

Improving Climate Resilience in Public Private Partnerships in Jamaica

Climate Change Division

Gianleo Frisari
Anaitée Mills
Mariana Silva
Elisa Donadi
Marcel Ham
Christine Shepherd
Irene Pohl

TECHNICAL NOTE N°
IDB-TN-01916

Improving Climate Resilience in Public Private Partnerships in Jamaica

Gianleo Frisari
Anaitée Mills
Mariana Silva
Elisa Donadi
Marcel Ham
Christine Shepherd
Irene Pohl

**Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library**

Improving climate resilience in public private partnerships in Jamaica / Gianleo Frisari, Anaitée Mills, Mariana Silva, Elisa Donadi, Marcel Ham, Christine Shepherd, Irene Pohl.

p. cm. — (IDB Technical Note ; 1916)

Includes bibliographic references.

1. Public-private sector cooperation-Environmental aspects-Jamaica. 2. Economic development projects-Environmental aspects-Jamaica. 3. Infrastructure (Economics)-Environmental aspects-Jamaica. 4. Climatic change-Risk assessment-Jamaica. I. Frisari, Gianleo. II. Mills, Anaitée. III. Silva Zuniga, Mariana. IV. Donadi, Elisa. V. Ham, Marcel. VI. Shepherd, Christine. VII. Pohl, Irene. VIII. Inter-American Development Bank. Climate Change Division. IX. Series.
IDB-TN-1916

JEL Codes: Q54, Q56

Keywords: Climate Change, PPPs, Jamaica, Public-Private Partnerships, Climate Resilience

<http://www.iadb.org>

Copyright © [2020] Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed. Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.



IMPROVING CLIMATE RESILIENCE IN PUBLIC PRIVATE PARTNERSHIPS IN JAMAICA



ABEL



Development Bank
of Jamaica Limited
Facilitating Economic Growth & Development



Copyright © 2020 Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed. Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.

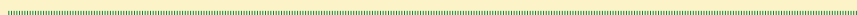


TABLE OF CONTENTS

	INTRODUCTION	11
	Background and objective.....	11
	Climate risk and vulnerability in Jamaica.....	12
	Definition of climate risk and classification of resilient projects.....	12
	Approach	14
	PPP institutional framework in Jamaica	15
	Climate change institutional framework in Jamaica	17
	Structure of this report	19
1	PROJECT IDENTIFICATION STAGE	21
1.1	Introduction	22
1.2	Diagnosis	22
1.3	Emerging practices	25
1.4	Recommendations.....	28
2	BUSINESS CASE STAGE	31
2.1	Introduction.....	32
2.2	Diagnosis	32
2.2.1	<i>Feasibility studies</i>	34
2.2.2	<i>Environmental Impact Assessment</i>	35
2.3	Emerging practices.....	36
2.3.1	<i>Qualitative & quantitative climate risk assessment</i>	36
2.3.2	<i>Project level experience</i>	37
2.4	Recommendations	39
3	TRANSACTION STAGE	42
3.1	Introduction	43
3.2	Diagnosis	43
3.3	Emerging practices	45
3.3.1	<i>Procurement documentation</i>	45
3.3.2	<i>Alternative financing mechanisms</i>	46
3.3.3	<i>Alternative funding mechanisms</i>	49
3.4	Recommendations.....	49

4	CONTRACT MANAGEMENT STAGE	55
4.1	Introduction	56
4.2	Diagnosis	56
4.2.1	Definition of Force Majeure	57
4.2.2	Insurance and its linkage with Force Majeure	58
4.3	Emerging practices	59
4.3.1	Expanding the Definition of Force Majeure	59
4.3.2	Insurance and alternative risk transfer	60
4.3.3	Unavailability of (affordable) insurance	64
4.4	Recommendations	65
5	IMPLEMENTATION PLAN	69
5.1	Objective	70
5.2	Implementation workstreams	70
5.2.1	Workstream 1: Policy revisions	70
5.2.2	Workstream 2: Capacity building	70
5.2.3	Workstream 3: Pilot projects	71
5.2.4	Workstream 4: Develop tools and methods	71
5.3	Implementation timeline	72
5.4	Stakeholder involvement	72
	APPENDIX A BIBLIOGRAPHY	75
	APPENDIX B INTERVIEWS	77
	APPENDIX C POLICY RECOMMENDATIONS OVERVIEW	77
	APPENDIX D PPP CRITERIA REVISIONS	82

LIST OF FIGURES

- Figure 1** PPP Process Jamaica
- Figure 2** Stage 1 of the PPP Process in Jamaica
- Figure 3** Overview of PPP Criteria as defined in PPP Policy of Jamaica
- Figure 4** IDB Climate Risk Assessment Methodology
- Figure 5** Categorization and Allocation of Identification Stage Recommendations
- Figure 6** Stage 2 of the PPP Process in Jamaica
- Figure 7** Categorization and Allocation of Business Case Stage Recommendations
- Figure 8** Stage 3 of the PPP Process in Jamaica
- Figure 9** Categorization and Allocation of Transaction Stage Recommendations
- Figure 10** Stage 4 of the PPP Process in Jamaica
- Figure 11** Categorization and Allocation of Contract Management Stage Recommendations

LIST OF TABLES

- Table 1** Classification of Climate Resilient Projects
- Table 2** Approach
- Table 3** Diagnosis Climate Resilience in PPP Policy: Stage 1
- Table 4** Diagnosis Climate Resilience in PPP Policy: Stage 2
- Table 5** Diagnosis Climate Resilience in PPP Policy: Stage 3
- Table 6** Diagnosis Climate Resilience in PPP Policy: Stage 4

ABBREVIATIONS

Climate Change Division	CCD
Caribbean Catastrophe Risk Insurance Facility	CCRIF
Climate Change Policy Framework	CCPF
Development Bank of Jamaica	DBJ
Enterprise Team	ET
Environment and Social Impact Assessment	ESIA
Environmental Impact Assessment	EIA
Feasibility Study	FS
Government of Jamaica	GoJ
Meteorological Service Jamaica	MSJ
Ministry of Finance and the Public Service	MoFPS
National Environment and Planning Agency.....	NEPA
Norman Manley International Airport.....	NMIA
Office of Disaster Response and Emergency Management	ODPEM
Planning Institute of Jamaica	PIOJ
Port Authority of Jamaica	PAJ
Project Team	PT
Public Investment Management Committee	PIMC
Public Investment Management Secretariat	PIMSec
Public Investment Management System	PIMS
Public Private Partnership	PPP
Request for Proposals	RFP
Request for Qualifications	RFQ
Special Purpose Vehicle	SPV
University of West Indies	UWI
Value for Money	VFM

ACKNOWLEDGMENTS

This report and the accompanying “Toolkit for Climate Resilient Infrastructure PPP” were developed by the IDB Climate Change Division in collaboration with the Development Bank of Jamaica, and IMG Rebel.

The authors of the report are Gianleo Frisari, Anaitee Mills and Mariana Silva (IDB), and Marcel Ham, Elisa Donadi, Christine Shepherd, Irene Pohl (IMG Rebel).

The authors wish to acknowledge the contributions of colleagues and experts in the field for their valuable support and help throughout this project: Denise Arana, Ricardo Munroe and Sharon Craig at the Development Bank of Jamaica for being great partners of the IDB in this project.

Adriana La Valley, Michelle McNaught, Jiae Kim, Maricarmen Esquivel, Daniela Zuloaga, Ancor Suarez, Gerard Alleng at the IDB, and Riccardo De Vecchi at the IDB Invest for the support in the origination and execution of the project, its reports and training activities.

Donovan Campbell (University of West Indies), Jim O’Gara, Sanae Sasamori and Naho Shibuya (World Bank), Brian Samuel (Caribbean Development Bank) for their expert review; and the colleagues from PIMSec, the National Environment and Planning Agency (NEPA), the Office of Disaster Preparedness and Emergency Management (ODPEM), the Planning Institute of Jamaica (PIOJ) and the Climate Change Division of the Ministry of Economic Growth (MEGJC) for their inputs and feedback on the potential for implementation of the suggested instruments in Jamaica. Finally, Samuel Wedderburn, Christina Paul (World Bank), Lisa Dickson (Arup), John Dionisio (Meridiam), Megan Linkin (Swiss Re), Joanne Foley (Willis Towers Watson), Laurence Carter (RMS), Daniel Raizman and Alvaro Farias Velasco (Air Worldwide), and Elizabeth Yee and Lisa Lee (100RC) for their insights and contributions on climate resilience funding and financing, climate risk insurance and alternative risk transfer solutions.

FOREWORD

This report “Improving Climate Resilience in Public Private Partnerships in Jamaica” and the accompanying “Toolkit for Climate Resilient Infrastructure PPP” are the result of an 18-month project of the Climate Change Division at the IDB in collaboration with the Public-Private Partnership team at Development Bank of Jamaica and IMG Rebel. The aim has always been to provide DBJ’s PPP professionals and, ultimately PPP professionals in the Caribbean Region, with pragmatic, practical solutions to integrate the assessment of climate risks and resiliency opportunities in the preparation of infrastructure projects through Public Private Partnerships (PPPs).

The need to consider climate change issues in the provision of infrastructure services through PPPs originates from two key observations: On one side, Jamaica like many small island states faces many risks associated with climate change. Studies show that the country’s infrastructure stock is vulnerable to hazard events like hurricanes and landslides, as well as to chronic slow changes as sea level rise and perturbations in temperature and precipitations patterns. To safeguard against

a future in which such hazards may occur more frequently or with greater intensity due to climate change, the country seeks to ensure that its infrastructure stock can withstand such occurrences. At the same time, Jamaica has been seeking to develop and build its infrastructure with an increased role for the private sector, developing an effective Public Private Partnerships model that is well regarded in the region (4th overall in LATAM 2019 Infrascope Ranking). As very long-dated contractual relationships, the success of PPPs is highly dependent on an accurate, sustainable and efficient distribution of risks and benefits between the public and private counterparts of the transaction. With climate change effects intensifying, the risk profile of infrastructure projects is rapidly changing and will continue to change, making the task of structuring efficient 20-30 years PPP contracts incredibly difficult if those risks are not identified, assessed and managed throughout the whole process of structuring a PPP transaction.

The following policy paper is borne then of an effort supported by IDB and the

Government of Jamaica to understand how, if at all, Jamaica currently considers climate change within its PPP policies and project development processes and what steps the country can take to ensure that it does so. Considering the high potential for replication for such instruments, and the common challenges that several climate-vulnerable countries face when developing their infrastructure projects, a companion toolkit has been developed, including decision support tools for policy makers and developers partaking in the PPP development process and which applies to Jamaica as well as any country government seeking to ensure their PPPs are more resilient, was developed in conjunction with this effort.

Report and Toolkit as well have been developed following the typical structure of the PPP process, from Project Identification, to the Business Case, the Transaction Structuring and the Management of the Contract during the whole life of the PPP project. In each phase, climate change risks may arise, as well as opportunities for an improved design for resilient and/or more productive infrastructure, and it would be important for such cases that risks and opportunities alike

would be considered and followed-through in the different phases of the transaction to ensure, for example, that critical aspects identified in the project preparation phase are then included in the preparation of the tender documents and, as well, inform the performance indicators in the contract management phase.

The analysis for the report has identified several instruments and tools already used to address climate change issues in the context of Jamaica's infrastructure production – albeit not always in a systematic way – that could be integrated in the PPP process in a more institutionalized and standardized manner, identifying options for a low-cost and seamless implementation in the established Jamaican PPP model. The Toolkit, finally, is to be considered a living document; we hope it could provide initial guidance to professionals implementing PPP projects in the region, while being open to improvements and updating as we collect evidence on other instruments that can be used to manage climate change risks and/or create resiliency opportunities for the infrastructure of the Latin America and the Caribbean.

INTRODUCTION

Background and objective

Climate change represents one of the most significant challenges facing humankind, especially in Small Island Developing States, such as Jamaica, where between 2001 and 2012, it has been estimated, the annual average damage and loss from flood, hurricane and droughts, cost the country an average of 1.3% of GDP.¹

These climate-and weather-related events impact Jamaica's economy. They cause material damage to infrastructure assets, interrupt business activities, lead to lower productivity because of health and emotional stress and create an unfavorable investment climate. Building strong and resilient infrastructure assets, able to withstand extreme climate- and weather-related events is key to economic stability. Achieving this requires the expertise and cooperation of public and private sector.

Since Jamaica implemented its PPP policy in 2012, the Development Bank of Jamaica (DBJ) has closed six projects with a total investment value of approximately US\$1.3 billion, accounting for, on average, 2.4% of the country's GDP in the past five years.² These projects include Highway 2000, North South Highway and Kingston Container Terminal; and The Norman Manley International

Airport PPP. Jamaica has been a role model for the region when it comes to implementation of PPP projects, ranking fourth in the 2019 Infrascopes PPP Programme Index for Latin America and the Caribbean.³ Currently, Jamaica's project pipeline includes nine different infrastructure projects, mostly in the transportation, water and waste management, and social infrastructure sectors, of which at least six will be developed under a PPP delivery method.

The DBJ with the support of the Inter-American Development Bank (IDB), aims to strengthen the existing PPP framework to include climate resiliency considerations. In order to achieve this, they hired IMG Rebel 1) to evaluate Jamaica's current PPP policy and practice as it relates to the treatment of climate related risks and vulnerability assessments, 2) to develop policy recommendations based on that diagnosis, expert interviews and emerging practices, and 3) to develop a tool and initiatives that will ultimately help government officials understand and manage climate risk throughout the design and implementation of PPP projects. The following document responds to points 1 and 2. It provides an overview of how Jamaica currently treats the subject of climate change and climate risks within its PPP policy and processes and provides a series of policy recommendations, that if implemented, could help the country better manage risks associated with climate change.

¹Per data from the Planning Institute of Jamaica (PIOJ)

²The Economist Intelligence Unit. 2019. Evaluating the environment for public-private partnerships in Latin America and the Caribbean: The 2019 Infrascopes. EIU, New York, NY. Retrieved from: https://infrascopes.eiu.com/wp-content/uploads/2019/04/EIU_2019-IDB-Infrascopes-Report_FINAL-1.pdf

³The Infrascopes Index evaluates readiness and capacity of a country/agency during the PPP project lifecycle considering five different components; including, enabling laws and regulations, the institutional framework, operational maturity, investment and business climate, financing facilities for infrastructure projects. For more information on Infrascopes, visit: <https://infrascopes.eiu.com/>

Climate risk and vulnerability in Jamaica

Jamaica's population centers, and hence most of its infrastructure and settlements are situated in the island's coastal zone. These centers are increasingly under pressure and vulnerable to erosion, sea level rise and storms. Research from the Planning Institute of Jamaica (PIOJ) suggests that if sea level rises by 0.18m the predicted loss of Jamaican land area is 101.9 km²; for a 10 m increase it is 416.4 km². Fast growing urban areas such as Old Harbour Bay and Portmore are forecasted to be inundated.⁴

Coastal erosion and sea level risk contribute to an environment in which it is increasingly difficult to manage the hazards of extreme precipitation, flooding and storms. Such events often damage critical infrastructure, such as transportation, energy, communications and water systems. For example, in 2004, Hurricane Ivan caused \$575 million in damages, with 62 percent focused directly on damage to physical assets in Jamaica.⁵

In addition to floods resulting from sea level rise, extreme tropical weather events like tropical waves, hurricanes, and droughts are causing significant damage.⁶ Moreover, serious droughts, followed by storms have resulted in landslides. Climate change projections suggest that such effects and impacts have already increased in the most recent past and will continue to increase in the future.⁷

Definition of climate risk and resilient projects

Climate Risk

Borrowing a definition of “climate risk” from financial markets and specifically from the work of the Financial Stability Board Task-Force for Climate Related Disclosures,⁸ this report focuses on “physical climate risk”, that includes any and all risks originated from a climate-related event that may have an impact in the disruption of operations or destruction of property, or that may negatively affect the feasibility and robustness of a project, whether associated with current climate conditions or with future climate change. Whereas other risks, unrelated to climate or weather may be equally important to a project's sustainable success, these are not the focus of this consultancy and assessment.

Climate Resilient Infrastructure Projects

Most people think primarily about storm surge barriers, sluices, dams, locks and stormwater solutions when referring to “climate-resilient” infrastructure. These projects, however, constitute only a small fraction of the overall infrastructure portfolio in most countries. Therefore, the following paper distinguishes three main categories of ‘climate-resilient’ infrastructure projects. The first category

⁴Climate Studies Group, Mona (CSGM), 2014: Near-Term Climate Scenarios for Jamaica (Technical Report). Produced for the Planning Institute of Jamaica (PIOJ), Kingston Jamaica.

⁵Zapata, Ricardo. (2004, November 24). Hurricane season in the Caribbean causes more than US\$2.2 billion in losses. Retrieved from: <https://reliefweb.int/report/bahamas/hurricane-season-caribbean-causes-more-us22-billion-losses>

⁶USAID, Climate Risk Profile, https://reliefweb.int/sites/reliefweb.int/files/resources/2017_USAID-CCIS_Climate-Risk-Profile-Jamaica.pdf




⁷University of West Indies, 2017. “The State of the Jamaican Climate 2015” https://www.pioj.gov.jm/Portals/0/Sustainable_Development/WEB_FULL%20DOCUMENT_The%20State%20of%20the%20Jamaican%20Climate%202015.pdf

⁸Physical risks as part of climate risks as defined in Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017). Retrieved from: <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Annex-062817.pdf>

includes projects dedicated to bolstering an area’s resiliency to specific climate-induced risks (e.g. a storm surge barrier); the second category includes projects that are resilient in and of themselves to climate risks, regardless of sector (e.g., social infrastructure, water and sanitation, transportation); the third category includes those projects which have an impact on the resiliency of their surrounding areas. In Jamaica, there are currently no projects in

the first category included in the PPP pipeline. When this report mentions “resilient projects” it predominantly refers to “projects that are resilient” or those included in the second category, without excluding the first category of dedicated climate resiliency projects and explicitly allowing for these projects to also classify as the third category of projects with climate resiliency impacts on their surroundings.




Table 1 Classification of Climate Resilient Infrastructure Projects

 Type of project	 Description	 Example
1. Dedicated climate resiliency projects.	An infrastructure project that is intended to protect (urban settlements) from climate-induced risks.	<ul style="list-style-type: none"> • Sluice gate. • Storm surge barrier.
2. Infrastructure projects that are climate resilient.	An infrastructure project that is designed, constructed and maintained such that it can withstand climate risks.	<ul style="list-style-type: none"> • Bridge that can withstand category-3 storm. • Building that is built to hurricane-proof code.
3. Projects with climate resiliency impacts on their surroundings.	An infrastructure project with features that enhance the climate resiliency of the areas surrounding the infrastructure.	<ul style="list-style-type: none"> • Elevating road to serve as a storm barrier, protecting nearby communities. • Repaving parking lot with permeable pavement, reducing possibility of flooding.

Approach

In order to achieve the overall objective of this effort, the following activities were carried out:

Table 2 Approach

 Activity	 Purpose	 Approach
<p>1. Diagnostic of Climate Risk Vulnerability of Infrastructure under current PPP Framework.</p>	<p>Diagnose how climate risk and climate vulnerability is currently incorporated in Jamaica's PPP framework.</p>	<ul style="list-style-type: none"> • Interviews with relevant stakeholders. • Review of existing PPP framework and guideline documents. • Review of project documents and reports part of current PPPs in Jamaica [relevant for the Business Case, Transaction and Contract Management Stages]⁹
<p>2. Identification of Climate-related risk identification and mitigation options through PPPs.</p>	<p>Identify international emerging practices with regard to climate risk in PPPs. Emerging practices were collected and assessed on their applicability for Jamaica.</p>	<ul style="list-style-type: none"> • Interviews with relevant stakeholders. • Desk review of the literature.
<p>3. Development of a Plan for Action towards resilient PPPs including Capacity Building and Regional Knowledge Exchange.</p>	<p>Develop tools and knowledge products for climate resilient PPPs as well as a 'plan for action for Jamaica'.</p>	<ul style="list-style-type: none"> • Development of tools and plan of action, based on the findings of Activities 1 and 2.

⁹Please refer to the bibliography in Appendix A for an overview of the reviewed documentation.

While the approach covers all phases in the PPP project life cycle and all climate risk related themes relevant to the preparation and implementation of a PPP project, special attention was given to:

- ▶ Including climate risk and vulnerability assessments in PPP policies and regulations.
- ▶ Including climate resiliency mechanisms in the selection, valuation, and procurement stages of PPPs.
- ▶ Improving PPP project structuring and disaster risk allocation in PPPs, particularly in relation to force majeure.
- ▶ Including risk mitigation instruments in PPPs, such as evaluating the role of insurance; and
- ▶ Evaluating innovative revenue and financing schemes in PPP contracts to remunerate resilience activities – such as tax-increment financing and insurance-linked securities.

PPP institutional framework in Jamaica

Jamaica's PPP policy was incorporated as an addendum in the Government of Jamaica's (GoJ) Policy Framework and Procedure Manual for Privatization of Assets in 2012; and subsequently revised in 2017.¹⁰ The policy aims to guide and facilitate the implementation of the GoJ's Public-Private Partnership (PPP) Programme.



A host of institutions are involved in the development of PPPs in Jamaica. Projects potentially eligible for procurement via the PPP mechanism are first identified by the Public Investment Management Committee (PIMC), housed within the country's Public Investment Management Secretariat (PIMSec). These potential PPP projects are submitted to the GoJ's Cabinet, which takes responsibility for all privatization activities, including PPPs. The Development Bank of Jamaica (DBJ) serves as the privatization agency and reports directly to the Cabinet. DBJ houses a PPP unit, which oversees day to day coordination of the PPP Programme. DBJ's PPP unit also serves in advisory capacity to help develop PPP projects. It does this together with what are called 'Enterprise Teams (ETs)' and their companion 'Project Teams (PTs)'. Both teams are appointed once a PPP project reaches its Business Case stage with goal of overseeing the development of a PPP project through to contract signing. They oversee the development of the Business Case and the Transaction Stage of PPPs.



Subject Ministries/Agencies, with sector level responsibility for a particular PPP project, work closely with the DBJ and the ETs and PTs to develop a project. Relevant Ministers from these Subject Ministries/Agencies have authority to appoint members to the ET.

In addition, there is a PPP Unit under the Ministry of Finance responsible for the assessment of value for money (VFM) and fiscal impact of PPP projects. The Table in the overleaf (Table 3: Institutions involved in developing PPPs in Jamaica and their role) provides more detail on each of these PPP-related entities, as well as further description of their respective functions.

¹⁰The revised PPP policy can be accessed via the Development Bank of Jamaica's website here: <https://dbankjm.com/services/ppp-and-privatisation-division/public-private-partnerships-ppp/policy-institutional-framework/>

Table 3**Institutions involved in developing PPPs in Jamaica and their role**

 Institution	 Overall Role
Public Investment Management Committee (PIMC).	Cabinet-appointed Committee responsible for creating policies and procedures for the effective and efficient operation of the 'Public Investment Management System (PIMS)'. Recommends to Cabinet the approval of PPP projects for development. PIMC is supported by the PIMSec.
Public Investment Management Secretariat (PIMSec).	Institution within the Ministry of Finance and Public Service, established to manage and administer the PIMS. Directly supports the work of the PIMC.
Cabinet of the Government of Jamaica (Cabinet).	The principal instrument of policy and charged with the general direction and control of the Government. Ultimate authority in relation to matters of policy set out in the PPP Policy. Provides series of 'approvals' throughout PPP development process.
Development Bank of Jamaica, PPP unit (DBJ PPP unit).	Ensures every project identified and approved for development as a PPP is developed/structured, evaluated, and implemented through a uniform and consistent process. Provides advisory and administrative support to PPPs; identifies and manages funds for project feasibility and development; manages PPP project development process through to contract signing.
Ministry of Finance, PPP unit (MoF PPP unit).	Coordinates, evaluates, and manages fiscal implications of PPPs.
Enterprise Team (ET).	Created when PPP project is approved by Cabinet to proceed to the 'Business Case' stage. Comprised of senior officials and other specialists. Guides each project through development, evaluation, and procurement. Includes representatives from the MoFP as well as the Subject Ministry/Agency with portfolio responsibility for the PPP.
Project Team (PT).	A companion to the ET responsible for the 'day-to-day' work of developing the PPP project. Collects and analyzes information, writes, reports, plans and structures the PPP; and performs administrative and management functions involved in developing, evaluating, and procuring PPPs.

 Institution	 Overall Role
Contract Management Team (CMT).	Appointed by the PPP Unit in consultation with the Subject Ministry/Agency; responsible for managing the PPP contract.
Subject Ministry/ Agency.	e.g. Ministry of Transport and Works, Ministry of Housing, Environment and Water, Port Authority, etc. All Subject Ministries/ Agencies are responsible for identifying candidate PPP projects in the contexts of developing their strategic plans. Where a project deemed suitable, responsible ministry will nominate a staff member to ETs and PTs as well as to CMT.
Planning Institute of Jamaica.	Initiates and coordinates development of policies, plans, and programs for the sustainable development of Jamaica. Consulted on PPP projects, where necessary, to ensure co-ordination and strategic consistency across government.

Climate change institutional framework in Jamaica

Jamaica has taken strides to mainstream climate resilience aims across sectors of its economy through various committees, task forces, working groups and networks. Underpinning this effort is the country's Climate Change Policy Framework (CCPF), developed in 2015, with support of the European Union and the United Nations

Environment Programme¹¹. The CCPF outlines the country's strategies for responding to the impacts and challenges of climate change, and specifically seeks to create a "sustainable institutional mechanism to facilitate the development, coordination and implementation of policies, sectoral plans, programs, strategies, and legislation to address the impacts of climate change."¹² As part of its 'development of a climate financing strategy' the CCPF also suggested looking to co-financing instruments like public private partnerships.

From an institutional perspective, the CCPF suggested the development of a Climate Change Division (CCD), which was developed

¹¹Climate Change Policy Framework for Jamaica, 2015

¹²Ibid


and is currently housed within the Ministry of Economic Growth and Job Creation. The CCD carries administrative oversight and responsibility for climate change initiatives, including serving as Jamaica’s focal point for the United Nations Framework Convention on Climate Change (UNFCCC). CCD also houses the designated authority for the Green Climate Fund. As of May 2019, the Government of Jamaica was in the process of updating its CCPF.¹³

including the appointment of a Climate Change Advisory Committee and the establishment of Climate Change Focal Point Network to facilitate a multi-sectoral approach to climate change. Further, there are several other institutions working on climate change, climate resilience and disaster preparedness, which would be relevant to helping progress the development of climate resilient PPPs in the country. These are outlined in the Table 4 in the overleaf.



In addition to the CCD, there are various climate change efforts in the country,

Table 4

Non-PPP institutions relevant to ensuring climate resilient PPPs

 Institution	 Overall Role
Office of Disaster Response and Emergency Management (ODPEM).	As Jamaica’s National Disaster Organization, ODPEM is responsible for disaster management and holds responsibility for taking action to reduce the impact of disasters and emergencies on the Jamaican population and its economy. It coordinates execution of emergency response and relief operations in major disaster events and provides outreach and training on the topic as well as conducts research.
National Environment and Planning Agency (NEPA).	Established in April 2001 as an Executive Agency, NEPA develops proposals for national environment and planning policies; ensures conservation and protection efforts of species, habitats, and ecosystems; undertakes spatial planning; provides recommendations for decisions on licenses and permits for planning, subdivisions, beaches, environment, etc; conducts public education and outreach; as well as monitoring for compliance with planning and environmental requirements.

¹³See: ‘Climate Change Policy Framework Being Updated’ accessible here: <https://jis.gov.jm/climate-change-policy-framework-being-updated/>

 Institution	 Overall Role
University of West Indies (UWI).	UWI is recognized for its research and activism with regard to tackling the effects of climate change and strengthening the Caribbean’s resilience in the face of increasing climate impact. Selected by the International Association of Universities to be leader in the mobilization of higher education and research for the achievement of a climate-smart and resilient world.
Planning Institute of Jamaica (PIOJ).	PIOJ is committed to leading the process of policy formulation on economic and social issues and external co-operation management to achieve sustainable development. PIOJ has several active climate change related programs, including the Improving Climate Data & Information Management Project (ICDIMP), designed to improve the quality and use of climate related data for effective planning and action at the local and national levels.

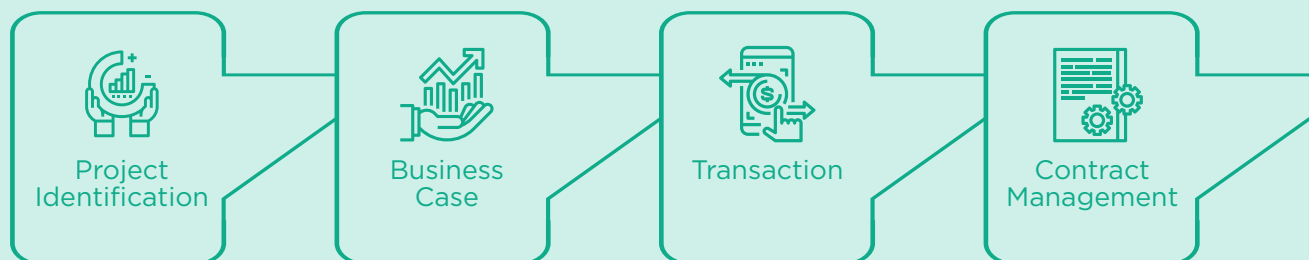
Structure of this report

The PPP Process for the Government of Jamaica as defined in the PPP Policy¹⁴ is structured in 4 stages, leading from (1) Project

Identification, via the (2) Business Case Stage to the (3) Transaction Stage (including Financial Close), and finally (4) the Contract Management Stage.

Each stage comprises various preparation and evaluation activities and is completed by a ‘Review and Approval’ moment.

¹⁴Development Bank of Jamaica Limited (2012). “Shaping new Partnerships for National Development. Policy and Institutional Framework for the Implementation of a Public- Private Partnership Programme for the Government of Jamaica: The PPP Policy”. Addendum to the Policy Framework and Procedures Manual for Privatisation of Government Assets. October 2012.

Figure 1 PPP Process in Jamaica¹⁵

The structure of this report mirrors the structure of Jamaica’s PPP process. Each chapter represents one of the four stages and provides a brief description of the purpose and key activities of that stage, as well as the key stakeholders involved. Thereafter, each chapter includes the following three main components:

a/ Diagnosis: Provides an assessment of how climate risk vulnerability of infrastructure is addressed in Jamaica’s current PPP policy and practice. For the Business Case, Transaction and Contract Management Stages, project documents from a subset of actual PPP projects in Jamaica were reviewed to shine light current project development practices.

b/ Emerging Practices: Provides an overview of successful practices in including climate resilience considerations in the various phases of the PPP project cycle. In the Project Identification and Business Case stages, these emerging practices refer to the IDB Methodology for conducting a climate screening for a project.

c/ Recommendations: A selection of practices recommended for inclusion in Jamaica’s current PPP policy and practice.

The report concludes with an ‘implementation plan,’ which details the steps the GoJ can take over the short, medium and long term to integrate climate resiliency considerations into its PPP process and policy framework. The companion “*Climate Resilient Public Private Partnerships Toolkit*”—developed under this same program by the IDB and IMG Rebel—provides practical guidance on the implementation of the policy recommendations presented in this report. It is recommended to read this report in conjunction with the toolkit.

Annex C provides more detail on all the policy recommendations and includes 1) a categorization of recommendations in quick wins, medium- and long-term goals, 2) references to the tools that can be used to implement the recommendations and 3) an allocation of responsibilities for the implementation amongst the key stakeholders.

¹⁵Source: Development Bank of Jamaica Limited (2012). “Shaping new Partnerships for National Development. Policy and Institutional Framework for the Implementation of a Public- Private Partnership Programme for the Government of Jamaica: The PPP Policy”. Addendum to the Policy Framework and Procedures Manual for Privatisation of Government Assets. October 2012.

1

PROJECT IDENTIFICATION STAGE

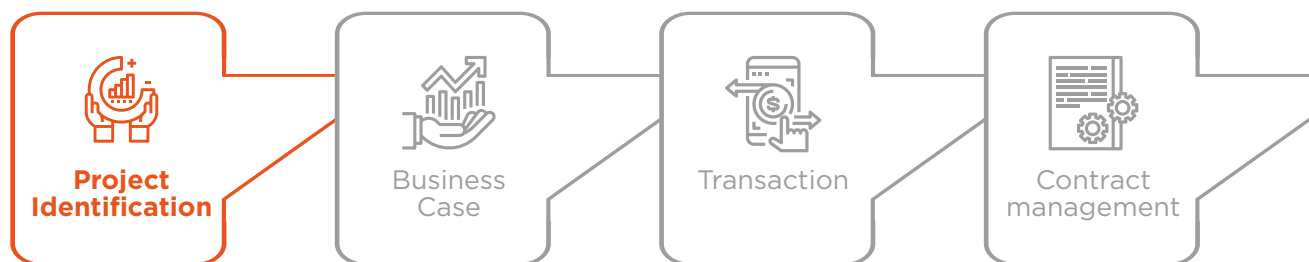


1.1 Introduction

During the Project Identification Stage, the Subject Ministries/Agencies identify potential projects and prepare project concepts for submission to the Public Investment Management Secretariat (PIMSec). PIMSec screens the projects according to a set of

criteria, including viability, marketability, value-for-money, and fiscal responsibility. They then prioritize projects and submit their recommendations to the Public Investment Management Committee (PIMC) for approval.

Figure 2 Stage 1 of the PPP Process in Jamaica







1.2 Diagnosis

A review of relevant policy processes and documents found that at the policy level, no guidance or specification on how to incorporate climate risk (assessment) into project concept development exists. This is

illustrated in the table below, which provides an overview of the main institutions, policy documents and guidelines governing this stage and whether any evidence exists to suggest that climate is considered.

Table 5 Diagnosis Climate Resilience in PPP Policy: Stage 1

 Step	 Institution / stakeholder	 Guideline / procedure	 Climate considerations
1.1 Identify candidate Projects.	Subject Ministries/ agencies + Strategy Committee.	N/A	N/A
1.2 Screen against criteria.	PIMSec	PIMS Criteria Chart Appendix to the PPP Policy.	N/A*
1.3 Prioritize and add to PPP List.	Strategy Committee/ PIMSec.	N/A	N/A

*However, PIMSec does screen projects for alignment with the UN's Sustainable Development Goals and Jamaica's Vision 2030 platform, which includes climate goals. Yet, this screening is not specific to PPP projects and not targeted for climate resilience.

The framework related to this stage that could potentially include climate considerations in the identification and initial evaluation of

projects is the PPP Criteria Chart (Table 6), which is included as an Appendix to the PPP Policy.

Table 6 Overview of PPP Criteria as defined in PPP Policy of Jamaica

PPP Criteria	Meaning for Project is:
Project is viable.	<ul style="list-style-type: none"> • Effective in meeting government objectives. • Technically feasible. • Legally feasible. • Environmentally compliant. • Socially sustainable. • Economically viable.
PPP achieves value for money.	<ul style="list-style-type: none"> • Project scale is sufficient. • Project duration is sufficient. • Outputs are clearly specified. • One or more PPP Value Drivers applies. • Functions are optimally allocated. • Risks are identified and allocated optimally. • Value for Money.
PPP is marketable.	<ul style="list-style-type: none"> • PPP is a viable “commercial project”. • Market has sufficient capacity and appetite.
PPP is fiscally responsible.	<ul style="list-style-type: none"> • Likely public cost is consistent with fiscal priorities. • Fiscal risk would not be destabilizing.

Climate risk and climate vulnerability are not explicitly included in the PPP Criteria, yet implicitly, climate risks may be reflected in the cost estimates that feed into the various studies and climate risk may be considered when assessing the value drivers for the value-for-money assessment. The review of PPP practices has shown limited evidence of the former and no evidence of the latter. This also implies that climate resilience is currently not (explicitly) considered at this stage of the PPP Policy.

In practice, PIMSec screens all potential projects for the PPP shortlist. This screening is streamlined by demanding projects to be submitted in a project submission template.¹⁶ This template includes checks with regard to various criteria, however climate risk is not explicitly mentioned, hence in this initial screening activity, PIMSec currently does not systematically check for climate risk nor for resilience. Climate vulnerability is only considered when there is obvious and material

¹⁶Project submission template. Available at: <http://www.mof.gov.jm/pims-project-submission-templates.html/>

climate risk. While it does not seem to have been widely used by PPP stakeholders to date, the Caribbean Climate Online Risk and Adaptation Tool (C-Coral), is available for project teams to use to do a high-level screen of their projects.

Going forward, PIMSec aims to institutionalize climate vulnerability in their screening and reviews, by 1) providing a permanent seat for a climate risk expert on the Public Investment Management Committee and 2) incorporating climate risk and resilience in the project submission template and screening checklist.¹⁷

1.3 Emerging practices

A review of ‘emerging practices’ for including climate resilience considerations in the various phases of the PPP project cycle, suggests that the practices that would work best at the ‘Project Identification Stage’ are also those that would work best at the ‘Business Case Stage’. Namely, at these two early stages of the PPP project development cycle, conducting a separate climate risk assessment, which can inform other related project analyses, can help ensure that climate resilience considerations are included throughout the project cycle. Given, the first two stages of the PPP project development cycle do not differ markedly from those processes used to develop a traditionally procured project, using the tool of a climate risk assessment is equally applicable for non-PPP Projects. Most countries have formulated and implemented climate resilience / disaster risk management (DRM) and PPP policies and

legislation separately, however, it is important for countries to reconcile existing policy and apply DRM standards to PPP contracts. In other words, minimum climate resilience / DRM requirements need to be ensured irrespective of types of procurement and contracting, through infrastructure sector laws and regulations or DRM related acts. These laws or regulations will require all PPP projects to comply with the minimum level of resilience, in turn referred to in procurement documentation and PPP contracts. Therefore, when considering incorporating climate resilience in the project cycle, identified successful practices are equally applicable for PPP and non-PPP Projects.

During the first two stages of the project cycle, performing a climate risk assessment is crucial in order to incorporate climate resilience considerations throughout the project lifecycle. Multilateral institutions and development agencies such as the Inter-American Development Bank (IDB), Asian Development Bank (ADB), The Caribbean Development Bank (CDB), and the United States Agency for International Development (USAID) now offer stand-alone tools to facilitate the preparation of climate risks assessments. This report has chosen to refer to the IDB’s methods for developing climate risk assessments to illustrate the steps and expertise needed to conduct a climate risk assessment in the context of developing a PPP project (or any project).¹⁸

Initially, the IDB methodology requires projects to go through a “screening level assessment” - see Figure 3¹⁹. During the screening phase, the IDB methodology requires projects to undergo

¹⁷This information is based on an interview with PIMSec held on January 31st, 2019.

¹⁸The companion toolkit to this report includes several tools - 1.1, 1.2, 1.3- which can provide a framework, in part modeled on IDB’s methodology, to help project teams develop screening-level climate risk assessments Project Identification Stage of the PPP development cycle.

¹⁹Executive Summary of the Disaster and Climate Risk Assessment Methodology for IDB Projects: A Technical Reference for IDB Project Teams, Figure 2. Disaster & Climate Change Risk Assessment **Methodology**. 2018. For more information visit: <https://publications.iadb.org/en/executive-summary-disaster-and-climate-risk-assessment-methodology-idb-projects-technical-reference>

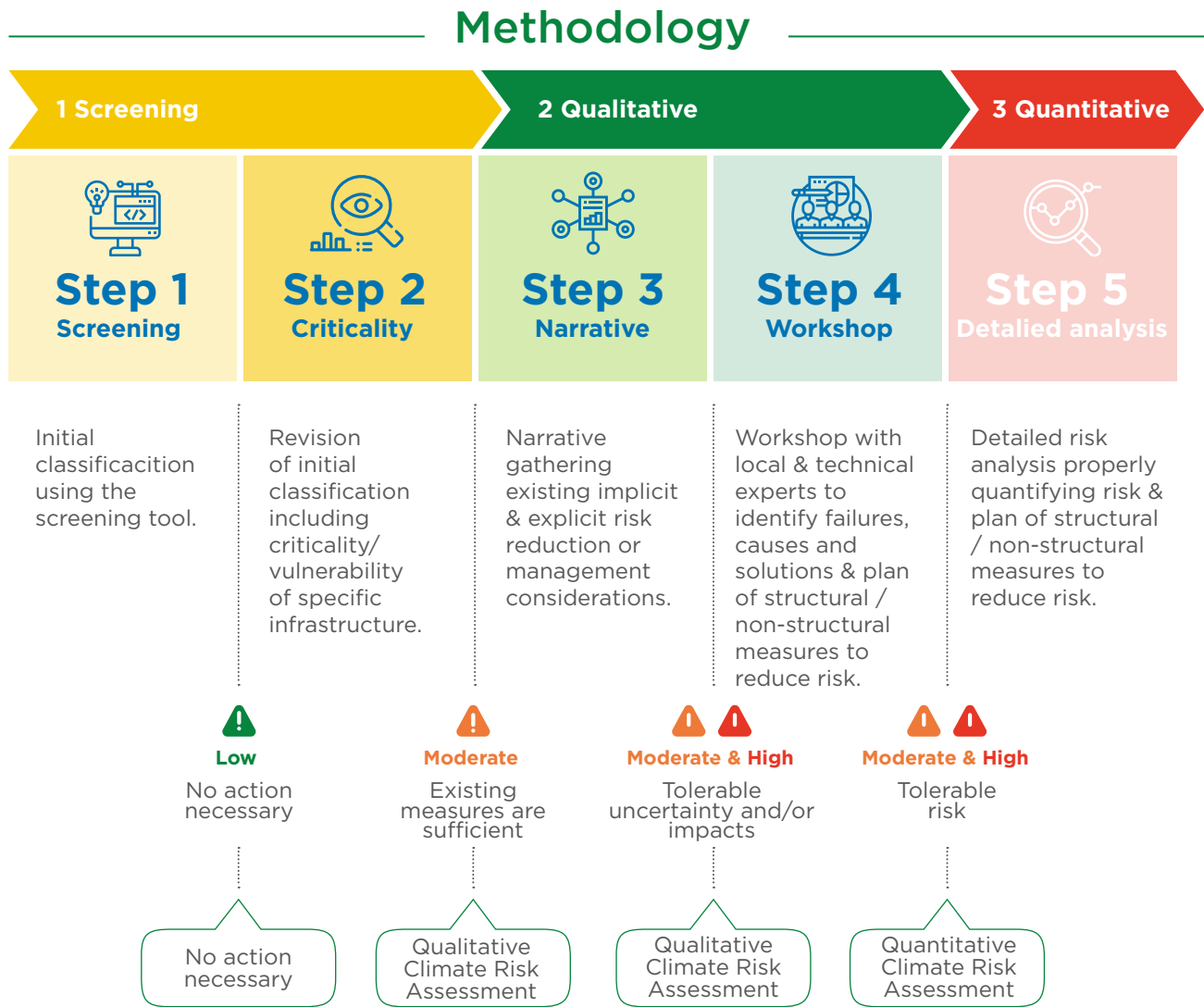
a two-step, high-level analysis. This analysis is in line with the typical practice of conducting pre-feasibility assessments in the identification phase of PPP projects and would complement such assessments.

- ▶ Step 1 seeks to gather a preliminary assessment of climate hazards in the country and / or project area (E.g., tropical storms, wildfires). This screening, conducted by project teams, involves reviewing potential climate hazards and ultimately helps teams assign a risk classification to the project of either low, moderate or high-risk. All IDB projects undergo this preliminary assessment, irrespective of the type of climate risk.
- ▶ Step 2 applies to those hazards identified as medium or high-risk in step one. This

step, conducted by sectoral specialists and climate experts, aims to evaluate whether the project is likely to be affected by (i.e. vulnerable to) the climate hazard, and the severity of such impact. The outcome of this step is a description of the critical project characteristics (E.g. physical, environmental, socioeconomic) as well as a classification of the project vulnerability as low, moderate, or high.

Projects classified as moderate to high risk must be assessed more comprehensively in the next two phases—the qualitative and quantitative risk assessment - which in the context of a PPP project would be conducted during the Business Case Stage.

Figure 3 IDB Climate Risk Assessment Methodology



Identification >> Preparation >>

1.4 Recommendations

Currently, Jamaica is not incorporating climate resiliency considerations into the PPP project identification stage. When compared against emerging practices, namely, the benefits of conducting climate risk assessments early in the project cycle, this suggests that scope exists to improve how Jamaica handles climate resiliency during this stage. One main area for

improvement would be to conduct climate risk assessments at a screening-level to identify eventual key risks, ensure projects' assessment and required due diligence is consistent with its risk classification, and to activate available specialized expertise for projects with high risk levels.

1.1

Develop screening-level climate risk assessment

- ▶ Improve access to geophysical and hydrometeorological hazard data for use by project teams.
- ▶ Identify and classify geophysical and hydrometeorological hazards.
- ▶ Customize the project characteristics in the vulnerability assessment.
- ▶ Classify project vulnerability (as low, medium or high).
- ▶ Summarize and score climate risk profile.



In addition to developing dedicated climate risk assessments, the results need to be considered in decision making. For this purpose, it is recommended to explicitly incorporate climate risk in other (existing)

assessments required alongside the project cycle, for PPP projects as well as projects delivered under different modalities (public investment, unsolicited proposals).

1.2

Include climate risk in other (existing) assessments

- ▶ Include climate risk profile in PIMSec project submission templates.
- ▶ Include climate resiliency in PPP criteria in the policy guidelines²⁰.
- ▶ Include the same process for unsolicited proposals.



The table on the next page provides 1) a categorization of these recommendations in quick wins, medium- and long-term goals, 2) references to the tools facilitating the implementation of the recommendations and 3) an allocation of responsibilities for the implementation amongst the key stakeholders.



IDB and other multilaterals and funds could potentially support the government of Jamaica in the implementation of these potential solutions by providing technical assistance on 1) supporting partners in creating enabling conditions for these tools to be implemented, such as the production of granular data and expertise in the key institutions; 2) developing screening level climate risk assessments for potential PPP projects and 3) incorporating the results of the climate risk assessments in other assessments, focusing on the first (pilot) PPP project(s) where this practice will be applied.

²⁰Annex D describes the proposed revisions of the PPP criteria in greater detail.

Figure 5 Categorization and Allocation of Identification Stage Recommendations

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			1.1 Develop screening-level climate risk assessment.										
•			a. Improve access to geophysical and hydrometeorological hazard data for use by project teams.	N/A	I		I	I		I	I	C	R
•			b. Identify and classify geophysical and hydrometeorological hazards.	1.1	I		I	R		C	C	C	R
•			c. Customize the project characteristics in the vulnerability assessment.	1.2	I		I	R		I	C	C	C
•			d. Classification of project vulnerability.	1.2	I		I	R		I	C	C	C
•			e. Summarize and score climate risk profile.	1.3	I		I	R		I	C	C	C
			1.2 Include climate risk in other (existing) assessments.										
•			a. Include climate risk profile in PIMSec project submission templates.	N/A	R		I	C		I	I	I	
•			b. Include climate resiliency in PPP criteria in the policy guidelines.	N/A	I		R	C		I	I	I	
•			c. Include the same process for unsolicited proposals.	N/A	I		R	I		I	I	I	

Key: **R = Responsible** C = Consulted I = Informed

2

BUSINESS CASE STAGE

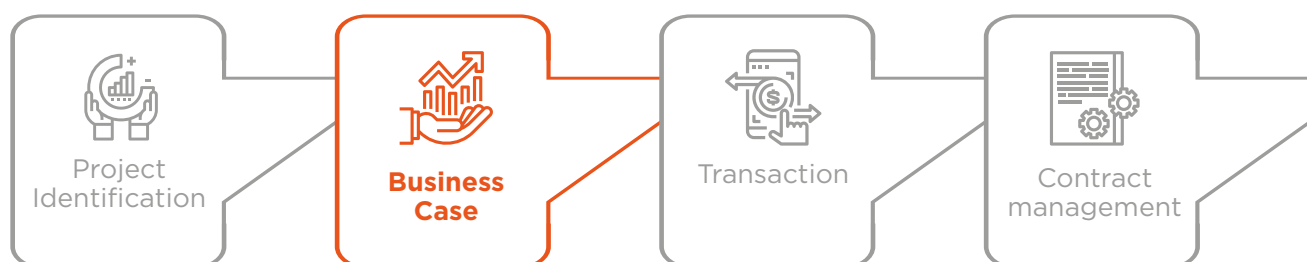


2.1 Introduction

During the Business Case Stage, a dedicated Enterprise Team and corresponding Project Team with members from DBJ's PPP Unit as well as the Subject Ministry/Agency, and the Ministry of Finance and the Public Service further develop the candidate PPP project (refer to table 3 for further description of these entities). The outcome of this stage is a thorough report ("business case") that

provides an analysis of the project's technical, economic, environmental and social viability, as well as its market attractiveness, value for money and fiscal impact. The Enterprise Team guides and supervises the Project Team. The business case along with the summary of the business case outlined in the PIMSec Project Template is submitted to PIMSec for consideration by the PIMC.

Figure 6 Stage 2 of the PPP Process in Jamaica







Ultimately, analysis undertaken during the Business Case Stage helps determine whether to proceed with the proposed project and whether to implement it as a PPP procurement. Whether a project proceeds as a PPP is based on how well it performs against the same criteria (see Table 6) applied during Project Identification Stage. However, at the Business Case Stage, the level of evidence required to prove that the project complies with those criteria is more advanced.

2.2 Diagnosis

The policy review of the Business Case Stage determined that climate change and climate resilience activities are not well-reflected at this stage. Table 7 provides an overview of the diagnosis, summarizing the main institutions and guidelines involved, and the role of climate resilience in each.

Table 7 Diagnosis Climate Resilience in PPP Policy: Stage 2

 Step	 Institution / stakeholder	 Guideline / procedure	 Climate considerations
2.1 Prepare pre-feasibility study / business case.	Project Team + Enterprise Team (supervision).	N/A.	Not available.
2.2 Determine project viability.	PIMSec.	PIMSec appraisal guidelines and PPP Criteria Chart Appendix to The PPP Policy.	Not available.
2.3 Structure proposed PPP.	MDA / Project Team.	N/A.	Not available.
2.4 Evaluate against criteria.	PIMSec.	PPP Criteria Chart Appendix to The PPP Policy.	Not available.

Climate risk, climate vulnerability, nor climate resilience are directly or indirectly included in the current set of PPP evaluation criteria (refer to Table 6 for overview of criteria). Further, they are not necessarily incorporated in the PPP project feasibility studies or risk assessments. This implies that climate resilience is currently not explicitly considered in the Business Case Stage of the PPP Policy.

In line with international emerging practice, the GoJ prepares feasibility studies (FS) for its PPP projects, which address all aspects of the project including technical, financial, legal, and environmental implications that can help the public agency determine the project's feasibility. A FS therefore assesses — among other things—whether a potential PPP project satisfies the technical needs, ensures value for money, assesses and allocates risks and confirms that the project complies with regulations.

In order to assess whether a project is also environmentally and socially feasible, *Environmental Impact Assessments* (EIA) or *Environmental and Social Impact Assessments* (ESIA) are carried out. The EIA / ESIA is often a separate study, carried out by a specialized advisor. It analyzes the impact that the project may have on the environment: on flora and fauna, natural resources, the people, and the broader environment. Climate risk could be considered in an EIA by not only assessing and mitigating the implications of the project on the environment given *the current* climate conditions but also the potential implications under *future* climate conditions. In this context, climate risk is a relevant factor that *influences the effects of the project on the environment*.

In addition, climate risk influences *the resiliency of the project itself*, considering

how the project will be impacted now, in the near future and in the long term by climate change, and how this will impact technical and economic feasibility. Climate risk needs to be considered when assessing the feasibility and robustness of the project: Is the project technically and economically feasible when considering all the current and future climate conditions?

Jamaica has no agreed standards for preparing climate risk assessments during the Business Case Stage, such as in the FS and EIA (neither standards for approach nor tables of contents or documentation requirements). However, in both FS and EIA, climate risk should still be considered. When doing so, synergies and interactions should be accounted for between the assessments: for example, if climate risk translates into the EIA showing an increased environmental impact from the project, the FS should account for this technically (e.g. through mitigation measures) and financially (e.g. through higher investment or operational costs associated with the mitigation measures). Project EIAs will also include suggested mitigation measures to limit the project's impact on its surrounding environment. Where relevant, these mitigation measures may also serve as a first step towards defining climate resiliency related mitigation measures.

Below, we summarize our key observations with regard to how feasibility studies and EIAs in Jamaica currently incorporate climate risk. These feasibility studies and EIAs are drawn from a subset of PPP projects implemented in Jamaica and provide an indication of standard operating procedures in the absence of clear guidance on whether/or how to incorporate climate change risk and resilience considerations into such studies. They are not indicative of how climate risk is incorporated into regularly procured infrastructure projects.

2.2.1 Feasibility studies

To gain a sense of how climate risks are considered within the context of PPP feasibility studies, studies for four PPP projects were reviewed. These included the: i) Caymanas Special Economic Zone, ii) the Kingston Container Terminal, iii) the Milk River Mineral Bath and Bath Fountain Hotel & Spa, and iv) The Norman Manley International (NMIA) Airport.

The review noted that climate-related risks are sometimes but not consistently taken into consideration in the technical, financial, or legal feasibility studies of a PPP project.

I/ Caymanas Special Economic Zone (SEZ) FS:

a/ Developed by the GoJ, introduces specific risks of climate hazards (natural or manmade).

- ▶ Climate hazards include flooding, drought, hurricanes, earthquakes, landslides (areas such as Glade and Caymanas Bay), tsunamis and storm surge that may affect the area.

b/ Specific impacts or mitigation plans to adapt to the climate change phenomenon are not assessed.

c/ Addresses the importance of conducting a thorough EIA of the area, specifically, on pre- and post- development of runoff changes.

II/ The Kingston Container Terminal FS:

a/ Does not mention climate-related risks that affect the container terminal in the short or long term.

III/ The Milk River Mineral Bath and Bath Fountain Hotel & Spa FS:

a/ Seeks to address the issue that the building is in an area prone to flooding by recommending investing in river management, regular dredging of the river mouth, and ensuring land for construction above the zone. However, flooding in the area is considered a chronic issue rather than a potential climate change related risk. Changes in flooding risk due to climate change are not explicitly anticipated.

IV/ The NMIA Airport Business Case:

a/ Includes specific measures for the project to adapt to climate change, such as specific budget and a thorough description of the capital improvements related to climate change.

b/ Although building a more resilient infrastructure will directly impact CAPEX, such measures were not considered in the project's financial model.²¹

2.2.2 Environmental Impact Assessment

To gain a sense of how climate risks are considered within the context of PPP EIAs, studies for two PPP projects were reviewed. These included the: i) Highway 2000 – North and South Link²² and the ii) Development of Infrastructure Capacity at Kingston Harbour: Channel Upgrade & Fort Augusta Development.

The review led to the following key observations:

I/ Infrastructure Capacity at Kingston Harbor EIA:

Does not mention climate risks or potential mitigations plans.

II/ Highway 2000 project (North-South link) EIA:

Clearly lists mitigation measures on how new structures have to be built to withstand hurricanes, earthquakes, natural hazards, landslides, and flooding related to climate change.

- ▶ More concretely, proposes to conduct detailed flooding studies that could contribute or modify the construction design of the project to prevent additional flooding related to climate change.

²¹NMI Air Transport PPP Project – Final Transaction Report. IFC Advisory Services in PPPs. December, 2013

²²This project preceded the Jamaica PPP policy enacted in 2012.

- ▶ However, not clear what hurricane category (from 1=least severe to 5=most severe) should serve as the minimum requirement to make the assessment natural-hazard-proof.
- ▶ The report includes other – more specific – measures such as road integrity inspections every two years.

2.3 Emerging practices

As was found for the Project Identification stage, the key emerging practice at this stage of the project cycle is to develop climate risk assessments for projects; albeit more detailed ones. During the Business Case Stage, climate risk assessments have the potential to lead to sharper analysis and thus better prepared projects— both those expected to be procured via PPP and those expected to be traditionally procured. The results from climate risk assessments can be incorporated into feasibility studies, cost-benefit analyses, and environmental impact assessments, not only by including the potential damage from these risk events when they occur, but also the cost of climate risk mitigation measures, as well as the avoided costs of the events that they are designed to mitigate. The incorporation of such risks in these Business Case Stage analyses may also result in changes to design specifications during construction as well as disaster risk management plans for the operations phase.

Risks either not identified through this climate risk assessment or that simply cannot be managed through various mitigation measures, disaster risk management plans or altered design specifications, may be

able to be mitigated against through other contractual mechanisms (e.g. the definition of Force Majeure or insurance requirements), which will be further discussed in the following sections of this report.

2.3.1 Qualitative & quantitative climate risk assessment²³

Continuing with the reference to the IDB methodology for climate risk screening, projects classified as moderate- to high-risk, during the project identification stage, should undergo more detailed qualitative and quantitative risk assessments (see Figure 3). In the context of a PPP project, this type of analysis would occur during the Business Case Stage. Some projects may skip portions of these assessments if there is no need to further quantify the risks.

- ▶ The qualitative risk assessment, requires that sectoral and climate risk experts complete two different steps (steps 3 and 4 of the full methodology of which step 1 and 2 are discussed in paragraph 3.3):
 - **Step three:** develop a narrative of all the data gathered and documentation on the project in relation to climate risks, as well as the development of a high-level climate risk management plan.
 - **Step four:** If the information available does not provide enough evidence that the mitigation plan is sound enough to adapt the project to climate risks, the project will need to

²³The companion toolkit to this report includes several tools – 2.1, 2.2, 2.3– which can provide a framework, in part modeled on IDB's methodology, to help project teams develop screening-level climate risk assessments Business Case Stage of the PPP development cycle.

conduct a thorough workshop – step 4 – with climate risks and sectoral experts to complete the qualitative assessment.

- ▶ The quantitative risk assessment, or the last step of the methodology – step 5, applies for a project that may need to quantify risks, including a thorough management plan based on the results of the workshop detailed in step 4. This step involves quantitatively modeling the aspects that require comprehensive investigation, and it entails a mathematical evaluation of the vulnerability, hazard and risks for those selected aspects for both the structure itself and the surrounding environment and communities, including an estimation of the impacts that would not occur if the project did not exist.

2.3.2 Project level experience

The two textboxes below provide practical examples of climate risk assessments in infrastructure projects. The first, the Central Mekong Delta Region Connectivity Project, shows how a development lender (the ADB) conducted a climate risk and vulnerability assessment that led to a design change to increase the project resilience. The second, the Confederations Bridge, is one of the earliest examples of a project that incorporated climate resiliency aims. The consideration of a climate risk factor over a very long horizon (projected sea level rise) inspired specific design characteristics from the inception of the project, which were translated into design requirements in the business case stage.

Box with Case Studies

a/ Central Mekong Delta Region Connectivity Project

The connectivity project involves two bridges and a main road that are part of the transportation platforms connecting southern Viet Nam and Ho Chi Minh City. As it was expected that the project would be exposed to future flooding, the ADB conducted a climate risk and vulnerability assessment for this project.

The study found that the connecting road to the two bridges was vulnerable to negative impacts of incremental flooding. Main impacts identified were the erosion of roads and embankment, waterlogging of road foundations leading to road subsidence, a reduction in the stability of the whole infrastructure, and an increase in future maintenance and lifecycle costs. The main adaptation measure during a first phase of the project included a 0.3-meter climate change factor on road embankment to allow for expected higher floods.



b/ The Confederation Bridge

The Confederation Bridge, a 12.8 km toll bridge, is the longest structure in the world crossing ice-covered water and is one of the first emerging examples of the incorporation of climate resiliency during the business case stage of a project, as well as one of the first concessions developed under a PPP delivery method in Canada. The Bridge has been in operation since 1997.

The 35-year DBFOM contract of the Confederation Bridge was a solution to overcome the increasing costs in ferry service between the islands. Considering the importance of the bridge as the main transportation link to Prince Edward Island, the Federal Government stipulated a design life of 100 years, as opposed to the 50-year design life requested to account for potential adverse effect of climate change, principally the sea level rise. The technical specifications called for a structure 1 meter higher than currently necessary in order to accommodate for future sea level rise. The anticipatory adaptation measure added a CAD 10 million to the cost of the project, set at CAD 840 million.²⁴

After a little more than 20 years, the Federal Government in Canada issued a tender in August 2018 to specifically address how incremental climate change and extreme weather events, mainly rising sea levels, harsher storms and changing waves, may pose a risk leading to failure, damage, and/or loss of services, and to identify and implement adaptation measures if necessary.²⁵

²⁴<https://www.thecanadianencyclopedia.ca/en/article/confederation-bridge>

²⁵<https://www.theglobeandmail.com/canada/article-ottawa-asks-for-assessment-of-climate-change-risk-to-atlantic-canada/>

2.4 Recommendations

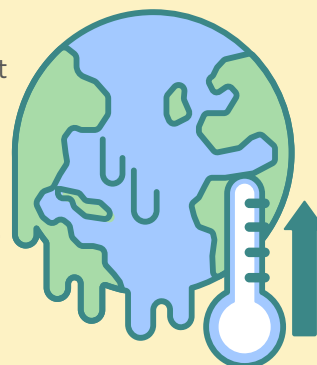
The diagnosis and emerging practices suggest that there is room for improvement in the business case stage. Like the project identification stage, one main area for improvement is the development of climate

risk assessments, yet at a more detailed level. It is recommended to only dedicate scarce and specialized resources to the projects with a medium- or high-climate risk profile, and within those projects, only to those risks to which the project is particularly vulnerable.

2.1

Develop detailed level climate risk assessment for projects with medium and high-level climate risk profiles

- ▶ Improve access to geophysical and hydrometeorological hazard data for use by project teams' qualitative assessment of geophysical and hydrometeorological hazards.
- ▶ Conduct qualitative assessment of project vulnerability.
- ▶ Develop climate risk mitigation / allocation measures / plan.
- ▶ Conduct quantitative assessment of climate risks.



The climate risk assessment can either be conducted as a stand-alone assessment, which may be appropriate for large and complex projects and/or projects with a high climate risk profile, or as an integral part of an overall project risk assessment, which seems right for most smaller projects and projects with a relatively low climate risk profile. The specific expertise and data required for the climate risk assessment may justify a separate treatment.

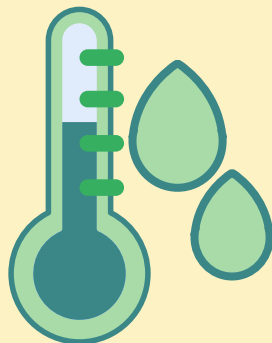
In addition to developing dedicated climate risk assessments, the results will need to be considered in decision making. For this purpose, it is recommended to explicitly incorporate climate risk in other (existing) assessments.²⁶

²⁶The Climate Resilient Public Private Partnerships Toolkit provides practical suggestions for implementation of these policy recommendations.

2.2

Include climate risk in other (existing) assessments

- ▶ Include climate resiliency in PPP criteria in the policy guidelines²⁷
- ▶ Consider climate risk in socio-economic analysis / benefit cost analysis
- ▶ Consider climate risk in financial feasibility analysis / business case / (contingent) fiscal impact assessment
- ▶ Consider climate risk in value for money assessment
- ▶ Consider climate risk in environmental impact assessment



The Figure 7 on the next page provides 1) a categorization of these recommendations in quick wins, medium- and long-term goals, 2) references to the tools facilitating the implementation of the recommendations and 3) an allocation of responsibilities for the implementation amongst the key stakeholders.



IDB and other multilaterals and funds could potentially support the government of Jamaica by providing technical assistance on 1) developing the capacity to conduct comprehensive climate risk assessments for potential PPP projects and 2) the capacity to incorporate the results of the climate risk assessments into other assessments (e.g. in feasibility studies, cost-benefit analyses, and environmental impact assessments).

This support could include:

a/ Supporting the PPP unit in creating internal expertise in the Project and Enterprise Teams for conducting in-house those qualitative activities that would not warrant use of external consultants; and

b/ Developing operational policies that formalize relationships between levels of risk detected and immediate actions by stakeholders in the PPP decision process.

²⁷ Annex D describes the proposed revisions of the PPP criteria in greater detail.

Figure 7 Categorization and Allocation of Business Case Stage Recommendations

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			2.1 Develop detailed level climate risk assessment for projects with medium and high-level climate risk profiles.										
•			a. Provide geophysical and hydrometeorological hazard data.	N/A	I	I	I	I		I	I	C	R
•			b. Qualitative assessment of geophysical and hydrometeorological hazards.	2.1	I	I	I	R		C	C	C	R
•			c. Qualitative assessment of project vulnerability.	2.2	I	I	I	R		C	C	R	R
•			d. Develop climate risk mitigation / allocation measures / plan.	2.3	I	I	I	R		C	C	R	R
•			e. Quantitative assessment of climate risks.	2.3	I	I	I	R		C	C	R	R
			2.2 Include climate risk in other (existing) assessments										
•			a. Consider climate risk in socio-economic analysis / benefit cost analysis.	2.6	I	C	C	R		C	C	C	C
•			b. Consider climate risk in financial feasibility analysis / business case / (contingent) fiscal impact assessment.	2.7	I	C	C	R		C	C	C	C
•			c. Consider climate risk in value for money assessment.	2.8	I	R	C	C		I	I	I	I
•			d. Consider climate risk in environmental impact assessment.	2.9	I	I	C	C		I	R	I	I

Key: **R = Responsible** C = Consulted I = Informed

3

TRANSACTION STAGE

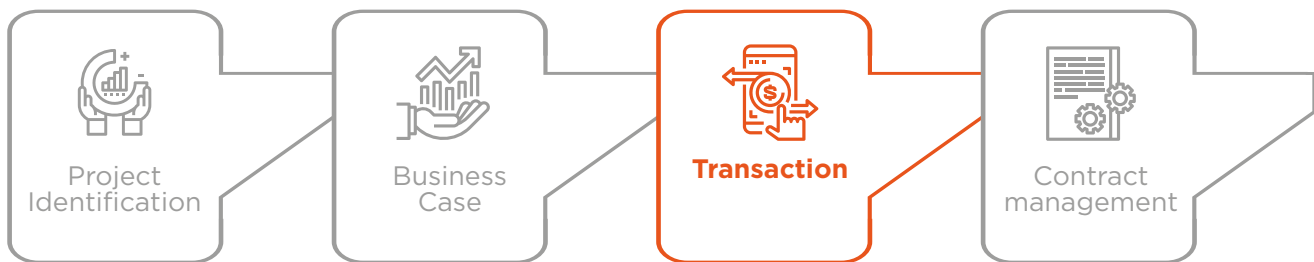


3.1 Introduction

The Transaction Stage focuses on the engagement with the market, from bidder qualification to bidder consultation, to the evaluation of the bids and finally, the award. The main documents that need to be prepared for this engagement with the private sector are the (draft) PPP agreement, the Request

for Qualifications (RFQ) and the Request for Proposals (RFP), as well as the evaluation documents. Again, the dedicated Project Team oversees this work, while the Enterprise Team provides guidance and supervision and reviews the final recommendation to Cabinet for approval.





Figure 8 Stage 3 of the PPP Process in Jamaica



3.2 Diagnosis

The table below provides an overview of the diagnosis of this stage by summarizing the main institutions and guidelines involved, and the role of climate resilience in either one.

Table 5 Diagnosis Climate Resilience in PPP Policy: Stage 3

 Step	 Institution / stakeholder	 Guideline / procedure	 Climate considerations
3.1 Prepare for transaction.	Project Team + Enterprise Team (supervision).	N/A	Not available
3.2 Draft PPP agreements.	Project Team + Enterprise Team (supervision).	No standard PPP agreement/ clauses.	
3.3 Qualify bidders.	Bidders + Project Team + Enterprise Team (supervision).	No standard RfQ.	
3.4 Prepare Draft RFP.	Project Team + Enterprise Team (supervision).	No standard RFQ.	
3.5 Consult with Bidders.	Bidders + Project Team + Enterprise Team (supervision).	N/A	
3.6 Issue RFP & manage bid preparation.	Project Team + Enterprise Team (supervision).	No standard RFP.	
3.7 Receive, evaluate, recommend & award.	Bidders + Project Team + Enterprise Team (supervision).	No standard evaluation documents.	

In general, Jamaica's current PPP framework does not make use of standard documents for RFQ, RFP or the PPP agreements. The government does not use any specific guidelines for the Transaction Stage activities either (only previous contracts, see next sub-chapter). Therefore, climate resilience is also not explicitly considered in policy documents for the Transaction Stage.

In line with international best practice, the Request for Proposal documentation that the

Jamaican government has used in the past few projects, some of which are reviewed below, includes the list of documents to be submitted and further submission requirements, divided into a technical proposal and a financial proposal. In addition to some legal/administrative documents – like a bid bond, insurance policies, and articles of association of the future special purpose vehicle (SPV) – proposal documents related to evaluation criteria are requested, such as a preliminary design, construction approach,

operating approach, and management plan. After contract award, the preferred proposer's technical proposal is typically added to the concession agreement as an appendix, making the technical proposal an enforceable document.

For this stage, RFPs from a subset of the PPPs in Jamaica were reviewed. These included those prepared for the i) Kingston Container Terminal and ii) the Norman Manley International Airport. The review yielded the following observations:

a/ The Kingston Container Terminal RFP requires a range of technical submissions, including a business plan, funding plan and a summary of commercial response. The evaluation criteria included financial robustness and as part of the financial proposal evaluation, the "Port Authority of Jamaica (PAJ) will evaluate and quantify the value that is offered and / or risks that are transferred back to PAJ / GoJ across the Bidder's Commercial Response, Business Plan and Funding Plan". Although the RFP refers to risks in a few places, it does NOT require proposers to develop a comprehensive risk assessment and mitigation plan. It however requires the submission of a capital expansion plan including timing and costs that "should take account of climate change mitigation and use of renewable energy sources;" though other than this reference, the RFP does not include reference to climate risks.

b/ The Norman Manley International Airport RFP requires a range of technical submissions, including a strategic and operational plan, capital plan, management plan and marketing plan. The evaluation criteria are aligned with these submission requirements. The RFP does not mention risk at all, which is interesting considering the attention that was given to climate risk in the business case. The Norman Manley International Airport RFP does not mention climate change.

3.3 Emerging practices

At the transaction phase of the PPP project's development lifecycle, options for encouraging and incentivizing a more climate resilient project exist when developing procurement documentation, structuring financing and including certain funding types. The following sub-section addresses these 'emerging practices'.

3.3.1 Procurement documentation

Procuring agencies generally use three main approaches to protect public interests in PPP procurements. These could also be considered for climate resilience concerns. The three approaches are as follow:

- 1/** Include minimum requirements that must be met, either as demonstrated in the proposal or only enforced after contract award. In this approach, all bidders will simply have to meet the minimum requirements:
 - ▶ The procuring agency will include all technical requirements in the PPP agreement. In a PPP, a procuring agency will typically try to use specifications that are functional or output-based rather than prescriptive or input-based.
 - ▶ The procuring agency may want to communicate minimum requirements for the proposal that are important enough so as to require not fully compliant proposals to be excluded from the procurement.

As pertains to climate resilience goals, procuring agencies can seek to ensure that the project includes related minimum resilience requirements, for example specific building codes or design standards aiming to mitigate climate risk.

2/ Use evaluation criteria and awarding of points to incentivize more climate resilient projects. Here, the bidders can distinguish themselves by presenting solutions in their proposals which make the project more climate resilient. These solutions can be scored via the evaluation criteria. The bidders are often required to include certain plans or sections in their technical proposals to demonstrate their proposed solutions regarding these evaluation criteria.

3/ Providing a minimum pass grade ('technical robustness'). Here, the bidders need to demonstrate that they will meet a minimally acceptable score on the evaluation criteria. The bidders are required to include certain plans or sections in their technical proposals to demonstrate their proposed solutions.

Ultimately, both minimum requirements and the preferred bidder's proposal are typically included in the PPP agreement, and enforced through contract management and payment mechanism approaches.

The first approach is generally seen as effective when the procuring agency can prescribe certain solutions or standards. The second approach is effective when 1) proposals can be evaluated based on both quality and price, and 2) climate resilience is important enough to be included in the evaluation criteria, and 3) bidders are expected to differentiate themselves and come up with creative solutions. The third approach can be used when the procuring agency wants to offer flexibility to the bidders but does not feel that the public objective is important enough to affect the evaluation score.

Bidders can either be held to certain design or performance standards (first approach), in cases when the procuring agency is able to identify either a specific resiliency solution or a degree of resiliency to which the asset needs to comply (e.g. a specific wind speed level); alternatively, when specific solutions are not available or determined, bidders could be encouraged to develop solutions in their proposals and be rewarded through the evaluation criteria (second and third approach). A World Bank publication on resilient infrastructure PPPs²⁸ describes several examples of minimum requirements, both with design standards and operational requirements, a few of which are included in the companion Toolkit to this policy paper²⁹. This study did not uncover any real-life examples of procuring authorities using the second and third approach.

3.3.2 Alternative financing mechanisms

Integrating resiliency assessments into the project preparation process might result in the conclusion that design and operational changes are necessary to make the project more climate resilient. Such resiliency improvements could result in additional costs and potentially introduce new risks difficult for financiers to accept. Paradoxically, this might affect the bankability of a project and the financial closing of a transaction when the value of the additional costs and risks are not offset by the financial value of the resiliency benefits. Considering such resiliency benefits typically accrue over a time horizon much longer than the maturity of the financing of a project, and that their monetization might be hard to realize, or that their benefits might be perceived as more uncertain – it is not uncommon that the integration of resiliency

²⁸https://www.globalinfrastructure.org/sites/gif/files/Resilient%20Infrastructure%20PPP%20Japan%20Case%20Study%20FINAL_web.pdf

²⁹The companion "Climate Resilient Public Private Partnerships Toolkit" - developed under this same program by the IDB and IMG Rebel - provides practical guidance on the implementation of the policy recommendations presented in this report.

components worsens the short term financial profile of a project, hence disincentivizing their uptake, or compromising the financial close of a transaction.

Concessional finance— that is capital at a cost that is lower than for commercial sources— could provide a financing solution that is not (fully) available under commercial financing terms. In such cases, blended-finance refers to the targeted use of concessional financing for high-impact projects where actual or perceived risks are too high for commercial lenders to enter on their own. This type of finance is increasingly used to help spur investment in projects with climate resilience impacts. The landscape of this type of financing is evolving and what is available depends on the project’s characteristics, such as its geography, sector, etc. Sources of concessional capital for climate resilient projects would include donor-funded climate funds, such as the Green Climate Fund, the Climate Investment Funds and the Adaptation Fund, as well as government agencies and bilateral climate funds managed by development finance institutions.³⁰ Concessional finance can be blended with commercial capital through the use of grants, low cost loans as well as higher-risk taking instruments such as subordinated loans and first loss guarantees. There is high flexibility in providing blended solutions to projects for both public and private counterparties of a PPP transaction – however, any solution would need to comply with five core principles:³¹

Additionality: Use concessional capital only for projects that would not be viable on a commercial basis, or to address externalities and market failures;

Minimum Concessional: concessional resources should be used only to the level needed to ensure viability of a project;

Crowding-in: concessionality should be used to ensure mobilization of private investments;

Commercial Sustainability: the use of concessional resources should address specific barriers and market failures without which projects should demonstrate long-term sustainability;

Governance: the disbursement and allocation of concessional resources should be transparent and avoid market distortions.

There are three main ways that blended finance can be used towards climate resilient PPPs:

- ▶ Multilateral development bank provides concessional lending to PPP project company.
- ▶ Government ‘on-lends’ to PPP project company; and
- ▶ Government draws on concessional climate funds and uses that to fund a milestone payment towards the PPP project company, thereby funding the costs of the additional resilience components, reducing the private financing need, and demonstrating commitment to implementing the project.

Whereas this study has not found any real-life examples of such blended finance solutions in PPPs in the region, these solutions can be applied relatively easily. These three approaches are further discussed in the companion Climate Resilient PPPs Toolkit.

³⁰For a detailed overview of sources of concessional capital for climate investments see the Global Landscape of Climate Finance 2019 <https://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2019/>

³¹https://www.ifc.org/wps/wcm/connect/c16cf9df-53a2-47fd-8b70-0bc26257a004/201712_Blendend-Finance-Principles_v1.pdf?MOD=AJPERES&CVID=m1hGdX6



Green Climate Fund

The Green Climate Fund (GCF) is currently the largest available source of concessional finance for low carbon and climate resilient investments.³² Building on the experience of the Climate Investment Funds (CIFs) in pooling resources from several donors in large climate funds, the GCF was created as a financial mechanism representing the commitment of developed nations to support the efforts of developing countries to respond to the challenge of climate change. GCF launched its initial resource mobilization in 2014, and rapidly gathered pledges worth USD 10.3 billion.³³ It seeks to promote a paradigm shift to low-emission and climate-resilient development, taking into account the needs of nations that are particularly vulnerable to climate change impacts. The Fund pays particular attention to the needs of societies that are highly vulnerable to the effects of climate change, including Small Island Developing States (SIDS). For the scale of contribution offered, and the attention towards mobilization of private investments in vulnerable contexts, the GCF seems to be a particularly promising financier of Jamaican PPPs.

There is a growing impact investor community and an emerging interest in innovative financing solutions, including climate resilience bonds (similar to the more mainstream green bonds) and climate resilience impact bonds (similar to the social impact bonds and environmental impact bonds). Climate resilience bonds would provide financing at favorable terms, as the category of financiers providing such financing looks not just at financial returns but values the positive impact of qualifying projects as well. Financiers of climate resilience impact bonds go one step further and link their financing conditions to the resilience impacts achieved. For example, they would accept a lower interest rate, if and when the project they are financing reaches certain predefined resilience targets. These and other solutions are further discussed in the Climate Resilient PPPs Toolkit.

Financing experts generally expect that feasible climate resilience (impact) financing solutions will emerge, yet the sector faces challenges to its development, including:

- 1/** there are no generally accepted resiliency standards, which makes both the eligibility of investments and the potential measurement of performance in results-based financing solutions challenging;
- 2/** the financing conditions are not always attractive due to limited market participation and lack of familiarity with the financial product in the market; and

³²<https://www.greenclimate.fund/home>

³³As per December 31st 2018, GCF total assets stand at USD 6.6bl, as some of the funds pledged initially have not been confirmed in contributions. https://www.greenclimate.fund/documents/20182/1674504/GCF_B.23_07_-_Audited_financial_statements_of_the_Green_Climate_Fund_for_the_year_ended_31_December_2018.pdf/15537fe2-ff77-b6ab-a639-1a7719b9d450

3/ these solutions are complex to structure and integrate into PPPs and therefore lead to high transactions costs.

3.3.3 Alternative funding mechanisms

Adding resiliency components might add significant costs that not only require additional financing, but might also require additional funding sources: in government-pays transactions to support the political acceptance of a more expensive infrastructure; in user-pays PPPs, to support the financial viability of the project and to ensure that the resiliency value is paid for by the users who capture it.

While grant funding from funds like the Green Climate Fund and the Rockefeller Foundation to support efforts during project development to ensure that projects are climate resilient remains an obvious solution, there is increased interest in alternative funding solutions for climate resilience. Some of these alternative funding mechanisms include:

- ▶ Value capture mechanisms such as business improvement districts and tax increment finance have been used in transit / transportation and can be applied for climate resiliency improvements, reflecting the increase in value of a site/land with reduced vulnerability to climate changes impacts and natural disasters.
- ▶ Some jurisdictions have used earmarked sales tax and property tax revenues for the funding of dedicated public investment projects. Climate resiliency improvement projects could be considered for financial support from dedicated tax revenues.

- ▶ Tourism tax seems to be an appropriate funding source, especially for Small Island Developing States, because of the significant dependencies between climate risk and tourism, and the often-diffused benefits of resiliency interventions to a large group of economic activities linked to tourism.
- ▶ Some jurisdictions have considered targeted (stormwater) taxes and parcel fees as funding mechanism for stormwater improvement projects, where the justification for such taxes and fees lies in the direct benefits (and increases in property value) that residents and businesses are enjoying from the improvements in gray and green stormwater infrastructure.
- ▶ Insurance premium savings due to resiliency improvements may be an appropriate funding mechanism for these improvements, but the short-term nature of those savings (due to short insurance policy terms) limits the applicability.

3.4 Recommendations

The review of Jamaica's current practices with regards to embedding climate resiliency considerations into its transaction stage (the diagnosis) when cast against the emerging practices reveal that Jamaica has room to improve how it treats climate resiliency within its processes and procedures for managing PPP transactions. This starts with considering climate risk mitigation experience in the evaluation of the technical capability of bidders in a PPP procurement.

3.1

Include climate risk considerations in RFQ

- ▶ Include experience with implementing projects with a similar climate risk profile as an RFQ evaluation criterion.



To the extent possible and useful, climate risk mitigation measures may be captured in the technical minimum requirements, including design standards.

3.2

Include climate risk considerations in technical provisions

- ▶ Address climate risk conditions to the extent possible in minimum technical requirements.
- ▶ Include obligation to develop emergency preparedness and response plan within [__90__] days of start date in PPP contract.



In addition to capturing risk mitigation measures in the minimum requirements, bidders can be invited to develop their own climate risk mitigation plans and consider the climate resilience of the technical proposals in the evaluation criteria. This should only be considered for projects with medium- or high-climate risk profile. This practice would be in line with the general PPP philosophy to leverage the bidders' creativity for critical project components. This recommendation needs to be carefully balanced with the ambition to keep the transaction costs for the procuring agency as well as the bidders low. In order to keep transaction costs low, it is recommended to make the detailed climate risk assessment (performed during the Business Case Stage) available to all bidders.



IDB and other multilaterals and funds could potentially support the government of Jamaica by providing technical assistance on incorporating climate resilience considerations in technical provisions, focusing on the first (pilot) PPP project(s) where this practice will be applied.

3.3

Include climate risk considerations in RFP

- ▶ Include climate risk mitigation plan in RFP submission requirements.
- ▶ Include climate resilience in evaluation criteria.



After the preferred bidder has been selected on the basis of the quality of its climate mitigation plan, among other criteria, this plan will – together with other parts of the technical proposal – be included in the Project

Agreement. The Project Agreement will then need to ensure that the Developer will adhere to the plan, and that the plan will be periodically updated, to reflect changes in climate risk over time.

3.4

Include climate risk considerations in Project Agreement

- ▶ Include obligation to periodically update the climate risk mitigation plan as submitted in proposal.
- ▶ Include enforcement mechanisms for minimum requirements as well as proposed and updated climate risk mitigation plan.



Finally, it is important to consider that investments in climate resiliency not only increase costs but also benefits. These benefits can translate in innovative funding and financing solutions. It is recommended that the procuring agency considers the use of such funding and financing solutions.



IDB and other multilaterals and funds could support the government of Jamaica by:

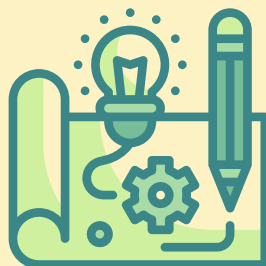
- Offering blended finance solutions for eligible resilience projects or project components;
- Funding the additional transaction costs associated with developing innovative funding and financing solutions in pilot PPP projects.

3.5

Consider climate resilience funding and financing mechanisms

Consider concessional financing options.

- ▶ Structure a project in line with the five core blended finance principles to maximize likelihood of successful implementation of concessional financing options.
- ▶ Include the consideration of climate resilience funding and financing solutions in the Business Case Stage activities.



The Figure 9 on the next page provides 1) a categorization of these recommendations in quick wins, medium- and long-term goals, 2) references to the tools facilitating the implementation of the recommendations and 3) an allocation of responsibilities for the implementation amongst the key stakeholders.

Figure 9 Categorization and Allocation of Identification Stage Recommendations

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			3.1 Include climate risk considerations in RFQ.										
•			a. Include regional / global experience with projects with a similar climate risk profile as an RFQ evaluation criterion.	3.1	I	I	R	I					
•			3.2 Include climate risk considerations in technical provisions.										
•			a. Address climate risk conditions to the extent possible in minimum technical requirements.	3.2 3.3	I	I	I	R					
•			b. Include obligation to develop emergency preparedness and response plan within [__90__] days of start date in PPP contract.	3.4	I	I	R	C		C			
			3.3 Include climate risk considerations in RFP.										
•			a. Include climate risk mitigation plan in RFP submission requirements.	3.5			R	R			C		
•			b. Include climate resilience in evaluation criteria.	3.5	I	I	I	R			C		
			3.4 Include climate risk considerations in Project Agreement.										
•			a. Include obligation to periodically update the climate risk mitigation plan as submitted in proposal.	3.6	I	I	R	C					
•			b. Include enforcement mechanisms for minimum requirements as well as proposed and updated climate risk mitigation plan.	3.7	I	I	R	C					

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			3.5 Consider climate resilience funding and financing mechanisms.										
•			a. Consider concessional financing options.	3.8	I	I	R	C	I			I	
•			b. Consider innovative funding options.	3.9	I	I	R	C	I			I	
			c. Consider innovative financing options.	3.10	I	I	R	C	I			I	

Key: **R = Responsible** C = Consulted I = Informed

4

CONTRACT MANAGEMENT STAGE



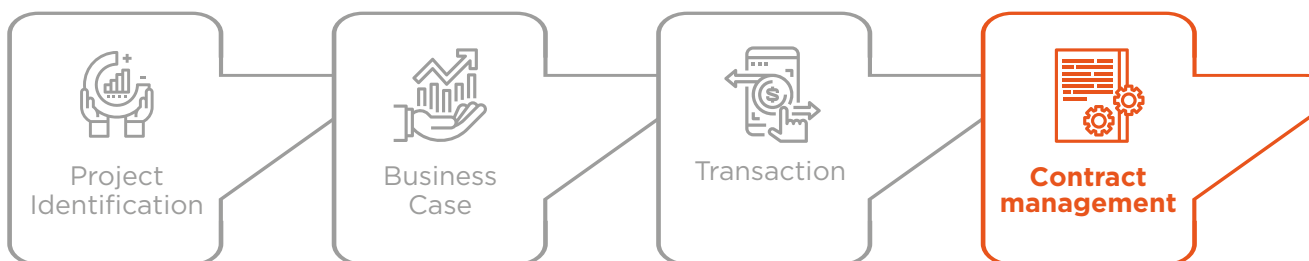
4.1 Introduction

The Contract Management Stage lasts from the project’s contract / financial close until the termination of the agreement. To manage this process, the DBJ PPP unit, in consultation with the Subject Ministry/Agency, appoints a Contract Management Team (CMT), which monitors the PPP delivery and risk. It is during this phase of the project’s lifecycle that

any clauses in the project agreement, such as clauses elaborating force majeure definition or defining insurance requirements, could possibly be tested. The CMT will need to interpret these occurrences in the context of the contract. The team also manages any changes to the contract and oversees the closure of the contract.

Figure 10





Stage 4 of the PPP Process in Jamaica



4.2 Diagnosis

The table below provides an overview of the diagnosis of this stage by summarizing the main institutions and guidelines involved, and the role of climate resilience in each.

Table 6 Diagnosis Climate Resilience in PPP Policy: Stage 4

 Step	 Institution / stakeholder	 Guideline / procedure	 Climate considerations
4.1 Establish Team.	Subject Ministry/Agency + PPP unit establish Contract Management Team.	N/A	Not available.
4.2 Establish processes & tools.	Subject Ministry/ Agency + PPP unit.	N/A	
4.3 Monitor delivery and risk.	Contract Management Team.	Contract Management Report Template.	
4.4 Manage Change.	Contract Management Team.	No standard PPP agreement/ clauses.	
4.5 Close Contract.	Contract Management Team.	N/A	

Comparable to the other stages, the Policy documents governing this stage likewise do not explicitly mention climate risk, climate vulnerability, or resilience. This implies that climate resilience is currently not (explicitly) considered in the Contract Management Stage of the PPP Policy.

Beyond the PPP policy and institutional processes, at the project level there exist some standard contractual components— such as Force Majeure and Insurance Requirements— where climate resilience could be considered, even if not mandated in the policy. The following sub-sections describe how these two contractual components have been handled in the Jamaican context.

4.2.1 Definition of Force Majeure

In line with international best practice, the PPP Concession Agreements in Jamaica allocate all risks to the Developer and expect it to perform its obligations under the agreement, unless stated otherwise. Among other mechanisms, PPP Concession Agreements have a “Force Majeure” clause to define the exception to that rule. Force Majeure clauses typically include large-scale natural disasters that cannot be foreseen or managed by the Developer.

The Force Majeure clause provides relief to the Developer from its duty to perform its obligations under the contract if some unforeseen event beyond the Developer’s

control prevents it from performing its contractual obligations. By adopting a Force Majeure clause, contracting parties increase the predictability of their relationship by identifying the circumstances that will exclude performance. There is no universal definition of what constitutes a force majeure event.

A review of a subset of PPP Concession Agreements in Jamaica, shows that they do specifically, yet briefly, refer to extreme weather events, whose occurrence and intensity is linked to climate change:

a/ The *Kingston Container Terminal Concession Agreement* includes “earthquakes or any other natural disasters”

b/ The *Highway 2000 and North South Highway Concession Agreements*: include “tidal wave, hurricane, tornado or landslide” in the definition of Force Majeure. They also further introduce the concept of a Prolonged Force Majeure Event, which is defined as a single Force Majeure Event that continues for a period of more than 9 months, in which case the Developer will receive compensation such that it is “made whole”. This is further defined that such event will only qualify as a Force Majeure Event “if the affected Party could not reasonably foresee them at the date of the signing of this Agreement or reasonably provide against them” and to the extent that they result in damage, delay or service interruption.

The Highway 2000 and North South Highway Concession Agreement’s reference to the ability to reasonably foresee the events and/or reasonably provide against them, offers the possibility to discriminate and exclude from force majeure those extreme events whose probability of occurrence and intensity could be assessed through climate data and modelling. Clearly, this would not be without challenges, as climate data and modeling results would need to be available to both parties of the contract (and to all bidders at the time of the tender) at an affordable cost

and useful timing, and finally the parties would need to be able to negotiate a definition for “reasonable provision”, “expected frequency and intensity” that would stand during the contract and prevent renegotiation at the occurrence of extreme events.

4.2.2 Insurance and its linkage with Force Majeure

In line with international best practice, the PPP Concession Agreements in Jamaica require the Developer to insure against material project risks (e.g. accidental damage, third party liabilities). However, the availability or affordability of insurance to cover climate risks is not always certain.

Insurance and Force Majeure are independent, but related instruments. The ability of the Developer to insure against certain risks, and to bear the relevant insurance premium costs, must be considered when defining Force Majeure events and related compensation provisions. The availability and cost of, and the obligation to take out, relevant insurances will be relevant to how the risk of certain events is allocated (such as Force Majeure events), as well as to what deductions may be applied to termination payments, in respect of insurance proceeds receivable. At a high level, insurable events are typically not regarded as Force Majeure, whereas uninsurable events are often treated as Force Majeure. At a more detailed level, the exact treatment of the compensation for Force Majeure and the relief from performance obligations (including penalties) depend on the exact definition of Force Majeure.

Without explicit contractual protection, the risk of unavailability of insurance and the risk of excessive increases in insurance premiums (hereafter jointly referred to as “uninsurability”) will typically lie with the Developer (who will also be in breach of its obligations to maintain the unavailable insurance). This is likely to result in a risk

premium (if indeed it is bankable), depending on the circumstances of the PPP Project and the risk assessment conducted by the Developer and its Lenders.

A review of a subset of PPP Concession Agreements in Jamaica shows that they do include some clauses regarding required insurance and uninsurability related to climate risks or extreme weather events:

a/ *The Kingston Container Terminal Concession Agreement:*

- ▶ Treatment of Force Majeure: agreement requires insurance covering loss, damage or destruction caused by Force Majeure events, to the extent that such are insurable.
- ▶ Treatment of Uninsurability: agreement does not mention uninsurability, meaning that the Developer is responsible in case of uninsurability.

b/ *Highway 2000 and North South Highway Concession Agreements:*

- ▶ Treatment of Force Majeure: agreements do not include specific reference to Force Majeure events. They do, however, further introduce the concept of a Qualifying Force Majeure Event, including “events required to be insured against pursuant to Clause 42 (Insurance) which although insurable on the Concession Award Date cease to be insurable on reasonable commercial terms during the Concession Period, other than as a result of any act or omission on the part of the Developer or its sub-contractors”. The Developer will receive compensation for a Qualifying Force Majeure Events such that it is “made whole”.
- ▶ Treatment of uninsurability: agreements do NOT further specify uninsurability and do not include the usual definition of uninsurability. Further, they do NOT anticipate any alternative approaches to

addressing the unavailability of insurance, for example (a) parties negotiating a mutually satisfactory solution for managing the risk, or (b) the government becoming the insurer of last resort.

4.3 Emerging practices

There are three areas, relevant to encouraging climate resiliency during the contract management stage of PPPs, where practices are quickly evolving. One, is in the way Force Majeure is defined against a backdrop where a changing climate context means certain types of disasters are more easily predicted. The second and third pertain to evolutions in the insurance market to absorb climate risks. The following sub-section discusses these emerging practices.

4.3.1 Expanding the Definition of Force Majeure

The aim of Force Majeure provisions in a PPP agreement is to share the financial and timing consequences of Force Majeure events between the Contracting Authority and the Developer. Parties share this risk, as it is outside both parties’ control. Neither is better placed than the other to manage the risk of such occurrence, or its consequences.

There are two main approaches to defining Force Majeure, the first is based on an open-ended catch-all definition and the second has an exhaustive list of specific events or circumstances. Natural disasters are typically implicitly (first approach) or explicitly (second approach) included in the definition of Force Majeure.

One emerging practice in defining Force Majeure is that procuring agencies specifically include in the PPP Agreement that events can only qualify as Force Majeure 1) if the affected Party could not reasonably foresee them at the date of the signing of this Agreement or

reasonably provide against them and 2) to the extent that they result in damage, delay or service interruption.

Another emerging practice is that procuring agencies more carefully consider which events should not qualify as Force Majeure. If natural events occur regularly, procuring agencies believe that bidders can analyze and protect against those risks. For example, earthquakes are no longer considered Force Majeure in Chile, because they occur so frequently. The Chilean government mandates insurance covering earthquakes from PPP developers. Excluding such “common” events leaves only truly “exceptional” events as Force Majeure. For example, flooding may only become Force Majeure in the case heavy rains exceed a certain threshold per hour.

With Developers needing to take increased responsibility in mitigating climate risks, including by developing and implementing climate risk mitigation plans, it seems reasonable to make them responsible for compliance with their risk mitigation plans. As a consequence, the negative impacts of non-compliance with a risk mitigation plan should be excluded from the definition Force

Majeure. So for example, if in the project area, earthquakes are a common phenomenon and the government expects that any infrastructure project procured via PPP should include measures in their climate risk mitigation plan which ensure uninterrupted service up to a magnitude level of 6, then any service interruption that occurs as a result of earthquakes below a magnitude of 6 would not be able to be claimed under Force Majeure. Examples of this this approach were not identified in this effort.

4.3.2 Insurance and alternative risk transfer

In general, governments have had access to climate risk insurance in the Caribbean (see box below); however high insurance costs and issues with underinsurance have been common challenges. In response to these challenges, Caribbean countries have developed new risk transfer tools. The Caribbean Catastrophe Risk Insurance Facility, a regional risk pool described in the textbox below, is the most referenced solution.



Regional Risk Pooling for Caribbean States

In 2007, 16 Caribbean island countries (including Jamaica) came together to form a regional risk insurance pool, the Caribbean Catastrophe Risk Insurance Facility (CCRIF). More than 10 years later, the facility has grown to 22 members, including 19 Caribbean governments and 3 Central American governments. To date, CCRIF has made 41 payouts, totaling \$152 million, to 13 member governments. All payments were made within 14 days.³⁴

CCRIF is a first-of-its-kind government risk-sharing platform, aimed at helping members manage part of their catastrophe risk exposure through access to affordable and effective insurance coverage against natural disasters. Prior to CCRIF, the economic aspects of disasters had gone largely unmanaged by governments, which had mostly relied on post-disaster humanitarian assistance from donors. With CCRIF, the member governments have developed a parametric insurance mechanism that enables them to share their risk between all participating countries and provides rapid payouts—similar to business interruption insurance—to finance an initial disaster response while maintaining basic government functions immediately following an event.³⁵

The CCRIF helps its member governments limit the financial impact of catastrophic hurricanes, earthquakes and excess rainfall events, and enables quick, short term liquidity when disaster strikes. The facility offers ‘parametric insurance’, which delivers payouts

according to a specific, pre-agreed parameter or trigger, like a certain category of hurricane or level of windspeed, as opposed to real losses incurred. As a result, payments can be made quickly, as they do not depend on documentation proving damages to assets.

³⁴CCRIF SPC Annual Report 2018 - 2019, accessed via: https://www.ccrif.org/sites/default/files/publications/CCRIF_SPC_Annual_Report_2018_2019.pdf

³⁵Regional Risk Pooling for Caribbean States, Disaster Risk Financing & Insurance Program, World Bank Group

Over the last quarter century, a market for ‘alternative risk transfer’ mechanisms has developed, which helps contribute to making insurance more available in areas more prone to natural disasters. This is because the market mechanisms for insurance companies, reinsurers and facilities like CCRIF to transfer specific types of disaster risk to capital markets. Examples of these alternative risk transfer mechanisms include financial instruments like catastrophe bonds and weather derivatives.

Catastrophe bonds are securities, which pay the issuer when a pre-defined disaster risk is realized. Payouts can be triggered according to indemnity (that is according to actual losses), industry loss (that is when insurance industry losses reach a certain level), or according to a parametric trigger. In 2014, CCRIF worked with the World Bank to issue catastrophe bonds with parametric triggers. Doing so, enabled CCRIF to expand its risk capital pool beyond that of reinsurers to include capital markets. It also enabled CCRIF to benefit from the highly competitive prices of the ‘catbond’ market, thus enabling them to

offer tropical cyclone and earthquake policies at the lowest possible price to their member states.³⁶

Weather derivatives are financial instruments used by companies or individuals to hedge against the risk of weather-related losses.³⁷ For example losses due to drought, or warmer or colder than average temperatures. Sellers of weather derivatives agree to bear the risk of losses in return for a premium. Unlike, catastrophe bonds, which would likely be purchased by an insurer, reinsurer or sovereign, infrastructure project companies or utilities may see fit to purchase weather derivatives at the project level. For example, a wind energy project could take out a weather derivative contract with a third-party provider to help offset the potential risk of lower than expected wind and thus, ensure smooth revenue streams.³⁸ The box below provides an example of how Uruguay’s public energy utility worked with the World Bank to make use of a weather derivative and protect itself against the risks to its business associated with drought.

³⁶<https://www.ccrif.org/news/ccrif-members-benefit-world-bank%E2%80%99s-first-ever-cat-bond-issuance>

³⁷<https://www.artemis.bm/library/what-are-weather-derivatives/>

³⁸SCOR Global P&C Technical Newsletter, June 2012 p6



Weather Derivative to Mitigate the Effect of Drought on Energy Production in Uruguay³⁹

In 2013, Uruguay's state-owned public electric company, Administración Nacional de Usinas y Trasmisiones Eléctricas, (UTE), took out a 'hydropower energy index-linked weather derivative' facilitated via the World Bank, which acted as an intermediary between Uruguay and insurers and reinsurers.

UTE generates more than 80% of its electricity needs from hydropower sources. In 2012, the country faced extreme water shortages, which resulted in insufficient hydropower resources. This meant that UTE was forced to buy expensive power elsewhere to service its customers, the costs of which were born by the Government of Uruguay. To prevent facing this situation again, UTE and the Government of Uruguay structured a derivative with the help of the World Bank, which helped insure UTE against the possibility of drought and high oil prices. To measure extent of drought conditions, data was taken from 39 weather stations spread through two key river basins that served Uruguay's hydropower resources. If precipitation were to fall below the level set as a trigger in the derivative contract, then UTE would receive a payout of \$450 million, based on severity of the drought and oil prices. If oil prices are high, then the payout would be even larger to offset the higher cost of purchasing alternative fuel.

Ensuring investor interest in such a transaction requires that weather data collected is of good quality. In this case the presence of the World bank helped reassure investors in the quality of the data protocols; further the World Bank helped Uruguay develop a 'market ready' term sheet which formalized levels at which payouts would occur, variable to consider, tenors and amounts.

³⁹"Mitigating the Impact of Drought on Energy Production in Uruguay" World Bank Group Treasury 2015. Accessed: <http://documents.worldbank.org/curated/en/510901468142790487/pdf/93908-Uruguay-Weather-Derivative-2015.pdf>

While the market for ‘alternative risk transfer mechanism’ is evolving and in the future there could be more implications relevant to PPP projects, as part of this effort, no approaches of incorporating climate risk insurance or other alternative risk transfer mechanisms at the PPP project level were identified. The transaction costs of developing innovative risk transfer mechanisms in PPP transactions may be prohibitive for a procuring agency, which creates a potential role for multilaterals in funding such efforts.

Further, there are no indications that PPP developers have experienced significant challenges in acquiring insurance for infrastructure projects. One observation is that insurance policy terms are relatively short, which creates a tension with long term PPP contracts. Developers would be exposed to significant premium increases as a result of climate risks or more in general changes in financial and insurance markets, which would be an unmanageable risk and could lead to lower “value-for-money” of PPP transactions. Broadly defined uninsurability clauses – that include excessive increase in insurance premiums in the definition of uninsurability – have not been used in Jamaica but are more common internationally and can effectively mitigate this particular risk for developers.

This study has not uncovered the use of incentive mechanisms for PPP bidders to develop innovative insurance and alternative risk transfer solutions in a PPP procurement. This approach would not be very different from the emerging practice to request bidders to include a risk management plan in their technical proposal. It would only be a small adjustment to also explicitly include climate risks in the risk management plan, and from there only a small adjustment to explicitly include insurance and alternative risk transfer mechanisms. It could be interesting to further explore this approach.

4.3.3 Including an ‘Unavailability of (affordable) insurance’ clause in the PPP Agreement

Logically, the procuring agency would consider the availability of insurance in the initial allocation of climate risks, when such risks are considered material for a transaction. Procuring agencies typically also prescribe the use of relevant insurances in the RFP.

With changing climate conditions, an important question is what happens if certain climate risk insurance would no longer be available, or only at excessive costs. Several procuring agencies now include “uninsurability” clauses in PPP agreements. The consequences of an insured risk becoming uninsurable include:

- ▶ Negotiating a solution: Parties negotiate a mutually satisfactory solution for managing the risk.
- ▶ Relief from breach: Authority grants relief to the Developer from the obligation to insure to the extent the Developer’s has not caused the insurance to become unavailable.
- ▶ Insurer of last resort – If the authority accepts becoming insurer of last resort, it will be liable for the consequences of the occurrence of the uninsurable risk.

If the authority is insurer of last resort and the uninsurable risk occurs, it may either terminate or pay the Developer an amount equivalent to the insurance proceeds that would have been payable and continue the PPP Contract.

4.4 Recommendations

Stakeholders involved in Jamaica's PPP contract management stage could take measures to more systematically include climate resilience aims in how PPP contracts are developed and managed. For

example, DBJ could establish a robust set of requirements regarding the insurance package, based on up-to-date market information and a consideration of alternative risk transfer mechanisms.

4.1

Include insurance requirements in Project Agreement

- ▶ Include specific insurance requirements in RFP / PA.
- ▶ Do market sounding (and “value for money” assessment) of insurance.
- ▶ Consider alternative risk transfer mechanisms – such as cat bonds and weather derivatives – for large transactions.



IDB and other multilaterals and funds could potentially support the government of Jamaica by providing technical assistance on conducting a periodic assessment of insurability issues and potentially funding the transactions costs associated with the development of alternative risk transfer solutions.

The process of changing a PPP contract can be cumbersome and lengthy. However, new climate realities, which might bring about environmental and weather-related conditions not considered or anticipated at contract close, may necessitate alterations to the contract. If that is expected to be the case for a specific PPP project or projects, then the procuring agency may consider establishing a ‘simplified change regime’ for changes needed to address a climate risk/ or climate risks. This means examining the standard procedures for making changes to a PPP contract (e.g. approvals needed, documentation required) and evaluating whether in the case of the event of certain climate related risks, those standard procedures can be streamlined or fast tracked. Building in a degree of flexibility into a PPP contract in this way helps make it more ‘resilient’.

4.2

Consider simplified change regime

- ▶ Consider incorporating a simplified change regime in the Project Agreement for changes associated with improving climate resilience



The definition of Force Majeure typically captures climate risks that cannot be controlled by either party. It is recommended to make sure that the Force Majeure definition in any given PPP agreement adequately addresses project-specific climate risks.

4.3

Customize Force Majeure definition

- ▶ Develop customized definition of Force Majeure, based on the business case stage climate risk assessment



IDB and other multilaterals and funds could potentially support the government of Jamaica by providing technical assistance on tailoring the definition of Force Majeure to the relevant climate risks, focusing on the first (pilot) PPP project(s) where this practice will be applied.

Climate risks that are insurable at the start of a PPP project, may become uninsurable over the life of the PPP agreement. It is recommended that the PPP agreement anticipates such uninsurability or excessive increases in insurance premiums, and describes the process to deal with that event.

4.4

Anticipate uninsurability of climate risks

- ▶ Include process for future uninsurability in the contract, based on emerging practices.
- ▶ Evaluate availability of insurance, including terms (length) and conditions.



4.5

Update climate risk assessment

- ▶ Establish tools, mechanisms and guidelines for updating climate risk assessments.
- ▶ Evaluate changes in risk patterns Document findings for future considerations.



Finally, a climate risk assessment is not only relevant at the start of a project, but rather throughout the entire project life cycle. It is therefore recommended to periodically update the climate risk assessment. Whereas the Developer could be asked to take responsibility for this, it is recommended for the government to update the climate risk assessment and for the Developer to update the climate risk mitigation plan in response to that risk assessment.



IDB and other multilaterals and funds could potentially support the government of Jamaica by providing technical assistance on periodically updating the climate risk assessment during the early years of the PPP agreement, focusing on the first (pilot) PPP project(s) where this practice will be applied.

The table on the next page provides 1) a categorization of these recommendations in quick wins, medium- and long-term goals, 2) references to the tools facilitating the implementation of the recommendations and 3) an allocation of responsibilities for the implementation amongst the key stakeholders.

Figure 11

Categorization and Allocation of Contract Management Stage Recommendations

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			4.1 Include insurance requirements in Project Agreement.										
•			a. Include specific insurance requirements in RFP / PA.	N/A		I	R	C					
•			b. Do market sounding (and “value for money” assessment) of insurance.	N/A		I	R	C					
	•		c. Consider alternative risk transfer mechanisms – such as cat bonds and weather derivatives – for large transactions.	N/A		I	R	C					
			4.2 Consider simplified change regime.										
	•		a. Consider incorporating a simplified change regime in the Project Agreement for changes associated with improving climate resilience.	4.1		I	R	C					
			4.3 Customize Force Majeure definition.										
•			a. Develop customized definition of Force Majeure, based on the business case stage climate risk assessment.	4.2		I	R	C					
			4.4 Anticipate uninsurability of climate risks.										
•			a. Include process for future uninsurability in the contract, based on emerging practices.	4.3		I	R	C					
	•		b. Evaluate availability of insurance, including terms (length) and conditions.	N/A		I	R	C					
•			4.5 Update climate risk assessment.	N/A			I	R				C	C

Key: **R = Responsible** C = Consulted I = Informed

5

IMPLEMENTATION PLAN



5.1 Objective

To ensure that each investment is resilient to the effects of climate risks, GoJ will need to amend some its policies to explicitly integrate climate resilience aspects into infrastructure PPPs. The government is committed to incorporating climate risk and resilience in the PPP project development, implementation and management. This will require implementing the policy recommendations in this report, which are summarized in Appendix C as well as developing capacity around climate change and climate risk assessments among relevant PPP project development stakeholders. Increased capacity around this topic is needed at all stages of the project cycle. This implementation plan provides some practical steps for making that happen.

5.2 Implementation workstreams

The implementation plan would consist of four discrete, yet interrelated, workstreams.

5.2.1 Workstream 1: Policy revisions

Many of the policy recommendations discussed in this report require a revision of the PPP policy and standard procedure or PPP procurement documentation. These revisions can be implemented in the short to medium term and are summarized in Appendix C. The government may want to consider implementing several of these policy recommendations on regularly procured infrastructure projects and not just PPP projects. One way GoJ could consider ensuring systematic treatment of climate resilience goals in all infrastructure projects is to require it for all projects that filter through Jamaica's public investment management process – regardless of whether they eventually end up as PPPs or as traditionally procured projects – to be screened for climate risk.

5.2.2 Workstream 2: Capacity building

Developing capacity of all stakeholders involved is critical to successfully incorporating climate resilience in PPP projects. In addition to the IDB offering support and hiring external advisors for specialized activities, the government should continue to strengthen its climate risk and resiliency expertise in house.

5.1

Build capacity

- ▶ Raise general awareness about climate risk and resilience.
- ▶ Include climate risk experts on PIMSec staff and committee.
- ▶ Build up capacity to use Climate Risk Assessment toolkits.
- ▶ Hire external climate risk experts for discrete tasks if appropriate.
- ▶ Set up pool of climate risk experts to enhance tools and develop data platforms and inform project-level analyses.





IDB and other multilaterals and funds could potentially support the government of Jamaica by providing trainings and workshops on climate risk and resilience, particularly in the context of PPP projects.

5.2.3 Workstream 3: Pilot projects

The government of Jamaica is advised to make a deliberate attempt to apply all the policy recommendations and tools in selected pilot projects. It is recommended to activate existing networks—the Climate Change Advisory Committee and the Climate Change Focal Point Network—and where needed, supplement them with additional expertise, to coordinate this effort and exchange knowledge and experience.

5.2.4 Workstream 4: Develop tools and methods

The tools in the toolkit, tools like CCORAL, the various reference documents and the various climate risk assessment toolkits developed by multilaterals should allow for short-term implementation of the policy recommendations. In the medium- to long-term, it would be recommended for the government to develop its own climate risk assessment methods, data sources, and standards. The Government of Jamaica is recommended to develop such a program in a partnership with the University of the West Indies.

5.2

Develop own tools and methodologies

- ▶ Develop standardized methodology and approach for socio-economic analysis, feasibility analysis, and business case; and develop a methodology and approach to incorporate climate risks in such studies.
- ▶ Develop standardized methodology and approach to incorporating climate risk in value-for-money assessment.
- ▶ Develop standardized methodology and approach for conducting environmental impact assessment (EIA); and develop methodology and approach to climate risk in the EIA.
- ▶ Develop own screening tool and data platform.
- ▶ Develop indicators for, monitor and benchmark climate risks and climate resiliency measures.





IDB and other multilaterals and funds could potentially support the Government of Jamaica by providing technical assistance on the development of tools and methodologies for climate risk assessment and the incorporation of the results of climate risk assessments in other (existing) assessments.

5.3 Implementation timeline

Most of the recommendations in this report can be implemented in the short run. Annex C provides an overview of all recommendations and indicates if they can be considered a “quick win” and which should be considered for “medium term” or “long term” goal. The overview also includes references to tools in the toolkit that was developed in conjunction with this report. The tools provide practical guidance and are intended to facilitate implementation of the policy recommendations.

The recommended timeline for the implementation of the workstreams as defined in section 6.2 is as follows.

	Q1 2020	Q2 2020	Q3 2020	Q4 2020	2021	2022
Workstream 1						
Workstream 2						
Workstream 3						
Workstream 4						

5.4 Stakeholder involvement

While the Development Bank of Jamaica has initiated this effort, it is clear that successful implementation requires involvement from many other stakeholders, including PIMSec, the MoFPS PPP Unit, Subject Ministries.

Department and Agencies, the Climate Change Division of the Ministry of Economic Growth & Job Creation, the Office of Disaster Response and Emergency Management, NEPA, PIOJ and the University of the West Indies. Annex C lays out which organizations are responsible for the implementation of each policy recommendation and which need to be consulted or confirmed.

Figure 12

**Categorization and Allocation of Implementation/
Capacity Building Recommendations**

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			5.1 Build capacity										
•			a.	Raise general awareness about climate risk and resilience.	N/A	R	R	R	R	R	R	R	R
•			b.	Include climate risk experts on PIMSec staff and committee.	N/A	R		C	C	C	C	C	C
•			c.	Build up capacity to use IDB Climate Risk Assessment toolkit (and other tools).	N/A	R	R	R			R	R	R
•			d.	Hire external climate risk experts for discrete tasks if appropriate.	N/A		C	R		C	R	C	C
	•		e.	Set up pool of climate risk experts to develop tools and data platforms and inform project-level analyses.	N/A		C	C	R	R	R	C	C
			5.2 Develop own tools and methodologies.										
	•		a.	Develop standardized methodology and approach to incorporating climate risk in socio-economic analysis, feasibility analysis, and business case.	N/A	I	C	I	C	C	I	C	R
	•		b.	Develop standardized methodology and approach to incorporating climate risk in value-for-money assessment.	N/A	I	R	C	C	C	I	C	C
	•		c.	Develop standardized methodology and approach to incorporating climate risk in environmental impact assessment.	N/A	I	I	C	C	C	I	R	C

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
		•	d. Develop own screening tool and data platform.	N/A	I	I	I	C	C	I	R	R	R
		•	e. Develop indicators for, monitor and benchmark climate risks and climate resiliency measures.	N/A	I	I	I	R	C	C	R	R	R

Key: **R = Responsible** C = Consulted I = Informed

Appendix A bibliography

- / Airport Economics & Research. Norman Manley International Airport. 2008/2009. Economic Impact Assessment.
- / Caribbean Development Bank. 2017. Jamaica Highway 2000 Case Study.
- / Climate Change Policy Framework for Jamaica, 2015.
- / CL Environmental & National Road Operating and Construction Company - Government of Jamaica. 2013. Environmental Impact Assessment for the Proposed Highway 2000 North South Link - Caymanas to Linstead.
- / CL Environmental & National Road Operating and Construction Company - Government of Jamaica. 2012. Environmental Impact Assessment for the Proposed Highway 2000 North South Link - Moneague to Ochorrios.
- / CL Environmental. & National Road Operating and Construction Company - Government of Jamaica. 2012. Water Resource Risk Assessment for Highway 2000.
- / Environmental Solutions Ltd. 2011. Rapid Ecologic Assessment for the Proposed Extension of Runway at Norman Manley International Airport.
- / Foundation for Competitiveness and growth. 2019. ToR for Support to Environmental Assessment of the Caymanas Special Economic Zone Development.
- / Gensler. 2018. Caymanas Special Economic Zone Concept Master Plan.
- / Government of Jamaica & China Communications Construction Company Limited. 2012. Cooperation Agreement.
- / IFC Advisory Services in Public-Private Partnerships. 2013. Air Transport PPP Project. FINAL - Transaction Structure Report.
- / IFC/World Bank Group. 2019. Jamaica Solid Waste Management Options Analysis Report.
- / International Development Group LLC. 2019. Caymanas Special Economic Zone. Feasibility Study Final Report.
- / International Development Group LLC. 2019. Caymanas Special Economic Zone. Infrastructure Plans and Costs Estimates.
- / Jamaica North-South Highway Company Limited. 2012. Concession Agreement Highway 2000 North-South Link.
- / Kingston Container Terminal. 2013. Transaction Structure Report- Final Draft.
- / Maxwell Stamp PLC & Planning Institute of Jamaica. Strategic Advice on PPP for Milk River Mineral Bath and Bath Fountain Hotel & Spa.
- / Ministry of Health of Jamaica (MoH), Development Bank of Jamaica (DBJ), & Planning Institute of Jamaica (PIOJ). 2019. PPP Centres of Excellence in Oncology and Nephrology Statement of Vision and Conceptual Master Plan
- / Ministry of Science Technology, Energy, and Mining & Ministry of Local Government. 2012. Joint Ministerial Committee Report on Street Lighting.
- / National Water Commission, IFC, & Worley Parsons. 2014. Technical and Environmental Consultant Services Soapberry Wastewater Treatment Plant Project Pre-feasibility and Environmental and Social Impact Assessment.
- / National Road Operating and Construction Company Limited, Jamaica North-South Highway Company Limited, & China Harbour Engineering Company Limited. 2011. Implementation Agreement with Respect of The North-South Highway Project in Jamaica.

/ National Road Operating Construction Company Limited & Transjamaican Highway Limited. 2011. Amended and Restated Concession Agreement in Respect of the Highway 200o Project in Jamaica.

/ NMIA Airport Limited, IFC, & Development Bank of Jamaica. 2018. Request of Proposal Norman Manley International Airport.

/ Norman Manley International Airport. Environmental & Social – Climate Change Due Diligence Recommendations.

/ Public-Private Partnership & Privatisation Division Development Bank of Jamaica Limited. 2012. Policy and Institutional Framework for the Implementation of a Public-Private Partnership Programme for the Government of Jamaica: The PPP Policy.

/ Public-Private Partnership & Privatisation Division Development Bank of Jamaica Limited. 2016. PPP Privatisation and Policy Recommendation.

/ Public-Private Partnership & Privatisation Division Development Bank of Jamaica Limited. 2012. Policy Framework and Procedures Manual for the Privatisation of Government Assets: The Privatisation Policy.

/ Public-Private Partnership & Privatisation Division Development Bank of Jamaica Limited. PPP Contract Management Report.

/ Public Investment Management Secretariat (PIMSEC) - Government of Jamaica. 2017. Project Concept Summary Template.

/ Public Investment Management Secretariat (PIMSEC) - Government of Jamaica. 2017. Project Proposal Form.

/ Technological an Environmental Management Network LTD. 2013. Environmental Impact Assessment of the Development of Infrastructure Capacity at Kingston Harbour: Channel Upgrade & Fort Augusta Development.

/ The Port Authority. 2014. Kingston Container Terminal Concession Agreement.

/ The Por Authority & The Development Bank of Jamaica. 2014. Request of Proposal for the Long-Term Concession to Finance, Expand, Operate, Maintain, and Transfer Kingston Container Terminal.

Appendix B interviews

The IMG Rebel Team held meetings with different agencies in Jamaica from January 29th to February 1st, 2020 as part of the inputs this diagnostic assessment. The agencies interviewed included:

- ▶ Development Bank of Jamaica.
- ▶ The Airport Authority of Jamaica.
- ▶ Ministry of Economic Growth & Job Creation - Housing Division.
- ▶ Port Authority of Jamaica & Kingston Free Port Terminal Limited.
- ▶ National Road Operating and Constructing Company Limited.
- ▶ National Environment and Planning Agency.
- ▶ University of the West Indies.
- ▶ Public Investment Management Secretariat.
- ▶ Jamaica Chamber of Commerce.

Appendix C policy recommendations overview

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			1.1 Develop screening-level climate risk assessment										
•			a. Improve access to geophysical and hydrometeorological hazard data for use by project teams.	N/A	I		I	I		I	I	C	R
•			b. Identify and classify geophysical and hydrometeorological hazards.	1.1	I		I	R		C	C	C	R
•			c. customize the project characteristics in the vulnerability assessment.	1.2	I		I	R		I	C	C	C
•			d. Classification of project vulnerability.	1.2	I		I	R		I	C	C	C
•			e. Summarize and score climate risk profile.	1.3	I		I	R		I	C	C	C

Key: **R = Responsible** C = Consulted I = Informed

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			1.2 Include climate risk in other (existing) assessments.										
•			a. Include climate risk profile in PIMSec project submission templates.	N/A	R		I	C		I	I	I	
•			b. Include climate resiliency in PPP criteria in the policy guidelines.	N/A	I		R	C		I	I	I	
•			c. Include the same process for unsolicited proposals.	N/A	I		R	I		I	I	I	
			2.1 Develop detailed level climate risk assessment for projects with medium and high-level climate risk profiles.										
•			a. Provide geophysical and hydrometeorological hazard data.	N/A	I	I	I	I		I	I	C	R
•			b. Qualitative assessment of geophysical and hydrometeorological hazards.	2.1	I	I	I	R		C	C	C	R
•			c. Qualitative assessment of project vulnerability.	2.2	I	I	I	R		C	C	R	R
•			d. Develop climate risk mitigation / allocation measures / plan.	2.3	I	I	I	R		C	C	R	R
•			e. Quantitative assessment of climate risks.	2.3	I	I	I	R		C	C	R	R
			2.2 Include climate risk in other (existing) assessments.										
•			a. Consider climate risk in socio-economic analysis / benefit cost analysis.	2.6	I	C	C	R		C	C	C	C
•			b. Consider climate risk in financial feasibility analysis / business case / (contingent) fiscal impact assessment.	2.7	I	C	C	R		C	C	C	C

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
•			c. Consider climate risk in value for money assessment.	2.8	I	R	C	C		I	I	I	I
•			d. Consider climate risk in environmental impact assessment.	2.9	I	I	C	C		I	R	I	I
			3.1 Include climate risk considerations in RFQ.										
•			a. Include regional / global experience with projects with a similar climate risk profile as an RFQ evaluation criterion.	3.1	I	I	R	I					
			3.2 Include climate risk considerations in technical provisions.										
•			a. Address climate risk conditions to the extent possible in minimum technical requirements.	3.2 3.3	I	I	I	R					
•			b. Include obligation to develop emergency preparedness and response plan within [__90__] days of start date in PPP contract.	3.4	I	I	R	C		C			
			3.3 Include climate risk considerations in RFP.										
•			a. Include climate risk mitigation plan in RFP submission requirements.	3.5			R	R			C		
•			b. Include climate resilience in evaluation criteria.	3.5	I	I	I	R			C		
			3.4 Include climate risk considerations in Project Agreement.										
•			a. Include obligation to periodically update the climate risk mitigation plan as submitted in proposal.	3.6	I	I	R	C					

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
•			b. Include enforcement mechanisms for minimum requirements as well as proposed and updated climate risk mitigation plan.	3.7	I	I	R	C					
			3.5 Consider climate resilience funding and financing mechanisms.										
•			a. Consider concessional financing options.	3.8	I	I	R	C	I			I	
•			b. Consider innovative funding options.	3.9	I	I	R	C	I			I	
•			c. Consider innovative financing options.	3.1	I	I	R	C	I			I	
			4.1 Include insurance requirements in Project Agreement.										
•			a. Include specific insurance requirements in RFP / PA.	N/A		I	R	C					
•			b. Do market sounding (and “value for money” assessment) of insurance.	N/A		I	R	C					
•			c. Consider alternative risk transfer mechanisms – such as cat bonds and weather derivatives – for large transactions.	N/A		I	R	C					
			4.2 Consider simplified change regime.										
•			a. Consider incorporating a simplified change regime in the Project Agreement for changes associated with improving climate resilience.	4.1		I	R	C					
			4.3 Customize Force Majeure definition.										
•			a. develop customized definition of Force Majeure, based on the business case stage climate risk assessment.	4.2		I	R	C					

Quick win	MT goal	LT goal		Tool	PIMSec	MoFP PPP Unit	DBJ PPP Unit	Subject Ministries	MEGJC - Climate	ODPEM	NEPA	PIOJ	UWI
			4.4 Anticipate uninsurability of climate risks.										
•			a. Include process for future uninsurability in the contract, based on emerging practices.	4.3		I	R	C					
	•		b. Evaluate availability of insurance, including terms (length) and conditions.	N/A		I	R	C					
•			4.5 Update climate risk assessment.	N/A			I	R				C	C
			5.1 Build capacity.										
•			a. Raise general awareness about climate risk and resilience.	N/A	R	R	R	R	R	R	R	R	R
•			b. Include climate risk experts on PIMSec staff and committee.	N/A	R			C	C	C	C	C	C
•			c. Build up capacity to use IDB Climate Risk Assessment toolkit (and other tools).	N/A	R		R	R			R	R	R
•			d. Hire external climate risk experts for discrete tasks if appropriate.	N/A			C	R		C	R	C	C
•			Set up pool of climate risk experts to develop tools and data platforms and inform project-level analyses.	N/A			C	C	R	R	R	C	C
			5.2 Develop own tools and methodologies.										
•			Develop standardized methodology and approach to incorporating climate risk in socio-economic analysis, feasibility analysis, and business case.	N/A	I	C	I	C	C	I	C	R	R
•			Develop standardized methodology and approach to incorporating climate risk in value-for-money assessment.	N/A	I	R	C	C	C	I	C	C	C
•			Develop standardized methodology and approach to incorporating climate risk in environmental impact assessment.	N/A	I	I	C	C	C	I	R	C	C
		•	Develop own screening tool and data platform.	N/A	I	I	I	C	C	I	R	R	R
		•	Develop indicators for, monitor and benchmark climate risks and climate resiliency measures.	N/A	I	I	I	R	C	C	R	R	R

Appendix D PPP criteria revisions

PPP Criterion	Suggestion for improvement PI = Project Identification Stage; BC = Business Case Stage
Project is viable	<p>Sub-criterion “Technically feasible”</p> <ul style="list-style-type: none"> • PI: Include explicit reference to climate risk in technical pre-feasibility study. • BC: Include explicit reference to climate risk in technical feasibility study. <p>Sub-criterion “Environmentally compliant”</p> <ul style="list-style-type: none"> • PI: Expand definition to the following: <i>There is a reasonable expectation that the project is environmentally sustainable not only under current climate conditions, but also considering future climate conditions based on expert opinion or an initial environmental impact assessment.</i> • PI: Include explicit reference to scenario analysis of future climate reference in content of initial EIA, if applicable. • BC: Include explicit reference to scenario analysis of future climate reference in content of EIA (refer to tool 2.2d). <p>Sub-criterion “Socially sustainable”</p> <ul style="list-style-type: none"> • PI: Expand definition to the following: <i>There is a reasonable expectation that the project is socially sustainable not only under current climate conditions, but also considering future climate conditions.</i> • BC: Include explicit reference to the assessment in current and future climate conditions in social impact assessment and the public consultation. <p>Sub-criterion “Economically viable”</p> <ul style="list-style-type: none"> • PI: Add requirement by extending the preliminary economic analysis with scenario analysis of future climate (e.g. by considering how benefits and costs may change with a changing climate). • BC: Add requirement by extending the economic analysis with scenario analysis of future climate.
PPP achieves Value for Money	<p>Sub-criterion “One or more PPP Value Drivers applies”</p> <ul style="list-style-type: none"> ▶ PI+BC: Expand the definition of PPP value drivers: <ul style="list-style-type: none"> • with an additional value driver related to <i>flexibility</i> of the contract in relation to the need for flexibility due to the uncertainty of future climate conditions; and • by explicitly considering climate risk in the value driver risk management.

PPP Criterion	Suggestion for improvement PI = Project Identification Stage; BC = Business Case Stage
	<p>Sub-criterion “Value for Money: PPP achieves greater net economic benefit than public provision”</p> <ul style="list-style-type: none"> ▶ PI+BC: Add requirement by including or improving existing criteria <ul style="list-style-type: none"> • add climate risk to risk management. • add inflexibility as potential negative effect in criteria that define the (I: preliminary) comparison of economic costs and benefits. <p>Sub-criterion “Risks are identified and allocated optimally”</p> <ul style="list-style-type: none"> ▶ Standardize overall risk assessment with a framework explicitly including climate risks.
PPP is marketable	<p>Sub-criterion: “PPP is a viable commercial project”</p> <ul style="list-style-type: none"> ▶ PI: Add consideration to analysis of commercial viability, how climate risk might affect market appetite or return expectations ▶ BC: Consider how climate risk influences commercial risk e.g. by considering impacts (and potential valuation) of climate risk on business case and return expectations ▶ BC: Consider early market sounding for projects with high climate risk
PPP is fiscally responsible	<p>Sub-criterion: “Fiscal risk would not be destabilizing”:</p> <ul style="list-style-type: none"> ▶ PI+BC: Explicitly add to the consideration of fiscal risks “including fiscal risks associated with Force Majeure events”

