



Status of Incorporation of Disaster Risk Management in National Public Investment Systems

**Barbados and Trinidad and
Tobago**

IDB

**Inter-American
Development Bank**

Environment, Rural
Development and
Disaster Risk
Management
Division

TECHNICAL NOTE

No. IDB-TN-527

August 2014

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Inter-American Development Bank

2014

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

Status of incorporation of disaster risk management in national public investment systems: Barbados and
Trinidad and Tobago / Inter-American Development Bank.

p. cm. — (IDB Technical Note ; 527)

Includes bibliographic references.

1. Natural disasters—Risk management—Trinidad and Tobago. 2. Natural disasters—Risk management—
Barbados. 3. Public investments—Trinidad and Tobago. 4. Public investments—Barbados. I. Inter-
American Development Bank. Environment, Rural Development and Disaster Risk Management Division.
II. Title. III. Series.

IDB-TN-527

<http://www.iadb.org>

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ACRONYMS

CARICOM	The Caribbean Community
CCA	Climate Change Adaptation
CDEMA	The Caribbean Disaster Emergency Management Agency
CDERA	The Caribbean Disaster Emergency Response Agency
CDM	Comprehensive Disaster Management
CEC	Certificate of Environmental Clearance
CZMU	Coastal Zone Management Unit, Barbados
DEM	Department of Emergency Management, Barbados
DRM	Disaster Risk Management
ECLAC	Economic Commission for Latin America and the Caribbean
EIA	Environmental Impact Assessment
EMA	Environmental Management Agency
GOTT	Government of the Republic of Trinidad and Tobago
ICT	Information Communications Technology
IDB	Inter-American Development Bank
NIDCO	National Infrastructure Development Company Limited, Trinidad and Tobago
NPIS	National Public Investment Systems
ODPM	Office of Disaster Preparedness and Management, Trinidad and Tobago
PDP	Physical Development Plan, Barbados
PIP	Public Investment Project
PIU	Public Investment Unit, Barbados
PSIP	Public Sector Investment Programme, Trinidad and Tobago
SIDS	Small Island Developing States
SPC	Special Purpose Company
TCDPO	Town and Country Development Planning Office, Barbados
TCPA	The Town and Country Planning Act, 1965, Barbados
TOR	Terms of Reference

T&CD

Town and Country Planning Division, Trinidad and Tobago

UDeCOTT

The Urban Development Corporation of Trinidad and Tobago Limited

ABSTRACT¹

Status of Incorporation of Disaster Risk Management in National Public Investment Systems: Barbados and Trinidad and Tobago

In 2012 the Inter-American Development Bank developed a methodology to assess the status of and progress in the incorporation of disaster risk management (DRM) in the national public investment systems (NPIS) of its borrowing countries. The methodology includes a total of 23 parameters that categorize five (5) main criteria viz. institutional capacity for NPIS; development of conceptual models, methodologies and tools to incorporate DRM in PIP; dissemination, training, technical support and information on the incorporation of DRM in NPIS; political consensus and follow up on the gradual adoption of technical tools for the incorporation of DRM in NPIS; and mechanisms of control. This Technical Note presents the results of the application of the methodology in two Caribbean countries: Barbados and Trinidad and Tobago. The Note includes an explanation of the model that served as the basis for the study, including the criteria, parameters and a description of the data and information collection process. The findings of the assessment for each of the two countries are presented along with recommendations for the more effective incorporation of DRM in NPIS.

JEL Code: Q54 (Climate; Natural Disasters; Global Warming).

Keywords: Disaster risk management, National Public Investment Systems, Incorporation of DRM in NPIS, Barbados, Trinidad and Tobago.

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1. INTRODUCTION

1.1 Justification

Small Island Developing States (SIDS) including Caribbean states have been described as generally facing resilience and sustainability challenges arising from their small size, open economies and in most cases limited natural, human and financial resources, which can restrict their capacity to diversify their economic activities and increase their vulnerability to exogenous economic shocks (Rasmussen, 2004; Easterly and Kraay, 2000). In addition, they experience difficulty in adequately managing their environment (Turvey, 2007) and are often highly susceptible to the effects of natural hazards such as tropical storms and hurricanes (CDEMA, 2014).

Statistics show that the Caribbean is the second region in the world most prone to natural hazards; and on an annual basis the estimated disaster losses due to both climatic and geologic hazards are in the order of US\$3 billion. Between 1990 and 2008 alone, the Caribbean experienced 165 natural disasters with a combined total of damage and losses estimated at US\$136 billion. More than 2.5 million persons were affected. The major impacts were to the key economic sectors of agriculture, tourism and manufacturing, and estimated at US\$63 billion or 46% of total impacts (ECLAC, 2010).

Disaster impacts in specific years in the Caribbean states have been particularly devastating. Damage and losses due to Hurricanes Frances, Ivan and Jeanne which affected The Bahamas, Cayman Islands, Dominican Republic, Grenada, Haiti, and Jamaica in 2004 were in excess of US\$6 billion (ECLAC, 2005). In Grenada alone, losses from Hurricane Ivan were estimated at US\$800 million or approximately 200% of GDP (Rasmussen, 2004); while in Jamaica the economic impact was US\$595 million, or 8% of GDP. Haiti experienced four (4) storms in 2008 and suffered damage estimated at over US\$1 billion or 5% of the country's GDP (Laframboise and Loko, 2012). Total damage and losses due to the January 2010 7.0 magnitude earthquake in Haiti were evaluated at US\$7.8 billion² or 120% of 2009 GDP (ECLAC, 2010); 230,000 lives were lost and more than 600,000 left homeless.

²<http://www.cepal.org/cgibin/getProd.asp?xml=/prensa/noticias/comunicados/3/38753/P38753.xml&xsl=/prensa/tpl-i/p6f.xsl&base=/prensa/tpl-i/top-bottom.xsl>

The frequency, total estimated damage costs, number affected and lives lost due to disasters in the Caribbean are increasing (EM-DAT, 2010). Impacts from natural hazards and disasters are expected to intensify as a result of climate change, especially since 60% of the Region's population and 70% of its economic activity are located within two miles of coastlines (CDEMA, 2014), placing them at high risk. Bueno et al. (2008) projected that on the basis of: (i) hurricane damages, (ii) tourism losses; and (iii) infrastructure damage (primarily due to sea level rise exclusive of hurricane damages), annual costs as a result of inaction to climate change ranges from US\$22 billion annually by 2050 and US\$46 billion by 2100 (amounts in 2007 dollars; percentages based on 2004 GDP). These costs represent 10% and 22%, respectively, of the Caribbean economy in terms of 2004 GDP figures.

Constrained budgets, high debt levels and restricted access to insurance risk transfer due to the costs, have generally limited the capacity of SIDS including those in the Caribbean to absorb the financial impacts of natural disasters. Inadequate responses to disaster events stymies recovery and have been identified as leading to negative secondary socioeconomic effects (Cashin et al., 2006).

The loss of life and negative economic and social consequences of disaster events in several islands of the Caribbean demonstrate the need for general implementation of effective disaster risk management (DRM) mechanisms at the national and local level. Integration of DRM in public investment as part of the national DRM strategies within the Region can be expected to reduce the susceptibility of public infrastructure to major damage and consequent negative economic and social effects. Incorporation of DRM in public investments implies the existence of laws, standards and regulations, as well as the design, development and implementation of conceptual and methodological frameworks for the incorporation and the practical application of DRM tools in the public investment projects.

1.2 Caribbean Disaster Risk Management Framework

In 2001 The Caribbean Community (CARICOM) adopted Comprehensive Disaster Management (CDM) as the regional strategy for DRM. The Caribbean Disaster Emergency Response Agency

(now CDEMA³), has been described CDM as involving “...all actions required to ensure that a country or jurisdiction has a capability to deal with all types of hazards, at all phases of the Disaster Management Cycle: Prevention and Mitigation, Preparedness, Response and Recovery by coordination of the wide-ranging actions and utilizing all necessary resources available from numerous agencies” (CDERA, 2007). The objective of the strategy was to integrate CDM in the development process of all CDERA countries.

An Enhanced CDM Strategy and Framework was introduced for the period 2007-2012 with the stated goal of ‘Regional Sustainable Development enhanced through Comprehensive Disaster Management’. This strategy was intended to “strengthen regional, national and community level capacity for mitigation, management, and coordinated response to natural and technological hazards, and the effects of climate change” (CDEMA, 2007). One of the four (4) priority outcomes of the enhanced CDM strategy is mainstreaming DRM at national levels and incorporating DRM into key sectors of national economies. Expected outputs from this priority outcome include (i) CDM being recognised as the roadmap for building resilience; and (ii) decision-makers in the public and private sectors understand and take action on DRM.

More recently, CDEMA has approved a Regional CDM Strategy and Programming Framework for the period 2014-2024 in which the integration of DRM into the development planning and decision making process is a strategic objective. The goal of the draft CDM Strategy 2014-2024 is to realise “Safer, more resilient and sustainable CDEMA Participating States through Comprehensive Disaster Management” (CDEMA, 2014). This goal is supported by four high level priority outcomes viz. Outcome 1: Strengthened institutional arrangements for CDM implementation at national and regional levels; Outcome 2: Increased and sustained knowledge management and learning for CDM; Outcome 3: Improved effectiveness of CDM at sectoral levels; and Outcome 4: Strengthened and sustained capacity for a culture of safety and community resilience in Participating States. Four cross-cutting themes viz. gender mainstreaming, climate change; ICT (Information Communications Technology) and environmental sustainability underpin Strategy and Programming Framework. These build on the

³ The Caribbean Disaster Emergency Management Agency.

outcomes of the previous strategy but also include focus on a more strategically aligned and integrated risk management approach where climate change considerations are integrated into priority sectors. In addition, the strategy calls for development of an implementation plan that will support actions at the national, regional and sectoral levels.

1.3 Context of the Study

In 2012 the Inter-American Development Bank (IDB) developed a methodology to assess the status of and progress in the incorporation of DRM in National Public Investment Systems (NPIS) of its borrowing countries. The methodology includes a total of 23 parameters that categorise five (5) criteria viz. (i) institutional capacity for NPIS; (ii) development of conceptual models, methodologies and tools to incorporate DRM in Public Investment Project (PIP); (iii) dissemination, training, technical support and information on the incorporation of DRM in NPIS; (iv) policy consensus and follow up on the gradual adoption of technical tools for the incorporation of DRM in NPIS; and (v) mechanisms of control. To date, the methodology has been applied in two countries viz. Costa Rica and Panama.

This Technical Note presents the results of the application of the IDB's methodology for the assessment of the status of the incorporation of DRM in NPIS and PIPs in two Caribbean countries: Barbados and Trinidad and Tobago. The Note includes an explanation of the model that served as the basis for the study, including the criteria, parameters and a description of the data and information collection process. The findings of the assessment for each of the two countries are presented along with recommendations for the effective incorporation of DRM in NPIS in these countries.

2. METHODOLOGY OF THE STUDY

2.1 National Public Investment System (NPIS)

The NPIS is defined in this Technical Note as the institutions in charge of receiving, analyzing and technically approving investment proposals from Ministries and other public organizations (sectorial and regional) with the aim of efficiency in public expenditure on investments. This system is expected to support the approval and financing of appropriate projects that best serve

national objectives (CEPREDENAC, 2012). The PIP is the basic unit of management resources, activities and time to achieve a specific product that contributes to developmental, economic, social and environmental outcomes (CEPREDENAC, 2012).

To be assessed as appropriate, a project should be demonstrated as being sustainable over time, economically profitable for the country, congruent with public policy and national priorities, and contributing to Government's or national goals and objectives.

In very general terms, some of the common functions of NPIS coordinating institutions should include:

- Training for participating actors in public investment;
- Development of legal instruments as well as functioning, normative and technical methods and tools;
- Technical viability assessment and evaluation of the economic and social profitability of projects;
- Preparation and formulation of PIPs;
- Technical approval of project formulation;
- Information management of PIPs;
- Monitoring implementation and follow up of the public investment process; and
- Management of financial resources in some countries.

Within this framework, for DRM to be incorporated in an effective way into systems and processes of planning and execution of public investment, it must be reflected explicitly in:

- a. Laws and Regulations that determine the minimum content of the pre-investment studies;
- b. General and specific methodologies and measures for incorporation of DRM; and
- c. Registration of public investment projects on a Project banks.

Within the Caribbean, various institutions in each country are involved in NPIS with responsibility for directing different aspects of the management and operation of these systems. These aspects include providing mechanisms for coordination training, monitoring, regulation,

and management of information relating to public investment. Incorporation of DRM requires the existence of a coordinating body for NPIS. In the Caribbean these bodies are generally within the agencies in charge of fiscal management and planning systems, such as the Ministries of Finance and Planning or affiliated body, as well as other institutions responsible for public investment projects.

The bodies generally responsible for coordinating NPIS in the Caribbean include (Ortegón and Dorado, 2006):

- The line Ministries under whose remit a project falls and in which the project idea is often generated and the budgetary approval process is undertaken
- The public sector special purpose agencies (SPC) in Trinidad and Tobago such as the Urban Development Corporation of Trinidad and Tobago Limited (UDeCOTT) that execute the projects, monitor the technical progress and implementation
- The Planning Ministries that manage the NPIS budget, review the progress of many projects and make recommendations for budgetary funding
- Special advisory or technical committees that supervise national planning or special PIPs.

The functions governing institutions of public investment in the Caribbean vary by institution and in some cases by project. Common functions include:

- Analysis of the economic and social profitability of the project
- Preparation of pre-feasibility studies and cost estimates to obtain Cabinet approval
- Development and formulation of the PIP (often in concert with contracted consulting firms or individual consultants for large projects)
- Obtaining budgetary approval in the national budget
- Execution of projects
- Monitoring execution of the projects
- Managing the national public investment budget.

Analysis of the incorporation of DRM in PIPs is based on the evaluation of risk analysis applied to the methodological steps and tools used in a project. Risk analysis is a set of tools that are applied to the pre-investment, investment and operation stages of a project. At the pre-

investment stage, tools for threat and vulnerability analysis, risk estimates, and incorporation of risk reduction measures are applied. At the investment stage, a detailed analysis and implementation of risk reduction measures are applied. And finally, at the project operation stage, monitoring and evaluation of risk management indicators are applied (PREDECAN 2009).

2.2 Methodology of the study

As stated in Section 1.3, the methodology to assess the status of and progress in the incorporation of DRM in NPIS includes a total of 23 parameters that categorise five (5) criteria: (i) institutional capacity for NPIS; (ii) development of conceptual models, methodologies and tools to incorporate DRM in PIP; (iii) dissemination, training, technical support and information on incorporation of DRM in NPIS; (iv) policy consensus and follow up on the gradual adoption of technical tools on incorporation of DRM in NPIS; and (v) mechanisms of control. The progress in each of the 23 parameters is evaluated on three levels: green (accomplished), yellow (in progress) and red (incipient). The criteria and parameters used in the study are detailed in Table 1. In addition, the study also assesses the incorporation of climate change adaptation (CCA) in NPIS.

Information was collected through interviews with public officials and technicians that have the responsibility for NPIS. These include the Ministries of Finance and Planning as well other Government Ministries and organisations involved in the formulation, implementation, evaluation and other roles in PIPs. The national agencies responsible for disaster risk management (Office of Disaster Preparedness and Management (ODPM) in Trinidad and Tobago and the Department of Emergency Management (DEM) in Barbados) were also interviewed. The selection of organisations to be surveyed in each country was informed by the structure of the planning and public investment functions within the country as indicated by the organisations with responsibility for public investment activities. For example, Trinidad and Tobago has a NPIS structure where a large part of the public investment implementation activity is executed by SPCs such as NIDCO and UDeCOTT, each of which have a reporting relationship with the Government Ministry to which they have been assigned.

Senior officials at the level of Technical Head or Director in the national DRM agency and the Ministry responsible for the national public investment function were identified as appropriate interviewees for the study. Senior officials at Ministries or other bodies that account for the

major portions of the public investment budget in each country were also identified as important sources of data. Face-to-face structured interviews (with the use of a questionnaire) were carried out during December 2013 in Trinidad and Tobago and in January 2014 in the case of Barbados.

The methodology is based on interviewees providing their personal opinions on the parameters included in the questionnaire, as well as supporting documentation such as legislation, regulations and procedures. Details of the organisations surveyed and the Office held by the interviewees are presented at Annex II. Information obtained during the interviews was supplemented by a review of supporting documentation provided by the organisations surveyed and of published information related to the NPIS and DRM in the two countries.

The criteria and parameters used in the study are detailed in Table 1.

Table 1
Criteria and Assessment Parameters for Assessing the Incorporation of DRM in the NPIS in the Caribbean

Criterion	Parameter	Assessment
Institutional framework for processes and national systems of public investment	Existence of legislation for the NPIS.	This assesses whether there is a legal framework that clearly defines the responsibilities in relation to: (i) the development of standards, methods and technical instruments for the formulation of PIPs, (ii) the analysis of technical feasibility and economic and social profitability of the PIPs, (iii) the management of information on the PIPs, (iv) monitoring for accomplishment and follow-up of public investment process; and (v) training to actors involved in public investment. Where there is an institutional framework that is not supported by enacted legislation or the relevant regulations,

		the status of accomplishment of this parameter is assessed as being in progress.
	Existence of an organizational structure for the functionality and coordination of NPIS.	This assesses whether the entity or entities responsible for the NPIS has/have an organizational structure that allows developing functions established by the legal framework, including coordination with all public stakeholders involved in the PIP.
	Existence of regulations for the NPIS.	This assesses whether, in addition to the legal framework that establishes entity or entities responsible for the NPIS, such framework assigns regulations for the establishment and follow up monitoring of procedures for the PIP at the operational level.
	Existence of manuals for the NPIS.	This assesses whether the NPIS has manuals that define the procedures for elaboration, approval, registration and monitoring of a PIP, including specific guidelines for investments at sector Ministries.
	Existence of mechanisms of technical approval of the PIP.	This assesses whether the legal framework and the manuals define clearly the technical mechanisms for the approval of the PIP.
	Existence of technical supervision for the	This assesses whether those responsible for the NPIS, both in terms of the coordination system and in sector Ministries, effectively perform technical

	implementation of projects.	supervision of the execution of the PIP.
	Existence of mechanisms for the dissemination and access to material related to the rules and presentation of the PIP.	This assesses whether there are mechanisms for the dissemination among members of the NPIS and civil society. Mechanisms include guidelines, manuals, bulletins and other materials relating to procedures and progress of the NPIS.
Development of conceptual models, methodologies and tools for incorporation of DRM in PIP	Existence of conceptual models for the incorporation of the DRM in public investment projects.	This assesses whether the legislation and guidelines of the NPIS include the description of conceptual models for the incorporation of DRM and in the PIP.
	Existence of methodologies for incorporation of DRM in PIP.	This assesses whether the guidelines and manuals for the PIP develop methodologies to be applied for the incorporation of DRM that are consistent with proposed conceptual models.
	Existence of technical tools for the incorporation of the DRM in NPIS.	This assesses whether, in addition to a conceptual framework and a methodology for the incorporation of DRM in NPIS, there are technical tools such as for site evaluation, models for vulnerability analysis by each component, etc.
	Existence of mechanisms of	This assesses whether the mechanisms for approval of the PIP considers, as part of the criteria for

	technical approval of the PIP with inclusion of the risk analysis.	approval, the incorporation of risk analysis in the PIP.
	Existence of mechanisms of technical approval of the PIP for the phase of reconstruction. ^[11]	This assesses whether there are special mechanisms for the reconstruction phase that guarantee rapid processes, with transparency and without reconstruction of the risk.
	Existence of other instruments, such as building codes, environmental impact assessment which are used at a general level both in the public and private sector.	This assesses whether instruments such as building codes and the environmental impact assessments incorporate considerations of DRM and if applied widely to the PIP, as part of the rules and procedures in force.
Outreach, training, technical assistance and information on incorporating DRM in PIP	Existence of processes of sensitization for authorities and national and subnational officers, private sector, civil society and others in	This assesses whether actions have been developed/taken to sensitize key actors regarding the incorporation of DRM in PIPs, in order to ensure and increase awareness of the issue.

	<p>respect to the importance of incorporating DRM in PIP.</p>	
	<p>Existence of technical assistance to the institutions that manage the system to formulate PIP, with emphasis on the specific application of the concepts and methodologies developed by the government.</p>	<p>This assesses whether the NPIS provides technical assistance to the institutions that formulate PIP systems, including specific support for the application of the methodologies and concepts in relation to the incorporation of DRM in PIPs.</p>
	<p>Existence of personnel responsible for project design trained in the application of the methodology of risk analysis.</p>	<p>This assesses whether the staff responsible for the design of the PIP within the NPIS is trained in the application of methodologies and tools for incorporating DRM.</p>
	<p>Existence of inventories of public infrastructure by</p>	<p>This assesses whether there are databases of public infrastructure inventory for different sectors or regions.</p>

	sector or region.	
	Existence of timely and reliable information of hazards, vulnerability and risk available to PIP formulators and managers.	This assesses whether PIP formulators have access to timely and reliable information on hazards, vulnerability and risk, allowing for application of the methodology and tools for the incorporation of DRM in PIPs.
Policyconsensus and follow-up for the gradual adoption of the technical tools in the incorporation of DRM in PIP	Update the regulations governing the minimum parameters of the DRM in public investment.	This assesses whether in the last five (5) years, the country has developed or is developing initiatives to update the rules and the criteria that define the minimum parameters for the incorporation of DRM in PIPs.
	Existence of reasonable deadlines for the incorporation of DRM in PIP and the verification of its obligation.	This assesses whether the legal framework and procedures define reasonable deadlines for the incorporation of DRM in PIPs and the verification of their mandatory minimum contents, general methodology and projects bank, specific sectorial methodologies, and specific methodologies at the territorial level.
	Existence of mechanisms to	This assesses whether there are mechanisms to identify, document and disseminate best practices

	identify, exchange and dissemination of successful experiences.	that can promote the incorporation of DRM in PIPs.
Control mechanisms	Existence of control or audit involvement by national authorities, in order to ensure the timely compliance with the regulations.	This assesses whether the national authorities of control and audit perform actions to verify the compliance of the NPIS.
	Existence of sanctions for non-compliance with the standards and the incorporation of the DRM in PIP from authorities of control and audit or other relevant institutions.	This assesses whether there are relevant experiences, sanctions for noncompliance in the incorporation of DRM in PIPs by control and audit authorities or other relevant institutions.

2.3 Application of the methodology of the study

A questionnaire was developed based on the criteria and related parameters being examined. For each country, every parameter was assessed on the three-item ordinal scale of color with green representing accomplishment of the parameter, yellow indicating progress towards accomplishment and red indicating no progress identified although there may be isolated and

sporadic actions taken. The interpretation of each colour is as follows (The Assessment Matrix/ Questionnaire at Annex I refer):

Green	Parameter fulfilled or accomplished in the country
Yellow	There is progress in the fulfilment of the parameter. However, there are actions pending
Red	Actions aimed at the fulfilment of the parameter are non-existent or very incipient and isolated

In addition to the questionnaire, respondents were asked to give their perception or experience on incorporating CCA concepts or methodologies in the NPIS and any programme of dissemination of information and training in this regard.

It is important to note the following:

- The selection of interviewees was informed by identification of institutions that are involved in or relevant to the NPIS and the DRM function in both countries.
- As required in the methodology, those interviewed provided their personal opinion about the criteria and parameters of the incorporation of DRM in the NPIS. Accordingly, the assessments represent their perceptions and interpretations regarding the level of progress of the parameters and any evidence derived from supporting documentation indicated or provided by interviewees as well as other related published information.

3. RESULTS

This section presents the results and analysis on the status of the incorporation of DRM in the NPIS in Barbados and Trinidad and Tobago, based on information acquired in the interviews held with officials and technicians from selected institutions.

The assessment of the parameters for each criterion in the methodology is presented in a table which is followed by a brief explanation of the justification for each assessment.

A summary of DRM legislation and policy is presented at Annex III.

3.1 Barbados

3.1.1 Institutional framework for processes and national systems of public investment

This criterion has seven parameters of evaluation. Table 2 summarises the results.

Table 2 Barbados

Institutional Framework for Processes and National Systems of Public Investment

Parameter	Classification
Existence of legislation for the NPIS.	Yellow
Existence of an organizational structure for the functionality and coordination of NPIS.	Green
Existence of regulations for the NPIS.	Yellow
Existence of manuals for the NPIS.	Red
Existence of mechanisms for technical approval of PIPs.	Yellow
Existence of technical supervision for the implementation of projects.	Yellow
Existence of mechanisms for the dissemination and access to material related to the rules and presentation of PIPs.	Red

i. Existence of legislation for the NPIS

Rated yellow. The NPIS is required to comply with the provisions of the Financial Management and Audit Act 2007-11 which covers public expenditure and budgeting including allocations to investment projects and management of NPIS funding. The Town and Country Planning Act of 1965 (TCPA), Chapter 240 includes provisions for regulation of physical development and the location and structure of buildings. This Act is administered by the TCDPO. No Laws were identified specifically for the NPIS that govern, for example, the technical specification standards for PIP or NPIS implementation, supervision or control.

ii. Existence of an organizational structure for the functionality and coordination of NPIS

Rated green. The Public Investment Unit (PIU) of the Ministry of Finance and Economic Affairs has oversight of financial administration of the NPIS including implementation progress. This Unit has responsibility for review of projects and coordination of NPIS executing agencies. Project Units are also established within Ministries. These Project Units liaise directly with the PIU.

iii. Existence of regulations for the NPIS

Rated yellow. Regulations exist for the elements of the NPIS that are covered by the Financial Management and Audit Act 2007-11. The provisions of the Financial Management and Audit (Financial) Rules, 2011 and the Financial Management and Audit Act 2007 - Instructions to Ministries and Departments include accounting and reporting requirements for publicly funded projects. The Town and Country Planning Development Order, 1972 issued under the TCPA, Chapter 240 includes qualifying criteria for different classes of permitted use for structures. Aspects of the NPIS including technical approval and supervision which are not covered by legislation are generally guided by documentation such as internal memoranda on project progress and issues for consideration at scheduled meetings. Practice

and informal protocols are used for other aspects such as the selection of organisations or persons to attend meetings for specific projects. Interviewees advised that these mechanisms are not consistent across the NPIS.

iv. Existence of manuals for the NPIS

Rated red. No NPIS manuals are known to exist that detail the procedures for the processes of the NPIS. Some procedures for legislative provisions are included in guidance documents. The Financial Management and Audit Act 2007 - Instructions to Ministries and Departments, for example, include accounting procedures and practices that are applicable to the NPIS, however these are not specific to the NPIS. Ministries may develop internal guidance and templates on selected processes that impact the NPIS e.g. tendering or progress reports but the incidence and contents may vary by Ministry and project. Respondents' statements support the assertion that the NPIS processes are understood by the persons who operate the system but are generally not documented.

v. Existence of mechanisms for technical approval of PIPs

Rated yellow. There is no overall policy to govern the technical standards of PIPs or a consistent approval policy to be applied across the system. Approvals under the TCPA, Chapter 240 that are applicable to the wider society are required for some of the technical aspects of PIPs. The Town Planner oversees compliance with the national physical planning policy as detailed in the Physical Development Plan (PDP) and grants development approval for projects based on an unlegislated building code. There is no law requiring Environmental Impact Assessment (EIA) for specified projects (a draft Environmental Management Act and EIA Guidelines and Procedures for Barbados exists). The TCDPO may require an EIA be completed and submitted with an application for approval of public or private projects as in the case of the Barbados Light & Power Company Limited's Trents Generating Station Project in 2006. Respondents advised that large projects are expected to meet technical standards based on the training and accreditations of the designers and engineers and the codes of practice with which they are required to comply. Specific standards are not designated by the NPIS. The Ministry of Works advised that it approves the technical requirements for infrastructure such as roads and bridges. The engineers, architects and other professionals in the respective Ministries as well as contracted consultants would determine

the specific methodologies to meet the requirements using their professional standards and practice codes.

vi. Existence of technical supervision for the implementation of projects

Rated yellow. There is no overall defined process for technical supervision throughout the NPIS. Supervision may be carried out by the Ministry responsible for the project e.g. Ministry of Works. Each Ministry was reported to have a Project Unit that will undertake the technical supervision if appropriately resourced. The degree of technical supervision varies depending on the size and nature of the project and the resources of the relevant Ministry. Interviewees advised that some Ministries with restricted technical expertise may seek assistance from the Ministry of Works or hire external consultants. Interviewees indicated that PIP projects funded by external lending agencies such as the IDB or the World Bank require a Project Manager to oversee implementation, including technical supervision.

vii. Existence of mechanisms for the dissemination and access to material related to the rules and presentation of PIPs

Rated red. No mechanisms were identified to disseminate and provide access to the rules and presentation of the NPIS. The statements of the respondents indicate that the policies and rules of the NPIS are largely undocumented. The Ministries interviewed advised that persons who function within the NPIS will obtain information on the PIPs within their remit and related policies and procedures at the time and to the extent that such information is needed.

3.1.2 Development of conceptual models, methodologies and tools for incorporation of DRM in PIP

This criterion has six parameters of evaluation. Table 3 summarises the results.

**Table 3 Barbados
Development of Conceptual Models, Methodologies and Tools for Incorporation of
DRM in PIP**

Parameter	Classification
Existence of conceptual models for the incorporation of DRM in public investment projects.	Red

Existence of methodologies for incorporation of DRM in PIP.	Yellow
Existence of technical tools for the incorporation of DRM in NPIS.	Yellow
Existence of mechanisms of technical approval of PIPs with inclusion of risk analysis.	Red
Existence of mechanisms of technical approval of PIPs for the phase of reconstruction.	Yellow
Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sectors.	Yellow

i. Existence of conceptual models for the incorporation of DRM in PIPs

Rated red. Respondents reported no knowledge of a conceptual model that has been adopted or applied to incorporate DRM routinely in the NPIS processes. No structured process was identified for incorporation of DRM in the NPIS. The Emergency Management Act, 2006 includes hazard and disaster risk reduction among the policy objectives that the DEM has been established to pursue. Disaster risk reduction is an integral part of the CDM strategy described under Section 1.2 above and which Barbados has adopted. Disaster risk reduction has however not been translated into a framework for DRM in PIPs.

ii. Existence of methodologies for incorporation of DRM in PIPs

Rated yellow. Some hazard risk analyses that can impact DRM are applied, though not consistently across the NPIS and not within a defined conceptual DRM framework. Soil tests and location evaluation are performed where applicable for projects in areas that are known to be exposed to hazards such as landslides, flooding and coastal erosion. Developments such as roads and settlements in the Scotland District in the north east of the island, for example, are evaluated for hazard impacts as the area is known to be subject to landslide risk. The existence and extent of such analyses vary by Ministry depending on the sensitivity and expertise of the NPIS personnel within that Ministry. There are no requirements or documented DRM methodologies and the projects to which they should apply. Recommendations have been made by the DEM for implementation of a hazard

impact assessment as a requirement for project approvals but this has not yet been approved by the Government.

iii. Existence of technical tools for the incorporation of DRM in NPIS

Rated yellow. There are no formal procedures in the NPIS for the use of technical tools for incorporating DRM; however, tools have been applied, particularly with respect to projects in the coastal zone. Risk assessment of coastal areas is in progress under the Coastal Risk Assessment, Monitoring and Management component of the Coastal Risk Assessment and Management Program of the Coastal Zone Management Unit (CZMU). In addition, the TCDPO currently refers development applications in respect of locations that fall under the coastal zone management area to the CZMU for technical review and recommendations.

iv. Existence of mechanisms of technical approval of PIPs with inclusion of risk analysis

Rated red. No formal approval process was identified within the NPIS that required disaster risk analysis for PIPs. Hazard risk analysis is undertaken for projects in areas widely known to be exposed to specific hazards such as flooding and landslides. Respondents however, did not identify any requirement or consistent practice or policy for disaster risk assessment for PIPs as criteria for approval of PIPs.

v. Existence of mechanisms of technical approval of PIPs for the phase of reconstruction

Rated yellow. Some measures that would reduce reconstruction of risks were identified. Construction standards were adjusted after past events to have more wind resistant roof designs and shortening of eaves. The DEM advised that in order to reduce losses from future natural hazards, a 'build back better' reconstruction policy was adopted in the country after the losses from Tropical Storm Tomas in 2010. No special mechanisms to facilitate rapid recovery were known to the respondents.

vi. Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sectors

Rated yellow. The TCPA and the Town and Country Planning Development Order, 1972 governs the functions of the TCDPO. The Town Planner applies a (draft) national building

code⁴ in granting development approval. This national building code is not supported by legislation but used as the basis for approvals. Respondents advised that larger NPIS projects such as commercial buildings are not adequately covered by the code. The respondents' statements indicate that the existing code does not routinely consider DRM in the approval process, but hazard risk and DRM may be considered for projects in specific areas, such as coastal developments. An EIA may required by the TCDPO when seeking development approval for large projects. A draft Environmental Management Act has been prepared.

3.1.3 Outreach, training, technical assistance and information on incorporating DRM in PIPs

This criterion has five parameters of evaluation. Table 4 shows the summary of the results.

Table 4 Barbados

Outreach, Training, Technical Assistance and Information on Incorporating DRM in PIPs

Parameter	Classification
Existence of processes of sensitization for authorities and national and subnational officers, private sector, civil society and others in respect to the importance of incorporating DRM in PIPs.	Red
Existence of technical assistance to the institutions that manage the system to formulate PIPs, with emphasis on the specific application of the concepts and methodologies developed by the government.	Red
Existence of personnel responsible for project design trained in the application of the methodology of risk analysis.	Red
Existence of inventories of public infrastructure by sector or territory.	Yellow
Existence of timely and reliable information on hazards, vulnerability and risk available to PIP formulators and managers.	Yellow

⁴ Draft Barbados National Building Code 1993; revised in 2012.

i. Existence of processes of sensitization for authorities and national and subnational officers, private sector, civil society and others in respect to the importance of incorporating DRM in PIPs

Rated red. No official or widely available informal programme exists to sensitise authorities and others such as civil society or the private sector on the importance of DRM in PIPs. DRM orientation and other outreach sessions have been held by the DEM for public officials and other stakeholders, however, these sessions do not specifically address DRM in PIPs.

ii. Existence of technical assistance to the institutions that manage the system to formulate PIPs, with emphasis on the specific application of the concepts and methodologies developed by the Government

Rated red. No programme to provide technical assistance to NPIS institutions on the application of DRM concepts and methodologies was identified. Specific agencies that provide assistance to certain sector have provided assistance where needed for projects, e.g. The Ministry of Health advised that PAHO's programmes in the health sector may require technical standards which are likely to include DRM requirements.

iii. Existence of personnel responsible for project design trained in the application of the methodology of risk analysis

Rated red. No personnel trained in the application of the methodology of DRM risk analysis were known to exist in the NPIS institutions.

iv. Existence of inventories of public infrastructure by sector or territory

Rated yellow. Respondents believed that most agencies or Ministries have developed inventories of infrastructure under their control, however the contents are not generally available and the extent of coverage of all sectors is unknown. The Ministry of Health reported that it retained records of all its buildings and facilities while the National Housing Corporation was reported to maintain records of all structures for which it retained ownership.

v. Existence of timely and reliable information on hazards, vulnerability and risk available to PIP formulators and managers

Rated yellow. Some hazard risk maps, e.g. for coastal erosion risks, are being developed or updated. The Coastal Risk Assessment and Management Program currently in execution, will include a comprehensive assessment of risk evaluation including generation of detailed hazard, exposure and vulnerability maps (for wind and earthquakes, storm surge, coastal erosion, tsunami, inland floods, landslides and oil spills and sea level rise); and a national coastal risk information and planning platform that is designed to inform development-decision making in the coastal zone.

3.1.4 Policy consensus and follow-up for the gradual adoption of technical tools in the incorporation of DRM in PIPs

This criterion has three parameters of evaluation. Table 5 shows the summary of the results.

Table 5 Barbados

Policy Consensus and Follow-up for the Gradual Adoption of Technical Tools in the Incorporation of DRM in PIPs

Parameter	Classification
Update the regulations governing the minimum parameters of DRM in public investment.	Red
Existence of reasonable deadlines for the incorporation of DRM in PIPs and the verification of its obligation.	Red
Existence of mechanisms to identify exchange and disseminate successful experiences.	Red

i. Update the regulations governing the minimum parameters of the DRM in public investment

Rated Red. There is currently no regulation governing minimum parameters of DRM in PIPs. Some work is in progress to implement Comprehensive Disaster Management (CDM) at the national level. The EMA, 2006 has adopted CDM for the country. The Act

is being updated to provide for operationalisation of CDM. No proposal to apply the CDM strategy to the NPIS was reported by any interviewee.

ii. Existence of reasonable deadlines for the incorporation of DRM in PIP and the verification of its obligation

Rated red. None of the respondents were aware of a timeframe for the incorporation of DRM in the NPIS.

iii. Existence of mechanisms to identify, exchange and disseminate successful experiences

Rated red. No mechanisms to disseminate successful experiences of DRM in the NPIS were known to participants.

3.1.5 Control mechanisms

This criterion has two parameters of evaluation. Table 6 shows a summary of the results.

**Table 6 Barbados
Control Mechanisms**

Parameter	Classification
Existence of control or audit involvement by national authorities, in order to ensure timely compliance with the regulations.	Red
Existence of sanctions for non-compliance with the standards and the incorporation of DRM in PIPs from authorities of control and audit or other relevant institutions.	Red

i. Existence of control or audit involvement by national authorities, in order to ensure timely compliance with the regulations

Rated red. The Office of the Auditor General examines and reports on the financial and procedural aspects of the NPIS but do not review incorporation of DRM in the NPIS as there are no regulations or national policy that applies.

- ii. **Existence of sanctions for non-compliance with the standards and the incorporation of DRM in PIPs from authorities of control and audit or other relevant institutions**
 Rated red. No standards are specified for DRM in PIPs and no sanctions are known to have been applied for failure to incorporate disaster risk in PIPs.

3.1.6. Incorporation of Climate Change Adaptation (CCA) in the NPIS

Although interviewees did not identify a major focus on CCA, they believed that policymakers have recognized the importance of CCA and the country in general is being sensitized to CCA. This view is held particularly with respect to the coastal areas of Barbados, as developments in these areas are subject to additional review by the CZMU. Reported actions on CCA include the current IDB-funded Coastal Risk Assessment and Management Program and the greening of the Ministry of Transport and Works. CCA is not known to be incorporated as a requirement in the NPIS and there is no formal or organized education programme on CCA in PIPs for NPIS personnel. The Government of Barbados approved a National Climate Change Policy in 2012. The policy is intended to support efforts to adapt to the effects of climate change.

3.2 Trinidad and Tobago

3.2.1. Institutional framework for processes and national systems of public investment

This criterion has seven parameters of evaluation. Table 7 summarises the results.

Table 7 Trinidad and Tobago

Institutional Framework for Processes and National Systems of Public Investment

Parameter	Classification
Existence of legislation for the NPIS.	Yellow
Existence of an organizational structure for the functionality and coordination of NPIS.	Yellow
Existence of regulations for the NPIS.	Yellow
Existence of manuals for the NPIS.	Red

Existence of mechanisms for technical approval of PIPs.	Yellow
Existence of technical supervision for the implementation of projects.	Yellow
Existence of mechanisms for the dissemination and access to material related to the rules and presentation of PIPs.	Red

i. Legislation for the NPIS

Rated yellow. There is no legislation that governs all the processes of the NPIS. The NPIS is required to comply with the provisions of the Exchequer and Audit Act, Chapter 69.01 (1959 as amended) which governs the control and management of public finances inclusive of capital expenditure. Other Laws cited as applicable to the NPIS were the Environmental Management Act, Chapter 35.05, (2000) and the Town and Country Planning Act, Chapter 35.01 (1960 as amended). The Environmental Management Act, Chapter 35.05 (2000) requires activities such civil works and waste disposal which are ‘designated activities’ to obtain a Certificate of Environmental Clearance (CEC). The Town and Country Planning Act, Chapter 35.01 (1960 as amended) requires approvals for development projects. No legislation was identified to govern technical approval, implementation or supervision of public investment projects.

ii. Organizational structure for functionality and coordination of the NPIS

Rated yellow. There is no integrated organisational structure identified to coordinate the NPIS at the national level; however an administrative setting that covers parts of the processes is in place. Administration of the NPIS is undertaken by disparate entities which include Government Ministries that generate the concepts and seek funding approval, SPCs such as NIDCO and UDeCOTT that function as executing agencies or project managers, the Central Tenders Board that attends to some procurement by Government and executive bodies such as Cabinet which approves the project concept and preliminary specifications. The Ministry of Planning and Sustainable Development has a coordinating role in the NPIS and also manages NPIS funding covered by the national budget as detailed in the Public Sector Investment Programme (PSIP).

iii. Regulations for the NPIS

Rated yellow. There are no specific regulations for the NPIS; however regulations issued under Laws with which PIPs are required to comply are also applicable to the NPIS. These include regulations for the submission of projects for budgetary approval. The Call Circular issued in accordance with the Exchequer and Audit Act, Chapter 69.01 (1959 as amended) specifies the procedure to get projects approved for budgetary funding. The required procedure includes the preparation of pre-feasibility and feasibility studies. Regulations and guidance issued under the Environmental Management Act, Chapter 35.05 (2000) are also relevant to the NPIS. The CEC (Designated Activities) Order specifies the activities that fall under the requirement for a CEC and the CEC Rules details the procedure for obtaining the CEC. There was no evidence of regulations or other structured and consistent procedural requirements for elements of the NPIS such as technical approvals and supervision.

iv. Manuals for the NPIS

Rated red. No manuals were identified that specifically defined NPIS processes such as approval and monitoring. Memoranda and some level of documented guidelines are used across Ministries for budgetary approvals in general, including allocation requests for the NPIS. No documentation across the system was identified for processes in the NPIS such as technical approval, procuring consultants or NPIS supervision.

v. Mechanisms for technical approval of PIPs

Rated yellow. Required technical standards for the NPIS were not identified under any specific Law. Respondents did not identify any formal, structured mechanism for technical approval of PIPs, consistently applied across the NPIS. Technical standards were however, indicated for larger projects although these standards are not stipulated under any NPIS requirements. The Terms of Reference (TOR) issued in respect of a project may include specific or general directions regarding technical standards to be applied. The technical standards for large projects are generally determined by the relevant professional standards applicable to the field of discipline i.e. those with which the architects, engineers and other contracted professionals are required to comply according to their code of practice or accreditation requirements. Respondents advised

that it is expected that best practice guides the technical elements of the project; and in this context the emphasis has been to contract well-known international firms for large projects. International consultants contracted to design and construct the Government Campus Plaza in Port of Spain which started in 2004, was cited as an example. The degree of involvement of Ministries in approving the technical aspects of PIPs varies by Ministry and the SPC under their remit. In addition, respondents indicated that executing agencies generally rely on designers to comply with international standards and codes for projects such as schools and hospitals. Respondents also stated that the Ministry of Works, in consultation with the executing agencies such as NIDCO, approves the technical specifications for major roadways and bridges. There is no structured procedure for this approval. Mechanisms for CEC and Town and Country Planning Division (T&CD) approvals, where required, include adherence to the rules and procedural guidance issued by the approving agencies e.g. the Environmental Management Agency's (EMA) 'A Guide to the Application for A Certificate of Environmental Clearance'.

vi. Technical supervision for the implementation of projects

Rated yellow. Mechanisms were indicated by the executing agencies interviewed. The Ministry of Works exercises technical supervision of road construction while specifically contracted technical project managers supervise the technical aspects of major highways projects, with oversight by the executing SPC. The mechanisms include evaluation of adherence to the design specifications, tracking of costs and preparation of progress reports. There is however, no structured or standardized process for supervision specified for the NPIS. Each executing agency such as a Ministry or SPC will develop its supervision mechanisms. The nature and robustness of the supervision mechanisms vary with the type of project, the executing agency and any technical professionals contracted for execution.

vii. Mechanisms for the dissemination and access to material about the rules and submission of PIPs

Rated red. No formalised or developing process to disseminate information about the NPIS was identified. Apart from the Call Circular and related documentation for budget approval and management of project funding, which are derived from outside the NPIS, dissemination is sporadic and specific involving parts of the NPIS information which are

shared as needed for particular projects. Memoranda issued on specific matters such as monitoring the progress of a particular project, may be directed only to those for whom the matters are determined to be relevant. The Ministry of Planning and Sustainable Development advised that it is available to provide information on specific elements of the NPIS when requested.

3.2.2. Development of Conceptual models, methodologies and tools for the incorporation of DRM in PIPs

This criterion has six (6) parameters of evaluation. Table 8 summarises the results.

**Table 8 Trinidad and Tobago
Development of Conceptual Models, Methodologies and Tools for the
Incorporation of DRM in PIP**

Parameter	Classification
Existence of conceptual models for the incorporation of DRM in public investment projects.	Red
Existence of methodologies for incorporation of DRM in PIP.	Yellow
Existence of technical tools for the incorporation of DRM in NPIS.	Yellow
Existence of mechanisms of technical approval of PIPs with inclusion of risk analysis.	Red
Existence of mechanisms of technical approval of PIPs for the phase of reconstruction.	Red
Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sector.	Yellow

i. Existence of conceptual models for the incorporation of DRM in public investment projects

Rated red. Respondents reported no evidence of DRM defined as a concept and required to be incorporated in the NPIS process.

ii. Existence of methodologies for incorporation of DRM in PIPs

Rated yellow. There are no methodologies specified by the NPIS processes or consistently practiced across the system for the incorporation of DRM in PIPs. Methodologies for hazard exposure that also impact DRM in PIPs are applied to some projects. The incidence and nature of the methodologies applied vary by Ministry or other executing agency. The Ministry of Works specifies hazard resistance standards for bridges and highways with respect to flooding and earthquakes. The CEC review may include DRM considerations such as seismic exposure as adjunct to the CEC evaluation. Some CEC applications are referred to the ODPM for comments. Only projects in an activity designated under the Environmental Management Act, Chapter 35.05 are however required to obtain a CEC.

iii. Existence of technical tools for the incorporation of DRM in NPIS

Rated yellow. There was no evidence of DRM tools being required or systematically incorporated into NPIS. It was reported however that specific types of projects such as major roads, highways and bridges are generally subject to site evaluations for risks such as flooding and landslides. Different project managers and the professionals contracted for other structures may include tools such as design features to withstand high winds or withstand defined earthquake intensity. The incidence and extent of such tools used varies across projects and NPIS agency. Respondents indicated that projects funded by external institutions such as the IDB, are likely to require the application of these technical tools.

iv. Existence of mechanisms of technical approval of PIPs with inclusion of risk analysis

Rated red. No general or specific NPIS policy or practice was identified requiring the inclusion of disaster risk analysis in the approval criteria. Persons interviewed expressed the view that procedures developed within different agencies have varying degrees of technical review and disaster risk analysis may be considered depending on the executing agency, the type of project and the professional standards used by the consultants. The technical specifications are designed by the consultants and guided by the project's TOR.

The TOR may or may not include DRM considerations, as there are no requirements or policy on incorporating DRM in the NPIS.

v. Existence of mechanisms of technical approval of PIPs for the phase of reconstruction

Rated red. No requirements, policy or arrangements are known to be implemented or proposed for reconstruction activities in respect of the NPIS. Respondents advised that in rebuilding, it is expected that hazard risks that caused the respective disaster will be taken into account and mitigated.

vi. Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sector

Rated yellow. There is currently a draft national building code for residential and other developments administered by the T&CD. No building code was identified for commercial buildings. The requirements are not enshrined in Law but guided by a Codebook. Respondents cited deficiencies in enforcement of the current building code resulting in some degree of non-compliance. Upgrade of the building code is underway as deliberations of the National Building Code Committee continue. The ODPM participates on the Committee. A CEC is required for projects that fall under the designated activities stipulated in the governing legislation. This system has been fully implemented and believed to be generally applied for PIPs for which they are required.

3.2.3. Outreach, training, technical assistance and information on incorporating DRM in PIPs

This criterion has five parameters. Table 9 summarises the results.

Table 9 Trinidad and Tobago.

Outreach, Training, Technical Assistance and Information on Incorporating DRM in PIPs

Parameter	Classification
Existence of processes of sensitization for authorities and national and subnational officers, private sector, civil society and others in respect to the importance of incorporating DRM in PIPs.	Red

Existence of technical assistance to the institutions that manage the system to formulate PIPs, with emphasis on the specific application of the concepts and methodologies developed by the government.	Red
Existence of personnel responsible for project design trained in the application of the methodology of risk analysis.	Red
Existence of inventories of public infrastructure by sector or territory.	Yellow
Existence of timely and reliable information on hazards, vulnerability and risk available to PIP formulators and managers.	Yellow

i. Existence of processes of sensitization for authorities and national and subnational officers, private sector, civil society and others in respect of the importance of incorporating DRM in PIPs

Rated red. There are no structured processes as part of the NPIS procedures to sensitise authorities and others such as civil society or the private sector on the importance of incorporating DRM in PIPs. The ODPM has stakeholder outreach programmes on the importance of DRM that include participation by public officers; however these programmes do not address the specific case of incorporating DRM in the NPIS.

ii. Existence of technical assistance to the institutions that manage the system to formulate PIPs, with emphasis on the specific application of the concepts and methodologies developed by the government

Rated red. There are no DRM concepts and methodologies developed for the NPIS or technical assistance known to be accessed for managers in the NPIS on incorporating DRM in PIPs.

iii. Existence of personnel responsible for project design trained in the application of the methodology of risk analysis

Rated red. Public officials responsible for project design or oversight of the process within the NPIS are not now trained in DRM risk analysis.

iv. Existence of inventories of public infrastructure by sector or territory

Rated yellow. No complete, reliable and accessible inventory of public infrastructure by sector or territory is known to be available. Each Ministry is expected to maintain records of its public infrastructure. Some inventories of publicly owned assets are known to exist although availability may be restricted. Respondents reported that the Property and Real Estate Services Division of the Ministry of Public Administration maintains an inventory of residential buildings owned by the Government; the Ministry of Works has an inventory of all roads and bridges, and the ODPM advised that it maintains a list of critical infrastructure⁵.

v. Existence of timely and reliable information on hazards, vulnerability and risk available to PIP formulators and managers

Rated yellow. Flood and landslide susceptibility maps are available on the ODPM's website. These are based on reported hazard events during 2010-2011; the maps include a disclaimer as to the reliability. Further development of seismic hazard maps is underway as respondents advised of additional sensors being installed across the country by the Seismic Research Unit of the University of the West Indies. In 2013 detailed hazard, vulnerability and risk assessments for hurricanes and earthquakes in Trinidad and Tobago were prepared⁶; they have not to date been made available to PIP formulators and managers.

3.2.4 Policy consensus and follow-up for the gradual adoption of technical tools in the incorporation of DRM in PIPs

This criterion has three parameters. Table 10 summarises the results.

⁵ The list of critical infrastructure as defined by the ODPM appears to be compiled from records from various sources from within the public service that may not be formulated into an inventory. The policy document (Draft CDM Policy Framework for T&T 2010) refers to critical infrastructure as including hospitals, roads, bridges and other facilities needed to ensure continuity of key government functions during an emergency.

⁶ Country disaster risk evaluation of Trinidad and Tobago, 2013

Table 10 Trinidad and Tobago
Policy Consensus and Follow-up for the Gradual Adoption of Technical Tools in the
Incorporation of DRM in PIPs

Parameter	Classification
Update the regulations governing the minimum parameters of DRM in public investment.	Red
Existence of reasonable deadlines for the incorporation of DRM in PIPs and the verification of its obligation.	Red
Existence of mechanisms to identify exchange and disseminate successful experiences.	Red

i. Update the regulations governing the minimum parameters of DRM in public investment

Rated red. There are currently no regulations governing such minimum parameters and no interviewee was aware of current proposals for incorporating DRM in the NPIS.

ii. Existence of reasonable deadlines for the incorporation of DRM in PIPs and the verification of its obligation

Rated red. No timeframe was identified for the formal consideration and implementation of DRM in the NPIS.

iii. Existence of mechanisms to identify, exchange and disseminate of successful experiences

Rated red. Interviewees were not aware of any mechanisms to disseminate successful experiences of DRM in the NPIS.

3.2.5. Control mechanisms

This criterion has two parameters. Table 11 shows the summary of the results.

**Table 11 Trinidad and Tobago
Control Mechanisms**

Parameter	Classification
Existence of control or audit involvement by national authorities, in order to ensure the timely compliance with the regulations.	Red
Existence of sanctions for non-compliance with the standards and the incorporation of DRM in PIPs from authorities of control and audit or other relevant institutions.	Red

i. Existence of control or audit involvement by national authorities, in order to ensure the timely compliance with the regulations

Rated red. The Auditor General conducts audits on Ministries and state agencies but these reviews do not extend to areas such as DRM in the NPIS for which there are no laws, regulations or other requirements.

ii. Existence of sanctions for non-compliance with the standards and the incorporation of DRM in PIPs from authorities of control and audit or other relevant institutions

Rated red. No standards have been specified for incorporation of DRM in PIPS and no sanctions are known to exist.

3.2.6. Incorporation of CCA in the NPIS

Respondents advised that climate change is not generally considered for PIPs and there is no conceptual framework or mechanism to incorporate CCA in the NPIS or CECs and planning approvals. They have noted that sea level rise and coastal erosion were likely considerations in the case of civil works done at Mosquito Creek. In addition, they advised that a flood alleviation project under consideration for Port of Spain has included acknowledgement of the potential effects of rising sea levels on the existing flooding problem in that City. They reported that the Ministry of the Environment and Water Resources has proposals for implementing climate change mitigation and adaptation measures and there appears to be a recent increased visibility on the subject of climate

change effects and adaptation. The National Climate Change Policy was completed in 2011 with the objective of guiding policy for developing a framework to address the effects of climate change, CCA and mitigation.

4. SUMMARY OF RESULTS

This section presents the summary of the two countries studied.

4.1. Barbados

A summary of the Barbados results regarding incorporation of DRM in NPIS/ PIPs is detailed in Table 12. In the case of Barbados, from the total of 23 parameters, one (1) parameter was classified in green, 10 in yellow and 12 in red.

Table 12

Barbados. Summary Assessment by Criteria in the Incorporation of DRM in NPIS/PIPs

Criterion	Summary assessment
Institutional framework for processes and national systems of public investment	The institutional framework for the processes and systems of public investment is partially covered by legislation, related regulations and an administrative structure that coordinates the processes. Technical approval and supervision systems are generally not formalised and there is limited documentation and dissemination of the processes.
Development of conceptual models, methodologies and tools for incorporation of DRM in PIPs	No conceptual framework for incorporation of DRM in the NPIS was identified. DRM methodologies and tools are not specified by the NPIS but are applied to projects based on project-specific factors. Residential building codes are applied but not supported by legislation.
Outreach, training, technical assistance and information on incorporating DRM in PIPs	No structured mechanisms were identified for information and training on the application of concepts and methodologies to incorporate DRM in the NPIS. Partial information on the stock of public infrastructure and hazard risks is available to the NPIS.
Political consensus and follow-	The draft amendments to the Emergency Management Act,

up for the gradual adoption of the technical tools in the incorporation of DRM in PIPs	2006 will operationalize the concept of CDM nationally. No timelines are specified for incorporating DRM in the NPIS.
Control mechanisms	There are no known requirements or control mechanisms for incorporating DRM in PIPs and sanctions are not known to apply for excluding DRM considerations in the NPIS.
Incorporation of CCA considerations in the national public investment systems and education on CCA	Respondents were of the view that the effects of climate change have been acknowledged by policymakers and the importance of adaptation strategies recognised, particularly with respect to coastal management. CCA has not been incorporated into the NPIS although sea level rise and coastal erosion risk will inform some development decisions in coastal zones. No sensitisation or education programme on climate change adaptation is currently in place for NPIS personnel. Barbados approved a National Climate Change Policy in 2012.

4.2. Trinidad and Tobago

A summary of the results of Trinidad and Tobago regarding incorporation of DRM in NPIS/PIPs is presented in Table 13. In the case of Trinidad and Tobago, from the total of 23 parameters, 10 parameters were classified in yellow and 13 classified in red. None of the parameters was assigned a green rating.

Table 13
Trinidad and Tobago. Summary Assessment by Criteria

Criterion	Summary Assessment
Institutional framework for processes and national systems of public investment	The institutional framework for the processes and systems of public investment in Trinidad and Tobago is partially covered by legislation, with the technical aspects administered by a diffuse organizational structure in which the Ministry of Planning and Sustainable Development has a coordinating and administrative role. SPCs have a major role in managing the execution of large investment projects.

	Regulations are generally limited to financial provisions and certain statutory technical approvals. Manuals have not been developed for most of the NPIS and technical approval and supervisory mechanisms of PIPs are not formally specified processes.
Development of conceptual models, methodologies and tools for incorporation of DRM in PIPs	No conceptual models have been defined and implemented for the incorporation of DRM. The sensitivity of executing agencies to the need for DRM considerations in PIPs and the standards used by contracted consultants have been the drivers of application of tools such as hazard risk analysis e.g. consideration of flood risk in potential site for highways. Buildings codes (draft) are used for approvals issued by the T&CD; however enforcement has been described as weak.
Outreach, training, technical assistance and information on incorporating DRM in PIPs	There is limited dissemination of information to NPIS personnel on incorporating DRM in PIPs. Expertise in this area was not regarded as necessary by some respondents as they felt DRM in the NPIS could be adequately addressed by the professional contracted to work on the projects. NPIS staff has not been trained in DRM application concepts and techniques, nor is any such technical assistance known to be used for the NPIS.
Policy consensus and follow-up for the gradual adoption of the technical tools in the incorporation of the DRM in the PIPs	No minimum parameters have been established or proposed for DRM in PIPs, and no timelines were advised for implementation. There are no known mechanisms for disseminating successful experiences of DRM in the PIP.
Control mechanisms	The national authorities of audit and control do not examine incorporation of DRM in public investment projects, nor are sanctions applied as there are no laws or regulations governing the NPIS.

<p>Incorporation of climate change considerations in the national public investment systems and education on climate change adaptation</p>	<p>No concepts or mechanisms related to climate change were known to be reflected in the processes of the NPIS or approval processes such as the CEC or approvals from T&CD. Coastal erosion has been noted and potential climate change impacts may be considered for some projects e.g. construction of coastal roads. The consensus view was that as a result of recent Government focus on climate change, it is now being noted as a matter to be addressed. There is also no known programme for the NPIS for sensitisation/education on climate change or climate change adaptation. The Government prepared a National Climate Change Policy in 2011 to inform development of CCA and climate change mitigation policies and measures.</p>
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5. ANALYSIS OF FINDINGS / RESULTS

This section presents an analysis of the general results of the assessment.

- i.** Trinidad and Tobago was assessed at red for 13 parameters and 10 at yellow, indicating that progress is evident in some aspects of the process but in most cases, there is little or no progress. The yellow assessments mainly relate to functions such as financial administration and budgeting or actions required by agencies which are external to the NPIS but which impact the NPIS. The parameters assessed as red relate mainly to those indicating structure and formality such as documentation and organised information dissemination as well as those relating to DRM applications. Actions in the weak areas were found to be sporadic and isolated and not derived from a considered policy but rather from the sensitivity of particular decision makers or contracted professionals who have minimum standards of practice with which to comply.
- ii.** Barbados obtained generally similar results derived from similar status in respect of parameters such as documentation, dissemination of information and DRM actions. The main exception is a green assessment for an organisational structure for the NPIS. Although similar functional characteristics such as lack of documentation and informal practices were reported in both countries, the indicated structure for Barbados is more

defined. The central coordinating and monitoring role of the Public Investment Unit (PIU) is unambiguous and understood by interviewees. Participants were unaware of related documentation but able to clearly identify the process of interaction with the PIU in respect of any PIPs with which they may be involved.

- iii.** For both Barbados and Trinidad and Tobago, the focus is on hazard exposure and most of the effort identified appears to respond to risks suggested by past hazard experience. In this context, the application of tools such as hazard analysis that may reflect DRM in the NPIS is largely incidental and not targeted at disaster risk reduction. Flood or landslide risk assessment (based on past experience in Barbados) for example may not result in adequate risk management to address the effects of a hurricane. Accordingly, while the efforts at risk analysis and management has been acknowledged in the assessment, progress towards accomplishment at the green level will involve implementation of the CDM framework which both countries have adopted as policy, and in the case of Barbados, is also reflected in the current legislation.
- iv.** Lack of structured systems and supporting legislation not enshrined in Law, may not necessarily result in an inefficient system in small countries with centralised public administration systems, including the NPIS and few PIPs. While there would be deficiencies, the rating may be assessed as yellow instead of red if the effectiveness of the systems actually in place are evaluated. Some respondents in Barbados advised that due to the size of the country, NPIS personnel know each other and as a result access to information, when needed, is easily obtained, although there is no documented or formal procedure. In addition, although exhibiting similar procedural characteristics, Barbados obtained a green rating for NPIS organisational structure while Trinidad and Tobago was assessed as yellow.
- v.** Ortegón (2006) noted the difference between the traditional definition of NPIS as “A set of standards, instruments and procedures common to the public sector and private sector entities that execute public investment (NGOs)....” which focuses on procedures and instruments; and the definition adopted in the Caribbean i.e. “Process by which a country transfers its development objectives, goals and priorities to a group of investment projects that can be implemented in a specific time, taking into consideration restrictions of a financial nature, those related to human resources, and other public spending restrictions”

(Humes,1992) which implies activity. This may suggest alternative approaches to assessment that may be more aligned to the NPIS culture and practices in the Caribbean.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- i.** The processes and systems for national public investments in both countries are generally not governed by Law but administered through guidelines and protocols. These are largely not documented. Other areas of governance with which the NPIS has to interface, such as the financial and budgetary process and protection of the environment are covered by Laws for financial management and environmental protection that prescribe requirements with which the NPIS has to comply.
- ii.** The administrative framework for the NPIS has the Ministry with responsibility for planning having a central role in budgeting approval and follow-up on implementation progress and management of the allocated budget. The coordination role of the Ministry is more defined in Barbados where there is a PIU within the Ministry of Finance and Economic Affairs identified as the principal administrative reference point for all public investment projects. In Trinidad and Tobago the administrative role of the Ministry of Planning and Sustainable Development is more diffuse, with the special purpose companies functioning as executing agencies having a major role in the supervision of the execution of projects. Dissemination of information on the NPIS within NPIS organizations or the wider society is limited.
- iii.** The mechanisms for technical approval of PIPs are not formalised as there are no consistent criteria or process required within the system. The procedure varies by Ministry or executing agency and the nature and size of the project. While the NPIS organisations may define some technical parameters for some projects, in both countries varying degrees of reliance is placed on contracted professionals such as engineers and architects to apply appropriate technical standards to the projects.
- iv.** The countries face a similar situation with respect to application of DRM conceptual models, strategies and tools to the NPIS. There is no conceptual framework for

incorporation of DRM in PIPs or requirements for applying DRM strategies and tools. However strategies and tools are applied for some projects depending on the degree of sensitisation of NPIS personnel on a particular project, to a widely known hazard risk for the location or type of project. There is no programme of training for NPIS personnel in the incorporation of DRM in PIP. Increased national attention to the potential impact of disasters and the need for management of the risk appears to be in progress in both countries which may be a catalyst for DRM training in the countries generally. Finalisation of draft legislation and policy documents to implement comprehensive disaster risk management nationally can have a positive impact incorporating DRM in the NPIS.

- v. Building codes do not have the force of Law but are used as the basis of approvals for developments as part of the formal procedure by the T&CPD, the authorising agency. The codes generally do not incorporate DRM considerations in the approval process. There are no structural or design requirements for NPIS projects.
- vi. Development of information to facilitate disaster risk analysis is in progress in both countries. In the case of the Coastal Risk Assessment and Management Programme in Barbados, the objectives include the assessment of the exposure, vulnerability and risk of the coastal areas to natural hazards and provision of risk data (through the development of a coastal risk information platform) to inform objective planning and management of coastal resources. In Trinidad and Tobago, the ongoing programme to install seismic sensors will enhance the spatial definition of seismic exposure.
- vii. While there are no Laws for the NPIS or incorporation of DRM in PIPs, there appears to be progress towards enacting legislation for implementing some form of comprehensive disaster risk management at the national level in both countries.
- viii. The Auditor General in both countries audits the financial aspects of NPIS projects as part of review of the financial activities for the overall public sector. These organisations also conduct special reviews on other aspects of the NPIS such as project implementation and approvals. However these do not extend to the incorporation of DRM in PIPs.

- ix.** There is some interaction between the DRM authorities (the DEM in Barbados and ODPM in Trinidad) and the issue of EIAs and CECs respectively. Both the DEM and the ODPM advised that applications for the approvals are referred for their input; however this is not a formal process or a requirement. Both the DEM and the ODPM reported no involvement in development planning approvals or formal relationships with the planning departments. Informal, sporadic requests for opinions on projects in their country were however reported.

Recommendations

Further to the findings of this study, the following recommendations are offered to generate a setting for progress in the incorporation of DRM in the NPIS in the two countries:

- i.** Finalisation of draft legislation and policy documents on the national CDM framework for Trinidad and Tobago should be expedited so as to enable progress on implementing DRM measures at the national level. This will provide an impetus for formulation and adoption of conceptual models for DRM generally and for the NPIS in particular.
- ii.** Initiate an exercise that would develop an administrative framework for the NPIS that formally defines the processes and standards for all phases and clarify the role and parameters of responsibility for different actors. These phases would include technical approval and supervision. Implementation of the framework should be supported by relevant legislation, regulations and appropriate documentation. Formal definition of processes and specification of applicable standards would provide the foundation to incorporate DRM in a structured and consistent manner.
- iii.** Successful implementation of DRM in the NPIS requires adequate dissemination of information about the NPIS as well as about disaster risk identification and analysis methodologies and tools for all elements of DRM. Training on the NPIS and DRM specifically structured for NPIS personnel should be developed and delivered within an overall education and sensitisation program in these areas. The program would also include easily accessible NPIS documentation. Formal definition of the NPIS and its rules, along with finalisation of the national policy and strategies for DRM will support a consistent standard of adequate training and general sensitisation of NPIS staff.

- iv. A formal coordination mechanism among the Ministries of Finance, Planning and the DRM authorities is required in order to facilitate seamless and routine incorporation of DRM in national public investment.
- v. Guidelines for the explicit incorporation of DRM in the national environmental review process, including EIAs should be developed and potential users trained in their use and implementation.

7. LIMITATIONS OF THE STUDY

- i. The model used for the study consists of criteria and parameters to evaluate the progress in the incorporation of DRM in the processes of a system of public investment at the national level. The model was initially used in the study of two countries (Costa Rica and Panama) using the methodology of interviews with officials and technicians from institutions involved in the NPIS in those countries. The methodology and technique of the evaluation is qualitative because it is based on the perception of officials and technicians interviewed. It should be noted that:
 - a. The selection of the persons interviewed was determined by the institutions involved in the NPIS and DRM, the subject of the study or otherwise relevant to these themes, as in the case of the representative from the University of the West Indies, Trinidad with considerable experience in the area of DRM in Trinidad.
 - b. Interviewees provided their personal opinions and perceptions on the consulted aspects of the criteria and parameters of the incorporation of DRM and CCA in the NPIS. The data accordingly reflect the experiences and perceptions of the persons selected. The results are not intended to be explanatory but to provide guidance on the areas which policy makers may wish to focus their efforts related to progress toward the effective implementation of the CDM strategy.
- ii. The model therefore provides an approach to examine the status of the incorporation of DRM in the NPIS/PIP, guidance on initiatives that can support strengthening of the NPIS and may be a platform on which to build models for further research and application.

REFERENCES

- Bueno, Ramon, Cornelia Herzfeld, Elizabeth Stanton and Frank Ackerman et al. 2008. The Caribbean and Climate Change: The Costs of Inaction. Tufts University.
- Calvo Drago, Jorge D. 2013. Integration of DRM and CCA to Public Investment. Central America. IDB, 2013.
- Cashin, Paul, David O. Robinson, Ratna Sahay. 2006. Government Responses to Natural Disasters in the Caribbean: From Vulnerability to Sustained Growth. International Monetary Fund.
- CDEMA (Caribbean Disaster Emergency Response Agency). 2005. Caribbean Community Regional Programme Framework 2005-2015.
- _____. 2007. Comprehensive Disaster Management Strategy and Programme Framework, 2007-2012.
- _____. 2014. Regional Comprehensive Disaster Management (CDM) Strategy and Programming Framework 2014-2024.
- CEPREDENAC (Centro de Coordinacion para la Prevencion de los Desastres Naturales en America Central). 2012. "Guide updated economic evaluation of the Inclusion of the Variable risk of disasters in public investment and its application in development projects in Panama, Honduras and Nicaragua". 2nd. Edition.
- Coastal Zone Management Unit (Barbados). 1998. Coastal Zone Management Plan, <http://www.coastal.gov.bb/>. Accessed January, 2014.
- Easterly, William and Aart Kraay. 2000. Small States, Small Problems? Income, Growth, and Volatility in Small States. World Development, Vol. 28, No. 11. The World Bank, Washington, DC, USA.
- ECLAC (Economic Commission for Latin America and the Caribbean). 2005. Thee 2004 hurricanes in the Caribbean and the Tsunami in the Indian Ocean. Lessons and policy changes for development and disaster reduction; Studies and Perspective Series. No. 35.
- _____. 2010. Analysis of Extreme Events in the Caribbean. 1990 – 2008.
- Government of Trinidad and Tobago. 2011. National Climate Change Policy.
- Humes, Dorla, Programming Public Sector Investment for Expenditure Control, CDB Economics Staff Working Paper No. 3/92, Caribbean Development Bank, 1992. Cited in Ortegón, Edgar; Diego Dorado. 2006. National Public Investment Systems in Barbados, Guyana, Jamaica and Trinidad and Tobago. *Manuales Series* no. 46, ECLAC.

- Laframboise, Nicole and Boileau Loko. 2012. Natural Disasters: Mitigating Impact, Managing Risks. IMF Working Paper. External Relations Department, Western Hemisphere Department.
- Ministry of Planning and Sustainable Development, Trinidad and Tobago. 2012. *Working for Sustainable Development in Trinidad and Tobago*.
- National Commission on Sustainable Development (Barbados). 2004. *The Barbados Sustainable Development Policy*.
- Nurse Leonard, A, Graham Sem. J.E. Hay, A.G. Suarez, Poh Poh Wong, L. Briguglio, S. Ragoonaden. 2001. Small Island States. Intergovernmental Panel on Climate Change.
- ODPM (Office of Disaster Preparedness and Management). 2010. Draft Comprehensive Disaster Management Policy Framework (2010).
- _____. 2013. website <http://www.odpm.gov.tt>. Accessed December.28, 2013.
- Ortegón, Edgar and Diego Dorado. 2006. National Public Investment Systems in Barbados, Guyana, Jamaica and Trinidad and Tobago. *Manuales Series* no. 46, ECLAC.
- PREDECAN (Prevenccion de Desastres en la Comunidad Ardina). 2009. Incorporating the management of the risk of disaster planning and territorial management: Technical guide for the interpretation and application of the analysis of threats and risks. General Secretariat of the Andean Community.
- Rasmussen, Tobias N. 2004. Macroeconomic Implications of Natural Disasters in the Caribbean. IMF Working Paper Western Hemisphere Department. International Monetary Fund.
- Turvey, Rosario. 2007. Vulnerability Assessment of Developing Countries: The Case of Small-island Developing States. *Development Policy Review*, 25 (2): 243-264. Overseas Development Institute. Blackwell Publishing, Oxford.

ANNEXES

ANNEX I

ASSESSMENT ON THE STATUS OF INCORPORATION OF DISASTER RISK MANAGEMENT (DRM) IN NATIONAL PUBLIC INVESTMENT IN THE CARIBBEAN

The following is the assessment matrix for the incorporation of disaster risk management in the national public investment processes and systems in the Caribbean.

Green	Parameter fulfilled or accomplished
Yellow	There is advancement or progress towards fulfillment of the parameter but there are actions pending.
Red	The actions towards the fulfillment are non-existent or very incipient and isolated.

Criterion	Parameter	Assessment	Red	Yellow	Green
Institutional framework for processes and national systems of public investment	Existence of legislation for the NPIS	This assesses whether there is a legal framework that clearly defines the responsibilities in relation to: (i) the development of standards, methods and technical instruments for the formulation of PIPs, (ii) the analysis of technical feasibility and economic and social profitability of the PIPs, (iii) the management of the information on the PIPs, (iv) monitoring for accomplishment and follow-up for public investment process and (v) training to actors involved in public investment. Where there			

Criterion	Parameter	Assessment	Red	Yellow	Green
		is an institutional framework that is not enacted legislation or the relevant regulations, country is considered to be in the process of improvement.			
	Existence of an organizational structure for the functionality and coordination of NPIS	This assesses whether the entity or entities responsible for the NPIS have an organizational structure that allows developing functions established by the legal framework, including coordination with all public stakeholders involved in the PIP.			
	Existence of regulations for the NPIS	This assesses whether, in addition to the legal framework that establishes entity or entities responsible for the NPIS, such framework assigns regulations for the establishment and follow up monitoring of procedures for the PIP at the operational level.			
	Existence of manuals for the NPIS	This assesses whether the NPIS has manuals that define the procedures for elaboration, approval, registration and monitoring of a PIP, including specific guidelines for investments at the sector ministries.			
	Existence of mechanisms of	This assesses whether the legal framework and the manuals define clearly the technical			

Criterion	Parameter	Assessment	Red	Yellow	Green
	technical approval of the PIP	mechanisms for the approval of the PIP.			
	Existence of technical supervision for the implementation of projects	This assesses whether those responsible for the NPIS, both in terms of the coordination system and in sector ministries, effectively perform technical supervision of the execution of the PIP.			
	Existence of mechanisms for the dissemination and access to material related to the rules and presentation of the PIP	This assesses whether there are mechanisms for the dissemination among members of the NPIS and civil society. Mechanisms include guidelines, manuals, bulletins and other materials relating to procedures and progress of the NPIS.			
Development of conceptual models, methodologies and tools for incorporation of DRM in PIP	Existence of conceptual models for the incorporation of the DRM in public investment projects	This assesses whether the legislation and guidelines of the NPIS include the description of conceptual models for the incorporation of the DRM and climate change adaptation in the PIP.			
	Existence of methodologies for incorporation of DRM in PIP	This assesses whether the guidelines and manuals for the PIP develop methodologies to be applied for the incorporation of DRM are consistent with proposed conceptual models.			
	Existence of technical	This assesses whether, in addition to a			

Criterion	Parameter	Assessment	Red	Yellow	Green
	tools for the incorporation of the DRM in NPIS	conceptual framework and a methodology for the incorporation of DRM in NPIS, there are technical tools, such as for site evaluation, models for vulnerability analysis by each component, etc.			
	Existence of mechanisms of technical approval of the PIP with inclusion of the risk analysis	This assesses whether the mechanisms for approval of the PIP considers, as part of the criteria for approval, the incorporation of risk analysis in the PIP.			
	Existence of mechanisms of technical approval of the PIP for the phase of reconstruction ^[1]	This assesses whether there are special mechanisms for the reconstruction phase that guarantee rapid processes, with transparency and without reconstruction of the risk.			
	Existence of other instruments, such as building codes, environmental impact assessment which are used at a general level both in the public and private sector	This assesses whether instruments such as building codes and the environmental impact evaluations incorporate considerations of DRM and CCA, and if applied widely to the PIP, as part of the rules and procedures in force.			
Outreach, training,	Existence of processes of sensitization for	This assesses whether actions have been developed/taken to sensitize key actors			

Criterion	Parameter	Assessment	Red	Yellow	Green
technical assistance and information on incorporating DRM in PIP	authorities and national and subnational officers, private sector, civil society and others in respect to the importance of incorporating DRM in PIP	regarding the incorporation of DRM in public investment projects, in order to ensure and increase awareness of the issue.			
	Existence of technical assistance to the institutions that manage the system to formulate PIP, with emphasis on the specific application of the concepts and methodologies developed by the government.	This assesses whether the NPIS provide technical assistance to the institutions that that formulate PIP system, including specific support for the application of the methodologies and concepts in relation to the incorporation of DRM in PIP.			
	Existence of personnel responsible for project design trained in the application of the methodology of risk analysis	This assesses whether the staff responsible for the design of the PIP within the NPIS is trained in the application of methodologies and tools for incorporating DRM and CCA.			

Criterion	Parameter	Assessment	Red	Yellow	Green
	Existence of inventories of public infrastructure by sector or territory ^[2]	This assesses whether there are databases of public infrastructure inventory for different sectors or territories.			
	Existence of timely and reliable information of hazards, vulnerability and risk available to PIP formulators and managers.	This assesses whether PIP formulators have access to timely and reliable information on threats, vulnerability and risk, allowing for application of the methodology and tools for the incorporation of DRM in PIP.			
Political consensus and follow-up for the gradual adoption of the technical tools in the incorporation of DRM in PIP	Update the regulations governing the minimum parameters of the DRM in public investment	This assesses whether in the last 5 years, the country has developed or is developing initiatives to update the rules and the criteria that define the minimum parameters for the incorporation of DRM in PIP.			
	Existence of reasonable deadlines for the incorporation of DRM in PIP and the verification of its obligation.	The legal framework and procedures define reasonable deadlines for the incorporation of the DRM in PIP and the verification of their mandatory minimum contents, general methodology and projects bank, specific sectorial methodologies, and specific methodologies at the territorial level.			
	Existence of	This assesses whether there are mechanisms			

Criterion	Parameter	Assessment	Red	Yellow	Green
	mechanisms to identify, exchange and dissemination of successful experiences.	to identify, document and disseminate best practices that can promote the incorporation of the DRM in PIP.			
Control mechanisms	Existence of control or audit involvement by national authorities, in order to ensure the timely compliance with the regulations.	This assesses whether the national authorities of control and audit perform actions to verify the compliance of the NPIS.			
	Existence of sanctions for non-compliance with the standards and the incorporation of the DRM in PIP from authorities of control and audit or other relevant institutions.	This assesses whether there are relevant experiences, sanctions for noncompliance to the incorporation of DRM in PIP by control and audit authorities or other relevant institutions.			

ANNEX II

LIST OF ORGANISATIONS AND THE OFFICES OF PERSONS INTERVIEWED

Barbados

Ministry of the Environment and Drainage

Director, Coastal Zone Management Unit

Acting Director, Coastal Zone Management Unit

Project Manager, Coastal Risk Assessment and Management Program

Ministry of Finance and Economic Affairs

Manager, Public Investment Unit

Ministry of Health

Senior Medical Officer of Health (with responsibility for Climate Change and Disaster Management)

Deputy Chief Environment Health Officer

Project Manager, Climate Change in Health Project

Health Planner

Financial Controller

Ministry of Transport and Works

Chief Technical Officer

Chief Planning Officer

Planning Officer (Ag)

Department of Emergency Management (DEM)

Director, Department of Emergency Management

Program Officers (2)

Trinidad and Tobago

Ministry of Finance

Permanent Secretary

Ministry of Planning and Sustainable Development

Director Project Planning and Reconstruction

Ministry of Works

Deputy Permanent Secretary

Acting Chief Planning Officer

Land Use Planner

Senior Health and Safety Specialist

Senior Planning Officer

Senior Economist

National Infrastructure Development Company Limited (NIDCO)

Vice- President (Ag), Engineering and Programme Management

Senior Planning Officer

University of the West Indies

Professor, Life Sciences

Office of Disaster Preparedness and Management

Chief Executive Officer

ANNEX III

DISASTER RISK MANAGEMENT LEGISLATION AND POLICY: BARBADOS AND TRINIDAD AND TOBAGO

BARBADOS

The Department of Emergency Management, established under the Emergency Management Act, 2006 is the national agency for DRM in Barbados. The agency's mandate includes natural hazard risk assessment and disaster risk reduction. The Barbados Sustainable Development Policy, 2004 "recognises the importance of preparing as far as possible for and mitigating against the adverse repercussions of man-made and natural disasters." The recommendations of the policy include consideration of the implications of all disasters in land use management, the appraisal of planning development applications and Environmental Impact Assessments. The Barbados Coastal Management Plan incorporates storm surge modeling in defining the parameters of its coastal zone delimiting area (CZMU, 2014).

TRINIDAD AND TOBAGO

The primary legislation currently governing DRM in Trinidad and Tobago is the Disasters Measures Act Chapter 16:50 (Act 47 of 1978) which focusses on responses to a disaster event (ODPM, 2013). The ODPM is the national agency responsible for DRM. The draft Comprehensive Disaster Management Policy Framework (2010) prepared by the ODPM has been identified as the national policy directing the DRM process. The stated aims of the framework include vulnerability reduction, management of hazards, maximisation of resilience on a national scale and 'aligning the strategic direction for disaster risk reduction with international and regional best practices and obligations' (ODPM, 2013). Upgrade of the legislation and the Comprehensive Disaster Management Policy Framework (2010), along with other policy documents such as the Critical Infrastructure Policy Framework and Hazard Mitigation Policy are in draft form awaiting review (ODPM, 2013).

The Government of Trinidad and Tobago's policy document 'Working for Sustainable Development in Trinidad and Tobago' prepared by the Ministry of Planning and Sustainable Development (2012) states that "Trinidad and Tobago's approach to disaster management is presently evolving from the existing approach of disaster preparedness and response, to embrace prevention, mitigation, recovery and rehabilitation planning through a CDM approach". In this regard, Trinidad and Tobago, as other CARICOM countries, has adopted as policy the CDEMA CDM strategy for management of disaster risk. The strategies identified to support this shift include more effective integration of disaster risk considerations into sustainable development and institutional strengthening at the community level.