Substantial**

Risk Description:

As a result of the proposed mitigation measures, which are taking place in part during preparation, the risk at implementation will remain Substantial in light of the multi-sectoral project design, the novelty for some partner ministries, as well as limited data and weak technical capacity in some sectors.

Annex 5: Implementation Support Plan
BELIZE: Climate Resilient Infrastructure Project

Strategy and Approach for Implementation Support

1. The Implementation Support Plan (ISP) draws on the risk profile of the Project (ORAF, *Annex 4*) and aims to enhance the client's delivery quality of the proposed interventions. The ISP focuses on risk mitigation measures and Bank implementation support, including technical, institutional, safeguards (environment, social) and fiduciary aspects. In addition, the ISP focuses on the Bank's support to the PMU to improve its coordination and management capacity given the multi-sectoral nature of the Project.

2. The Task Team Leader (TTL) and technical specialists of the Project will be based in Washington DC. In the first two years, high intensity supervision is expected until the PMU and line ministry are fully familiarized with Bank procedures and requirements and close technical supervision will also be needed until works get mobilized. Initially (at least until mid-term review), the task team will undertake at least 2 supervision missions per year. The frequency of missions thereafter will be determined based on the implementation progress of the Project. Regular supervision by the task team, will focus on the following areas:

(a) **Strategic** – Missions will meet with BSIF and other partner institutions to: (i) review Project activities, (ii) re-confirm strategic alignment of Project activities to the PDO; (iii) ensure the necessary coordination amongst respective stakeholders; (iv) support institutional strengthening of BSIF and initiatives to enhance institutional capacity

(b) **Technical** – The team for the Project will consist of World Bank technical specialists who will review and supervise the execution of the Project components with partner institutions, ensure activities are in-line with the PDO, and make adjustments to the design and procurement plan when necessary.

(c) **Monitoring and evaluation (M&E)** – Ongoing support will be provided to continue to strengthen BSIF's ability to track implementation progress and assess the impact of the interventions; in particular the team will work closely with the PMU to monitor and update the M&E Framework every six months.

(d) **Safeguards** – Bank environmental and social specialists will support BSIF and executing agencies, as needed, in the preparation and consultation process associated with the required safeguard instruments: Environmental Management Framework (EMF) and Resettlement Policy Framework (RPF), Indigenous People's Planning Framework (IPPF), when needed. This support will continue throughout Project implementation, in particular to ensure the application and effectiveness of those instruments. These specialists will: (i) further strengthen BSIF's knowledge and understanding of Bank safeguard instruments and further familiarize BSIF staff with their application; (ii) ensure BSIF has the capacity to undertake environmental and social analyses and develop mitigation approaches; and (iii) ensure regular and close supervision of progress and implementation of the plans.

(e) **Procurement and Fiduciary** – The Bank's financial management (FM) and procurement specialists will provide timely and targeted training to BSIF and possibly other executing institutions and through periodic supervision missions. These specialists will: (i) further

develop BSIF's knowledge and understanding of Bank rules and procedures as well as familiarize PCU staff with their application; (ii) provide further training to BSIF staff on Bank Procurement Guidelines; (iii) ensure BSIF has the capacity to manage the flow of funds and accounting procedures, in line with FM guidelines; and (iv) support BSIF in building its overall FM and procurement capacity to improve and facilitate project management (in the context of this Project, and in general). The supervision strategy for this Project is based on its FM risk rating, which will be evaluated on a regular basis by the FMS in consultation with the TTL. Procurement supervision will also be carried out semi-annually, preferably jointly with the regularly-scheduled Bank supervision missions. The support will focus primarily on contract management and on improving proficiency and efficiency in implementation according to Bank guidelines.

(f) **Client-relations** – The TTL and task team will: (i) coordinate Bank supervision to ensure consistent Project implementation, as specified in the legal documents (i.e. Financing Agreement, operations manual (OM)); and (ii) speak regularly with the client and BSIF to gauge progress in achieving the PDO and address implementation roadblocks as they arise.

Table 1: Skills Mix Required

Skills needed	***# Staff Weeks per FY***	***# Trips per year***	***Comments***
Task Team Leader	15	At least 2	HQ-based
DRM specialist	12	At least 2	HQ-based
Operations Analyst	12	At least 2	HQ-based
Civil/Transport Engineer	12	At least 2	HQ-based
Procurement Specialist	5	At least 2	HQ-based
Financial Management Specialist	5	At least 2	HQ-based
Environmental Specialist	5	At least 2	HQ-based
Social Specialist	5	At least 2	HQ-based
Risk Assessment Specialist	4	1	HQ-based
GIS/Data Management Specialist	4	1	HQ-based
TOTAL	**79**	**At least 2 missions**	

** Skills needed in the team (to be carried through the same or other arrangements in case there is a change of TTLs throughout Project implementation)*

Implementation Support Plan

3. **Project Oversight and Technical Support**. Day-to-day follow-up and support for the proposed Project will be provided by the Bank's TTL assisted by operational support staff based in Washington, DC. Technical specialists in transport, risk assessment, GIS and engineering will also support the project in implementing specific activities. The project will also be supported on a routine basis by procurement, financial management and safeguards specialists. From the side of the GoB the Project Steering Committee, chaired by the MoFED, will provide strategic guidance and oversight during project preparation and implementation. The TTL will liaise with the MoFED after PSC annual review meetings for updates on the strategic direction and on the Project.

4. **Fiduciary Inputs**. Training will be provided by the Bank's procurement and FM specialists before commencement of project activities, and as needed throughout project implementation. Additional training will also occur through regional (hub) level events. The

supervision strategy for this project is based on its FM risk rating, which will be evaluated on regular basis by the FMS in consultation with the task team leader.

5. **Safeguards**. The Project's social and environmental impacts are estimated to be manageable, hence to the extent inputs are required from environmental and social specialists, these will be provided by specialists based in Washington, DC.

Table 2: Estimated Implementation Support

Time	Focus	Skills Needed	Partner Role
First 12 months	• Initiate technical studies and contracts for civil works and provide technical support to technical studies, in particular bringing climate resilience into project civil works feasibility studies and detailed design • Discuss and agree on the scope of TA activities and provide technical support to articulate and develop detailed terms of reference • Initiate capacity building activities for staff with the PCU • Initiate safeguards procedures	• Technical Guidance/ Support • Procurement • FM • Safeguards	NA
12-60 months	• Ensure adequate technical design and timely implementation • Provide technical support on various TA activities by sharing international best practices and expertise • Supervise ongoing works on site and ensure works are implemented on schedule and adequate technical supervision is in place by the PMU/line ministry. • Regular supervision and oversight on procurement/ contracting via the Bank's required no objection and post review • Financial management • M&E	• Technical Guidance/ Support • Procurement • FM • M&E	NA

Table 3: Partners

Name	***Institution/Country***	***Role***
Client (Primary Counterpart)	Ministry of Finance and Economic Development (MoFED)	Project oversight and coordinating the Government of Belize support for the Project. Representative will chair the PSC.
Project Management Unit	Belize Social Investment Fund (BSIF)	Project coordination role, responsible for i) ensuring compliance with agreements spelled out in Financing Agreement; ii) project coordination; iii) fiduciary aspects; and iv) safeguards aspects of the Project. Representative will sit on the PSC.
Implementing Agency	Ministry of Works and Transport (MoWT)	Strategic and technical role, responsible for leading technical components with respect to Works. Representative will sit on the PSC.
Implementing Agency	Ministry of Natural Resources and Agriculture (MNRA)	Strategic and technical role, responsible for leading technical components with respect to i) Physical Planning; ii) Land-Use and Territorial Planning; and iii) National Spatial Data Infrastructure. Representative will sit on the PSC.
Key Line Ministry	National Emergency Management Organization (NEMO)	Representative will sit on the PSC.
Key Line Ministry	Ministry of Forestry, Fisheries and Sustainable Development (MFFSD)	Representative will sit on the PSC.

Annex 6: Economic Analysis
BELIZE: Climate Resilient Infrastructure Project

A. Summary

1. The activities proposed in the Belize Climate Resilient Infrastructure Project (BCRIP) would limit the loss of economic output, contribute to poverty reduction and shared prosperity, improve productivity and reduce travel time by improving roads conditions and reducing traffic interruptions caused by extreme rain events. The potential sub-projects would reduce the likelihood of damage to transportation networks and allowing economic activity to more quickly return to normal levels. The economic analysis for the BCRIP is based on an estimate of the change in benefits, for individuals and society, in the event of an extreme weather-related infrastructure failure. The methodology applies a benefit-cost analysis (BCA) incorporating extreme weather (climate change) risk factors or scenarios. The economic analysis draws from available local data, literature review, and discussions with the local stakeholders[32]. The BCA framework was applied to the Belize City District and would be applied to all sub-projects as part of the feasibility studies.

2. The National Climate Resilient Investment Plan (NCRIP) prioritized road interventions that were crucial to developing climate resilience in Belize. The most vulnerable transportation networks with high connectivity for social, health, education and economic use were identified through the flood susceptibility assessment and the criticality analysis based on a multi-criteria evaluation (MCE) approach. The findings from these analyses highlighted four areas for potential risk reduction intervention, which include the Belize City area, Belmopan West towards San Ignacio and the Guatemalan border, the Northern area around Corozal, and the Southern area around Independence. The economic analysis was conducted for the Belize City area, as an illustrative case, as will be conducted for all sub-projects as part of the feasibility study.

3. **Economic Analysis Results.** The results from the Belize City District case study indicate that the project is economically viable. The Economic Internal Rate of Return (EIRR) of the illustrative case, for a 1 in 50 year rainfall event, evaluated in the analysis ranges from 23 to 26 percent with different climate scenarios. Using a discount rate of 12 percent, the Net Present Value (NPV) ranges from US$25.7 to US$35.1 million for an initial investment of US$13.0 million. Previous research found that the average return on road construction in the developing world is 29 percent.[33] These figures attest to the sizable economic benefits that would result from the activities outlined in the proposed BCRIP.

4. **Rationale for public sector provision or financing of the Project.** Public sector financing is the appropriate funding vehicle as all activities are designed to improve national capacity for disaster risk management and climate change monitoring to support improved integration of risk management principles in national development. Moreover, the Project will

[32] Please see the "Data" section of this report for a more specific discussion of data limitations and suggestions for future improvement.
[33] World Bank (1994), *World Development Report 1994, Infrastructure for Development,* New York, Oxford University Press.

illustrate how integrated, data driven, climate resilience interventions could be applied to the transportation network. The Project would provide a pilot case for which potential public/private options could be considered in the future.

5. **World Bank Added Value.** The World Bank has experience working on climate resilience and disaster risk management (DRM) infrastructure projects in the Caribbean, Central America and globally. The Bank can provide technical assistance and guidance as Belize continues to build capacity and becomes more climate resilient. Lessons learnt and best practices from across the world can be applied to the Project in Belize. In addition, the Bank has brought in additional resources through the GFDRR grant and will continue to support Belize in trying to leverage additional funds to support decreasing vulnerability disasters and improving climate resilience in order to lessen the socio-economic and fiscal shocks of disasters.

B. Methodology

6. The BCA approach enables agencies to assess benefits of proposed climate change adaptation investments versus costs. The outputs of the process are climate risk adjusted benefit-cost analyses that a project evaluator (World Bank, Government of Belize, etc.) could—with some caveats[34]—compare directly to other potential projects evaluated using BCA.

Economic Analysis Methodology

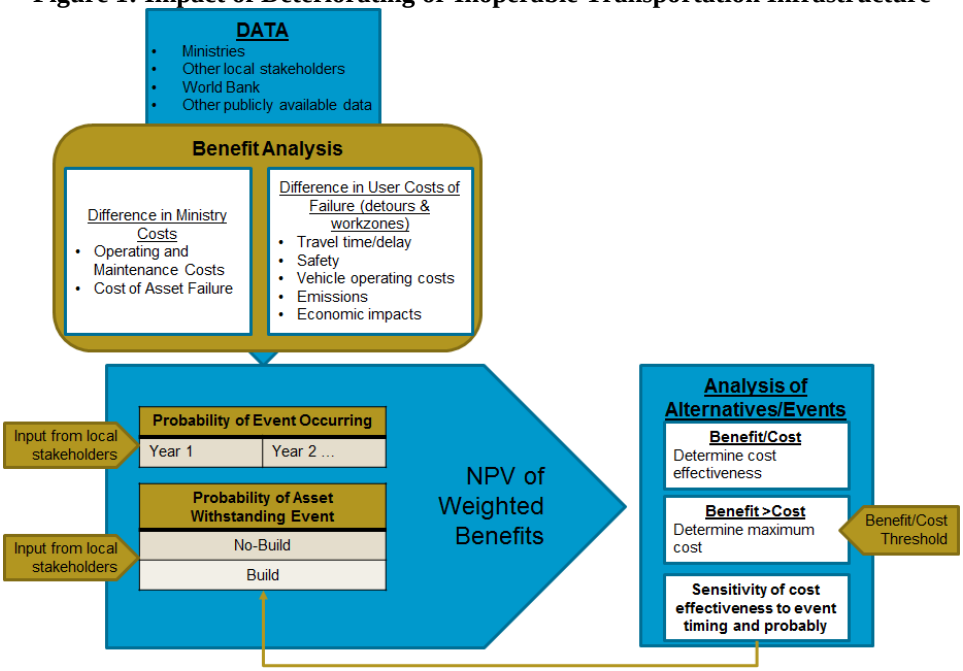
7. This section presents a framework for evaluating the benefits and costs of potential investment strategies as well as the counterfactual, the costs of not undertaking the investments. The approach combines traditional BCA with probabilities of asset failure in a climate change strategy environment. This modified BCA quantifies in monetary terms as many of the costs and benefits of the investment project as possible.

8. The climate risk-enhanced BCA approach considers four key dimensions:
   a. Initial and future cost of the BCRIP investment strategy;
   b. Government and user costs associated with infrastructure failure and/or disruption;
   c. Changing annual (or decadal) likelihood of a selection of relevant climate risks occurring over the analysis period; and
   d. Ability of infrastructure, with and without implementation of an investment (risk management) strategy to withstand potential climate related impacts.

Figure 1 provides an illustrative example of this enhanced BCA for the BCRIP.

[34] There are few established best practices for integrating climate risk into transportation BCA, therefore the comparability of results between climate risk-adjusted BCA and standard transportation BCA should be considered with caution.

Figure 1: Impact of Deteriorating or Inoperable Transportation Infrastructure



9. The economic analysis methodology is based on estimating roadway volumes, disruptions associated with natural hazards and anticipated climate trends, and the agency and user costs associated with these disruptions. The specific methodology developed for this project involves:

a. Establishing existing and future conditions under the build (investment) and no-build (no investment) scenario;
b. Assessing the long-term benefits and costs of each scenario in dollar terms, whenever possible, and expressing benefits and costs in a common unit of measurement for users[35] and agencies[36];
c. Discounting future benefits and costs with the real discount rates of 12 percent, consistent with other World Bank infrastructure studies;
d. Dividing the discounted benefits by the discounted costs to obtain the benefit-cost ratio; and
e. Calculating the Internal Rate of Return (IRR) and Net Present Value (NPV).

10. **Establishing conditions under the build and no-build scenarios.** The probability of asset failure is estimated as a function of the probability of an event occurring and the probability that the asset can withstand the event. This estimation leverages the existing flood susceptibility and MCE findings with climate scenario modeling. Two probabilities regarding the asset's ability to withstand an event are determined: the probability with the adaptation strategy applied,

[35] 'Users' are defined as those individuals and businesses operating on the facility by way of automobiles or trucks.
[36] "Agencies" refers primarily to the Belize Ministry of Works and Transport, but, in certain contexts, may refer to other Government of Belize Ministries or even funders.

and the probability without. Based on these values, the total probability of asset failure is calculated for the adaptation scenario.

11. **Assessing the long-term benefits.** The value of time (delay) benefits is based on total number of trips multiplied by the delay per vehicle and vehicle occupancy. This delay is then monetized by mode and trip purpose. For commuters and personal travel, 50% of the average hourly wage is used, while for business travel time is valued at the full hourly wage. All truck travel is considered "on the clock" business travel. The industry benefits represent the share of the user benefits allocated to the various industry tiers and these benefits are simply a subset of the total user benefits. and should not be added to the total auto, bus, or truck user benefits. The total agency benefits of the adaptation strategy are calculated based on the output from the previous steps. The total user benefits are estimated by calculating the user benefits in each year (user benefits change as traffic volumes change), and converting the results to a net present value.

12. **Assessing the long-term costs.** The following costs were considered:

a. *Operations and Maintenance (O&M) Costs*. The marginal change in future operations and maintenance (O&M) of the roadway in the build versus no-build scenario was calculated, without applying an inflation factor. The average annual O&M costs were estimated for: (i) an adaptation (build) scenario, in which the adaptation strategy is implemented and (ii) a no adaptation (no build) scenario, in which the adaptation strategy is not implemented.

b. *Asset Failure Costs*. The costs associated with an asset failing were considered, in addition to the O&M costs. In this context "failure" is representative of the adaptation strategy being considered. As this data is unavailable, a 25 percentage premium assumption was used in the analysis[37]. The calculation for the Repair Premium is: $AF = total\ project\ cost * repair\ failure\ premium$

c. *User Costs*. The costs incurred by road users due to asset failure (such as, flooding, road damage and other interruptions) from extreme flooding is a key component of the BCA and the economic analysis. An asset failure causing detours or considerable delays increases travel times which impact user safety, vehicle operation costs, and household economics. When evaluating climate change adaptation strategies, the timing of an asset failure (and therefore the year in which the user costs are accrued) is uncertain, and is represented by an average annual probability of failure occurring.

d. *Fuel Costs*. Fuel costs are based on the increase in detour miles travelled divided by vehicle fuel efficiency. This is then monetized using local fuel rates. Half of the bus fleet is assumed to run on gasoline (50% gas, 50% diesel), while 100% of autos are assumed to run on gasoline, and 100% of trucks are assumed to run on diesel.

13. Once the benefits and costs are estimated, the benefit/cost ratio is developed.

[37] Please see the User Guide annex for additional description of the input calculation and considerations.

Probability of Asset Failure (Scenario Development)

14. The probability of asset failure is a fundamental input into the economic analysis, shifting the benefits/costs (BC) ratio of a given infrastructure investment based on the potential reduction in failure risk. It consists of the probability of occurrence of a certain event multiplied by the probability of the asset notwithstanding the event. The probability of occurrence of a specific event type is influenced by the impact of climate change. However, climate projections that intend to estimate future climate are associated with significant uncertainty[38]; therefore, the analysis manages uncertainty by utilizing plausible, but illustrative, "failure event" scenarios based on existing/available climate output.

Estimating Failure Probability

15. The analysis assumes that the occurrence of a 1 in 50 year or a 1 in 100 year rainfall exceedance event would result in asset failure. Estimates on the average annual probability of a rainfall event with a return period greater than 100 years was drawn from a range of available climate model scenarios, with data tailored to the relevant areas in Belize. Although each scenario is associated with a failure probability, the overall likelihood of failure will be illustrative, not probabilistic (i.e., the likelihood of a given scenario occurring will not be calculated).

Illustrative Climate Scenarios

16. The climate scenarios were based on a series of draft downscaled projections developed for the Inter-American Development Bank (IDB) (forthcoming, 2014)[39]. These projections estimate potential changes in the Average Recurrence Interval (ARI)[40] of extreme precipitation events based on the IDB analysis[41], for two emission scenarios, which produce different climate change outcomes, and three global climate models, which have varying amounts of rainfall (wet, mid and dry). The global climate models cover the entire surface of the earth, so to facilitate more granular local or regional analyses, the model output was downscaled into 0.5 degree grids to better reflect local conditions[42].

17. *Table 1* depicts the projected change in average recurrence intervals (ARI), which is the average time, in years, between events, of the 24-hour rainfall amounts associated with extreme rainfall events for Belize City District (cell 238). Results show that a current 1 in 100 year event

[38] Uncertainty includes: a product of the variations, biases and limitations of general circulation models (GCMs), emissions scenarios (Representative Concentration Pathways), carbon sensitivity assumptions, and downscaling techniques

[39] Credit is due to Stratus Consulting, which developed these projections as a subcontractor to Cambridge Systematics based on CS's specifications.

[40] United States Geological Survey (USGS) definition: "The recurrence interval is based on the probability that the given event will be equalled or exceeded in any given year. For example, assume there is a 1 in 50 chance that 6.60 inches of rain will fall in a certain area in a 24-hour period during any given year. Thus, a rainfall total of 6.60 inches in a consecutive 24-hour period is said to have a 50-year recurrence interval."

[41] Ibid.

[42] Normally, this technique requires a robust observed weather record. Because quality historical weather data is not available throughout the study region, the team employed a reanalysis dataset (simulated meteorological data) from the Princeton University Terrestrial Hydrology Research Group.

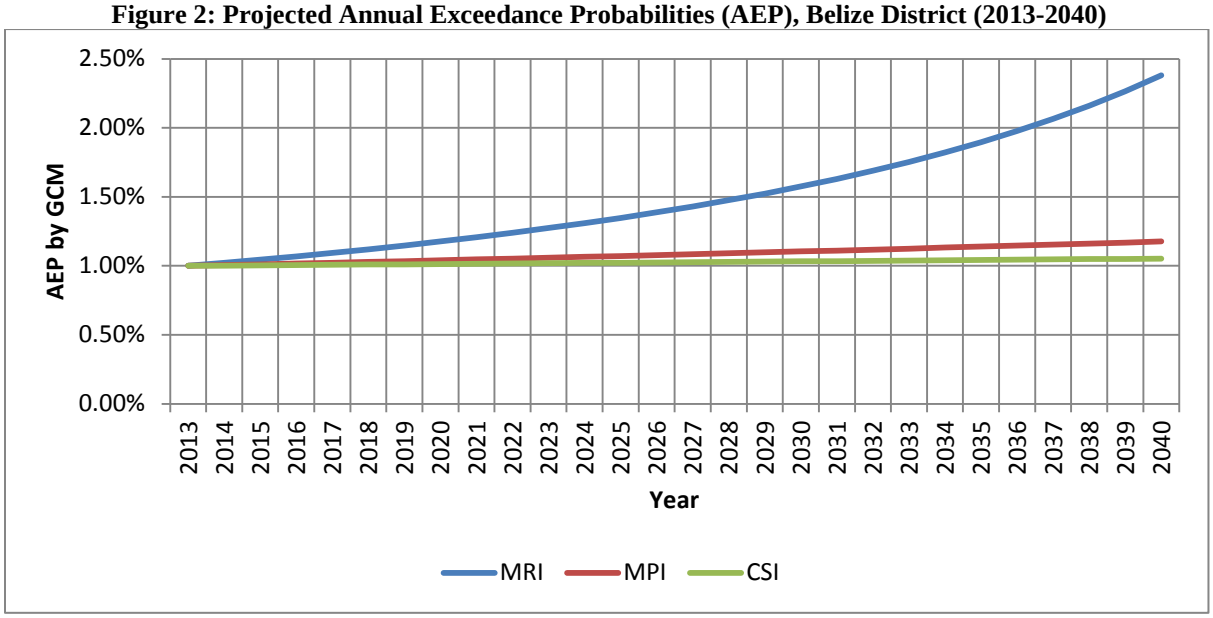
would become a 1 in 95 year event under the "dry" scenario, a 1 in 85 year event under the "mid" scenario and a 1 in 42 year event under the "wet" scenario.

Table 1: Baseline and Projected Average Annual Recurrence Intervals, Belize District (Cell 238)

Model	Scenario	Estimated Average Recurrence Intervals (Years)					
Baseline (current)		10	20	30	50	100	300
CSI (2040, RCP8.5)	Wet	9	19	29	48	95	284
MPI (2040, RCP8.5)	Mid	7	16	24	41	85	270
MRI (2040, RCP8.5)	Dry	4	11	16	24	42	106

18. These ARIs are converted into annual exceedance probabilities (AEP), which are the chance that an event exceeding this threshold would occur in any given year, by solving for 1/ARI (e.g., a 100-year ARI = a 1% annual exceedance probability [1/100]). *Figure 2* depicts the AEP curves of the rainfall value associated with the baseline 100-year event for Belize District, using linear interpolation to estimate interim year probabilities. The annual exceedance probabilities are used to calculate the probability of asset failure.

Figure 2: Projected Annual Exceedance Probabilities (AEP), Belize District (2013-2040)



Source: Inter-American Development Bank, Draft Extreme Precipitation Projections (2014). RCP modelled is 8.5.

C. Analysis

BCA analysis for the first intervention under the BCRIP

19. The GoB identified the Philip Goldson Highway from the Philip Goldson International Airport Junction to Mile 20 the first site and it will be used as illustrative case for the economic analysis. It is critical to the operation of the country's road network and links major economic zones and communities.

Key Assumptions

20. Economic and travel activity assumptions used for the development of this case study include:

a. Annual average daily traffic (AADT) growth rate equal to population growth rate in Belize;
b. Construction time period is estimated to take 1 year;
c. Fuel economy rates based on average of 40-55 mph;
d. Price of gasoline (auto) and diesel (truck and bus) based on in-country survey (February 2014);
e. Discount rate of 12 percent;
f. The avoided "premium repair costs", which is the marginal cost of repair in the event of a failure above the project cost, is 25 percent. (This is a percent of total project cost and the recommended values are between 10 and 30 percent.)
g. The probability that the asset withstands a given climate event (before and after the adaptation investment) are 1% chance (of withstanding) with no adaptation, 99% chance of withstanding without adaptation. (This creates a compound failure probability (*probability of event * probability asset will withstand the event*), both with and without the adaptation investment.)

21. Climate scenario assumptions used for the development of this case study include:

a. Exceedance threshold(s) associated with asset failure: 50- year rainfall event;
b. Climate analysis year: 2040;
c. Emission scenario model (Representative Concentration Pathway or RCP): 6 and 8.5;
d. Global climate model (General Circulation Model): CSI (wet), MPI (mid), MRI (dry)

Data

22. In instances when locally-specific data were unavailable, reasonable proxies were sought from regional and international literature. Values for several key inputs should be considered variable, based on the yet-to-be determined specifics of the Northern Highway climate risk mitigation project. Therefore, the case study BCA results (below) should be considered illustrative[43].

Illustrative Results

23. Following are the illustrative case study results, using the parameters specified previously. The following tables highlight the total costs, benefits, Net Present Value (NPV), Internal Rate of Return (IRR), and the Benefit-Cost Ratio (BCR).

[43] The US Federal Highway Administration's (FHWA) "Benefit-Cost Analysis Primer" provides resources and additional guidance for developing assumptions/proxies in the absence of directly applicable data. FHWA Benefit-Cost Analysis Primer: http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm.

Table 2: Illustrative BCA Results (50-year event, RCP 6)

	RCP 6		
Costs	**Dry (MRI)**	**Mid (MPI)**	**Wet (CSI)**
with adaption	$13.0 million	$13.0 million	$13.0 million
Discounted	$11.6 million	$11.6 million	$11.6 million
Benefits (Avoided Losses)	$44.6 million	$38.7 million	$37.3 million
NPV	$37.8 million	$32.0 million	$30.5 million
IRR	**25%**	**24%**	**23%**
BCR	3.84	3.34	3.21

Table 3: Illustrative BCA Results (50-year event, RCP 8.5)

	RCP 8.5		
Costs	**Dry (MRI)**	**Mid (MPI)**	**Wet (CSI)**
with adaption	$13.0 million	$13.0 million	$13.0 million
Discounted	$11.6 million	$11.6 million	$11.6 million
Benefits (Avoided Losses)	$46.7 million	$39.4 million	$37.3 million
NPV	$35.1 million	$27.8 million	$25.7 million
IRR	**26%**	**24%**	**23%**
BCR	4.02	3.39	3.21

24. BCRs, NPVs, and IRRs for all scenarios are within acceptable ranges, indicating that a $13.0 million investment to significantly increase resiliency is considered cost-effective, based on multiple metrics.


IBRD 33371
BELIZE
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88°W
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To Lázaro Cárdenas
To Chetumal
To Xpujil
Chetumal Bay
Corozal
Buena Vista
San Jose
COROZAL
Orange Walk
Hondo
Ambergris Cay
San Pedro
Blue Creek
Neustadt
Booth's
Maskall
ORANGE WALK
Gallon Jug
Burrell Boom
BELIZE
Belize City
Hattieville
Turneffe Islands
Belize
BELMOPAN
San Ignacio
Gales Point
Caribbean Sea
To El Cruce
Middlesex
CAYO
Macal
STANN CREEK
Dangriga
Hopkins
Victoria Peak (1,160 m)
Maya Mts.
Riversdale
Placentia
0 10 20 30 40 Kilometers
0 10 20 30 Miles
TOLEDO
Monkey River Town
San Antonio
Punta Gorda
Gulf of Honduras
Barranco
Sarstoon
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BELIZE
SELECTED CITIES AND TOWNS
DISTRICT CAPITALS
NATIONAL CAPITAL
RIVERS
MAIN ROADS
DISTRICT BOUNDARIES
INTERNATIONAL BOUNDARIES
SEPTEMBER 2004