



National Integrated Disaster Risk Management Plan and Implementation Strategy for Guyana

Integrated Disaster Risk Management Implementation Strategy

Commissioned by:
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ACRONYMS

AAL	Average Annual Loss
BCP	Business Continuity Plan
CARICOM	Caribbean Community
CCCCC	Caribbean Community Climate Change Centre
CCDMF	Canada Caribbean Disaster Management Fund
CCRDR	Caribbean Community Resilience to Disaster Risk
CDB	Caribbean Development Bank
CDC	Civil Defence Commission
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CHPA	Central Housing and Planning Authority
CIDA	Canadian International Development Agency
CIMH	Caribbean Institute for Meteorology and Hydrology
COOP	Continuity of Operations Plan
DaLA	Damage and Loss Assessment
DANA	Damage and Needs Assessment
DEM	Digital Elevation Model
DFID	United Kingdom Department for International Development
DM	Disaster Management
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECLAC	Economic Commission for Latin America and the Caribbean
EIA	Environmental Impact Assessment
EOC	Emergency Operation Centre
EPA	Environmental Protection Agency
EU	European Union
EWS	Early Warning Systems
GDP	Gross Domestic Product
GG&MC	Guyana Geology and Mines Commission
GINA	Guyana Information Agency
GIS	Geographical Information System
GL&SC	Guyana Lands and Surveys Commission
GoG	Government of Guyana
GPL	Guyana Power and Light
GT&T	Guyana Telephone and Telegraph Company
GWI	Guyana Water Incorporated
GYP	Guyana Dollars
HRVA	Hazard, Risk and Vulnerability Analysis
IDB	Inter American Development Bank
IDRM	Integrated Disaster Risk Management
IFRC	International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
LFA	Logical Framework
LIDAR	Laser Imaging Detection and Raging
M&E	Monitoring and Evaluation

Guyana National Integrated Disaster Risk Management Strategy

MLG&RD	Ministry of Local Government and Regional Development
MOE	Ministry of Education
MOH	Ministry of Health
NDC	National Disaster Coordinator
NDIA	National Drainage and Irrigation Authority
NEOC	National Emergency Operations Centre
NGO	Non-governmental Organization
NIDRMP	National Integrated Disaster Risk Management Plan
OECS	Organization of Eastern Caribbean States
OP	Office of the President
PAHO	Pan American Health Organization
PDNA	Post Disaster Needs Assessment
PMF	Performance Measurement Framework
PML	Probable Maximum Loss
PRP	Pure Risk Premium
RBM	Results-based Management
SO	Strategic Objective
SOPs	Standard Operating Procedures
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
US\$	American Dollar (United States currency)
USAID	United States Agency for International Development
USAR	Urban Search and Rescue Team

GLOSSARY

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as: “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces or to persistent anthropogenic changes in the composition of the atmosphere or in land use. (...) The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.”¹

Comprehensive Disaster Management (CDM)

CDM includes planning for all and responding to all hazards and threats (both natural and man-made) during all phases of the disaster cycle (mitigation, preparedness, response and recovery). It involves all levels of and sectors of society in an integrated management approach. It requires continuous engagement of political and other decision-makers.

Disaster

A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.²

Disaster Management (DM)

The continuous process, based on a previous assessment of hazard, vulnerability and risk information and response capacity resources, of multi-sectoral identification, promotion, planning, implementation, coordination, monitoring, evaluation and improvement, of preventive, preparedness, response and recovery activities executed in order to reduce and/or eliminate the effects of a hazard or a group of hazards on the vulnerable elements of a well-defined specific area.³

Disaster Risk Management (DRM)

The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and nonstructural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.⁴

¹ United Nations International Strategy for Disaster Reduction (UNISDR). (2009). *2009 UNISDR Terminology on Disaster Risk Reduction*.

² *Idem*.

³ Caribbean Community (CARICOM) & University of the West Indies (UWI). (1998). *Disaster Management Workshop. Technical Cooperation Agreement México*.

⁴ Caribbean Disaster Emergency Management Agency (CDEMA). (2010). *Comprehensive Disaster Management. CDM Glossary*.

Disaster Risk Reduction (DRR)

The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (Prevention) or to limit (Mitigation and Preparedness) the adverse impacts of hazards, within the broad context of sustainable development. DRR involves:

- Risk awareness and assessment including hazard analysis and vulnerability/capacity analysis;
- Knowledge development including education, training, research and information;
- Public commitment and institutional frameworks, including organizational, policy, legislation and community action;
- Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
- Early warning systems (EWS) including forecasting, dissemination of warnings, preparedness measures and reaction capacities⁵

The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.⁶

Emergency Management

The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.

Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters.

Natural Hazard

Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent or current hazard events or conditions.

Prevention

The outright avoidance of adverse impacts of hazards and related disasters.

⁵ Caribbean Disaster Emergency Management Agency (CDEMA). (2010). *Comprehensive Disaster Management. CDM Glossary*.

⁶ All further terms are extracted from: United Nations International Strategy for Disaster Reduction (UNISDR). (2009). *2009 UNISDR Terminology on Disaster Risk Reduction*.

Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Retrofitting

Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.

Risk

The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation $\text{Risk} = \text{Hazards} * \text{Vulnerability}$. Some disciplines also include the concept of exposure to refer particularly to the physical aspects of vulnerability.

Beyond expressing a possibility of physical harm, it is crucial to recognize that risks are inherent or can be created or exist within social systems. It is important to consider the social contexts in which risks occur and that people therefore do not necessarily share the same perceptions of risk and their underlying causes.

The combination of the probability of an event and its negative consequences.

Risk Assessment

A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

Risk Transfer

The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

Structural and Non-structural Measures

Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard resistance and resilience in structures or systems;

Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

1. PART I – INTRODUCTION

1.1. Introduction

The IDB is currently providing the GoG non-reimbursable technical support through the technical cooperation project “Design and Implementation of an Integrated Disaster Risk Management Plan” (GY-T1050). This project has three components: 1) Country risk indicators and flood risk evaluation; 2) Strengthening national and local capacity for integrated disaster risk management (IDRM), and 3) Design of an investment programme in flood prevention and mitigation.

It is under Component 2 that a *National Integrated Disaster Risk Management Plan* (NIDRMP) and its Implementation Strategy (herein referred to as “the Strategy”) were then developed.

This document represents the NIDRMP Strategy. The Strategy is herein presented as follows:

- Part I: Introduction.
- Part II: Ten-year Strategy. Presents the corresponding NIDRMP’s Strategy which contains the following:
 - *Introduction*
 - *Purpose of the Strategy*
 - *Set of Suggested Activities and Projects:* Includes suggested projects that regroup and address multiple priority activities. For each project, information is presented regarding: A general description, objectives, expected results, level of priority (short-, medium-, long-term), general data required, stakeholders, potential technical and financial resources and the activities addressed.
 - *Proposed Structure for DRM in Guyana, Operational Plan and Coordination Mechanisms:* Briefly presents the new proposed structure for DRM in Guyana, how the Strategy will be implemented, and the mechanisms for coordination in the DRM system in Guyana and coordination of the Plan and Strategy.
 - *Ten-year Implementation Plan:* Presents a ten-year plan for the implementation of each of the projects.
 - *Technical and Financial Resources:* A general overview will be presented particularly on available funding sources in the region.
 - *Monitoring and Evaluation (M&E) Framework:* The Strategy logical framework (LFA) presents a snapshot of the expected results (i.e., outputs and outcomes) of the Strategy, as well as the associated performance measurement indicators and risks. The expected results are then further expanded in a performance measurement framework (PMF), a tool used to measure and monitor results.
- Annexes.
 - Annex I: Bibliography
 - Annex II: List of Persons Consulted in the Development of the NIDRMP and Strategy
 - Annex III: Snapshot of Strategic Objectives (SOs) and Activities
 - Annex IV: Strategy LFA
 - Annex V: PMF for the NIDRMP and the Strategy
 - Annex VI: Table Depicting Linkages from SOs to Activities to Outcomes and Outputs to Suggested Projects

- Annex VII: Summary of Possible Sources of Funding

This Strategy should be seen as the second part to the NIDRMP, which contains much more detail and all background information needed for the NIDRMP itself.

2. PART II – TEN-YEAR STRATEGY

2.1. Introduction

The Strategy contains and presents details related to the key activities at the various levels that will serve to achieve or contribute to the SOs and expected outcomes as defined in the NIDRMP and presented briefly in section 2.3. These activities directly address all of the gaps, challenges and priorities that Guyana faces in DRM at present, as detailed in NIDRMP.

2.2. Structure of the Strategy

The Strategy is structured as follows:

- Section 2.3 describes the purpose of the Strategy.
- Section 2.4 presents the set of suggested activities at national, regional and local levels that were devised to achieve the expected outcomes and SOs presented in section 2.3 and discussed and presented in the NIDRMP. The activities are broken down and presented along the lines of the five components of DRM: risk identification, prevention and mitigation, financial protection and risk transfer, preparedness and response, and recovery.
- Section 2.5 regroups these various activities and presents a suggested set of projects to be implemented over the 10-year period in a comprehensive and complementary way with a view to achieving the expected outcomes and SOs. These projects can also be implemented within and part of ministries work programmes depending on resources available and existing work planning. This section outlines the objective, expected results, priority, requirements, key agencies responsible/involved, technical and financial resources required, and possible sources of support and implementation time for each project.
- Section 2.6 presents a revised proposed structure for DRM in Guyana, the Operational Plan and the coordination mechanisms as well as briefly discusses how the Strategy is to be implemented. In that section, all the NIDRMP and Strategy projects and activities are presented within a ten-year implementation timeframe.
- Section 2.7 presents a general overview on available funding sources in the region.
- Section 2.8 reinterprets and discusses the Strategy in terms of expected results – outputs and outcomes (as per results-based management (RBM) terminology) and then presents the brief LFA for the NIDRMP and the Strategy.
- Section 2.9 briefly outlines an M&E framework for the NIDRMP and its Strategy, indicating key performance measurement indicators for measuring progress and achievement of results.

2.3. Purpose of the Strategy

The Strategy outlines a way forward for implementing Guyana’s NIDRMP’s vision and goal as well as achieving NIDRMP’s SOs and expected outcomes over a ten-year timeframe. The Strategy is intended to

guide the implementation of projects and initiatives in Guyana – at national, regional and local levels – that are required in order to meet the NIDRMP’s objectives.

The NIDRMP’s vision, goal, SOs, expected outcomes are presented below.

The vision and the goal are:

<p>Vision</p> <p><i>A more sustainable and safe Guyana with reduced risk and enhanced resilience to impacts and consequences of the key hazards.</i></p>
<p>Goal</p> <p><i>The establishment and continuous enhancement of Integrated Disaster Risk Management in Guyana mainstreamed across all sectors and at all levels in the country to minimize potential deaths, injuries, loss of property, livelihoods, socio-economic loss and damage to the environment, and underpinning sustainable development.⁷</i></p>

The SOs for the NIDRMP are presented below – broken down into the five components of DRM (risk identification, prevention and mitigation, financial protection and risk transfer, preparedness and response, and recovery).

Table 1. Strategic Objectives⁸

Risk Identification	1. <i>To be able to identify and quantify the risks and possible consequences of the impacts of floods and droughts in Guyana and their possible interrelationship with the vulnerable elements of society and the environment in order to inform DRM and development activities in the country.</i>
Prevention/ Mitigation	2. <i>To reduce the risks of floods and droughts in Guyana through structural and non-structural measures, thereby reducing the vulnerability of society and the environment to the impacts and consequences of floods and droughts in order to better ensure sustainable development in the country.</i>
Financial Protection/Risk Transfer	3. <i>To promote the transfer of risk in order to reduce direct losses due to the impacts of floods and droughts affecting the government, private sector and society in general in Guyana.</i>
Preparedness/	4. <i>To establish a continuous preparedness process in Guyana, ensuring a</i>

⁷ Various comments were received on the wording of the Goal statement, many inconsistent. This revised version attempts to integrate most. Feedback will be required to arrive at the final wording.

⁸ Please note that SOs represent the overarching objective for a particular programmatic area, here broken down by the DRM components. These are not intended to be measurable results, but rather descriptive and the overall “raison d’être” of a particular programmatic area.

Response	<i>consistent adequate level of preparedness and response capacity for responding to floods and droughts through the ongoing improvement of contingency planning and emergency resources at all levels.</i>
Recovery	5. <i>To establish recovery mechanisms from the impacts of floods and drought to ensure the continuity of operations of the government, private sector and communities through early recovery, business continuity, rehabilitation and physical and social reconstruction initiatives.</i>

The expected outcomes are presented in table 2 below.

Table 2. Expected Outcomes

Risk Identification	1. <i>All hazards, vulnerable elements and risks identified, assessed and mapped in Guyana to be used in the DRM process.</i>
Prevention/ Mitigation	2. <i>Vulnerable infrastructure and communities with risks and vulnerability assessed and reduced by strengthening of structures or by relocation.</i> 3. <i>Vulnerability of sea defences, conservancy dams, drainage, and irrigation systems assessed and mitigation measures implemented to reduce risk.</i>
Financial Protection/Risk Transfer	4. <i>Mandatory risk transfer financing mechanisms in place for buildings, housing and infrastructure at risk.</i> 5. <i>Guyana insured with the Caribbean Catastrophe Risk Insurance Facility (CCRIF) at the regional level.</i>
Preparedness/ Response	6. <i>Organizations at all levels with a high level of preparedness to provide an adequate and timely response to the impacts and consequences of floods and droughts.</i> 7. <i>All needed laws and policies completed, and all plans completed, revised and tested for IDRM in Guyana.</i>
Recovery	8. <i>Organizations at all levels adequately prepared to start recovering immediately after floods and droughts in Guyana.</i> 9. <i>A National Contingency Fund established and operating in the country.</i>

2.4. Suggested Activities to Achieve Expected Outcomes and SOs

The section below presents suggested activities to be implemented in Guyana at the national, regional and local levels linked to each of the five SOs, in order to contribute to the achievement of the latter. Please note that these activities are not exhaustive in terms of detail but rather suggestive.⁹ They aim to encompass the key areas to be addressed in order to achieve each of the NIDRMP SOs, encompassing

⁹ Further specificity for some activities can only be provided by national stakeholders, while in others this may only emerge as activities begin to be implemented. Moreover, these activities should not be viewed only here as listed but also in the more detailed context of the listed projects in section 2.5.

the five components of DRM. Further detail about each are presented as part of the more detailed project descriptions that follow below in section 2.5.

2.4.1. Risk Identification

Key Activities Related to SO - For Risk Identification	
SO 1	Key Activities
<p>1. To be able to identify and quantify the risks and possible consequences of the impacts of floods and droughts in Guyana and their possible interrelationship with the vulnerable elements of society and the environment in order to inform DRM and development activities in the country.</p>	<p>National</p> <p>N.1.1.Design and implement a <i>National Hazard, Vulnerability and Risk Mapping Plan</i>.</p> <p>N.1.2.Establish a mechanism (e.g. a National Risk Identification Sub-Committee) for identification of information needed, data gathering, mapping and addressing the issue of availability.</p> <p>N.1.3.Undertake a holistic assessment of national flood and drought management needs, taking into consideration the impacts of increased rainfall, the threat of drought risk and the need to avoid maladaptation. The assessment would also review the various flood protection projects currently underway, address cross-border watershed management issues and examine gaps towards development of a master plan for flood and drought reduction in the country.</p> <p>N.1.4.Create and/or update hazard maps for: floods (river overflow), floods on the coastline (storm surge), drought, earthquake, tropical cyclone, landslide and wildfire.</p> <p>N.1.5.Create and/or update maps: of floodable/flood prone areas; of droughts and their effects by region; identifying location of critical infrastructure; about the status and location of the population; including small scale risk maps at the community level; and including the acquisition of satellite images of Guyana coastal area.</p> <p>N.1.6. Acquire Laser Imaging Detection and Raging (LIDAR) information model for the topography of the main rivers, areas and cities in the country (LIDAR digital elevation model (DEM) is desirable for the entire country).</p> <p>N.1.7.Design of vulnerability maps of prioritized areas (e.g. Georgetown, Anna Regina and New Amsterdam), and elements and assets (population, agriculture, infrastructure¹⁰, floodable areas).</p> <p>N.1.8. Conduct vulnerability assessments of all identified (and potential) vulnerable elements (population, agriculture, infrastructure, floodable areas, etc.) to floods and droughts.</p> <p>N.1.9. Collect data and conduct analysis on: Average Annual Loss (AAL), Pure Risk Premium (PRP), Loss Excedence Curve, Probable Maximum Loss (PML).</p> <p>N.1.10.Develop/update a baseline database of vulnerable and at-risk areas and elements (population, infrastructure, environment, etc.), including prioritization.</p> <p>N.1.11. Design of risk maps and disaster scenario maps for development and emergency planning.</p> <p>N.1.12.Purchase of hardware and software for the development and analysis of and access to geographical information system (GIS) maps developed, as part of national GIS database.</p> <p>N.1.13.Develop/improve GIS-based flood and drought risk information system (database).</p> <p>N.1.14.Deliver training to key government staff in the design and use of mapping software and processes, including analysis.</p> <p>N.1.15.Hold awareness-raising and information sessions with government and decision-makers with a view to integrating hazard, vulnerability and risk mapping and analysis into national planning and decision making (including addressing enforcement).</p>

¹⁰ For example: dwellings, hospitals, schools, government buildings, industrial buildings, commercial buildings, road and rail network, among others.

	<p>Regional/Local</p> <p>R.1.1.Design of community risk maps¹¹ and hazard, risk and vulnerability analysis (HRVAs).</p> <p>R.1.2.Deliver workshops to key stakeholders for community risk mapping.</p> <p>R.1.3.Incorporation of information from the regional/local level into the national database of vulnerable and at-risk areas and elements and the GIS database.</p>
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2.4.2. Prevention and Mitigation

Key Activities Related to SO - For Prevention/Mitigation	
SO 2	Key Activities
<p>2. To reduce the risks of floods and droughts in Guyana through structural and non-structural measures, thereby reducing the vulnerability of society and the environment to the impacts and consequences of floods and droughts.</p>	<p>National</p> <p>N.2.1. Design a <i>National Prevention/Mitigation Plan</i> that includes the creation and establishment of two national sub-committees: one for sea defences and sea walls and one for assessing vulnerability and mitigation measures for all other buildings/infrastructure.</p> <p>N.2.2.Implementation of mitigation activities according to the <i>National Prevention/Mitigation Plan</i>.¹²</p> <p>N.2.3.Conduct a diagnosis of structural reliability and a geotechnical and hydraulic assessment of all conservancy dams and drainage and irrigation systems.</p> <p>N.2.4.Conduct assessment of the vulnerability of the sea defences.</p> <p>N.2.5.Planning and implementation of mitigation/repair works for conservancy dams, drainage and irrigation systems based on vulnerability assessments. Establishment of a mitigation plan for conservancy dams, drainage and irrigation systems.</p> <p>N.2.6.Planning and implementation of mitigation/repair works in sea defences based on vulnerability assessments. Establishment of a mitigation plan for sea defences.</p> <p>N.2.7.Build capacity for regular inspection and maintenance of conservancy dams, sea defences and drainage systems (personnel, training, equipment, vehicles, materials, pumps, trucks, etc).</p> <p>N.2.8. Design of emergency plans for breach or overflow in conservancy dams and sea defences (including allocation of personnel and equipment for response in the case of breaches or overflow in conservancy dams and sea defences).</p> <p>N.2.9.Conduct risk assessment studies to determine the feasibility of relocating specific human settlements in high risk areas¹³.</p> <p>N.2.10.Conduct assessment studies in order to identify agricultural activities that reduce risk during the flooding season.</p> <p>N.2.11.Conduct assessment studies for the identification of specific measures to access</p>

¹¹ The key vulnerable communities (i.e. those at risk for floods) in Guyana will be selected by the Civil Defence Commission (CDC) in coordination with other agencies based on possible risk levels considering previous flooding events or other hazards (such as drought), as well as the assessment that will be rolled out as part of NIDRMP Implementation.

¹² Though the NIDRMP identified numerous areas and activities that could comprise the *National Prevention/Mitigation Plan*, these areas are not exhaustive. These need to be identified and agreed to by the key stakeholders involved through a participatory and exhaustive plan development process. They could include actions such as, for example, the re-introduction of forest rangers to protect the mangroves in the interior locations.

¹³ To be identified through the completion of previous assessments that would shed light on options available and priorities.

	<p>and store water during droughts.</p> <p>N.2.12.Design/revise and enact Building Code for Guyana including specific mandatory building measures against floods¹⁴.</p> <p>N.2.13. Identify/assess specific needs and related challenges for enforcement of Building Code in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.14. Build capacity for enforcement of the Building Code.</p> <p>N.2.15. Design/revise and enact a policy and plan for land use and human settlements.</p> <p>N.2.16. Identify/assess specific needs and related challenges for enforcement of the land-use plan in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.17. Ensure that environmental impact assessment (EIA) is integrated adequately into the land-use planning and construction process in the country.</p> <p>N.2.18. Retrofitting and reinforcement of public and private assets and infrastructure as identified through previously completed vulnerability and risk assessments.</p> <p><u>Regional /Local</u></p> <p>R.2.1. Allocation of personnel and equipment for regular clean up/maintenance and inspection in conservancy dams, municipal drainage systems, channels, culverts, sluices/kokers, ducts, outlet, etc.</p> <p>R.2.2. Training of personnel at the regional and local levels in identified areas for prevention/mitigation.</p> <p>R.2.3. Design of maintenance and clean-up plans at the regional and local levels.</p>
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2.4.3. Financial Protection and Risk Transfer

Key Activities Related to SO - For Financial Protection and Risk Transfer	
SO 3	Key Activities
<p>3.To promote the transfer of risk to reduce the direct losses due to the impacts of floods and droughts affecting the government, private sector and society in general in Guyana.</p>	<p><u>National</u></p> <p>N.3.1. Establish mandatory insurance for housing, agriculture activities and key/critical infrastructure in the DRM Bill.</p> <p>N.3.2. Develop and disseminate guidelines for the implementation of risk reduction measures for accessing flood insurance.</p> <p>N.3.3. Identification of risk transfer financing mechanisms and their requirements for Guyana in coordination with regional and international organizations, insurance companies and farmers.</p> <p>N.3.4. Identify requirements to access CCRIF insurance for floods (excess rainfall).</p> <p>N.3.5. Acquire CCRIF membership.</p> <p>N.3.6. Engage regional insurance with the CCRIF to access insurance for flooding in Guyana.</p> <p>N.3.7. Develop a national financial strategy for the management of the impacts of extreme events.</p> <p><u>Regional/Local</u></p> <p>R.3.1. Design and deliver workshops to train government officials and communities in risk transfer financial mechanisms.</p> <p>R.3.2. Develop and disseminate guidelines for best building practices to facilitate access to insurance.</p> <p>R.3.3. Develop and disseminate guidelines for best practices to ensure access to insurance to crops and animals.</p>

¹⁴ The Building Code could also include specific flood and drought counter-measures agreed between government and insurance companies.

2.4.4. Preparedness and Response

Key Activities Related to SO - For Preparedness/Response	
SO 4	Key Activities
<p>4. To establish a continuous preparedness process in Guyana, ensuring a consistent adequate level of preparedness and response capacity for responding to floods and droughts through the ongoing improvement of contingency planning and emergency resources at all levels.</p>	<p>National</p> <p>N.4.1.Design/revision/finalization of the <i>DRM Bill</i>, including integration of the relevant aspects of the NIDRMP (e.g. clarification of mandated roles and responsibilities for all organizations as laid out in the NIDRMP).</p> <p>N.4.2. Revise the draft <i>DRM Policy</i> (2011) to ensure it adequately covers all five DRM components, and is comprehensive and compatible with the NIDRMP as well as supporting and aligned with the revised <i>DRM Bill</i>. Ensure gender, environmental and climate change issues are also considered.</p> <p>N.4.3.Design of other relevant policies (such as evacuation, shelter management policy, relief policy, donations policy, waste disposal) and revision of existing legislation to ensure comprehensive integration of DRM, gender, environmental and climate change issues, and compatibility with the NIDRMP.</p> <p>N.4.4.Revision of the CDC structure, positions, functions, legislative authority (as embedded in the draft <i>DRM Bill</i> (2013) and draft <i>DRM Policy</i> (2011)), and name to ensure it is structured as a DRM organization and enabled to address and coordinate all DRM components. This re-structuring could include positions that would take responsibility for among the following areas: risk identification, financial protection and risk transfer, prevention and mitigation, preparedness and response, and recovery or identify liaisons for these areas to coordinate and work with the lead agencies in these areas.</p> <p>N.4.5.Revision of the National Disaster Preparedness and Response Structure with a view to making it a national DRM structure, focused on all DRM components.</p> <p>N.4.6.Revision of all national and regional sub-committees to ensure that together they comprehensively cover all DRM components, covering key hazards, all sectors and all levels. The number, composition, functions and terms of reference of all national and regional sub-committees are to be designed or revised/enhanced, as relevant in each case.</p> <ul style="list-style-type: none"> - The suggested national sub-committees include: i) For risk identification: Risk Identification Sub-Committee; ii) for prevention and mitigation: Sea Defence Sub-Committee, Drainage and Irrigation Sub-Committee, Mitigation Sub-Committee; iii) for financial protection and risk transfer: Risk Transfer Sub-Committee; iv) for preparedness/response: Emergency Sub-Committees, Warning and Evacuation, Health, Security, Shelter management, Welfare/ Relief, Public information and Education, Agriculture, Tourism, Public Utilities, Transport, Road Clearance and Waste Disposal.; and v) for recovery: Recovery Sub- Committee, Reconstruction Sub-Committee. <p>N.4.7.Revision of the National DRR Platform, its role, composition and functions, with a view to DRM.</p> <p>N. 4.8.Finalize the establishment and integration of the volunteer corps into the national DRM structure, into preparedness initiatives and into emergency response planning and relevant plans.</p> <p>N.4.9. Establish a national emergency planning process, including continuous updating and an assessment of linkages between and consistency/harmonization among all plans at all levels.</p> <p><i>N.4.9.1.</i>Development of key plans: Some of the emergency function plans to be developed include: tele-communications, emergency public information, and evacuation (beyond Mahaica). Plans for drought and fire are to be developed. The other hazard-specific emergency plans that still need to be developed include: oil spills, landslides, earthquake, hurricanes/storms/severe weather systems, hazardous materials spill, sea wall breach, mass casualty events: aircraft accidents, vehicle accidents, epidemics, chemical/ biological/ radiological/ nuclear events, mining accidents, and tsunamis. Sectoral plans that still need to be developed/finalized include: education, agriculture, tourism, infrastructure,</p>

	<p>environment, and health.</p> <p>N.4.9.2 Revision and updating of all existing plans, including the National Multi-Hazard Preparedness and Response Plan, Flood Response and Preparedness Plan, National Emergency Operations Centre (NEOC) Standard Operating Procedures (SOPs), EWS Protocol, Damage and Needs Assessment (DANA) Plan, Land Search and Rescue Plan, Aeronautical Search and Rescue Plan, Air Maritime Plan, Upper Mahaica Evacuation Plan, and community plans developed by Guyana Red Cross Society. The <i>National Health Sector Disaster Plan</i> and the Environmental Protection Agency (EPA) Plan could be revised as well.</p> <p>N.4.9.3 Depict harmonization among all plans and all levels, and ensure they are integrated into plans for annual simulations and exercises.</p> <p>N.4.9.4 Ensure that the appropriate plans integrate volunteers and define their roles and responsibilities</p> <p>N.4.10. Design and implementation of a national simulation exercise programme for testing and updating plans and ensuring they are well known, practiced and up to date.¹⁵</p> <p>N.4.11. Enhancement of the <i>EWS Plan for flood and drought</i>. This could include specific mechanisms for liaison with neighbouring countries, Caribbean Institute for Meteorology and Hydrology (CIMH) and Caribbean community (CARICOM) states for EWS; the establishment of the EWS Sub-Committee; the revision/integration and synergy of the current EWS with stakeholders (e.g.: text messaging); and the establishment of an EWS for the entire country, flood warning systems via satellite, radio, etc. among others.</p> <p>N.4.12. Assess the need for equipment, hardware and software and technical staff for EWS.</p> <p>N.4.13. Design and implementation of a national DRM training programme (including identification of DRM training needs at national, regional and local levels, design of new training courses¹⁶ adapted to Guyana's specific needs and conditions, based on areas identified, and including allocation of budget for the implementation of trainings.)</p> <p>N.4.14 Design and implementation of a National DRM Public Education and Awareness Plan and Strategy.¹⁷</p> <p>N.4.15. Revision of NEOC structure, roles and responsibilities and then revision of NEOC manual, SOPs, staffing and equipment.</p>
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¹⁵ This programme will allow for the revision, update, and testing of all plans regularly, ensuring that plans remain up to date and well known by all stakeholders and practiced regularly.

¹⁶ Some courses suggested, reflecting priorities identified, include: general DRM; drought management: prediction, prevention and response to its effects; search and rescue (land and maritime); shelter management; DANA using Caribbean Disaster Emergency Management Agency (CDEMA) guidelines; Damage and Loss Assessment (DaLA) using the methodology from the Economic Commission for Latin America and the Caribbean (ECLAC); Post Disaster Needs Assessment (PDNA) (using the methodology from ECLAC and World Bank); Contingency Planning; Contingency Planning for the Health Sector (using Pan American Health Organization (PAHO) guidelines); Mass Casualty Management (with PAHO assistance); Incident Command System (with PAHO assistance); EOC management with assistance from the United States Agency for International Development (USAID); use of the SAHANA software; training of instructors with assistance of USAID; Community disaster preparedness with assistance of CDEMA and the Red Cross. Ultimately, CDC and its key partners stakeholders will need to decide the annual priorities to be implemented.

¹⁷ Key activities could include: 1. Development of DRM messages for specific target audiences to be transmitted through television, radio and published in newspapers, magazines, etc.; 2. Flyers, videos, posters, etc., with information about specific hazards, their characteristics, actions being done by government authorities and self-protection actions during emergencies and disasters; 3. Composing songs by well-known Guyanese/Caribbean artists with DRM themes. Production, release and distribution of CDs; 4. Continuous enhancement of the CDC website; 5. Activities in communities with social groups such as Rotary, Lions, community-based and faith-based organizations and others; 6. Activities such as contests, fairs, caravans, river and drainage clean-ups, etc., always with themes related to DRM; 7. Design of *Family Emergency Plans*; 8. Design an *Emergency Public Information Plan* to be activated during disasters; 9. Design of the DRM information to be integrated into school curricula.

	<p>N.4.16. Design of model regional and local emergency operation centres (EOCs) manuals to be adapted at regional and local levels.</p> <p>N.4.17. Identification of specific measures to integrate gender issues into DRM processes.</p> <p><u>Regional/Local</u></p> <p>R.4.1. Establish regional DRM committees including regional DRM sub-committees¹⁸, ensuring that all DRM components are addressed.</p> <p>R.4.2. Establish all local DRM committees (i.e. neighbourhood or community district DRM committees and EOCs) including local DRM sub-committees, ensuring that DRM components are addressed.</p> <p>R.4.3. Design, establish and properly equip all regional EOCs.</p> <p>R.4.4. Design, establish and properly equip all local EOCs.</p> <p>R.4.5. Design and test emergency response plans at the regional level and ensure they are compatible with those at the national and local levels.</p> <p>R.4.6. Design and test emergency response plans at the local level and ensure they are compatible with those at the regional and national levels.</p> <p>R.4.7. Design and deliver a community-based DRR/DRM capacity building programme.</p>
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2.4.5. Recovery

Key Activities Related to SO - For Recovery	
SO 5	Key Activities
<p>5. To establish recovery mechanisms from the impacts of floods and drought to ensure the continuity of operations of government, the private sector and communities through early recovery, business continuity, rehabilitation and physical and social reconstruction.</p>	<p><u>National</u></p> <p>N.5.1. Design a <i>National Early Recovery Plan</i> for floods that include actions for all three levels: national, regional and local.</p> <p>N.5.2. Design a <i>National Early Recovery Plan</i> for droughts that include actions for all three levels: national, regional and local.</p> <p>N.5.3. Design of Continuity of Operations Plan (COOPs) and Business Continuity Plan (BCP) guidelines for the government and the private sector based on vulnerability assessments.</p> <p>N.5.4. Design of COOPs for government offices and key/critical national infrastructure based on vulnerability assessments.</p> <p>N.5.5. Design of BCPs for the private sector.</p> <p>N.5.6. Design and delivery of a national training programme for COOPs and BCPs.</p> <p>N.5.7. Revise/update and enhance the National Contingency Fund and its mechanisms, including addressing the enabling environment. This could include improving the availability and timeliness of disbursement of funds to cover the immediate costs for relief and early recovery after an event and to compensate the population for the loss of housing and agricultural assets (crops, livestock); a commitment from the GoG to provide more funds after disasters, agreement on the general contingency fund mechanisms (eligibility, amounts of compensation, etc.). The legislative, policy and institutional framework would be addressed.</p> <p>N.5.8. Hold awareness raising sessions for government and the private sector about the need for recovery, COOPs and BCPs in Guyana.</p> <p><u>Regional/Local</u></p> <p>R.5.1. Design COOPs for government offices and key/critical infrastructure at the regional</p>

¹⁸ The suggested regional committees and sub committees are: Risk Identification, Prevention and Mitigation, Warning and Evacuation Health, Shelter Management., Welfare/Relief, Public Information and Education, Transport and Clean-up. However, this needs to be decided upon by the CDC, the DRR Platform and key agencies, in particular in view of the suggested revised national DRM sub-committees.

	and local levels. R.5.2.Design of BCPs for the private sector at the regional and local levels. R.5.3.Workshops for training in COOPs and BCPs for the regional and local levels.
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The activities listed above are regrouped into potential and suggested projects for their implementation in the following section.

2.5. Projects

This section presents a suggested set of projects to be considered for implementation of the activities listed above and for NIDRMP overall – linked to each of the SOs. The suggested projects brought forth for consideration regroup activities into a comprehensive set of initiatives. This is presented to offer an alternative means for implementation rather than positing that each of the activities should be implemented in isolation. There are natural synergies and areas of complementarity among the various activities listed above, and therefore it might be efficient and effective to consider projects such as those listed below. In addition, as noted, these projects should also be considered for potential integration into various Ministries’ and agencies’ own work programmes into the future, especially for those who have been identified as key or lead agencies.

All projects are presented briefly in a table depicting:

- The key objective(s);
- The expected result(s);
- The level of priority, i.e., to be undertaken in the short (immediately, one year), medium (starting within two to five years), or long term (within five to ten years);
- General requirements;
- Proposed activities;
- The key agencies involved and responsible;
- Resources required (financial and technical);
- Possible sources of financial support;
- Proposed timing of implementation (refers to the duration of the project).¹⁹

2.5.1. For Risk Identification

Risk Identification Project	
Objective	<p>To reduce risk in Guyana through the development of a comprehensive probabilistic multi-risk analysis for Guyana, making improved data and mapping more accessible and available and catalyzing the use of risk information in planning and decision-making.</p> <p>The frequency of catastrophic events is particularly low and variable according to the type of event. Therefore, the historical information is generally very limited. Considering the potential for highly destructive events in the future, risk estimates should be focused in probabilistic models that can use the limited historical information available to forecast future event scenarios in the best possible way, while simultaneously considering the high uncertainties involved in analyses.</p> <p>The project aims to improve previous hazard analysis for:</p> <ul style="list-style-type: none"> ▪ Floods from the conservancy canal; ▪ Floods due to high intensity rainfall with prolong return periods; ▪ Cause/analysis of storm surges; ▪ Analysis of breaches in sea defences ▪ Floods caused by river overflow; ▪ Floods on the coastline due to storm surge; ▪ Drought; ▪ Earthquake; ▪ Tropical cyclone; ▪ Landslides; ▪ Wildfire.

¹⁹ Each project will need to be further defined and refined by the CDC and the organizations involved/responsible.

Risk Identification Project	
	It aims as well to improve on previous vulnerability analyses and to initiate multi-risk analyses for the country. In addition, it also aims to improve the inventory of exposed assets.
Expected Results	<p>Overall, the project aims to complete a comprehensive multi-hazard risk analysis for Guyana. The main expected results for this project will include:</p> <ul style="list-style-type: none"> • Hazard maps to include flood related impacts from the conservancy canal. • <i>National Hazard, Vulnerability and Risk Mapping Plan</i> developed. • Hazard maps produced for: floods (river overflow), floods on the coastline (storm surge), drought, earthquake, tropical cyclone, landslide and wildfire. • Risk maps for: floods (river overflow), floods on the coastline (storm surge), drought, earthquake, tropical cyclone, landslide and wildfire. • Database developed and populated regarding vulnerable elements and areas. • GIS database improved. <ul style="list-style-type: none"> - Further data and analysis developed on: AAL, PRP, Loss Excedence Curve, PML • Awareness of GoG and decision-makers increased regarding the national hazards, vulnerabilities and risks as well as the need and means to integrate this knowledge into decision-making and planning. • Dissemination of information.
Priority	Short to medium term
General Requirements	<ol style="list-style-type: none"> 1. Stakeholders' agreement on scope of information needed and type and scope of maps. 2. Adequate software and hardware. 3. Full-time designated personnel to use and enhance maps. 4. Daily precipitation records in meteorological stations, for the maximum number of years available, at least 30 years is desirable. 5. DEM (topography) at the maximum detail available in the country. 6. LIDAR information model for the topography of the main rivers, areas and cities in the country. LIDAR DEM is desirable for the entire country. 7. Cross sections of the rivers to be included in the model. 8. Basins and micro basins contours to be included. 9. Main and secondary rivers to be included. 10. Digital information (shape files or grids) of land use and soil cover properties for the area in study. 11. Flow records in rivers. 12. Location and characteristics of hydro-meteorological stations. 13. Satellite image with the extent of flooded areas for past historical events. 14. Urban area limits. 15. Geometry of seismic sources. 16. Seismic source parameters. 17. Attenuation laws of intensity. 18. Earthquake catalogues. 19. Reports and information of local site effects. 20. Geo-referenced GIS information (shape files) of the exposed assets to risk, mainly: infrastructure, dwellings, hospitals, schools, government buildings, industrial buildings, commercial buildings, road and rail network, crops (sugar cane, rice, etc), among others. 21. Geo-referenced cadastral information (shape files, excel, etc) of the main cities and towns. 22. Damage reports by previous events, with impacts and effects (events reports, affected zones, characteristics of the damages). 23. Modelling capability. 24. Consultations with public/governmental organization before, during and after implementation.
Proposed Activities	<p>N.1.1.Design and implement a <i>National Hazard, Vulnerability and Risk Mapping Plan</i></p> <p>N.1.2.Establish a mechanism (e.g. a National Risk Identification Sub-Committee) for identification of information needed, data gathering, mapping and addressing the issue of availability.</p> <p>N.1.3.Undertake a holistic assessment of national flood and drought management needs, taking into consideration the impacts of increased rainfall, the threat of drought risk and the need to avoid maladaptation. The assessment would also review the various flood protection projects currently underway, address cross-border watershed management issues and examine gaps towards development of a master plan for flood and drought reduction in the country.</p>

Risk Identification Project	
	<p>N.1.4.Create and/or update hazard maps for: floods (river overflow), floods on the coastline (storm surge), drought, earthquake, tropical cyclone, landslide and wildfire.</p> <p>N.1.5.Create and/or update maps: of floodable/flood prone areas; of droughts and their effects by region; identifying location of critical infrastructure; about the status and location of the population; including small scale risk maps at the community level; and including the acquisition of satellite images of Guyana coastal area.</p> <p>N.1.6.Acquire LIDAR information model for the topography of the main rivers, areas and cities in the country.</p> <p>N.1.7.Design of vulnerability maps of prioritized areas (e.g. Georgetown, Anna Regina and New Amsterdam), and elements and assets (population, agriculture, infrastructure, floodable areas).</p> <p>N.1.9.Collect data and conduct analysis on: AAL, PRP, Loss Excedence Curve, PML</p> <p>N.1.10.Develop/update a baseline database of vulnerable and at-risk areas and elements (population, infrastructure, environment, etc.), including prioritization.</p> <p>N.1.11.Design of risk maps and disaster scenario maps for development and emergency planning.</p> <p>N.1.12.Purchase of hardware and software for the development and analysis of and access to GIS maps developed, as part of national GIS database.</p> <p>N.1.13.Develop/improve GIS-based flood and drought risk information system (database).</p> <p>N.1.14.Deliver training to key government staff in the design and use of mapping software and processes, including analysis.</p> <p>N.1.15.Hold awareness-raising and information sessions with government and decision-makers with a view to integrating hazard, vulnerability and risk mapping and analysis into national planning and decision making (including addressing enforcement).</p>
Key Agencies Involved/ Responsible	Suggested lead: Guyana Lands and Surveys Commission (GL&SC) ; Suggested participants: CDC, Ministry of Local Government and Regional Development (MLG&RD), Ministry of Public Works and Communications, Ministry of Education (MOE), Ministry of Health (MOH), Ministry of Housing & Water, EPA, Central Housing & Planning Authority (CHPA) Ministry of Tourism, Guyana Geology and Mines Commission (GG&MC), private sector,
Technical Resources Required	<ol style="list-style-type: none"> 1 Hazard and vulnerability modeller: floods 2 Hazard and vulnerability modeller: drought 3 Hazard and vulnerability modeller: earthquakes 4 Hazard and vulnerability modeller: tropical cyclone 5 Hazard and vulnerability modeller: landslide 6 Hazard and vulnerability modeller: wildfire 7 Hazard and vulnerability modeller: storm surge 8 Exposure expert modeller 9 Multi-risk modeller 10 GIS expert 11 GIS software 12 Computers (hardware and software) 13 Statisticians 14 Lawyers 15 Demographic research analyst 16 Engineers
Financial Resources Required	US\$ 1M - US\$ 1.5M ²⁰
Possible Support Sources	IDB, United Nations Development Programme (UNDP), Caribbean Development Bank (CDB), Non-governmental Organizations (NGOs), insurance companies, local private sector, charitable organizations ²¹

²⁰ Costs here and in all projects are estimates. This point will not be repeated below but this is the case for all tables and projects below.

²¹ Here only possible organizations/donors are mentioned; specific projects that could provide funding are listed in section 2.7 and in Annex VII. This point will not be repeated below but this is the case for all tables and projects below.

Risk Identification Project	
Proposed time of Implementation	1.5 to 2 years. ²²

Community Risk Identification and Mapping Project	
Objective	To reduce community vulnerability through improved community risk mapping and capacity building in key vulnerable communities (i.e., those at risk for floods and drought) in Guyana. (The communities will be selected by the CDC in coordination with other agencies based on possible risk levels considering previous flooding event and building on assessments to be undertaken as part of the first project under risk identifications.)
Expected Results	<ul style="list-style-type: none"> • HRVAs completed for key communities at risk in Guyana. • Risk maps produced for 15²³ key vulnerable communities (at risk for flood) in Guyana. • Improved capacity for community members (local committees) trained to design and undertake HRVAs in their communities. • National database updated and improved with HRVA information integrated.
Priority	Medium-term
General Requirements	<ol style="list-style-type: none"> 1. General consensus on the communities to participate in the project activities. 2. HRVA methodology/approach agreed to. 3. Active participation of community members. 4. Regional and district/local/neighbourhood DRM committees already established. 5. Local committees already established and responsibilities assigned (not required but ideal). 6. Proper coordination with the Guyana Red Cross who already commenced aspects of this project.
Proposed Activities	<p>R 1.1 Design of community risk maps and HRVA.</p> <p>R 1.2 Deliver workshops to key stakeholders at the regional and local level for community risk mapping.</p> <p>R 1.3 Incorporation of information from the regional/local level into the national database of vulnerable and at-risk areas and elements and the GIS database.</p>
Key Agencies Involved/ Responsible	Suggested lead: GL&SC and MLG&RD. Suggested participants: CDC, GG&MC, MLG&RD, Ministry of Public Works and Communications, Ministry of Housing & Water, CHPA, Ministry of Amerindian Affairs, regional DRM sub-committees, district/local/neighbourhood DRM committees.
Technical Resources Required	<ol style="list-style-type: none"> 1. One full-time community disaster preparedness officer for CDC to assist in the management of the processes. 2. Technical expert familiar with HRVA tool/methodology.
Financial Resources Required	US\$ 350,000 (approximately US\$ 20,000 per community plus US\$ 50,000 to conduct workshops and other expenses)
Possible Support Sources	CDB, CDEMA, Canadian International Development Agency (CIDA), European Union (EU), International Federation of Red Cross and Red Crescent Societies (IFRC), Organization of Eastern Caribbean States (OECS), UNDP
Proposed time of Implementation	For 15 communities: 2-3 years

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the GL&SC (and the MLG&RD), among those of other agencies involved²⁴.

²² See the Ten-year Implementation Programme for the Strategy in table 5 indicating suggested start and duration of projects. This point will not be repeated below but this is the case for all tables and projects below.

²³ Real number to be determined based on needs. This point will not be repeated below but this is the case for all tables and projects below.

2.5.2. For Prevention/Mitigation

Vulnerability Assessment and Mitigation in Key Areas and Sectors	
Objective	To assess the vulnerability of key/critical infrastructure in key areas and pertaining to key sectors (including health, education, tourism, agriculture, transportation/communication, and water)
Expected Results	<ul style="list-style-type: none"> • Vulnerability of key/critical infrastructure in key areas and pertaining to key sectors (including health, education, tourism, agriculture, transportation/ communication, and water) assessed. • <i>National Prevention/Mitigation Plan</i> developed and implemented to address vulnerability assessment results.
Priority	Medium- to long-term
General Requirements	<ol style="list-style-type: none"> 1. Identification and consensus on the vulnerable elements to assess. 2. Consensus by stakeholders on priorities. 3. Consensus on the scope: type and number of buildings and areas to assess. 4. Consensus on the vulnerability assessment methodology to be followed in the assessments. 5. Consensus on mitigation activities to be selected. 6. Processes to hire mitigation works implementers.
Proposed Activities	<p>N.1.8. Conduct vulnerability assessments of all identified (and potential) vulnerable elements (population, agriculture, infrastructure, floodable areas, etc.) to floods and droughts.</p> <p>N.2.1. Design a <i>National Prevention/Mitigation Plan</i> that includes the creation and establishment of two national sub-committees: one for sea defences and sea walls and one for assessing vulnerability and mitigation measures for all other buildings/infrastructure.</p> <p>N.2.2. Implementation of mitigation activities²⁵ according to the <i>National Prevention/Mitigation Plan</i>.</p> <p>N.2.9. Conduct risk assessment studies to determine the feasibility of relocating specific human settlements in high risk areas²⁶.</p> <p>N.2.10. Conduct assessment studies in order to identify agricultural activities that reduce risk during the flooding season.</p> <p>N.2.11. Conduct assessment studies for the identification of specific measures to access and store water during droughts.</p> <p>N.2.18. Retrofitting and reinforcement of public and private assets and infrastructure as identified through previously completed vulnerability and risk assessments.</p>
Key Agencies Involved/ Responsible	Suggested lead: Ministry of Home Affairs Suggested participants: Ministry of Public Works and Communications, CDC, MOH, MOE, Ministry of Tourism, MOA, NDIA, Ministry of Housing & Water, CHPA, EPA, Guyana Water Incorporated (GWI), GL&SC, GG&MC.
Technical Resources Required	<p>First stage:</p> <ol style="list-style-type: none"> 1. Consultancy/engineering firm(s) 2. Technical expert familiar with vulnerability assessment tool/methodology. <p>Second stage:</p> <ol style="list-style-type: none"> 1. Construction companies to conduct mitigation works.
Financial Resources Required	<p>First stage: sectoral vulnerability assessments: US\$ 1M</p> <p>Second stage: Implementation of mitigation works (retrofitting, etc.) to be determined after results of the first stage and according to priorities identified.</p>
Possible Support Sources	EU, World Bank, IDB, CDB, UNDP.
Proposed time of Implementation	5 years: 1-2 years to conduct vulnerability assessments; 3 years to conduct works identified.

²⁴ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

²⁵ These need to be identified and agreed to by the key stakeholders involved. Many are posited in the NIDRMP and the Strategy but ultimately the key stakeholders need to agree on the priorities.

²⁶ To be identified through the completion of previous assessments.

Building Code Project	
Objective	To reduce the risk of Guyanese infrastructure in the future through the application and enforcement of a revised, updated, enacted and enforced Building Code for Guyana and improved enforcement capacity. The project will focus on the finalized development and the approval of the Building Code, the identification of mechanisms for the inspection and verification of constructions, and the provision of vehicles and equipment for conducting the latter. The GoG would provide full-time inspectors who would be trained under the project. In this manner, enforcement capacity would be created at the same time as the Building Code is developed.
Expected Results	<ul style="list-style-type: none"> • The Guyana Building Code is revised/updated/enacted. • Enforcement capacity improved. • Trained personnel to conduct inspections at construction sites. • Increase in the number/% of construction in Guyana built according to the Building Code.
Priority	Short-term
General Requirements	<ol style="list-style-type: none"> 1. Consensus of key stakeholders on the Building Code. 2. Consensus on building practices and on inspection mechanisms. 3. Full-time inspectors provided by the GoG.
Proposed Activities	<p>N.2.12.Design/revise and enact Building Code for Guyana including specific mandatory building measures against floods²⁷.</p> <p>N.2.13.Identify/assess specific needs and related challenges for enforcement of Building Code in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.14.Build capacity for enforcement of the Building Code.</p> <p>N.2.17. Ensure that EIA is integrated adequately into the land-use planning and construction process in the country.</p>
Key Agencies Involved/ Responsible	Suggested lead: Ministry of Home Affairs and Ministry of Legal Affairs. Suggested participants: Ministry of Public Works and Communications, MOA, CHPA, EPA, CDC, MOH, Guyana Bureau of Standards, Mayor and City Council, municipalities
Technical Resources Required	1. Consultancy engineering firm
Financial Resources Required	US\$ 300,000
Possible Support Sources	UNDP, EU, United Kingdom Department for International Development (DFID), CIDA, USAID.
Proposed time of Implementation	1 year

Vulnerability Assessment of Sea and River Defences and Conservancy Dams Project	
Objective	To reduce the vulnerability and increase the resiliency of sea and river defences and conservancy dams in Guyana
Expected Results	<ol style="list-style-type: none"> 1. Vulnerability of sea and river defences and conservancy dams assessed 2. Vulnerability of drainage and irrigation systems assessed 3. Capacity built to inspect sea and river defences, conservancy dams and drainage and irrigation systems to assess their structural status 4. Mitigation plans for both conservancy dams and sea and river defences developed 5. Improved resiliency of both sea and river defences and conservancy dams through mitigation works implemented 6. Emergency plans and planning developed for breaches and overflow
Priority	Medium-term
General	1. Consensus on the elements and scope of the conduct of vulnerability assessments (e.g.,

²⁷ The Building Code could also include specific flood and drought counter-measures agreed between government and insurance companies.

Vulnerability Assessment of Sea and River Defences and Conservancy Dams Project	
Requirements	conservancy dams, km of sea and river defences, etc.) 2. Full-time personnel to conduct inspections to sea and river defences and conservancy dams. 3. Agreement on prioritized mitigation works. 4. Monitoring/supervision of mitigations works. 5. Consensus on scope and content of plans.
Proposed Activities	N.2.3. Conduct a diagnosis of structural reliability and a geotechnical and hydraulic assessment of all conservancy dams and drainage and irrigation systems. N.2.4. Conduct assessment of the vulnerability of the sea defences. N.2.5. Planning and implementation of mitigation/repair works for conservancy dams, drainage and irrigation systems based on vulnerability assessments. Establishment of a mitigation plan for conservancy dams, drainage and irrigation systems. N.2.6. Planning and implementation of mitigation/repair works in sea defences based on vulnerability assessments. Establishment of a mitigation plan for sea defences. N.2.8. Design of emergency plans for breach or overflow in conservancy dams and sea defences (including allocation of personnel and equipment for response in the case of breaches or overflow in conservancy dams and sea defences).
Key Agencies Involved/ Responsible	Suggested lead: Ministry of Public Works and Communications and National Drainage and Irrigation Authority (NDIA) Suggested participants: CDC, MOA, MLG&RD, GWI
Technical Resources Required	First stage: 1. Consultancy engineering firm(s) (for vulnerability assessments conducted to sea and river defences, conservancy dams and drainage and irrigation systems.) 2. Capacity building for inspections Second stage: 1. Consultancy engineering or other firms (for mitigation works conducted determined by the results of vulnerability assessments).
Financial Resources Required	First stage: US\$ 1M Second Stage: cost of works to be determined after first stage.
Possible Support Sources	EU, World Bank, UNDP, IDB, CDB.
Proposed time of Implementation	First stage: 1-1.5 years Second stage: 2-5 years

Capacity Building for Maintenance of Drainage and Irrigation Systems Project	
Objective	To reduce the vulnerability of Guyana's conservancy, drainage and irrigation system through improved inspections and maintenance.
Expected Results	1. Drainage and irrigation systems regularly inspected, maintained and cleaned. 2. Enhanced capacity of personnel at the regional and local levels to conduct inspections, maintenance and clean-up activities in drainage and irrigation systems. 3. Maintenance plans developed.
Priority	Short- to medium-term
General Requirements	1. Consensus on the activities and mechanisms for inspections, maintenance and clean-up. 2. Full-time personnel to conduct inspections, maintenance and clean-up and selected for capacity building.
Proposed Activities	N.2.7. Build capacity for regular inspection and maintenance of conservancy dams, sea defences and drainage systems (personnel, training, equipment, vehicles, materials, pumps, trucks, etc. as an ongoing activity). R.2.1. Allocation of personnel and equipment for regular clean up/maintenance and inspection in conservancy dams, municipal drainage systems, channels, culverts, sluices/kokers, ducts, outlet, etc. R.2.2. Training of personnel at the regional and local levels in identified areas for prevention/mitigation.

Capacity Building for Maintenance of Drainage and Irrigation Systems Project	
	R.2.3.Design of maintenance and clean-up plans at the regional and local levels.
Key Agencies Involved/ Responsible	Suggested lead: Ministry of Public Works and Communications and NDIA Suggested participants: MOA, CDC, MLG&RD, GWI
Technical Resources Required	1. Technical capacity to train personnel for management/maintenance 2. Equipment for inspection, maintenance and clean-up.
Financial Resources Required	US\$ 750,000 - US\$ 1M
Possible Support Sources	EU, World Bank, IDB, CDB.
Proposed time of Implementation	2 years

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the Ministry of Home Affairs, the Ministry of Public Works and Communications, NDIA, among those of other agencies involved²⁸.

2.5.3. For Financial Protection and Risk Transfer

Flood and Drought Insurance Project	
Objective	To reduce (transfer) disaster risk (for flood and drought) through insurance mechanisms at the national and regional level.
Expected Results	1. Insurance made mandatory in Guyana 2. Housing and buildings insured to floods in Guyana 3. Increase in persons with insurance for agriculture activities in Guyana (crops and livestock) 4. Guidelines for best building best practices developed 5. Guidelines for agricultural best practices developed
Priority	Short-term
General Requirements	1. Consensus among government, insurance companies and the population on the mechanisms and requirements for mandatory insurance. 2. Consensus among government, insurance companies and farmers on the mechanisms and requirements for mandatory insurance.
Proposed Activities	N.3.1.Establish mandatory insurance for housing, agriculture activities and key/critical infrastructure in the <i>DRM Bill</i> . N.3.2.Develop and disseminate guidelines for the implementation of risk reduction measures for accessing flood insurance. N.3.3.Identification of risk transfer financing mechanisms and their requirements for Guyana in coordination with regional and international organizations, insurance companies and farmers. R.3.1. Design and deliver workshops to train government officials and communities in risk transfer financial mechanisms. R.3.2. Develop and disseminate guidelines for best building practices to facilitate access to insurance. R.3.3. Develop and disseminate guidelines for best practices to ensure access to insurance to crops and animals.
Key Agencies Involved/	Suggested lead: Ministry of Finance Suggested participants: CDC, Ministry of Housing & Water, CHPA, MOA, Ministry of Legal Affairs. Private Sector Commission

²⁸ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

Flood and Drought Insurance Project	
Responsible	
Technical Resources Required	<ol style="list-style-type: none"> 1. Insurance expertise/firm. 2. Public outreach expertise for design and publication of guidelines and public information.
Financial Resources Required	US\$ 200,000
Possible Support Sources	IDB, CDB
Proposed Time for Implementation	2 years

CCRIF Insurance Project	
Objective	To reduce (transfer) disaster risk (for floods/excess rainfall) at the national/regional levels by accessing insurance from the CCRIF
Expected Results	1. Guyana insured for floods (excess rainfall) at the regional level through the CCRIF
Priority	Medium-term
General Requirements	<ol style="list-style-type: none"> 1. Identification of requirements to access CCRIF insurance for floods (excess rainfall) 2. Consensus on becoming a CCRIF 3. Guyana becoming a CCRIF member
Proposed Activities	N.3.4. Identify requirements to access CCRIF insurance for floods (excess rainfall). N.3.5. Acquire CCRIF membership. N.3.6. Engage regional insurance with the CCRIF to access insurance for flooding in Guyana.
Key Agencies Involved/ Responsible	Suggested lead: Ministry of Finance Suggested participants: Office of the President (OP), National Assembly, Ministry of Foreign Affairs, CDC, Ministry of Legal Affairs
Technical Resources Required	Potentially to engage someone with understandings of the requirements from CCRIF.
Financial Resources Required	To be determined: Cost determined by the CCRIF to ensure Guyana against floods.
Possible Support Sources	GoG, CCRIF, EU.
Proposed time for Implementation	1 year

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the Ministry of Finance, among those of other agencies involved²⁹.

²⁹ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

2.5.4. For Preparedness/Response

Legislation and Policies Project	
Objective	To enhance preparedness and response in Guyana by ensuring DRM legislation and policies are designed and approved in Guyana
Expected Results	<ol style="list-style-type: none"> 1. A <i>DRM Bill</i> enacted in Guyana 2. A <i>DRM Policy</i> revised and enhanced 3. DRM integrated into legislation in Guyana 4. Policies related to DRM developed. 5. Climate change and gender issues integrated into legislation and policies
Priority	Short-term
General Requirements	<ol style="list-style-type: none"> 1. Approval and adoption of the NIDRMP and the Strategy 2. Consensus among stakeholders on the contents of the <i>DRM Bill</i> and policies
Proposed Activities	<p>N.2.15. Design/revise and enact a policy and plan for land use and human settlements.</p> <p>N.2.16. Identify/assess specific needs and related challenges for enforcement of the land-use plan in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.4.1. Design/revision/finalization of the <i>DRM Bill</i>, including integration of the relevant aspects of the NIDRMP (e.g. clarification of mandated roles and responsibilities for all organizations as laid out in the NIDRMP).</p> <p>N.4.2. Revise the draft <i>DRM Policy</i> (2011) to ensure it adequately covers all five DRM components, and is comprehensive and compatible with the NIDRMP as well as supporting and aligned with the revised <i>DRM Bill</i>. Ensure gender, environmental and climate change issues are also considered.</p> <p>N.4.3. Design of other relevant policies (such as evacuation, shelter management policy, relief policy, donations policy, waste disposal) and revision of existing legislation to ensure comprehensive integration of DRM, gender, environmental and climate change issues, and compatibility with the NIDRMP.</p>
Agency Responsible	Suggested lead: CDC Suggested participants: All ministries
Technical Resources Required	<ol style="list-style-type: none"> 1. Consultant(s) for revision and development of legislation and policies
Financial Resources Required	<p>For the design of the <i>DRM Bill</i>, the cost is already covered by the IDB project.</p> <p>For the rest of activities: US\$ 100,000</p>
Possible Support Sources	CDEMA, IDB, UNDP.
Proposed time of Implementation	1 year

Early Warning Systems Enhancement Project	
Objective	To improve disaster preparedness and response in Guyana through enhanced EWS for floods and drought
Expected Results	<ol style="list-style-type: none"> 1. A revised <i>EWS Plan for floods and drought</i>. 2. EWS for drought designed.
Priority	Short-term
General Requirements	<ol style="list-style-type: none"> 1. Consensus on the mechanisms for early warning and contents and coverage of plans and systems 2. Early warning mechanisms in place 3. Full-time personnel in charge of early warning (forecast and flood warning)
Proposed Activities	N.4.11. Enhancement of the <i>EWS Plan for flood and drought</i> . This could include specific mechanisms for liaison with neighbouring countries, CIMH and CARICOM states for EWS; the establishment of the EWS Sub-Committee; the revision/integration and synergy of the current EWS with stakeholders (e.g.: text messaging); and the establishment of an EWS for the entire country, flood warning systems via satellite, radio, etc. among others.

Early Warning Systems Enhancement Project	
	N.4.12. Assess the need for equipment, hardware and software and technical staff for EWS.
Key Agencies Involved/ Responsible	Suggested lead: CDC Suggested participants: OP, MOA, NDIA, HydroMet, Guyana Power and Light (GPL), Guyana Telephone and Telegraph Company (GT&T), Digicel, National Communications Network, Guyana Information Agency (GINA), Defence Force, Fire Service, Police Force
Technical Resources Required	1. EWS equipment 2. Potentially hardware/software 3. Consultant(s) for developments of plans and revision/enhancement of systems 4. Appropriate technical staff for installations and testing of equipment
Financial Resources Required	US\$ 100,000 for the project, further resources likely to be required (to be determined) for full-time staff as needed.
Possible Support Sources	UNDP, IDB, Caribbean Community Climate Change Centre (CCCCC), CDB, CIMH, CDEMA.
Proposed time of Implementation	1 year

Emergency Planning Project	
Objective	To enhance and systematize emergency preparedness in Guyana, through a comprehensive set of emergency response plans designed, harmonized, updated and tested regularly, as part of a comprehensive system.
Expected Results	First stage: 1. <i>National Multi-Hazard Preparedness and Response Plan</i> , the <i>Flood Response and Preparedness Plan</i> , the <i>DANA Plan</i> and the <i>NEOC SOPs</i> , all harmonized and revised (also bearing in mind the <i>NIDRMP</i>). 2. <i>Drought Emergency Response Plan</i> developed. Second stage: 1. Missing emergency preparedness and response plans developed (to be determined). 2. All key emergency preparedness and response plans in Guyana (hazard-specific, emergency response functions, sectoral plans) at all levels (national, regional, local and sectoral) revised, tested and harmonized. 3. National process for revising and testing all plans developed.
Priority	Short- to medium-term
General Requirements	First stage: 1. Analysis of the results of simulation exercises executed: Flood Gate 2012 and others. 2. Plan to address gaps as identified in the <i>NIDRMP</i> finalized through thorough review. Second stage: 1. Consensus on the number of plans to be revised/designed at all levels. 2. National, regional, local and sectoral DRM structures already in place for participation in revision and testing of plans ³⁰ . 3. Full national testing of all plans ³¹ .
Proposed Activities	N.4.9. Establish a national emergency planning process, including continuous updating and an assessment of linkages between and consistency/harmonization among all plans at all levels: N.4.9.1: Development of key plans: Some of the emergency function plans to be developed include: tele-communications, emergency public information, and evacuation (beyond Mahaica). Plans for drought and fire ³² are to be developed. The other hazard-specific emergency plans that still need to be developed include: oil spills, landslides, earthquake,

³⁰ These expected results emerge through the implementation of another suggested project below: the National DRM Structure and Organisations Project.

³¹ Also addressed in the following ongoing project: DRM Simulations Exercises Project.

³² The plan for fire could include the objective of increasing the number of functioning fire hydrants to reduce fire risks and occurrences, amongst other things.

Emergency Planning Project	
	<p>hurricanes/storms/severe weather systems, hazardous materials spill, sea wall breach, mass casualty events: aircraft accidents, vehicle accidents, epidemics, chemical/biological/radiological/nuclear events, mining accidents, fire, and tsunamis. Sectoral plans that still need to be developed/finalized include: education, agriculture, tourism, infrastructure, environment, and health.</p> <p>N.4.9.2 Revision and updating of all existing plans, including the <i>National Multi-Hazard Preparedness and Response Plan</i>, <i>Flood Response and Preparedness Plan</i>, <i>NEOC SOPs</i>, <i>EWS Protocol</i>, <i>DANA Plan</i>, <i>Land Search and Rescue Plan</i>, <i>Aeronautical Search and Rescue Plan</i>, <i>Air Maritime Plan</i>, <i>Upper Mahaica Evacuation Plan</i>, and community plans developed by Guyana Red Cross Society. The <i>National Health Sector Disaster Plan</i> and the <i>EPA National Environment Emergency Response Plan</i> could be revised as well.</p> <p>N.4.9.3 Depict harmonization among all plans and all levels, and ensure they are integrated into plans for annual simulations and exercises.</p> <p>N.4.9.4 Ensure that the appropriate plans integrate volunteers and define their roles and responsibilities</p> <p>R.4.5. Design and test emergency response plans at the regional level and ensure they are compatible with those at the national and local levels.</p> <p>R.4.6. Design and test emergency response plans at the local level and ensure they are compatible with those at the regional and national levels.</p>
Key Agencies Involved/ Responsible	Suggested lead: CDC Suggested participants: All ministries, agencies.
Technical Resources Required	<p>First stage:</p> <ol style="list-style-type: none"> 1. Consultant(s) for review and harmonization of all plans; development of new plans and overall national process for revision and testing; <p>Second stage:</p> <p>Consultant(s) for design, execution and evaluation of simulation exercises.</p>
Financial Resources Required	<p>First stage: US\$ 150,000 - US\$ 250,000</p> <p>Second stage: US\$ 400,000 - US\$ 600,000</p>
Possible Support Sources	IDB, UNDP, World Bank, CDEMA, USAID, DFID, CIDA, EU.
Proposed time of Implementation	<p>Stage one: 1 year</p> <p>Stage two: 1-2 years</p>

DRM Simulation Exercises Project	
Objective	To improve the preparedness and response capacity in Guyana through the planning, execution and evaluation of simulation exercises to test emergency response plans, trained personnel and other resources in Guyana.
Expected Results	<ol style="list-style-type: none"> 1. A national simulation exercises programme designed. 2. Simulation exercises planned, executed and evaluated at all levels for all emergency response plans and for all hazards (floods and droughts initially).
Priority	Medium-term
General Requirements	<ol style="list-style-type: none"> 1. Emergency response plans designed/revised for floods and droughts and for other priority hazards and emergency response functions. 2. Emergency response personnel trained. 3. Consensus reached on the timing, scope and coverage of simulation exercises
Proposed Activities	N.4.10. Design and implementation of a national simulation exercise programme for testing and updating plans and ensuring they are well known, practiced and up to date.
Key Agencies Involved/ Responsible	Suggested lead: CDC Suggested participants: regional and district/local/neighbourhood DRM committees; specific sectors and Ministries such as Ministry of Home Affairs, MLG&RD, MOH, MOE, MOA, EPA; Other key responders such as Guyana Defence Force, Police Force, Fire Service, Urban Search and Rescue Team (USAR), etc.
Technical	<ol style="list-style-type: none"> 1. Consultant(s) for developing the simulation exercise programme

DRM Simulation Exercises Project	
Resources Required	2. Consultant(s) for developing and conducting desk top simulation exercises and operational simulation exercises
Financial Resources Required	For Phase 1: US\$ 200,000 For Phase 2: to be determined in Phase 1: approximately US\$ 500,000
Possible Support Sources	CDEMA, UNDP, EU, USAID, DFID, CIDA.
Proposed time of Implementation	Phase 1: 1 year Phase 2: 2 years

EOC Improvement Project	
Objective	To enhance preparedness and response capacity in Guyana through the establishment, enhanced equipping and operations of the EOCs at the national, sectoral, regional and local levels in Guyana.
Expected Results	<ul style="list-style-type: none"> National EOC, all regional EOCs and selected local EOCs adequately equipped and ready to be activated in the case of an emergency. Key manuals and SOPs developed/revised based on models developed.
Priority	Medium-term
General Requirements	<ol style="list-style-type: none"> National DRM and NEOC structures revised and established. Regional and district/local/neighbourhood DRM EOC organizations established. Sectoral DRM organizations established. Key emergency response plans and procedures revised: <i>National Multi-Hazard Preparedness and Response Plan, Flood Response and Preparedness Plan, National EWS Plan, DANA Plan.</i> EOCs at different levels established.
Proposed Activities	<p>N.4.15. Revision of NEOC structure, roles and responsibilities and then revision of NEOC manual, SOPs, staffing and equipment.</p> <p>N.4.16. Design of model regional and local EOC manuals³³ to be adapted at regional and local levels.</p> <p>R.4.3. Design, establish and properly equip all regional EOCs.</p> <p>R.4.4. Design, establish and properly equip all local EOCs.</p>
Key Agencies Involved/ Responsible	Suggested lead: CDC Suggested participants: regional and district/local/neighbourhood DRM organizations and committees.
Technical Resources Required	<ol style="list-style-type: none"> Consultant(s) for development/revision of manuals and SOPs and models Expertise for equipment installations
Financial Resources Required	US\$ 500,000
Possible Support Sources	UNDP, IDB, CDEMA, USAID, DFID, CIDA
Proposed time of Implementation	2 years

³³ The manual designed could include: a typical structure for the EOC, its members, lay-out, minimal resources and SOPs.

DRM Training Project	
Objective	To improve the response capacity in Guyana of all emergency responders considered in emergency plans in Guyana.
Expected Results	<ol style="list-style-type: none"> 1. DRM training needs identified at the national, regional and local levels. 2. A national DRM training programme designed. 3. Activities identified in the national DRM training programme are funded and implemented. 4. Response personnel trained in their specific responsibilities as stated in emergency plans and SOPs. 5. DRM training capacity enhanced at the national, regional and local levels.³⁴ <p>Some courses suggested are:</p> <ol style="list-style-type: none"> a. General DRM b. Droughts: prediction, prevention and response to its effects c. Search and rescue (land and maritime) d. Shelter management e. DANA using CDEMA guidelines f. DaLA using the methodology from the ECLAC g. PDNA (using the methodology from ECLAC and World Bank) h. Contingency Planning (CDEMA also has guidelines for the design of emergency plans) i. Contingency Planning for the Health Sector (using PAHO guidelines) j. Mass Casualty Management (with PAHO assistance) k. Incident Command System (with PAHO assistance) l. EOC management with assistance from the USAID m. Use of the SAHANA software n. Training of instructors with assistance of USAID o. Community disaster preparedness with assistance of CDEMA and the Red Cross. <p>The exact type and number of training courses and the exact number of trainees will be determined at the end of Phase 1 of the project. Expected results would then be revised/further specified.</p>
Priority	Short- to medium-term
General Requirements	<p>For Phase 1:</p> <ol style="list-style-type: none"> 1. DRM structures established/enhanced at the national, regional and local levels³⁵. 2. Emergency response plans designed/revised/harmonized at the all levels³⁶. 3. Identification of DRM training needs for response. 4. Delivery of two trainings for instructor training courses. <p>For Phase 2:</p> <ol style="list-style-type: none"> 1. DRM training capacity in Guyana built. 2. Responsibilities for specific training assigned to stakeholders including national DRM sub-committees. 3. Training course delivery by consultants and by trained instructors.
Proposed Activities	Phase 1: N.4.13. Design and implementation of a national DRM training programme (including identification of DRM training needs at national, regional and local levels, design of new training courses ³⁷)

³⁴ These expected results are general/generic at this stage. Once the specific activities/elements of the training programme are agreed to, more specific expected results should be developed.

³⁵ These expected results emerge through the implementation of another suggested project below: the National DRM Structure and Organisations Project.

³⁶ These expected results emerge through the implementation of another suggested project above: the Emergency Planning Project.

³⁷ Some courses suggested, reflecting priorities identified, include: general DRM; drought management: prediction, prevention and response to its effects; search and rescue (land and maritime); shelter management; DANA using CDEMA guidelines; DaLA using the methodology from the ECLAC; PDNA (using the methodology from ECLAC and World Bank); Contingency Planning; Contingency Planning for the Health Sector (using PAHO

DRM Training Project	
	adapted to Guyana's specific needs and conditions, based on areas identified, and including allocation of budget for the implementation of trainings.) R.4.7. Design and deliver a community-based DRR/DRM capacity building programme
Key Agencies Involved/ Responsible	Suggested lead: CDC Suggested participants: regional and district/local/neighbourhood DRM organizations and committees. Ministries/agencies responsible for specific response plans (hazard-specific, sectoral)
Technical Resources Required	1. Consultant(s) for design and implementation of the training programmes (expertise to be determined based on training areas selected)
Financial Resources Required	Phase 1: US\$ 100,000 Phase 2: To be determined after Phase 1. Approximately US\$ 500,000 for ~50+ training courses.
Possible Support Sources	CDEMA, USAID, DFID, CIDA, UNDP, EU, World Bank, ECLAC, PAHO, Red Cross.
Proposed time of Implementation	Phase 1: 1 year Phase 2: 2 years

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the CDC, among those of other agencies involved³⁸.

National DRM Public Education and Awareness Plan and Strategy Project	
Objective	To increase public awareness and knowledge on DRM in Guyana. To design a <i>National DRM Public Education and Awareness Plan and Strategy</i> .
Expected Results	1. A <i>National DRM Public Education and Awareness Plan and Strategy</i> developed and implemented. Phase 1 would include selection of activities to be included in the Strategy and Plan. Phase 2 would involve implementation. It is anticipated that expected results could then be revised/further specified after Phase 1.
Priority	Short-term
General Requirements	1. Consensus on the types of messages to be broadcast/disseminated 2. Consensus on the DRM information to be included in school curricula. 3. Consensus on all aspects of the Strategy and Plan in terms of scope and coverage.
Proposed Activities	N.4.14 Design and implementation of a <i>National DRM Public Education and Awareness Plan and Strategy</i> . Key activities could include: 1. Development of DRM messages for specific target audiences to be transmitted through television, radio and published in newspapers, magazines, etc.; 2. Flyers, videos, posters, etc., with information about specific hazards, their characteristics, actions being done by government authorities and self-protection actions during emergencies and disasters; 3. Composing songs by well-known Guyanese/Caribbean artists with DRM themes. Production, release and distribution of CDs; 4. Continuous enhancement of the CDC website;

guidelines); Mass Casualty Management (with PAHO assistance); Incident Command System (with PAHO assistance); EOC management with assistance from the USAID; use of the SAHANA software; training of instructors with assistance of USAID; Community disaster preparedness with assistance of CDEMA and the Red Cross. Ultimately, CDC and its key partners stakeholders will need to decide the annual priorities to be implemented.

³⁸ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

National DRM Public Education and Awareness Plan and Strategy Project	
	5. Activities in communities with social groups such as Rotary, Lions, community-based and faith-based organizations and others; 6. Activities such as contests, fairs, caravans, river and drainage clean-ups, etc., always with themes related to DRM; 7. Design of <i>Family Emergency Plans</i> ; 8. Design an <i>Emergency Public Information Plan</i> to be activated during disasters; 9. Design of the DRM information to be integrated into school curricula ³⁹ .
Key Agencies Involved/ Responsible	Suggested lead: MOE, National Communications Network Suggested participants: CDC GINA, EPA,, Ministry of Amerindian Affairs, University of Guyana
Technical Resources Required	1. Consultant(s) to design and implement Strategy and Plan.
Financial Resources Required	US\$ 200,000 - US\$ 500,000 including printing of key materials and production of videos, depending on activities selected.
Possible Support Sources	EU, CIDA, UNDP, CDEMA, United Nations Children's Fund (UNICEF).
Proposed time of Implementation	2 years

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the MOE, among those of other agencies involved⁴⁰.

2.5.5. For Recovery

Early Recovery Project	
Objective	To build capacity in Guyana to recover immediately after disasters.
Expected Results	1. A <i>National Early Recovery Plan for Floods</i> for Guyana developed 2. A <i>National Early Recovery Plan for Droughts</i> for Guyana developed 3. Guidelines for the design of COOPs and BCPs for all sectors of society developed 4. COOPs and BCPs designed and tested in Guyana
Priority	Medium-term
General Requirements	1. The need for government and private sector to acknowledge the need for recovery, COOPs and BCPs. 2. Full involvement of government and private sector in the planning process of recovery planning. 3. Consensus on the content of the recovery plans and guidelines and the scope of COOP and BCP coverage
Proposed Activities	N.5.1. Design a <i>National Early Recovery Plan for floods</i> that include actions for all three levels: national, regional and local. N.5.2. Design a <i>National Early Recovery Plan for droughts</i> that include actions for all three levels: national, regional and local. N.5.3. Design of COOPs and BCP guidelines for the government and the private sector based on vulnerability assessments. N.5.4. Design of COOPs for government offices and key/critical national infrastructure based on vulnerability assessments. N.5.5. Design of BCPs for the private sector.

³⁹ Ultimately, CDC and its key partners stakeholders will need to decide the annual priorities to be implemented.

⁴⁰ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

Early Recovery Project	
	<p>N.5.6. Design and delivery of a national training programme for COOPs and BCPs.</p> <p>N.5.8. Hold awareness raising sessions for government and the private sector about the need for recovery, COOPs and BCPs in Guyana.</p> <p>R.5.1. Design COOPs for government offices and key/critical infrastructure at the regional and local levels.</p> <p>R.5.2. Design of BCPs for the private sector at the regional and local levels.</p> <p>R.5.3. Workshops for training in COOPs and BCPs for the regional and local levels.</p>
Key Agencies Involved/ Responsible	Suggested lead: CDC, MLG&RD Suggested participants: regional and district/local/neighbourhood DRM committees, MOA, Ministry of Tourism, Industry and Commerce, Ministry of Public Works and Communications, MOH, MOE, NEOC, Ministry of Finance and the private sector (e.g. Private Sector Commission, Chamber of Commerce of Georgetown).
Technical Resources Required	1. Consultant(s) for the design of Early Recovery Plans and for the design of COOPs and BCPs and guidelines for them.
Financial Resources Required	US\$ 250,000 - US\$ 300,000
Possible Support Sources	CDB, IDB, UNDP.
Proposed time of Implementation	1 year

Contingency Funding and Financial Management Strategy Project	
Objective	To improve financial management and recovery capacity in Guyana through increasing availability of funds for recovery after a disaster.
Expected Results	<ul style="list-style-type: none"> National contingency funding reviewed and enhanced Improved availability and timeliness of disbursement of funds to cover the immediate costs for relief and early recovery after an event and to compensate the population for the loss of housing and agricultural assets (crops, livestock)
Priority	Medium-term
General Requirements	<ol style="list-style-type: none"> Full commitment from the GoG to provide more available funds after disasters Consensus among government, private sector and population in general on contingency fund mechanisms (eligibility, amounts of compensation, etc.)
Proposed Activities	<p>N.3.7. Develop a national financial strategy for the management of the impacts of extreme events.</p> <p>N.5.7. Revise/update and enhance the National Contingency Fund and its mechanisms, including addressing the enabling environment. This could include improving the availability and timeliness of disbursement of funds to cover the immediate costs for relief and early recovery after an event and to compensate the population for the loss of housing and agricultural assets (crops, livestock); a commitment from the GoG to provide more funds after disasters, agreement on the general contingency fund mechanisms (eligibility, amounts of compensation, etc.). The legislative, policy and institutional framework would be addressed.</p>
Key Agencies Involved/ Responsible	Suggested lead: Ministry of Finance Suggested participants: CDC, key ministries: MLG&RD, Ministry of Legal Affairs, MOA, Ministry of Tourism, Industry and Commerce, Ministry of Public Works and Communications, MOH, MOE and private sector.
Technical Resources Required	1. Consultant(s) to revise the national contingency fund
Financial Resources Required	US\$ 75,000 - US\$ 100,000
Possible Support Sources	IDB, CDB, UNDP.
Proposed time of Implementation	1 year

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the MLG&RD, the Ministry of Finance, and the CDC, among those of other agencies involved⁴¹.

2.5.6. Multi-component Project

The following project explicitly involves more than one of the five DRM components and refers to revising/establishing the national DRM structure and may affect all DRM organizations involved with DRM activities at the national, regional and local levels for risk identification, prevention and mitigation, financial protection and risk transfer, preparedness and response and recovery. The revision and enhancement of the national DRM structure is of central importance to an improved system in Guyana as well as for implementing the rest of the projects discussed above as part of a moving forward in DRM.

The National DRM Structure and Organizations Project	
Objective	To strengthen the entire DRM structure and system in Guyana.
Expected Results	<ol style="list-style-type: none"> 1. CDC structure and functions revised, clarified, and enhanced and properly embedded in the DRM Policy and DRM Bill. 2. A new/revised national DRM structure in Guyana established. 3. The number, composition, functions and terms of reference of all national disaster sub-committees revised and enhanced and properly embedded in the DRM Policy and DRM Bill. 4. The role, composition and terms of reference of the National DRR Platform revised and enhanced and properly embedded in the DRM Policy and DRM Bill. 5. The roles, responsibilities and functions of all DRM organizations at the national level, including the national DRM structure and national disaster sub-committees, established/revised and clarified and properly embedded in the DRM Policy and DRM Bill. 6. The roles, responsibilities and functions of the regional and district/local/neighbourhood DRM committees established/enhanced.
Priority	Short-term
General Requirements	<ol style="list-style-type: none"> 1. Clear definition of roles and functions of all DRM organizations. 2. Consensus on the roles, responsibilities and functions of the CDC and the National DRR Platform. 3. Consensus on the need to improve the national DRM system to better reflect IDRM. 4. Consensus on the establishment or revision of national DRM sub-committees, and regional and district/local/neighbourhood DRM committees and sub-committees to better reflect IDRM. 5. Ensuring that revised structure and organisational roles, responsibilities and functions are embedded in the DRM Policy and DRM Bill.
Proposed Activities	<p>N.4.4. Revision of the CDC structure, positions, functions, legislative authority (as embedded in the draft <i>DRM Bill</i> (2013) and draft <i>DRM Policy</i> (2011)), and name to ensure it is structured as a DRM organization and enabled to address and coordinate all DRM components. This re-structuring could include positions that would take responsibility for among the following areas: risk identification, financial protection and risk transfer, prevention and mitigation, preparedness and response, and recovery or identify liaisons for these areas to coordinate and work with the lead agencies in these areas.</p> <p>N.4.5. Revision of the National Disaster Preparedness and Response Structure with a view to making it a national DRM structure, focused on all DRM components.</p>

⁴¹ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

The National DRM Structure and Organizations Project	
	<p>N.4.6. Revision of all national and regional sub-committees to ensure that together they comprehensively cover all DRM components, covering key hazards, all sectors and all levels. The number, composition, functions and terms of reference of all national and regional sub-committees are to be designed or revised/enhanced, as relevant in each case.</p> <p>The suggested national sub-committees include:</p> <ul style="list-style-type: none"> i) For risk identification: Risk Identification Sub-Committee; ii) for prevention and mitigation: Sea Defence Sub-Committee, Drainage and Irrigation Sub-Committee, Mitigation Sub-Committee; iii) for financial protection and risk transfer: Risk Transfer Sub-Committee; iv) for preparedness/response: Emergency Sub-Committees, Warning and Evacuation, Health, Security, Shelter management, Welfare/ Relief, Public information and Education, Agriculture, Tourism, Public Utilities, Transport, Road Clearance and Waste Disposal.; and; v) for recovery: Recovery Sub-Committee, Reconstruction Sub-Committee. <p>N.4.7. Revision of the National DRR Platform, its role, composition and functions, with a view to DRM.</p> <p>N.4.8. Finalize the establishment and integration of the volunteer corps into the national DRM structure, into preparedness initiatives and into emergency response planning and relevant plans</p> <p>N.4.17. Identification of specific measures to integrate gender issues into DRM processes.</p> <p>R.4.1. Establish regional DRM committees including regional DRM sub-committees⁴², ensuring that all DRM components are addressed.</p> <p>R.4.2. Establish all local DRM committees (i.e. neighbourhood or community district DRM committees and EOCs) including local DRM sub-committees, ensuring that DRM components are addressed.</p>
Key Agencies Involved/ Responsible	Suggested lead: CDC Suggested participants: OP, National DRR Platform, All ministries/agencies
Technical Resources Required	<ol style="list-style-type: none"> 1. Consultant (s) 2. Workshops
Financial Resources Required	US\$ 150,000
Possible Support Sources	CDEMA, UNDP, IDB, EU, DFID, CIDA
Proposed Time of Implementation	1 year

There is the possibility for some aspects of or the projects above to be integrated into and/or complemented by the work programmes of the CDC, among those of other agencies involved⁴³.

⁴² Potential regional committees and sub committees could include: Risk Identification, Prevention and Mitigation, Warning and Evacuation Health, Shelter Management., Welfare/Relief, Public Information and Education, Transport and Clean-up. The CDC and its partner agencies will need to determine the appropriate structure and need at the regional and local levels, once the overarching National DRM Structure has been further established.

⁴³ The CDC and its partner agencies would need to look further into the complementarity offered by existing or future work programmes of agencies identified for participation in these initiatives. In this manner, either the parts of or entire projects posited here could be integrated into existing or future work programmes or certain parts of posited projects could be implemented as part of existing or future work programmes.

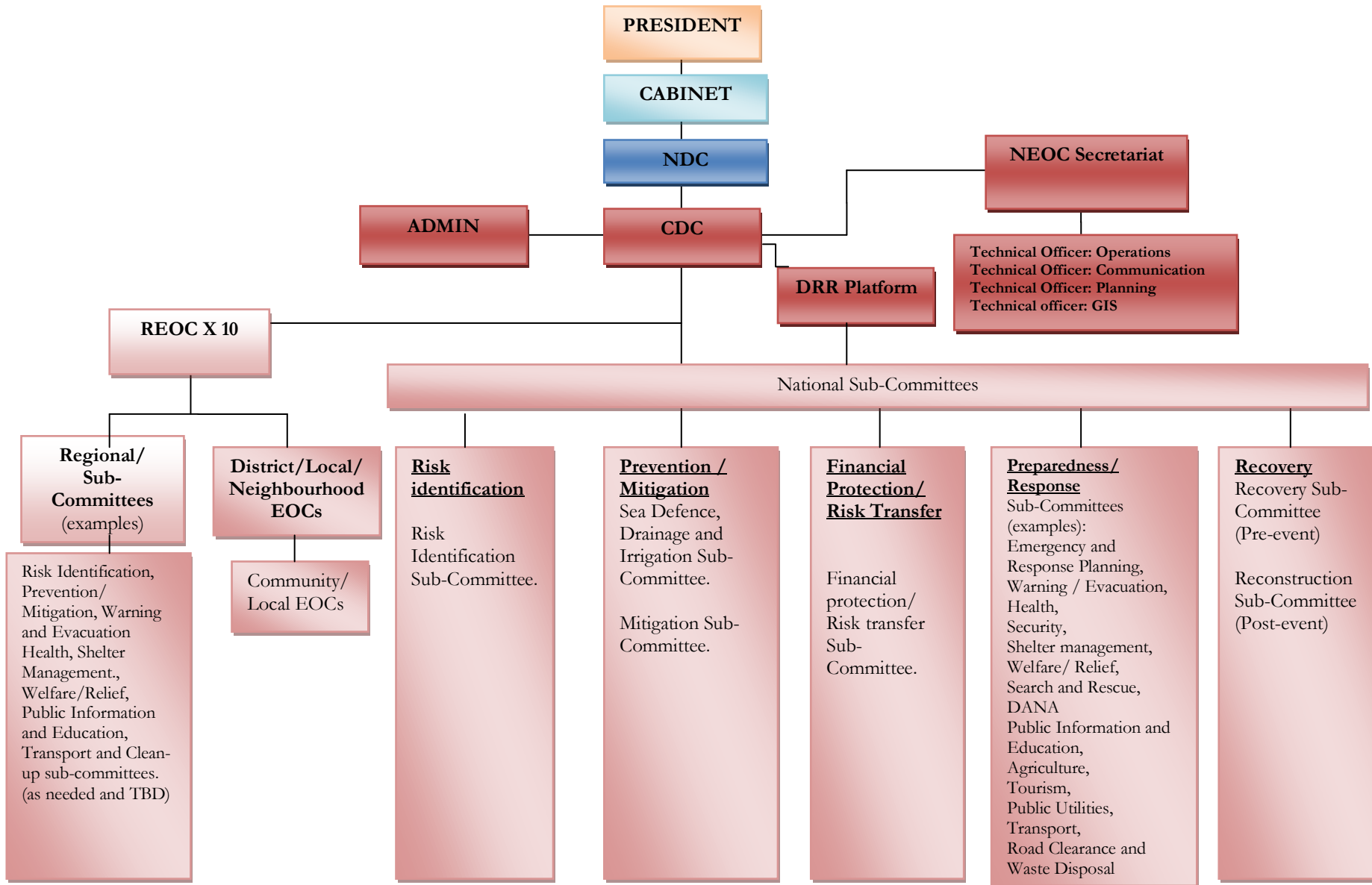
2.6. Proposed DRM Structure, Operational Plan and Coordination Mechanisms

2.6.1. Proposed DRM Structure for Guyana

In the process of developing the NIDRMP and the Strategy, an assessment of Guyana's current DRM system was undertaken. It revealed that Guyana has some general elements and the foundation of an overarching DRM system, but though the recently proposed National Disaster Preparedness and Response Structure (presented in the *National Multi-Hazard Disaster Preparedness and Response Plan (2012)*) is an improvement on what existed previously (as defined in 1985 in the *National Disaster Preparedness and Response Plan*) it still leaves much to be desired from the IDRM perspective. Figure 1 below presents a slightly revised national DRM structure for consideration.

This proposed revised DRM Structure for Guyana leaves the chain of command for the CDC under the National Disaster Coordinator (NDC), Cabinet and the President, as suggested in the *National Multi-Hazard Preparedness and Response Plan (2012)*. However, it presents new suggested national disaster sub-committees, as presented and then discussed below.

Figure 1. Suggested Disaster Risk Management Structure for Guyana



2.6.1.1. Tentative Roles and Responsibilities of the Different Sub-Committees⁴⁴

1. Risk Identification Sub-Committee (suggested lead: GL&SC; suggested members: CDC, MLG&RD, Ministry of Public Works and Communications, MOE, MOH, Ministry of Housing & Water, EPA, CHPA, Ministry of Tourism, Industry and Commerce, GG&MC)

- To plan for and oversee the development of maps, including coordination among key ministries and agencies;
- To ensure that maps are accessible/available for all stakeholders involved in DRM at all levels;
- To ensure that maps are updated as needed;
- To address the needs related to adequate software and capacity for modelling, prediction, analysis and decision-making-planning.

2. Drainage, Irrigation and Sea Defences Sub-Committee (suggested lead: Ministry of Public Works and Communications/NDIA; suggested members: CDC, MOA, MLG&RD, GWI)

- To assess the vulnerability, risks and operational status of sea walls, sea defences, conservancy dams, irrigation channels, etc.;
- To identify needs and costs for retrofitting, repairing, rehabilitation, rebuilding, of all elements listed above and to plan for and ensure that works are completed;
- To identify needs for maintenance of all elements listed above, including the resources needed to do so: personnel, training, equipment, vehicles, materials, budget, etc. and to plan for and ensure that maintenance is undertaken regularly.

3. Mitigation Sub-Committee (suggested lead: Ministry of Home Affairs; suggested members: CDC, Ministry of Public Works and Communications, MOA, EPA, CHPA, GL&SC, GG&MC, NDIA, GWI)

- To assess vulnerability in schools, hospitals, clinics, government buildings and all critical infrastructure;
- To plan for an ensure that the prioritized actions to reduce vulnerability in all critical infrastructure;
- To ensure that the Guyana Building Code is finalized and enacted;
- To plan for an manage relocation of human settlements and other activities such as agriculture from areas at risk, including development of any needed plans or policies;
- To ensure that a drought plan is developed and implemented;
- To ensure that needed water sources are identified and the issue of storage is addressed;
- To facilitate coordination among all key ministries, agencies and stakeholders for mitigation.

4. Financial Protection/Risk Transfer Sub-Committee (suggested lead: Ministry of Finance; suggested members: CDC, Ministry of Legal Affairs, Ministry of Housing and Water, CHPA, MOA, Private Sector Commission)

- To oversee a comprehensive exploration of options for (mandatory) insurance for drought and flood targeting individuals, crops, livestock, etc.;
- To ensure that agreed insurance become mandatory and to plan for compliance and enforcement;
- To ensure coordination among the government, private sector and society with regards to access to insurance and options;
- To facilitate an in-depth exploration of having Guyana engage with the CCRIF.

⁴⁴ These are posited for consideration.

4. Sub-Committees for Preparedness/Response

A number of sub-committees are possible for preparedness/response or a larger committee for preparedness/response overall could be considered. In the latter case, the CDC should lead such committees or in cases be deeply involved. The elements to be addressed include but are not limited to: Emergency and Response Planning, Warning and Evacuation, Health, Security, Shelter management, Welfare/ Relief, Public information and Education, Agriculture, Tourism, Public Utilities, Transport, Road Clearance and Waste Disposal, among others⁴⁵. As an example of the potential roles and responsibilities of some of these sub-committees, one is posited below:

i. Public Information and Education Sub-Committee (suggested lead: MOE, National Communications Network; suggested members: CDC, Ministry of Amerindian Affairs, EPA, GINA, University of Guyana)

This sub-committee could be responsible for, among other aspects:

- To design, implement, monitor, evaluate, update and test an *Education Sector Disaster Plan*;
- To develop an *Emergency Public Information Plan*;
- To develop, implement and update a National DRM Public Awareness and Education Campaign at all levels on a regular basis;
- To develop and introduce DRM curricula in schools at all levels and to monitor its implementation;
- To train teachers and students accordingly.

The other sub-committees could include:

- ***Emergency Response and Planning*** (suggested lead: CDC; suggested members: all)
- ***Warning and Evacuation*** (suggested lead: CDC; suggested members: Hydromet, NDIA, Defence Force, Fire Service, Police Force, GT&T, GINA, National Communications Network)
- ***Health*** (suggested lead: MOH; suggested members: IFRC, PAHO, CDC)
- ***Security*** (suggested lead: Ministry of Home Affairs; suggested members: Defence Force, Fire Service, Police Force, CDC)
- ***Shelter management*** (suggested lead: CHPA; suggested members: Guyana Red Cross Society, MOE, MOH, CDC)
- ***Welfare/ Relief*** (suggested lead: Ministry of Labour, Human Services and Social Security/CDC; suggested members: Defence Force, Guyana Red Cross Society, Guyana Relief Council, MOE)
- ***Search and Rescue*** (suggested lead: Guyana Police Force/NEOC; suggested members: Defence Force, Fire Service, USAR teams, Civil Aviation Authority, Air-Craft Owners Association, MOH, EOCs)
- ***DANA*** (suggested lead: MLG&RD; suggested members: GL&SC, EOCs)
- ***Agriculture*** (suggested lead: MOA; suggested members: NDIA, EPA)
- ***Tourism*** (suggested lead: Ministry of Tourism, Industry and Commerce; suggested members: Guyana Tourism Authority, EPA, Ministry of Foreign Affairs, Guyana Tourism and Hospitality Association)
- ***Public Utilities*** (suggested lead: Ministry of Public Works and Communications; suggested members: MOA, EPA, GWI, GT&T, GPL)

⁴⁵ The CDC and National DRR Platform should discuss which sub-committees will be selected to be part of the revised structure.

- **Transport (suggested lead: Ministry of Public Works and Communications; suggested members: EPA)**
- **Road Clearance and Waste Disposal (suggested lead: Ministry of Home Affairs; suggested members: MLG&RD, Defence Force, Fire Service, Police Force)**

5. Recovery Sub-Committees (suggested lead: CDC/ MLG&RD; suggested members: MOA, Ministry of Tourism, Industry and Commerce, Ministry of Public Works and Communications, MOH, MOE, NEOC, Ministry of Finance)

A separate Recovery Sub-Committee and Reconstruction Sub-Committee are possible for recovery or a larger committee for recovery overall could be considered.

Separately or together, the sub-committee(s) could be responsible, among other aspects:

- To ensure the development and implementation of early recovery plans for floods and drought;
- To oversee the development of BCPs and COOPs as needed for governments and the private sector;
- To ensure that reconstruction is facilitated/coordinated with key mitigation stakeholders to ensure that mitigation is considered in construction;
- To ensure there is adequate resources (human, material, financial) for recovery.

In the context of Strategy implementation, depending on how rapidly and efficiently the sub-committees can be established, some of these may in fact be in a position to lead or assist in the implementation of key projects detailed above. It should be noted that suggested lead agencies here align with the suggested leads above for particular projects under the various DRM components.

2.6.2. Operational Plan

This section presents the Operational Plan for the NIDRMP and the Strategy. The Operational Plan provides further detail and insight into the implementation of the NIDRMP and its Strategy to ensure the NIDRMP is implemented, monitored, evaluated and improved continually through the regular assessment of the progress and results of its projects and activities as well as through continuous learning. The Operational Plan comprises the following steps:

1. Approval and adoption of the NIDRMP, its Strategy and projects.
2. Identification of potential funding sources, followed by agreement on funding.
3. Implementation of projects.
4. M&E.
5. Reporting and learning with a view to maintenance and improvement.
6. Updating of the NIDRMP, the Strategy and the projects (may also account for new funding available or shifts in funding).
7. Implementation of revised projects.
8. Mediation for the resolution of conflicts, if necessary, at any stage.
9. Final evaluation of the NIDRMP and the Strategy.

Approval and Adoption of the NIDRMP, its Strategy and Projects

The NIDRMP and its Strategy need to be approved by all key stakeholders and the IDB, and would then be submitted to Cabinet for approval. This is expected to occur in 2013.

Identification of Potential Funding Sources and then Agreement on Funding

Based on the projects agreed upon and approved by CDC and key stakeholders, as well as the IDB, funding will be sought out among ongoing and upcoming regional projects. This is discussed in greater detail in section 2.7 below and in Annex VII.

Implementation of Projects

Projects then need to be implemented by the agencies responsible for them in order to achieve their results. As noted, if the national sub-committees are established rapidly, then these could also lead the implementation of some projects. Otherwise, the identified lead agencies shall coordinate this aspect. As noted, this may as part of a stand-alone project that is receiving outside assistance or it could be the case that the projects suggested activities and details are integrated into the work programme of the lead agency or other agencies involved. This will need to be determined on a case by case basis as implementation moves forward.

Monitoring and Evaluation.

The implementation of all the NIDRMP, the Strategy and the projects in particular, will be monitored and evaluated by the CDC using, in the first instance, the PMF described in section 2.9 and detailed in Annex V. However, it is expected that individual project PMFs would need to be created and utilized for project monitoring. If projects are implemented with external assistance such a M&E tool will be required and if implemented within an organizational work programme, then it is recommended that a PMF be developed, using the PMF in Annex as an example.

Reporting and Learning with a View to Maintenance and Improvement

The results of the progress of the projects, as monitored through use of the PMF(s), will be stated in reports prepared every six months by the CDC (in concert with all other stakeholders) and presented to the National DRR Platform for discussion and to assist in solving any problems that may have arisen. This will allow for continual learning throughout implementation and for revisions and enhancements when needed.

Updating of the Plan, the Strategy and the Projects

The Strategy includes a number of projects covering a significant period of time. However, the implementation of some of them will take just one or two years, while other projects require subsequent periodic actions like revision/updating or continuous activity. Some projects or activities call for continuous activities throughout the ten-year timeframe. It is evident that resources, needs and organizations change over time; in addition, the initial funding for projects may run out or shift. Moreover, it is very likely that other new regional programmes and new funding will also emerge over the period of the Strategy's implementation. The NIDRMP, the Strategy and corresponding projects need not only to be revised regularly in terms of the progress achieved and for learning and improvement, but also in terms of funding needs (including new opportunities). Consequently, it is suggested that in 2018 (i.e., at mid-term) a revision of funds - both available and needed - is made. Thus, a new or revised version of the Strategy and corresponding projects could emerge based on progress made, on challenges, gaps or priorities, and on the loss of or emergence of new funding. As presented below in section 2.7, the funding for projects included at this stage has been considered based on current/existing potential funding sources. It is suggested that funds available are then reviewed at the mid-term point.

New Funding and Implementation of Revised Projects

After the Strategy and the initial projects and their funding sources have been revised at the mid-term point, newly available funds or new changes in funding sources may necessitate a revisiting of the overall Strategy and new or revised projects could emerge.

Mediation for the resolution of conflicts, if necessary, at any steps.

Conflicts are normal in any such endeavour of this scope and more particularly in the present context where a myriad of stakeholders are involved. In order for conflicts that may arise in implementing the Plan not to affect the successful implementation of the Plan, its Strategy and corresponding projects and activities, mediation for the resolution of conflicts should be considered throughout.

Final Evaluation of the Plan, the Strategy and Final Report

At the end the period of overall Strategy implementation, the CDC will prepare a Final Report including results achieved, key challenges and gaps, lessons learned and recommendations for a new NIDRMP and Strategy (2023 and beyond).

2.6.3. Coordination Mechanisms

The CDC will be responsible for the overall coordination of the NIDRMP and the Strategy. Though, as clearly described in this document, they do not do so alone. Like all aspects of DRM in Guyana, there are a plethora of ministries and organizations involved. Regarding suggested lead agencies and responsibilities for the implementation of each project they were denoted above in section 2.5 and are suggested in Table 3 below broken down by DRM components. They reflect suggested roles and responsibilities presented in section 2.6.1.1. above as they pertain to suggested revised national sub-committees.

Table 3. Strategy Projects and Suggested Responsibilities⁴⁶

Project	Main Responsibility (lead)	Key Organizations Involved
Risk Identification		
1. Risk Identification Project	GL&SC	CDC, MLG&RD, Ministry of Public Works and Communications, MOE, MOH, Ministry of Housing & Water, EPA, CHPA, Ministry of Tourism, Industry and Commerce, GG&MC
2. Community Risk Identification and Mapping Project	GL&SC/ MLG&RD	CDC, Ministry of Public Works and Communications, MOE, MOH, Ministry of Housing & Water, EPA, CHPA, Ministry of Tourism, Industry and Commerce, Ministry of Amerindian Affairs, GG&MC, Regional and district/local/neighbourhood DRM committees
Prevention/Mitigation		
3. Vulnerability Assessment and Mitigation in Key Areas and Sectors	Ministry of Home Affairs	CDC, Ministry of Public Works and Communications, MOH, MOE, Ministry of Tourism, Industry and Commerce, MOA, NDIA, Ministry of Housing & Water, CHPA, EPA, GWI, GG&MC, GL&SC
4. Building Code Project	Ministry of Home Affairs/ Ministry of Legal Affairs	CDC, Ministry of Public Works and Communications, MOA, CHPA, EPA, MOH, Guyana Bureau of Standards
5. Vulnerability Assessment of Sea and River Defences and Conservancy Dams Project	Ministry of Public Works and Communications/ NDIA	CDC, MOA, MLG&RD, GWI

⁴⁶ Both main responsibilities and key organizations involved are only suggestions. Final responsibilities need to be assigned and agreed upon by CDC its partner agencies.

Project	Main Responsibility (lead)	Key Organizations Involved
6. Capacity Building for Maintenance of Drainage and Irrigation Systems Project	Ministry of Public Works and Communications/ NDIA	CDC, MOA, MLG&RD, GWI
Financial Protection/Risk Transfer		
7. Flood and Drought Insurance Project	Ministry of Finance	CDC, Ministry of Housing & Water, CHPA, MIA, Ministry of Legal Affairs, Private Sector Commission
8. CCRIF Insurance Project	Ministry of Finance	CDC, Ministry of Foreign Affairs, Ministry of Legal Affairs
Preparedness/Response		
9. Legislation and Policies Project	CDC	All ministries
10. Early Warning Systems Enhancement Project	CDC	MOA, NDIA, HydroMet, National Communications Network, GINA, Defence Force, Fire Service, Police Force, GPL, GT&T, Digicel
11. Emergency Planning Project	CDC	All ministries
12. EOCs Improvement Project	CDC	Regional and district/local/neighbourhood DRM committees
13. DRM Training Project	CDC	Regional and district/local/neighbourhood DRM committees, Ministries/agencies responsible for specific response plans
14. DRM Simulation Exercises Project	CDC	Regional and district/local/neighbourhood DRM committees, Ministries/agencies responsible for specific plans. Key Responders such as: Defence Force, Police Force, Fire Service, USAR
15. National DRM Public Education and Awareness Plan and Strategy Project	MOE/National Communications Network	CDC, GINA, Ministry of Amerindian Affairs, University of Guyana, EPA
Recovery		
16. Early Recovery Project	CDC/MLG&RD	Regional and district/local/neighbourhood DRM committees, MOA, Ministry of Tourism, Industry and Commerce, Ministry of Public Works and Communications, MOH, MOE, NEOC, Ministry of Finance, private sector (e.g. Private Sector Commission, Chamber of Commerce of Georgetown)
17. Contingency Funding and Financial Management Strategy Project	Ministry of Finance	CDC, MLG&RD, Ministry of Legal Affairs, MOA, Ministry of Tourism, Industry and Commerce, Ministry of Public Works and Communications, MOH, MOE, and the private sector
Multi-component		
18. Improving the National DRM Structure and Organizations Project	CDC	National DRR Platform, All ministries/agencies

The mechanisms through which CDC will coordinate the implementation of the projects are:

1. Work programmes. Agencies could prepare work programmes for the implementation of specific projects (as part of their overarching work programmes or specifically for the project)

and submit them to CDC for approval and follow up. Again, resources for project implementation may form part of Ministry budget lines as part of their work programmes, or they be part of externally-funded projects.

2. *Information and reporting.* All agencies other than CDC responsible for specific projects will keep the CDC informed about the implementation and progress of projects. Agencies will produce and submit progress reports to CDC regularly. It is expected that stakeholders will develop PMFs in line with the PMF developed for the Strategy.
3. *Coordination meetings.* The CDC will convene and coordinate meetings for monitoring the projects as well as discussing challenges and risks and will suggest and agree on specific solutions to move forward in a context of learning and improvement. These monitoring meetings could be project specific or they could form part of the national sub-committee or DRR Platform meetings.
4. *Participation.* CDC will participate, where applicable, in specific meetings and activities coordinated by agencies responsible for specific projects; e.g., sectoral meetings, regional and local meetings, activities at the regional and local levels such as training, simulation exercises, etc.

2.6.4. Prioritization

Prioritization was suggested above in section 2.5 in terms of the short-, medium- or long-term prioritization of each suggested initiative.⁴⁷ The implementation of projects and the corresponding rationales are depicted below in Table 4:

Table 4. Priorities and Rationale for the Strategy Projects

Project	Rationale
<ol style="list-style-type: none"> 1. Improving the National DRM Structure and Organizations Project 2. Legislation and Policies Project 3. Early Warning Systems Enhancement Project 4. Emergency Planning Project 5. Building Code Project 6. Capacity Building for Maintenance of Drainage and Irrigation Systems Project 7. Community Risk Identification and Mapping Project 8. National DRM Public Education and Awareness Plan and Strategy Project 	<p>Some projects are of a higher priority as they lay a foundation for other projects, thereby requiring implementation before those. Among these projects are:</p> <ul style="list-style-type: none"> • The enabling environment: laws and policies, which guide and provide the basis for the DRM process and anchor the structure and authority of the revised and enhanced DRM structure and system. In addition, some key priority plans need to be developed. • DRM organizations and the overarching DRM structure, which first need to be established or improved in order to assist in the coordination of DRM activities at all levels. National, regional and local DRM committees and sub-committees, which should be established first since they are the ones that would conduct or be involved in vulnerability and risk assessments and as they would be responsible for or involved in designing emergency response plans. • Vulnerability and risks must be identified first as well in order to better focus emergency and mitigation plans. This includes mapping at the community level. • Personnel should be trained when they have been assigned responsibilities as members of committees/sub-committees in specific emergency response plans.

⁴⁷ Prioritization of course needs to be revised and finalized by CDC and key stakeholders. The list here is merely indicative.

9. Vulnerability Assessment and Mitigation Key Areas and Sectors. 10. Vulnerability Assessment of Sea and River Defences and Conservancy Dams Project	Vulnerability assessments are critical first steps in terms of identifying the priorities for reducing vulnerability and risk. Vulnerability of new structures would be reduced by first enacting and enforcing the Building Code. At the same time, there are prevention and mitigation initiatives that would be implemented at national, sectoral and individual/community levels. In addition, the key works on the sea and river defences could be brought.
11. DRM Training Project 12. DRM Simulation Exercises Project 13. EOCs Improvement Project 14. Early Recovery Project	These projects depend on the implementation of the first group of projects. To conduct a simulation exercise, there must be revised/enhanced plans and response-trained personnel; to train response personnel, there must first be an emergency plan. Improved and strengthened legislation and organizations should be in place to facilitate these projects.
15. Flood and Drought Insurance Project 16. CCRIF Insurance Project 17. Contingency Funding and Financial Management Strategy Project	Consensus among stakeholders on the mechanisms for risk transfer and contingency funding may take time.
18. Risk Identification Project	Though arguably to be placed in the short-term category, it is likely that this project might be costly and the "Flood Risk Modelling Project" has already been produced, which has provided the country with some key data upon which to undertake analyses and planning to some degree. Nonetheless, this project should be implemented as soon as is possible/feasible.

In Table 5 below, all 18 projects are presented according to priority levels. The table indicates the type of project and their approximate schedule or timeline for implementation.

Table 5. Suggested Ten-Year Implementation Programme for the NIDRMP Strategy

Project/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1. Improving the National DRM Structure and Organizations Project	x				R				R	
2. Legislation and Policies Project	x				R				R	
3. Early Warning Systems Enhancement Project	x				R				R	
4. Emergency Planning Project	x	x	x		R				R	
5. Building Code Project	x	x			R				R	
6. Capacity Building for Maintenance of Drainage and Irrigation Systems Project	x	x	x	C	C	C	C	C	C	C
7. National DRM Public Education and Awareness Plan and Strategy Project.	x	C	C	C	C	C	C	C	C	C
8. Community Risk Identification and Mapping Project	x	x	x	C	C	C	C	C	C	C
9. Vulnerability Assessment and Mitigation in Key Areas and Sectors		x	x	x	x	x	C	C	C	C
10. Vulnerability Assessment of Sea and River Defence and Conservancy Dams Project		x	x	x	x	x	C	C	C	C
11. DRM Training Project		x	x	x	C	C	C	C	C	C
12. DRM Simulation Exercises Project		x	x	x	C	C	C	C	C	C
13. EOCs Improvement Project		x	x		R				R	
14. Early Recovery Project		x			R				R	
15. CCRIF Insurance Project		x								
16. Contingency Funding and Financial Management		x								

Strategy Project										
17. Flood and Drought Insurance Project		x	x							
18. Risk Identification Project		x	x	C	C	C	C	C	C	C

R= Needs recurrent revision and funding; C= Activities continue for the ten-year period.

2.7. Project Funding

A detail description of the most relevant regional projects identified as of December 2012 is presented in Annex VII. In that list, key ongoing or upcoming DRM projects in the Caribbean are described. The list is not exhaustive and other sources of funding could be found. Nonetheless, a number of projects are presented that may provide for a significant amount of the funding needed to implement this Strategy. Table 6 presents a correlation between the known ongoing or upcoming relevant DRM projects in the Caribbean and the suggested projects in this Strategy so as to present feasible options for financing this Strategy, beyond integration into agencies’ work programmes, which are likely to present opportunities for implementation.

It will be the responsibility of the CDC and/or of those agencies responsible for specific projects to contact donors/development partners and regional and international agencies to find out more about funding specificities and to engage with the existing or upcoming programming opportunities, including the development of proposals.

Table 6. Possible Sources for Funding for the Strategy Projects

Possible Sources of Funding ⁴⁸	NIDRMP Strategy Projects
EU Funded Project (through CDB, CDEMA)**	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • EWS Enhancement Project • Building Code Project • Emergency Planning Project • Capacity Building for Maintenance of Drainage and Irrigation Systems Project • Community Risk Identification and Mapping Project • National DRM Public Education and Awareness Plan and Strategy Project • Vulnerability Assessment and Mitigation in Key Areas and Sectors. • Vulnerability Assessment of Sea and River Defence and Conservancy Dams Project • DRM Training Project • DRM Simulation Exercises Project • EOCs Improvement Project • Early Recovery Project • Risk Identification Project
Community DRR Trust Fund (CIDA, DFID, through CDB)	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • EWS Enhancement Project • Emergency Planning Project • Capacity Building for Maintenance of Drainage and Irrigation Systems Project • Community Risk Identification and Mapping Project • National DRM Public Education and Awareness Plan and Strategy Project • DRM Training Project • DRM Simulation Exercises Project • EOCs Improvement Project

⁴⁸ The list of possible sources of funding is not exhaustive. Moreover, the ongoing or upcoming regional DRM projects are merely listed here, with a more detailed description offered in Annex VII.

<p>CDM Harmonized Implementation Project (CIDA, DFID, EU)</p>	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • EWS Enhancement Project • Building Code Project • Emergency Planning Project • Capacity Building for Maintenance of Drainage and Irrigation Systems Project • Community Risk Identification and Mapping Project • National DRM Public Education and Awareness Plan and Strategy Project • Vulnerability Assessment and Mitigation in Key Areas and Sectors. • Vulnerability Assessment of Sea and River Defence and Conservancy Dams Project • DRM Training Project • DRM Simulation Exercises Project • EOCs Improvement Project • Early Recovery Project
<p>Canada Caribbean Disaster Management Fund (CCDMF; CIDA)</p>	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • EWS Enhancement Project • Building Code Project • Emergency Planning Project • Capacity Building for Maintenance of Drainage and Irrigation Systems Project • Community Risk Identification and Mapping Project • National DRM Public Education and Awareness Plan and Strategy Project • Vulnerability Assessment and Mitigation in Key Areas and Sectors. • Vulnerability Assessment of Sea and River Defence and Conservancy Dams Project • DRM Training Project • DRM Simulation Exercises Project • EOCs Improvement Project • Early Recovery Project
<p>Emergency Preparedness and Disaster Relief Programme (PAHO)</p>	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • Emergency Planning Project • Vulnerability Assessment and Mitigation in Key Areas and Sectors. • National DRM Public Education and Awareness Plan and Strategy Project • DRM Training Project • DRM Simulation Exercises Project • Early Recovery Project
<p>Caribbean Community Resilience to Disaster Risk (CCRDR; Canadian Red Cross)</p>	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • EWS Enhancement Project • Building Code Project • Emergency Planning Project • Capacity Building for Maintenance of Drainage and Irrigation Systems Project • Community Risk Identification and Mapping Project • National DRM Public Education and Awareness Plan and Strategy Project • Vulnerability Assessment and Mitigation in Key Areas and Sectors. • Vulnerability Assessment of Sea and River Defence and Conservancy Dams Project • DRM Training Project • DRM Simulation Exercises Project • EOCs Improvement Project • Early Recovery Project
<p>CCRIF – Excess Rainfall Coverage.</p>	<ul style="list-style-type: none"> • CCRIF Insurance Project • Flood and Drought Insurance Project
<p>CCRIF – Climate Change Adaptation and Insurance in the Caribbean</p>	<ul style="list-style-type: none"> • Flood and Drought Insurance Project
<p>DRM Sub Regional Program under the Asia-Caribbean-Pacific - EU Natural Disaster Facility (through CDB and CDEMA)</p>	<ul style="list-style-type: none"> • Improving the National DRM Structure and Organizations Project • Emergency Planning Project • Capacity Building for Maintenance of Drainage and Irrigation Systems Project • Community Risk Identification and Mapping Project • National DRM Public Education and Awareness Plan and Strategy Project • Vulnerability Assessment and Mitigation in Key Areas and Sectors. • DRM Training Project

	<ul style="list-style-type: none">• DRM Simulation Exercises Project• EOCs Improvement Project• Early Recovery Project
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2.8. Strategy's Monitoring and Evaluation Framework

Following the RBM approach, the implementation of the Strategy's activities can be translated in shorter and longer-term expected results: outputs and outcomes, respectively. The Strategy LFA presents the hierarchy of the results, defines indicators to track accomplishment performance of these results and takes into account risks. It is accompanied by a preliminary monitoring tool, the Performance Measurement Framework (PMF) – which can serve to assist in the needed process of monitoring and reporting. These tools are presented below.

2.8.1. The Strategy Logical Framework

The LFA in Annex IV presents a snapshot of the expected results (i.e. outputs and outcomes) of the Strategy, as well as the associated performance measurement indicators and risks. The indicators seek to measure the achievement of the expected results (outputs and outcomes), to provide evidence that a result has been achieved, or to provide a signal that progress is (or is not) being made towards the achievement of a result. An indicator is also a means of measuring actual results against planned or expected results and what specific progress has been made. There are both quantitative and qualitative indicators for measuring progress presented below. The risks serve to identify the potential inhibitors to the achievement of results. They also represent issues to be addressed in order to expect results achievement over time.

2.8.2. Linkages Between the Logical Framework and Suggested Projects

In order to demonstrate the key linkages between the SOs and related activities, the outputs and outcomes of the NIDRMP and Strategy, and the suggested projects, a comprehensive table is presented in Annex VI.

2.9. Monitoring and Evaluation

2.9.1. The Importance of Monitoring and Reporting

Monitoring essentially refers to assessing on a continual basis the progress being made towards the achievement of expected results in a project, programme or, in this case, the NIDRMP and its Strategy. This is done through performance measurement - using indicators and measuring the difference from the baseline (the starting point for a given expected result) to the expected result and capturing the actual situation as it relates to these throughout implementation. Monitoring and reporting are therefore inextricably linked, as implementers and key stakeholders are expected to monitor and then capture and share information on successes and progress being made as well as on challenges encountered. In this manner, monitoring and reporting can be described as the planned systematic process of assessing the status of expected versus actual results and of disseminating this information while also utilizing the information to make management decisions. In this case, this refers to a systematic process of capturing progress being made towards the objectives of the NIDRMP and the Strategy as well as the challenges encountered, with a focus on the successful implementation of the NIDRMP's Strategy.

High-quality, participatory monitoring and reporting can have the following benefits for the management and implementation of the NIDRMP and Strategy as it:

- Improves understanding of what is transpiring “on the ground” and increases tracking of and reporting on the successes and challenges of activities/initiatives related to the NIDRMP and its Strategy;
- Allows for dealing with particular implementation challenges in a timelier manner, thus increasing effectiveness and efficiency;
- Creates steady streams of performance measurement data that provides ongoing information (and facilitates reporting) to key stakeholders such as the CDC (and IDB); and,
- Improves knowledge-sharing and lesson-learning for all stakeholders involved in the implementation of the NIDRMP and Strategy.

High-quality, participatory monitoring and reporting throughout the implementation can help to regularly generate knowledge and lessons on:

- Resource utilization;
- Effects on beneficiaries and populations;
- The “state of affairs” for the NIDRMP and its Strategy;
- Achievement of specific expected results at different levels (including outputs, outcomes and unexpected results) from national, regional and local levels;
- Successes and challenges (and where adjustments/improvement could be made) – with a view to lesson-learning;
- Respect of timelines, targets and adherence to responsibilities; and,
- Adequacy of risk identification and management (and new risks which may have emerged).

However, it is important to note that these benefits listed above from performance measurement/monitoring can only be accrued if:

- Monitoring information captured is results-based and pertinent;
- Monitoring is done consistently, regularly and adequately;
- Information is captured sufficiently (and honestly) on a constant basis;
- There is buy-in and ownership that results in good participation at the national, regional and local levels in data collection and reporting;
- Data/information is shared openly, disseminated widely and managed well. In many cases, this is only possible if information is easily accessible and presented in an organized manner;
- There is a culture of information-sharing, transparency and the willingness to share positive and negative aspects in a context of learning - as well as clear accountability and responsibility for various aspects.

2.9.2. Basic Performance Measurement Framework

To manage the monitoring of the NIDRMP and its Strategy, it could be useful to utilize a basic tool – the PMF - to ensure that monitoring and reporting are results-based, and not focused

only on the completion of activities. Utilization of the PMF could further help to manage and standardize monitoring and reporting being undertaken by the various stakeholders involved, and can be a helpful tool in fulfilling reporting commitments and for structuring reporting on expected results and detailed indicators.

The PMF represents a simple yet effective tool for managing this kind of process and the related information. Linked to each expected result for the NIDRMP and the Strategy, the PMF details the following:

- **Indicators:** As stated above, these seek to measure the progress, or lack thereof, being made towards the achievement of expected results. Indicators can (and likely should) be revised throughout the NIDRMP and Strategy implementation, as new or better indicators are identified for enhanced monitoring and reporting or if an indicator turns out to be less useful for its initial purpose.
- **Baseline Data:** Baseline data refers to the existing situation related to each result before project activities begin. This baseline refers to the “starting point” from which change can be measured. In this way, indicators can point to the change that occurred over time.⁴⁹
- **Target(s)/Milestone(s):** These can be utilized for setting shorter-term targets for the NIDRMP and the Strategy. They can also help to ensure that steady progress is being made towards the expected outputs and outcomes. These might be dependent on available funding for focusing on particular activities/initiatives and expected results.⁵⁰
- **Source(s) of Data:** This element of the PMF refers to “where” information can be found for ongoing monitoring and reporting on the various expected results of the NIDRMP and Strategy. These sources may include individual people, organizations and institutions but can also include documentation.⁵¹
- **Frequency of Data Collection:** This column of the PMF reflects how often the data will be collected throughout implementation.⁵²
- **Responsibility for Data Collection:** This column presents those responsible for monitoring - collecting data on – and reporting on the particular expected result and the associated indicators in question.⁵³ The persons in charge may change throughout

⁴⁹ The PMF here will not include baseline data. This requires a more in-depth study.

⁵⁰ The PMF here will not include targets. These will need to be set by those managing the NIDRMP and the Strategy (i.e., CDC, key ministries, National DRR platform, etc.) and will be dependent on how and when activities/initiatives will be executed.

⁵¹ Sources of data should be identified by those managing the NIDRMP and the Strategy once agreement is reached on indicators.

⁵² The frequency of monitoring and reporting is dependent on the planned implementation of activities/initiatives, which are at this stage not known. Therefore, they are best developed by those managing the NIDRMP and the Strategy.

⁵³ The persons responsible for monitoring on the various aspects of the NIDRMP and the Strategy will need to be identified by those managing the NIDRMP and the Strategy.

project execution given that people may leave their positions or that others may join the project as key project stakeholders.

A PMF for the NIDRMP and the Strategy is presented in Annex V.

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ANNEX II. List of Persons Consulted in the Development of the NIDRMP and Strategy

Name	Designation	Organization
Colonel (Rtd.) Chabilall Ramsarup	Director General	CDC
Colonel Francis Abrahams	Deputy Director	CDC
Major Kester Craig	Training and Operations Officer	CDC
Mr. Geoffrey Vaughn.	Permanent Secretary	Ministry of Public Works and Communications
Mr. Neermal Rekha	Permanent Secretary	Ministry of Finance
Mr. George Jervis	Permanent Secretary	MOA
Mr. Lionel Wordsworth	Chief Executive Officer	NDIA
Dr. Dindyal Permaul.	Chief Executive Officer	Livestock Department
Dr. Oudho Homenauth	Chief Executive Officer	National Agriculture Research Extension & Institute
Ms. Bhaleka Seulall.	Chief Hydrometeorological Officer	HydroMet
Mr. Brahmanand Sing	Special Projects Officer	MLG&RD
Dr. Indrajit Ramdass	Executive Director	EPA
Ms. Shanta Gobardhan		GINA
Mr. Paul McAdam.		GINA
Anne Greene	Logistic Officer	Women Across Differences
Murtland Stewart	Senior Engineer District	Work Services Group
Mark Crawford	Regional Chairman	RDC
Lorraine Pollydore	Officer in Charge	M&CC Solid Waste Dept.
Paul Mc Adam	Editor	GINA/Office of the President
De Vaughn Lewis	First aid Coordinator	Guyana Red Cross Society
Gitaijal Chandrapal	Climate Change Specialist	Office of Climate Change
Anthony Gouveia	Electrical Engineer	CJIA
Bernard Lord	Planner	Ministry of Finance
Cullen Nelson	Photographer	GNNL
Manmohan Balram	Airport Operations Superintendant	CJIA
Lyndon Alves	Snr. Supt.	GPF
Stephen Thomas	Director, Maritime Safety	MARAD
Kenson Boston	Asst. City Engineer	M&CC
Ramona Dabee-Johnson	Lecturer	University of Guyana
Michael Welch	LDS	GLDA/MOA
Donessa David	Agriculture Meteorologist	Hydromet Service
Bridget Roberts	Senior Meteorological Technician	Hydromet Service
Ignatius Merai	Environmental Health Officer	Region 5
Sonia Luke	Senior Environmental Officer	EPA
Emil McGarrel	PS	MoH&W

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Aggrey Azore	Probation Officer Social Services	Min. of LHS&SS
Shimbhudyal Naitram	Manager	GTT
Dwayne Bagot	Internal Security Officer	DIGICEL
Adrian Alleyne	Superintendent of Works	Ministry of Education
Janelle Leitch	Operations Analyst	IDB
Karen Anthony	Senior GIS Analyst	GLSC
I. Dill	Sales Manager	GTM Group Insurance Company
Malcolm Clarke	Retired Teacher	
Mr. Mariah		Ministry of Health
Marco Velasco		
Colonel Gaskin		GDF
Lt. Col. Claude Fraser		GDF
Ms. Sparrow		Canadian High Commission
Malcom Embleton	Consultant	

ANNEX III. Snapshot of Strategic Objectives and Activities.

Vision	
<i>A more sustainable and safe Guyana with reduced risk and enhanced resilience to impacts and consequences of the key hazards.</i>	
Goal	
<i>The establishment and continuous enhancement of Integrated Disaster Risk Management in Guyana mainstreamed across all sectors and at all levels in the country to minimize potential deaths, injuries, loss of property, livelihoods, socio-economic loss and damage to the environment, and underpinning sustainable development.</i>	
Risk Identification	Prevention/Mitigation
Strategic Objective 1.	Strategic Objective 2.
<i>To be able to identify and quantify the risks and possible consequences of the impacts of floods and droughts in Guyana and their possible interrelationship with the vulnerable elements of society and the environment in order to inform DRM and development activities in the country.</i>	<i>To reduce the risks of floods and droughts in Guyana through structural and non structural measures thereby reducing the vulnerability of society and the environment to the impacts and consequences of floods and droughts in order to better ensure sustainable development in the country.</i>
<p>N.1.1. Design and implement a National Hazard, Vulnerability and Risk Mapping Plan</p> <p>N.1.2. Establish a mechanism for identification of information needed, data gathering, mapping and addressing the issue of availability.</p> <p>N.1.3. Undertake a holistic assessment of national flood and drought management needs, taking into consideration the impacts of increased rainfall, the threat of drought risk and the need to avoid maladaptation.</p> <p>N.1.4. Create and/or update hazard maps for: floods (river overflow), floods on the coastline (storm surge), drought, earthquake, tropical cyclone, landslide and wildfire.</p> <p>N.1.5. Create and/or update maps: of floodable/flood prone areas; of droughts and their effects by region; identifying location of critical infrastructure; about the status and location of the population; including small scale risk maps at the community level; and including the acquisition of satellite images of Guyana coastal area.</p> <p>N.1.6. Acquire Laser Imaging Detection and Raging (LIDAR) information model for the topography of the main rivers, areas and cities in the country.</p> <p>N.1.7. Design of vulnerability maps of prioritized areas (e.g. Georgetown, Anna Regina and New Amsterdam), and elements and assets (population, agriculture, infrastructure, floodable areas).</p> <p>N.1.8. Conduct vulnerability assessments of all identified (and potential) vulnerable elements (population, agriculture, infrastructure, floodable areas, etc.) to floods and droughts.</p> <p>N.1.9. Collect data and conduct analysis on: AAL, Pure Risk Premium (PRP), Loss Excedence Curve, PML</p> <p>N.1.10. Develop/update a baseline database of vulnerable and at-risk areas and elements (population, infrastructure, environment, etc.), including prioritization.</p> <p>N.1.11. Design of risk maps and disaster scenario maps for development and emergency planning.</p>	<p>N.2.1. Design a National Prevention/Mitigation Plan that includes the creation and establishment of two national sub-committees: one for sea defences and sea walls and one for assessing vulnerability and mitigation measures for all other buildings/infrastructure.</p> <p>N.2.2. Implementation of mitigation activities according to the National Mitigation Plan (an ongoing activity).</p> <p>N.2.3. Conduct a diagnosis of structural reliability and a geotechnical and hydraulic assessment of all conservancy dams and drainage and irrigation systems.</p> <p>N.2.4. Conduct assessment of the vulnerability of the sea defences.</p> <p>N.2.5. Planning and implementation of mitigation/repair works for conservancy dams, drainage and irrigation systems based on vulnerability assessments. Establishment of a mitigation plan for conservancy dams, drainage and irrigation systems.</p> <p>N.2.6. Planning and implementation of mitigation/repair works in sea defences based on vulnerability assessments. Establishment of a mitigation plan for sea defences.</p> <p>N.2.7. Build capacity for regular inspection and maintenance of conservancy dams, sea defences and drainage systems (personnel, training, equipment, vehicles, materials, pumps, trucks, etc. as an ongoing activity).</p> <p>N.2.8. Design of emergency plans for breach or overflow in conservancy dams and sea defences (including allocation of personnel and equipment for response in the case of breaches or overflow in conservancy dams and sea defences).</p> <p>N.2.9. Conduct risk assessment studies to determine the feasibility of relocating specific human settlements in high risk areas.</p> <p>N.2.10. Conduct assessment studies in order to identify agricultural activities that reduce risk during the flooding season.</p>

<p>N.1.12. Purchase of hardware and software for the development and analysis of and access to GIS maps developed, as part of national GIS database.</p> <p>N.1.13. Develop/improve GIS-based flood and drought risk information system (database).</p> <p>N.1.14. Deliver training to key government staff in the design and use of mapping software and processes, including analysis.</p> <p>N.1.15. Hold awareness-raising and information sessions with government and decision-makers with a view to integrating hazard, vulnerability and risk mapping and analysis into national planning and decision making (including addressing enforcement).</p> <p>R 1.1 Design of community risk maps and HRVA.</p> <p>R 1.2 Deliver workshops to key stakeholders at the regional and local level for community risk mapping.</p> <p>R 1.3 Incorporation of information from the regional/local level into the national database of vulnerable and at-risk areas and elements and the GIS database.</p>	<p>N.2.11. Conduct assessment studies for the identification of specific measures to access and store water during droughts.</p> <p>N.2.12. Design/revise and enact Building Code for Guyana including specific mandatory building measures against floods.</p> <p>N.2.13. Identify/assess specific needs and related challenges for enforcement of Building Code in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.14. Build capacity for enforcement of the Building Code.</p> <p>N.2.15. Design/revise and enact a policy and plan for land use and human settlements.</p> <p>N.2.16. Identify/assess specific needs and related challenges for enforcement of the land-use plan in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.17. Ensure that EIA is integrated adequately into the land-use planning and construction process in the country.</p> <p>N.2.18. Retrofitting and reinforcement of public and private assets and infrastructure as identified through previously completed vulnerability and risk assessments.</p> <p>R.2.1. Allocation of personnel and equipment for regular clean up/maintenance and inspection in conservancy dams, municipal drainage systems, channels, culverts, sluices/kokers, ducts, outlet, etc.</p> <p>R.2.2. Training of personnel at the regional and local levels in identified areas for prevention/mitigation.</p> <p>R.2.3. Design of maintenance and clean-up plans at the regional and local levels</p>
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Risk Identification	Preparedness / Response	Recovery
<p>Strategic Objective 3.</p> <p><i>To promote the transfer of risk to reduce the direct losses due to the impacts of floods and droughts affecting the government, private sector and society in general in Guyana.</i></p>	<p>Strategic Objective 4.</p> <p><i>To establish a continuous preparedness process in Guyana, ensuring a consistent adequate level of preparedness and response capacity for responding to floods and droughts through the ongoing improvement of contingency planning and emergency resources at all levels.</i></p>	<p>Strategic Objective 5.</p> <p><i>To establish recovery mechanisms from the impacts of floods and drought to ensure the continuity of operations of the government, private sector and communities through early recovery, business continuity, rehabilitation and physical and social reconstruction initiatives.</i></p>
<p>N.3.1. Establish mandatory insurance for housing, agriculture activities and key/critical infrastructure in the DRM Bill.</p> <p>N.3.2. Develop and disseminate guidelines for the implementation of risk reduction measures for accessing flood insurance.</p>	<p>N.4.1. Design/revision/finalization of the DRM Bill, including integration of the relevant aspects of the NIDRMP.</p> <p>N.4.2. Revise the draft DRM Policy (2011) to ensure it adequately covers all five DRM components, and is comprehensive and compatible with the NIDRMP as well as supporting and aligned with the revised DRM Bill. Ensure gender, environmental and CC issues are also considered.</p> <p>N.4.3. Design of other relevant policies (such as evacuation, shelter management policy, relief policy,</p>	<p>N.5.1. Design a National Early Recovery Plan for floods that include actions for all three levels: national, regional and local.</p> <p>N.5.2. Design a National Early Recovery Plan for droughts that include actions for all three levels: national, regional and local.</p>

<p>N.3.3. Identification of risk transfer financing mechanisms and their requirements for Guyana in coordination with regional and international organizations, insurance companies and farmers.</p> <p>N.3.4. Identify requirements to access CCRIF insurance for floods (excess rainfall).</p> <p>N.3.5. Acquire CCRIF membership.</p> <p>N.3.6. Engage regional insurance with the CCRIF to access insurance for flooding in Guyana.</p> <p>N.3.7. Develop a national financial strategy for the management of the impacts of extreme events.</p> <p>R.3.1. Design and deliver workshops to train government officials and communities in risk transfer financial mechanisms.</p> <p>R.3.2. Develop and disseminate guidelines for best building practices to facilitate access to insurance.</p> <p>R.3.3. Develop and disseminate guidelines for best practices to ensure access to insurance to crops and animals.</p>	<p>donations policy, waste disposal) and revision of existing legislation to ensure comprehensive integration of DRM, gender, environmental and CC issues, and compatibility with the NIDRMP.</p> <p>N.4.4. Revision of the CDC structure, positions, functions, legislative authority (as embedded in the draft DRM Bill and draft DRM Policy (2011)), and name to ensure it is structured as a DRM organization and enabled to address and coordinate all DRM components.</p> <p>N.4.5. Revision of the National Disaster Preparedness and Response Structure with a view to making it a national DRM structure, focused on all DRM components.</p> <p>N.4.6. Revision of all national and regional sub-committees to ensure that together they comprehensively cover all DRM components, covering key hazards, all sectors and all levels.</p> <p>N.4.7. Revision of the National DRR Platform, its role, composition and functions, with a view to DRM.</p> <p>N.4.8. Finalize the establishment and integration of the volunteer corps into the national DRM structure, into preparedness initiatives and into emergency response planning and relevant plans</p> <p>N.4.9. Establish a national emergency planning process, including continuous updating and an assessment of linkages between and consistency/harmonization among all plans at all levels</p> <p>N.4.10. Design and implementation of a national simulation exercise programme for testing and updating plans and ensuring they are well known, practiced and up to date.</p> <p>N.4.11. Enhancement of the EWS Plan for flood and drought.</p> <p>N.4.12. Assess the need for equipment, hardware and software and technical staff for EWS.</p> <p>N.4.13. Design and implementation of a national DRM training programme</p> <p>N.4.14 Design and implementation of a National DRM Public Education and Awareness Plan and Strategy.</p> <p>N.4.15. Revision of NEOC structure, roles and responsibilities and then revision of NEOC manual, SOPs, staffing and equipment.</p> <p>N.4.16. Design of model regional and local EOC manuals to be adapted at regional and local levels.</p> <p>N.4.17. Identification of specific measures to integrate gender issues into DRM processes.</p> <p>R.4.1. Establish regional DRM committees including regional DRM sub-committees, ensuring that all DRM components are addressed.</p> <p>R.4.2. Establish all local DRM committees (i.e. neighbourhood or community district DRM committees and EOCs) including local DRM sub-committees, ensuring that DRM components are addressed.</p> <p>R.4.3. Design, establish and properly equip all regional EOCs.</p> <p>R.4.4. Design, establish and properly equip all local EOCs.</p> <p>R.4.5. Design and test emergency response plans at the regional level and ensure they are compatible with those at the national and local levels.</p> <p>R.4.6. Design and test emergency response plans at the local level and ensure they are compatible with those at the regional and national levels.</p> <p>R.4.7. Design and deliver a community-based DRR/DRM capacity building programme.</p>	<p>N.5.3. Design of COOPs and BCP guidelines for the government and the private sector based on vulnerability assessments.</p> <p>N.5.4. Design of COOPs for government offices and key/critical national infrastructure based on vulnerability assessments.</p> <p>N.5.5. Design of BCPs for the private sector.</p> <p>N.5.6. Design and delivery of a national training programme for COOPs and BCPs.</p> <p>N.5.7. Revise/update and enhance the National Contingency Fund and its mechanisms, including addressing the enabling environment.</p> <p>N.5.8. Hold awareness raising sessions for government and the private sector about the need for recovery, COOPs and BCPs in Guyana.</p> <p>R.5.1. Design COOPs for government offices and key/critical infrastructure at the regional and local levels.</p> <p>R.5.2. Design of BCPs for the private sector at the regional and local levels.</p> <p>R.5.3. Workshops for training in COOPs and BCPs for the regional and local levels.</p>
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ANNEX IV. Strategy Logical Framework

Expected Results	Performance Measurement Indicators ⁵⁴	Risks
<p>Vision: <i>A more sustainable and safe Guyana with reduced risk and enhanced resilience to impacts and consequences of the key hazards.</i></p> <p>Goal: <i>The establishment and continuous enhancement of Integrated Disaster Risk Management in Guyana mainstreamed across all sectors and at all levels in the country to minimize potential deaths, injuries, loss of property, livelihoods, socio-economic loss and damage to the environment, and underpinning sustainable development</i></p>		
Outcomes⁵⁵		
<ol style="list-style-type: none"> 1. All hazards, vulnerable elements and risks identified, assessed and mapped in Guyana to be used in the DRM process. 2. Vulnerable infrastructure and communities with risks and vulnerability assessed and reduced by the strengthening of structures or by relocation. 3. Vulnerability of sea defences, conservancy dams, drainage and irrigation systems assessed and mitigation measures implemented to reduce risk. 4. Mandatory risk transfer financing mechanisms in place for buildings, housing and infrastructure at risk. 5. Guyana insured with the CCRIF at the regional level. 6. Organizations at all levels with a high level of preparedness to provide an adequate and timely response to the impacts and consequences of floods and droughts. 7. All needed laws and policies completed, and all plans completed, revised and tested for IDRM in Guyana. 		

⁵⁴ Please note: The indicators and risks below are presented for the purpose of gathering comments and feedback. The final list of indicators should not be as long, and should be prioritized and finalized by the key stakeholders.

⁵⁵ Indicators could be developed for the Outcome level as well once feedback is provided on the draft indicators at the Output level.

Expected Results	Performance Measurement Indicators ⁵⁴	Risks
<p>8. Organizations at all levels adequately prepared to start recovering immediately after floods and droughts in Guyana.</p> <p>9. A National Contingency Fund established and operating in the country.</p>		
Outputs		
<p>1.1. Hazard, Vulnerability and Risk Mapping Plan designed and implemented.</p> <p>1.2. Mechanisms for identification of information needed, gathering, mapping and availability established.</p> <p>1.3. Holistic assessment of national flood and drought management needs completed.</p> <p>1.4. Hazard and risk maps designed.</p> <p>1.5. Vulnerability and risk maps designed</p> <p>1.6. Community risk maps designed in selected communities (HVRAs).</p> <p>1.7. LIDAR information model acquired</p> <p>1.8. Vulnerable elements whose vulnerability is to be assessed are identified.</p> <p>1.9. Vulnerability assessments of all identified vulnerable elements to floods and droughts completed.</p> <p>1.10. Hazards to be mapped identified.</p> <p>1.11. Analysis on AAL, PRP, Loss Excedence Curve and PML conducted</p> <p>1.12. Baseline information about vulnerable elements (population, infrastructure, environment, etc.) prepared, including prioritization.</p> <p>1.13. Risk maps and disaster scenario maps designed.</p> <p>1.14. Software and hardware purchased.</p> <p>1.15. GIS-based flood and drought risk information system developed and enhanced.</p> <p>1.16. Training workshops to conduct HVRA delivered.</p> <p>1.17. Personnel hired and trained.</p> <p>1.18. Hazard, vulnerability and community risk maps information integrated into the national planning and</p>	<ul style="list-style-type: none"> • Existence/quality of Plan. • #/type of mechanisms established. • Existence/quality of the assessment of national flood and drought management needs • #/% of hazard, vulnerability and risk maps designed. • Quality of hazard, vulnerability and risk maps (high, medium, low). • #/% of communities that have applied HRVA mapping. • #/% of LIDAR maps available. • #/% of vulnerable elements identified: Schools, hospital, clinics, key infrastructure; telecommunications, roads, bridges, etc. • #/% of vulnerability assessments conducted per sector. • Quality of vulnerability assessments • Existence/quality of analysis • #/% of vulnerable elements entered into the vulnerability database. • Quality/comprehensiveness of baseline established. • Existence/quality of risk maps and disaster scenario maps • Level of use of risk maps and disaster scenario maps for development and emergency planning • #/% of software and hardware purchased. • Existence/quality of a database for GIS-based flood and drought risk information • #/% of GIS-based flood and drought risk information 	<p>Lack of funding for purchase of software, hardware and training.</p> <p>Lack of existing information about hazards and vulnerable elements.</p> <p>Stakeholders do not agree to/accept HVRA methodology.</p> <p>Enforcement challenges.</p> <p>Low or inconsistent application of HRVA tools.</p> <p>Insufficient funding for initiatives found/available.</p> <p>Challenges with government buy-in needed for integration of community risk information into national maps.</p>

Expected Results	Performance Measurement Indicators ⁵⁴	Risks
<p>decision making process.</p>	<p>entered into the database.</p> <ul style="list-style-type: none"> • #/% of communities trained in the HRVA Tool. • #/% of HRVA training workshops conducted. • Quality of training provided, according to beneficiaries. • #/% of personnel trained in map design. • Quality of training, according to beneficiaries. • #/% of trained personnel remaining in organization over time. • Evidence that community risk information has been integrated into national GIS mapping. • Level of use by government decision makers of hazard, vulnerability and risk maps for development and emergency planning 	
<p>2.1. National Prevention/Mitigation Plan designed. 2.2. Mitigation works conducted. 2.3. Vulnerability assessment of sea defences conducted. 2.4. Vulnerability assessments of conservancy dams, drainage and irrigation systems conducted. 2.5. Priorities for mitigation works identified and planned. 2.6. Mitigation works needed planned and conducted. 2.7. Resources for inspections/maintenance/clean up at national and regional/local levels identified and quantified and hired/trained/purchased. 2.8. Emergency plans for breach or overflow in conservancy dams and sea defences designed 2.9. Assessment studies on different sectors and themes (e.g. human settlements, agriculture, etc.) completed. 2.10. Building Code designed and enacted. 2.11. Specific needs and challenges related to the enforcement of the Building Code identified 2.12. Action Plan to address needs and challenges identified for the enforcement of the Building Code designed and implemented. 2.13. Personnel and equipment for Building Code enforcement hired/trained/purchased. 2.14. Mechanisms for building according to new Building</p>	<ul style="list-style-type: none"> • Existence/quality of Prevention/Mitigation plan. • #/% of mitigation needs/works to be conducted identified. • #/% of mitigation works completed. • #/% of priorities for vulnerability assessment identified (% of sea defence, #/% of conservancy dams). • % of vulnerability assessment of sea defences conducted. • #/% of vulnerability assessment of conservancy dams conducted. • Quality of vulnerability assessments completed (high, medium, low). • #/% of mitigation works identified. • #/% of mitigation works conducted. • % of identified needed resources acquired. • #/% of personnel/equipment for inspections/maintenance/clean up (disaggregated by local/regional/national) hired/trained/purchased. • Existence/quality of emergency plans for breach or overflow in conservancy dams and sea defences • #/quality of assessment studies (per sector) conducted • Existence/quality/level of enactment of Building 	<p>Insufficient funds to conduct vulnerability assessments.</p> <p>Too much time and resources needed to conduct vulnerability assessments.</p> <p>Insufficient funding for mitigation works.</p> <p>Stakeholders unable to reach consensus on Building Code.</p> <p>Contractors not complying with new Building Code.</p> <p>Economic repercussions to comply with new Building Code.</p> <p>Insufficient enforcement of Building Code</p> <p>Stakeholders unable to reach consensus on vulnerability assessment needs.</p> <p>Lack of funding/resources for continuous inspections, maintenance/clean up of sea defences, conservancy dams and drainage and irrigation systems.</p> <p>Collaboration/coordination challenges among supporting sectors or at local level (including needed ongoing support from government).</p> <p>Insufficient funding for initiatives found/available.</p>

Expected Results	Performance Measurement Indicators ⁵⁴	Risks
<p>Code in place including regular inspections to construction sites.</p> <p>2.15. Policy for land use and human settlements designed and enacted.</p> <p>2.16. Maintenance and clean-up plans designed</p>	<p>Code.⁵⁶</p> <ul style="list-style-type: none"> • Existence/quality/comprehensiveness of Action Plan for the enforcement of the Building Code • #/% of personnel/equipment for Building Code enforcement hired/trained/purchased. • %/level of adequacy of mechanisms for building according to new Building Code in place. • % of enforcement capacity versus rate of constructions built. • Existence/quality of Policy for land use and human settlements • # (disaggregated by local/regional/national) of maintenance and clean-up plans 	
<p>3.1. Flood and drought insurance made mandatory in legislation for housing, agriculture activities and key/critical infrastructure.</p> <p>3.2. Guidelines for the implementation of risk reduction measures for accessing insurance (flood and drought) developed and disseminated.</p> <p>3.3. Risk transfer and financial mechanisms identified for floods and drought.</p> <p>3.4. Guyana insured for flooding (excess rainfall) with the CCRIF.</p> <p>3.5. Training workshops to government officials and private sector on risk transfer and financial mechanisms conducted.</p> <p>3.6. Government buildings and housing, and critical infrastructure in key sectors such as tourism, education, health, agriculture (including the private sector) insured against floods and drought.</p>	<ul style="list-style-type: none"> • Evidence that insurance is legislated as being mandatory in Guyana. • #/% of guidelines for risk reduction measures for accessing insurance completed. • Quality of guidelines, according to the target public. • #/% of risk transfer and financial mechanisms identified as viable for the Guyana context. • Level of adequacy of insurance ensured. • % of compliance with CCRIF requirements to be insured. • #/% of training courses delivered. • Quality of training provided, according to beneficiaries. • #/% of buildings/houses/assets insured. 	<p>Stakeholders unable to reach consensus on risk transfer and financial mechanisms.</p> <p>Legal difficulties and implications (economic, etc.) to make insurance mandatory.</p> <p>Disagreement between stakeholders to get to a consensus on the mechanisms to be followed to insure buildings, crops, livestock.</p> <p>Insufficient funding for initiatives found/available.</p> <p>Difficulty in complying with CCRIF requirements to be insured for flooding (excess rainfall).</p> <p>Lack of sufficient funds to be insured with CCRIF.</p>
<p>4.1. DRM Bill designed and enacted.</p> <p>4.2. Draft DRM Policy revised.</p> <p>4.3. DRM (including gender, environmental and CC</p>	<ul style="list-style-type: none"> • #/% of legislation designed/revised/enacted. • Quality of legislation designed/revised (high, medium, low). 	<p>Lack of consensus on the contents of DRM legislation and policies.</p> <p>Lack of participation of stakeholders in the design and revision of emergency</p>

⁵⁶ Benchmark scales can be developed to measure quality and level of enactment of the Building Code.

Expected Results	Performance Measurement Indicators ⁵⁴	Risks
<p>issues) introduced in existing legislation in Guyana for all sectors (health, education, agriculture, sea defence, environment, etc.).</p> <p>4.4. New DRM policies designed (shelter management, evacuation, relief, donations, waste disposal).</p> <p>4.5. New CDC structure designed reflecting DRM.</p> <p>4.6. Current National Disaster Preparedness and Response Structure revised to reflect DRM and integrating volunteer corps.</p> <p>4.7. Number, composition and terms of reference of all national DRM sub-committees revised to reflect DRM.</p> <p>4.8. All national, regional and local DRM committees and sub-committees established and operating.</p> <p>4.9. National DRR Platform role, functions, composition and terms of reference revised</p> <p>4.10. Current emergency plans revised and harmonized.</p> <p>4.11. Drought emergency response plan designed.</p> <p>4.12. National simulation exercises programme designed and implemented.</p> <p>4.13. Regional and local emergency response plans designed (flood and drought).</p> <p>4.14. Revision and testing of EWS for floods and design of EWS for drought.</p> <p>4.15. National DRM training programme designed and implemented.</p> <p>4.16. National DRM Public Education and Awareness Plan and Strategy designed and implemented.</p> <p>4.17. New NEOC structure, role & responsibilities</p> <p>4.18. Personnel and equipment for NEOC hired/trained/purchased.</p> <p>4.19. National EOC manual and SOPs revised.</p> <p>4.20. Regional and local EOC guidelines designed.</p> <p>4.21. Regional and local DRM committees and sub-committees established and operating.</p> <p>4.22. Regional and local EOCs established.</p> <p>4.23. Personnel and equipment for EOC hired/trained/purchased.</p>	<ul style="list-style-type: none"> ● #/% of policies revised/designed/enacted. ● Quality of policies developed/revised (high, medium, low). ● Evidence that CDC structure re-designed. ● Level of satisfaction with CDC re-design. ● Evidence that National DRM Structure re-designed. ● #/% of national DRM sub-committees composition revised. ● #/% of national DRM sub-committees established. ● Level of functionality of new national DRM sub-committees. ● Degree of participation of stakeholders in the DRM sub-committees (per committee). ● % of National DRR Platform role and composition revised. ● #/% of emergency plans revised and harmonized. ● Existence/quality of drought emergency response plan. ● Degree to which emergency response plans harmonized. ● #/% of regional and local emergency response plans designed. ● Quality of regional and local response plans. ● #/% /type of national DRM training programmes designed. ● #/% of national DRM training courses delivered. ● #/% of personnel trained. ● Quality of training provided, according to beneficiaries. ● Evidence/quality of national simulation exercises programme designed. ● #/% of simulation exercises executed and evaluated. ● Quality of simulations and exercises, based on evaluations. ● Evidence/quality of National DRM Public Education and Awareness Plan and Strategy. ● #/% of the National Public Education and Awareness activities implemented. 	<p>plans.</p> <p>Insufficient funding for initiatives found/available.</p> <p>Lack of consensus on the revision of the CDC, the National Disaster Preparedness and Response Structure, the national sub-committees, the NEOC, and the National DRR Platform roles, composition and terms of reference.</p> <p>Lack of consensus on information and materials produced for public education and awareness.</p>

Expected Results	Performance Measurement Indicators ⁵⁴	Risks
	<ul style="list-style-type: none"> • Evidence that National EOC manual revised. • #/type/% of SOPs revised. • Evidence that NEOC audit conducted. • #/% of Regional and Local EOC guidelines designed. • Quality of Regional and Local EOC guidelines designed. • #/%/type of regional and local DRM committees established. • #/% of regional and local EOCs established and equipped. • #/%/type of flood EWS revised. • #/type of drought EWS designed. 	
<p>5.1. National Early Recovery Plan for floods designed.</p> <p>5.2. National Early Recovery Plan for droughts designed.</p> <p>5.3. Guidelines for the design of COOPs and BCPs for the government and the private sector designed.</p> <p>5.4. Awareness sessions to promote COOPs and BCPs conducted.</p> <p>5.5. Training COOPs and BCPs workshops delivered</p> <p>5.6. COOPs and BCPs designed for government and private sector.</p> <p>5.7. Contingency Fund for floods and droughts mechanisms revised.</p>	<ul style="list-style-type: none"> • Existence/quality of National Early Recovery Plan for floods. • Existence/quality of National Early Recovery Plan for droughts. • #/%/type of guidelines for COOPs and BCPs designed and published. • Quality of COOPs and BCPs designed. • # of awareness sessions to promote COOPs and BCPs • Quality and usefulness of awareness sessions according to beneficiaries • #/%/type of government agencies and private businesses who attended the awareness sessions on COOPs and BCPs • #/%/type of training workshops delivered for COOPs and BCPs. • #/%/type of government agencies and private businesses trained. • Quality of training provided, according to beneficiaries • #/%/type/quality of COOPs and BCPs designed. 	<p>Lack of participation of stakeholders (the government and private sectors) and unwillingness to dedicate funds for COOPs and BCPs.</p> <p>Insufficient funding for initiatives found/available.</p> <p>Lack of consensus among stakeholders on the criteria to access the National Contingency Fund and its amount.</p> <p>Lack of commitment and general agreements to revise/update/enhance the National Contingency Fund and its mechanisms.</p>

Annex V- Performance Measurement Framework for the NIDRMP and its Strategy

<u>Results</u>	<u>Performance Indicators</u> ⁵⁷	<u>Baseline Data</u> ⁵⁸	<u>Targets/ Milestones</u> ⁵⁹	<u>Source of Data</u> ⁶⁰	<u>Frequency</u> ⁶¹	<u>Responsible</u> ⁶²
Outcomes						
1. All hazards, vulnerable elements and risks identified, assessed and mapped in Guyana to be used in the DRM process.						
2. Vulnerable infrastructure and communities with risks and vulnerability assessed and reduced by the strengthening of structures or by relocation.						
3. Vulnerability of sea defences, conservancy dams, drainage and irrigation systems assessed and mitigation measures implemented to reduce risk.						
4. Mandatory risk transfer financing mechanisms in place for buildings, housing and infrastructure at risk.						
5. Guyana insured with the CCRIF at the regional level.						
6. Organizations at all levels with a high level of preparedness to provide an adequate and timely response to the impacts and consequences of floods and droughts.						
7. All needed laws and policies completed, and all plans completed, revised and tested for IDRMP in Guyana.						

⁵⁷ Indicators could be developed for the Outcome level once feedback is provided on the draft indicators at the Output level. Output level indicators are provided for discussion purposes.

⁵⁸ The PMF here will not include Baseline data. This requires in-depth study.

⁵⁹ The PMF here will not include targets. These are more appropriately set by those managing the NIDRMP and Strategy (CDC, Key Ministries, DRR Platform) and will be dependent on how and when activities/initiatives will be executed.

⁶⁰ Sources of data should be identified by those managing the NIDRMP and Strategy once agreement is reached on indicators.

⁶¹ The frequency of monitoring and reporting is dependent on the planned implementation of activities/initiatives which are at this stage not known. Therefore, these should be developed by those managing the NIDRMP and Strategy.

⁶² Persons responsible for monitoring on the various aspects of the NIDRMP and Strategy will need to be identified by those managing the Plan and Strategy.

Guyana National Integrated Disaster Risk Management Strategy

<u>Results</u>	<u>Performance Indicators</u> ⁵⁷	<u>Baseline Data</u> ⁵⁸	<u>Targets/ Milestones</u> ⁵⁹	<u>Source of Data</u> ⁶⁰	<u>Frequency</u> ⁶¹	<u>Responsible</u> ⁶²
<p>8. Organizations at all levels adequately prepared to start recovering immediately after floods and droughts in Guyana.</p> <p>9. A National Contingency Fund established and operating in the country.</p>						
<i>Outputs</i>						
<p>1.1. Hazard, Vulnerability and Risk Mapping Plan designed and implemented.</p> <p>1.2. Mechanisms for identification of information needed, gathering, mapping and availability established.</p> <p>1.3. Holistic assessment of national flood and drought management needs completed.</p> <p>1.4. Hazard and risk maps designed.</p> <p>1.5. Vulnerability and risk maps designed</p> <p>1.6. Community risk maps designed in selected communities (HVRAs).</p> <p>1.7. LIDAR information model acquired</p> <p>1.8. Vulnerable elements whose vulnerability is to be assessed are identified.</p> <p>1.9. Vulnerability assessments of all identified vulnerable elements to floods and droughts completed.</p> <p>1.10. Hazards to be mapped identified.</p> <p>1.11. Analysis on AAL, PRP, Loss Excedence Curve and PML conducted</p> <p>1.12. Baseline information about vulnerable elements (population, infrastructure, environment, etc.) prepared, including prioritization.</p> <p>1.13. Risk maps and disaster scenario maps designed.</p> <p>1.14. Software and hardware purchased.</p> <p>1.15. GIS-based flood and drought risk information system developed and enhanced.</p> <p>1.16. Training workshops to conduct HVRAs delivered.</p> <p>1.17. Personnel hired and trained.</p>	<ul style="list-style-type: none"> • Existence/quality of Plan. • #/type of mechanisms established. • Existence/quality of the assessment of national flood and drought management needs • #/% of hazard, vulnerability and risk maps designed. • Quality of hazard, vulnerability and risk maps (high, medium, low). • #/% of communities that have applied HRVA mapping. • #/% of LIDAR maps available. • #/% of vulnerable elements identified: Schools, hospital, clinics, key infrastructure; telecommunications, roads, bridges, etc. • #/% of vulnerability assessments conducted per sector. • Quality of vulnerability assessments • Existence/quality of analysis • #/% of vulnerable elements entered into the vulnerability database. • Quality/comprehensiveness of baseline established. • Existence/quality of risk maps and disaster scenario maps • Level of use of risk maps and disaster scenario maps for development and emergency planning • #/% of software and hardware purchased. • Existence/quality of a database for GIS-based flood and drought risk information • #/% of GIS-based flood and drought risk information entered into the database. 					

Guyana National Integrated Disaster Risk Management Strategy

Results	Performance Indicators⁵⁷	Baseline Data⁵⁸	Targets/ Milestones⁵⁹	Source of Data⁶⁰	Frequency⁶¹	Responsible⁶²
<p>1.18. Hazard, vulnerability and community risk maps information integrated into the national planning and decision making process.</p>	<ul style="list-style-type: none"> • #/% of communities trained in the HRVA Tool. • #/% of HRVA training workshops conducted. • Quality of training provided, according to beneficiaries. • #/% of personnel trained in map design. • Quality of training, according to beneficiaries. • #/% of trained personnel remaining in organization over time. • Evidence that community risk information has been integrated into national GIS mapping. • Level of use by government decision makers of hazard, vulnerability and risk maps for development and emergency planning 					
<p>2.1. National Prevention/Mitigation Plan designed. 2.2. Mitigation works conducted. 2.3. Vulnerability assessment of sea defences conducted. 2.4. Vulnerability assessments of conservancy dams, drainage and irrigation systems conducted. 2.5. Priorities for mitigation works identified and planned. 2.6. Mitigation works needed planned and conducted. 2.7. Resources for inspections/maintenance/clean up at national and regional/local levels identified and quantified and hired/trained/purchased. 2.8. Emergency plans for breach or overflow in conservancy dams and sea defences designed 2.9. Assessment studies on different sectors and themes (e.g. human settlements, agriculture, etc.) completed. 2.10. Building Code designed and enacted. 2.11. Specific needs and challenges related to the enforcement of the Building Code identified 2.12. Action Plan to address needs and challenges identified for the enforcement of the Building Code designed and implemented.</p>	<ul style="list-style-type: none"> • Existence/quality of Prevention/Mitigation plan. • #/% of mitigation needs/works to be conducted identified. • #/% of mitigation works completed. • #/% of priorities for vulnerability assessment identified (% of sea defence, #/% of conservancy dams). • % of vulnerability assessment of sea defences conducted. • #/% of vulnerability assessment of conservancy dams conducted. • Quality of vulnerability assessments completed (high, medium, low). • #/% of mitigation works identified. • #/% of mitigation works conducted. • % of identified needed resources acquired. • #/% of personnel/equipment for inspections/maintenance/clean up (disaggregated by local/regional/national) hired/trained/purchased. • Existence/quality of emergency plans for breach or overflow in conservancy dams and sea defences 					

Guyana National Integrated Disaster Risk Management Strategy

Results	Performance Indicators⁵⁷	Baseline Data⁵⁸	Targets/ Milestones⁵⁹	Source of Data⁶⁰	Frequency⁶¹	Responsible⁶²
<p>2.13. Personnel and equipment for Building Code enforcement hired/trained/purchased.</p> <p>2.14. Mechanisms for building according to new Building Code in place including regular inspections to construction sites.</p> <p>2.16. Policy for land use and human settlements designed and enacted.</p> <p>2.17. Maintenance and clean-up plans designed</p>	<ul style="list-style-type: none"> • #/quality of assessment studies (per sector) conducted • Existence/quality/level of enactment of Building Code.⁶³ • Existence/quality/comprehensiveness of Action Plan for the enforcement of the Building Code • #/% of personnel/equipment for Building Code enforcement hired/trained/purchased. • %/level of adequacy of mechanisms for building according to new Building Code in place. • % of enforcement capacity versus rate of constructions built. • Existence/quality of Policy for land use and human settlements • # (disaggregated by local/regional/national) of maintenance and clean-up plans 					
<p>3.1. Flood and drought insurance made mandatory in legislation for housing, agriculture activities and key/critical infrastructure.</p> <p>3.2. Guidelines for the implementation of risk reduction measures for accessing insurance (flood and drought) developed and disseminated.</p> <p>3.3. Risk transfer and financial mechanisms identified for floods and drought.</p> <p>3.4. Guyana insured for flooding (excess rainfall) with the CCRIF.</p> <p>3.5. Training workshops to government officials and private sector on risk transfer and financial mechanisms conducted.</p> <p>3.6. Government buildings and housing, and critical infrastructure in key sectors such as tourism, education, health, agriculture (including the private sector) insured against floods and drought.</p> <p>3.7. National financial strategy for the management of the impacts of extreme events developed</p>	<ul style="list-style-type: none"> • Evidence that insurance is legislated as being mandatory in Guyana. • #/% of guidelines for risk reduction measures for accessing insurance completed. • Quality of guidelines, according to the target public. • #/% of risk transfer and financial mechanisms identified as viable for the Guyana context. • Level of adequacy of insurance ensured. • % of compliance with CCRIF requirements to be insured. • #/% of training courses delivered. • Quality of training provided, according to beneficiaries. • #/% of buildings/houses/assets insured. • Existence/quality/comprehensiveness of financial strategy 					

⁶³ Benchmark scales can be developed to measure quality and level of enactment of the Building Code.

Guyana National Integrated Disaster Risk Management Strategy

Results		Performance Indicators⁵⁷	Baseline Data⁵⁸	Targets/ Milestones⁵⁹	Source of Data⁶⁰	Frequency⁶¹	Responsible⁶²
4.1.	DRM Bill designed and enacted.	<ul style="list-style-type: none"> • #/% of legislation designed/ revised/ enacted. • Quality of legislation designed/ revised (high, medium, low). • #/% of policies revised/ designed/ enacted. • Quality of policies developed/ revised (high, medium, low). • Evidence that CDC structure re-designed. • Level of satisfaction with CDC re-design. • Evidence that National DRM Structure re-designed. • #/% of national DRM sub-committees composition revised. • #/% of national DRM sub-committees established. • Level of functionality of new national DRM sub-committees. • Degree of participation of stakeholders in the DRM sub-committees (per committee). • % of National DRR Platform role and composition revised. • #/% of emergency plans revised and harmonized. • Existence/quality of drought emergency response plan. • Degree to which emergency response plans harmonized. • #/% of regional and local emergency response plans designed. • Quality of regional and local response plans. • #/% /type of national DRM training programmes designed. • #/% of national DRM training courses delivered. • #/% of personnel trained. • Quality of training provided, according to beneficiaries. • Evidence/quality of national simulation exercises programme designed. • #/% of simulation exercises executed and evaluated. • Quality of simulations and exercises, based on evaluations. • Evidence/quality of National DRM Public Education and Awareness Plan and Strategy. • #/% of the National Public Education and Awareness 					
4.2.	Draft DRM Policy revised.						
4.3.	DRM (including gender, environmental and CC issues) introduced in existing legislation in Guyana for all sectors (health, education, agriculture, sea defence, environment, etc.).						
4.4.	New DRM policies designed (shelter management, evacuation, relief, donations, waste disposal).						
4.5.	New CDC structure designed reflecting DRM.						
4.6.	Current National Disaster Preparedness and Response Structure revised to reflect DRM and integrating volunteer corps.						
4.7.	Number, composition and terms of reference of all national DRM sub-committees revised to reflect DRM.						
4.8.	All national, regional and local DRM committees and sub-committees established and operating.						
4.9.	National DRR Platform role, functions, composition and terms of reference revised						
4.10.	Current emergency plans revised and harmonized.						
4.11.	Drought emergency response plan designed.						
4.12.	National simulation exercises programme designed and implemented.						
4.13.	Regional and local emergency response plans designed (flood and drought).						
4.14.	Revision and testing of EWS for floods and design of EWS for drought.						
4.15.	National DRM training programme designed and implemented.						
4.16.	National DRM Public Education and Awareness Plan and Strategy designed and implemented.						
4.17.	New NEOC structure, role & responsibilities						
4.18.	Personnel and equipment for NEOC hired/trained/purchased.						
4.19.	National EOC manual and SOPs revised.						
4.20.	Regional and local EOC guidelines designed.						
4.21.	Regional and local DRM committees and sub-						

<u>Results</u>	<u>Performance Indicators</u> ⁵⁷	<u>Baseline Data</u> ⁵⁸	<u>Targets/ Milestones</u> ⁵⁹	<u>Source of Data</u> ⁶⁰	<u>Frequency</u> ⁶¹	<u>Responsible</u> ⁶²
4.22. committees established and operating. Regional and local EOCs established. 4.23. Personnel and equipment for EOC hired/trained/purchased.	activities implemented. <ul style="list-style-type: none"> • Evidence that National EOC manual revised. • #/type/% of SOPs revised. • Evidence that NEOC audit conducted. • #/% of Regional and Local EOC guidelines designed. • Quality of Regional and Local EOC guidelines designed. • #/%/type of regional and local DRM committees established. • #/% of regional and local EOCs established and equipped. • #/%/type of flood EWS revised. • #/type of drought EWS designed. 					
5.1. National Early Recovery Plan for floods designed. 5.2. National Early Recovery Plan for droughts designed. 5.3. Guidelines for the design of COOPs and BCPs for the government and the private sector designed. 5.4. Awareness sessions to promote COOPs and BCPs conducted. 5.5. Training COOPs and BCPs workshops delivered 5.6. COOPs and BCPs designed for government and private sector. 5.7. Contingency Fund for floods and droughts mechanisms revised.	<ul style="list-style-type: none"> • Existence/quality of National Early Recovery Plan for floods. • Existence/quality of National Early Recovery Plan for droughts. • #/%/type of guidelines for COOPs and BCPs designed and published. • Quality of COOPs and BCPs designed. • # of awareness sessions to promote COOPs and BCPs • Quality and usefulness of awareness sessions according to beneficiaries • #/%/type of government agencies and private businesses who attended the awareness sessions on COOPs and BCPs • #/%/type of training workshops delivered for COOPs and BCPs. • #/%/type of government agencies and private businesses trained. • Quality of training provided, according to beneficiaries • #/%/type/quality of COOPs and BCPs designed. 					

Annex VI – Table Depicting Linkages from SOs to Activities to Outcomes and Outputs to Suggested Projects

SOs and Activities		Outcomes and Outputs Projects	
Risk Identification Related SO and Activities		Outcome 1 -	
		All hazards, vulnerable elements and risks identified, assessed and mapped in Guyana to be used in the DRM process.	
SO	Activities	Outputs	Projects
SO1. To be able to identify and quantify the risks and possible consequences of the impacts of floods and droughts in Guyana and their possible interrelationship with the vulnerable elements of society and the environment in order to inform DRM and development activities in the country.	<u>National:</u> N.1.1. Design and implement a National Hazard, Vulnerability and Risk Mapping Plan N.1.2. Establish a mechanism for identification of information needed, data gathering, mapping and addressing the issue of availability. N.1.3. Undertake a holistic assessment of national flood and drought management needs, taking into consideration the impacts of increased rainfall, the threat of drought risk and the need to avoid maladaptation. N.1.4. Create and/or update hazard maps for: floods (river overflow), floods on the coastline (storm surge), drought, earthquake, tropical cyclone, landslide and wildfire. N.1.5. Create and/or update maps: of floodable/flood prone areas; of droughts and their effects by region; identifying location of critical infrastructure; about the status and location of the population; including small scale risk maps at the community level; and including the acquisition of satellite images of Guyana coastal area. N.1.6. Acquire Laser Imaging Detection and Raging (LIDAR) information model for the topography of the main rivers, areas and cities in the country. N.1.7. Design of vulnerability maps of prioritized areas (e.g. Georgetown, Anna Regina and New Amsterdam), and elements and assets (population, agriculture, infrastructure, floodable areas). N.1.8. Conduct vulnerability assessments of all identified (and potential) vulnerable elements (population, agriculture, infrastructure, floodable areas, etc.) to floods and droughts.	1.1. Hazard, Vulnerability and Risk Mapping Plan designed and implemented. 1.2. Mechanisms for identification of information needed, gathering, mapping and availability established. 1.3. Holistic assessment of national flood and drought management needs completed. 1.4. Hazard and risk maps designed. 1.5. Vulnerability and risk maps designed 1.6. Community risk maps designed in selected communities (HVRAs). 1.7. LIDAR information model acquired 1.8. Vulnerable elements whose vulnerability is to be assessed are identified. 1.9. Vulnerability assessments of all identified vulnerable elements to floods and droughts completed. 1.10. Hazards to be mapped identified. 1.11. Analysis on AAL, PRP, Loss Excedence Curve and PML conducted 1.12. Baseline information about vulnerable elements (population, infrastructure, environment, etc.) prepared, including prioritization. 1.13. Risk maps and disaster scenario maps	Risk Identification Project Community Risk Identification and Mapping Project

	<p>N.1.9. Collect data and conduct analysis on: AAL, Pure Risk Premium (PRP), Loss Excedence Curve, PML</p> <p>N.1.10. Develop/update a baseline database of vulnerable and at-risk areas and elements (population, infrastructure, environment, etc.), including prioritization.</p> <p>N.1.11. Design of risk maps and disaster scenario maps for development and emergency planning.</p> <p>N.1.12. Purchase of hardware and software for the development and analysis of and access to GIS maps developed, as part of national GIS database.</p> <p>N.1.13. Develop/improve GIS-based flood and drought risk information system (database).</p> <p>N.1.14. Deliver training to key government staff in the design and use of mapping software and processes, including analysis.</p> <p>N.1.15. Hold awareness-raising and information sessions with government and decision-makers with a view to integrating hazard, vulnerability and risk mapping and analysis into national planning and decision making (including addressing enforcement).</p> <p><u>Regional/Local:</u></p> <p>R 1.1 Design of community risk maps and HRVA.</p> <p>R 1.2 Deliver workshops to key stakeholders at the regional and local level for community risk mapping.</p> <p>R 1.3 Incorporation of information from the regional/local level into the national database of vulnerable and at-risk areas and elements and the GIS database.</p>	<p>designed.</p> <p>1.14. Software and hardware purchased.</p> <p>1.15. GIS-based flood and drought risk information system developed and enhanced.</p> <p>1.16. Training workshops to conduct HVRA's delivered.</p> <p>1.17. Personnel hired and trained.</p> <p>1.18. Hazard, vulnerability and community risk maps information integrated into the national planning and decision making process.</p>	
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Prevention/Mitigation Related SO and Activities		Outcome 2 - Vulnerable infrastructure and communities with risks and vulnerability assessed and reduced by the strengthening of structures or by relocation.	
SO	Activities	Outputs	Projects
SO2. To reduce the risks of floods and droughts in Guyana through structural and non structural measures, thereby reducing the vulnerability of society and the environment to the impacts and consequences of floods and droughts in order to better ensure sustainable development in the country.	<p>National</p> <p>N.2.1. Design a National Prevention/Mitigation Plan that includes the creation and establishment of two national sub-committees: one for sea defences and sea walls and one for assessing vulnerability and mitigation measures for all other buildings/infrastructure.</p> <p>N.2.2. Implementation of mitigation activities according to the National Mitigation Plan (an ongoing activity).</p> <p>N.2.10. Conduct assessment studies in order to identify agricultural activities that reduce risk during the flooding season.</p> <p>N.2.11. Conduct assessment studies for the identification of specific measures to access and store water during droughts.</p> <p>N.2.12. Design/revise and enact Building Code for Guyana including specific mandatory building measures against floods.</p> <p>N.2.13. Identify/assess specific needs and related challenges for enforcement of Building Code in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.14. Build capacity for enforcement of the Building Code.</p> <p>N.2.15. Design/revise and enact a policy and plan for land use and human settlements.</p> <p>N.2.16. Identify/assess specific needs and related challenges for enforcement of the land-use plan in Guyana (personnel, training, equipment, vehicles, etc) and develop a plan of action to address challenges identified.</p> <p>N.2.17. Ensure that EIA is integrated adequately into the land-use planning and construction process in the country.</p> <p>N.2.18. Retrofitting and reinforcement of public and private assets and infrastructure as identified through previously completed vulnerability and risk assessments.</p>	<p>2.1. National Prevention/Mitigation Plan designed.</p> <p>2.2. Mitigation works conducted.</p> <p>2.5. Priorities for mitigation works identified and planned.</p> <p>2.6. Mitigation works needed planned and conducted.</p> <p>2.9. Assessment studies on different sectors and themes (e.g. human settlements, agriculture, etc.) completed.</p> <p>2.10. Building Code designed and enacted.</p> <p>2.11. Specific needs and challenges related to the enforcement of the Building Code identified</p> <p>2.12. Action Plan to address needs and challenges identified for the enforcement of the Building Code designed and implemented.</p> <p>2.13. Personnel and equipment for Building Code enforcement hired/trained/purchased.</p> <p>2.14. Mechanisms for building according to new Building Code in place including regular inspections to construction sites.</p> <p>2.15 Policy for land use and human settlements designed and enacted</p>	<p>Vulnerability Assessment and Mitigation in Key Areas and Sectors.</p> <p>Building Code Project</p>

Prevention/Mitigation Related SO and Activities		Outcome 3 - Vulnerability of sea defences, conservancy dams, drainage, and irrigation systems assessed and mitigation measures implemented to reduce risk.	
SO	Activities	Outputs	Projects
<p>SO2 To reduce the risks of floods and droughts in Guyana through structural and non structural measures, thereby reducing the vulnerability of society and the environment to the impacts and consequences of floods and droughts in order to better ensure sustainable development in the country.</p>	<p><u>National</u></p> <p>N.2.3. Conduct a diagnosis of structural reliability and a geotechnical and hydraulic assessment of all conservancy dams and drainage and irrigation systems.</p> <p>N.2.4. Conduct assessment of the vulnerability of the sea defences.</p> <p>N.2.5. Planning and implementation of mitigation/repair works for conservancy dams, drainage and irrigation systems based on vulnerability assessments. Establishment of a mitigation plan for conservancy dams, drainage and irrigation systems.</p> <p>N.2.6. Planning and implementation of mitigation/repair works in sea defences based on vulnerability assessments. Establishment of a mitigation plan for sea defences.</p> <p>N.2.7. Build capacity for regular inspection and maintenance of conservancy dams, sea defences and drainage systems (personnel, training, equipment, vehicles, materials, pumps, trucks, etc. as an ongoing activity).</p> <p>N.2.8. Design of emergency plans for breach or overflow in conservancy dams and sea defences (including allocation of personnel and equipment for response in the case of breaches or overflow in conservancy dams and sea defences).</p> <p>N.2.9. Conduct risk assessment studies to determine the feasibility of relocating specific human settlements in high risk areas.</p> <p><u>Regional</u></p> <p>R.2.1. Allocation of personnel and equipment for regular clean up/maintenance and inspection in conservancy dams, municipal drainage systems, channels, culverts, sluices/kokers, ducts, outlet, etc.</p> <p>R.2.2. Training of personnel at the regional and local levels in identified areas for prevention/mitigation.</p> <p>R.2.3. Design of maintenance and clean-up plans at the regional and local levels</p>	<p>2.3. Vulnerability assessment of sea defences conducted.</p> <p>2.4. Vulnerability assessments of conservancy dams, drainage and irrigation systems conducted.</p> <p>2.7. Resources for inspections/maintenance/clean up at national and regional/local levels identified and quantified and hired/trained/purchased.</p> <p>2.8. Emergency plans for breach or overflow in conservancy dams and sea defences designed</p> <p>2.16. Maintenance and clean-up plans designed</p>	<p>Vulnerability Assessment of Sea and River Defences and Conservancy Dams Project</p> <p>Capacity Building for Maintenance of Drainage and Irrigation Systems Project</p>

Financial Protection and Risk Transfer Related SO and Activities		Outcome 4 Mandatory risk transfer mechanisms in place for buildings, housing and infrastructure at risk. Outcome 5 Guyana insured with the CCRIF at the regional level.	
SO	Activities	Outputs	Projects
SO3 To promote the transfer of risk in order to reduce direct losses due to the impacts of floods and droughts affecting the government, private sector and society in general in Guyana.	<p><u>National</u></p> <p>N.3.1. Establish mandatory insurance for housing, agriculture activities and key/critical infrastructure in the DRM Bill.</p> <p>N.3.2. Develop and disseminate guidelines for the implementation of risk reduction measures for accessing flood insurance.</p> <p>N.3.3. Identification of risk transfer financing mechanisms and their requirements for Guyana in coordination with regional and international organizations, insurance companies and farmers.</p> <p>N.3.4. Identify requirements to access CCRIF insurance for floods (excess rainfall).</p> <p>N.3.5. Acquire CCRIF membership.</p> <p>N.3.6. Engage regional insurance with the CCRIF to access insurance for flooding in Guyana.</p> <p>N.3.7. Develop a national financial strategy for the management of the impacts of extreme events.</p> <p><u>Regional/Local</u></p> <p>R.3.1. Design and deliver workshops to train government officials and communities in risk transfer financial mechanisms.</p> <p>R.3.2. Develop and disseminate guidelines for best building practices to facilitate access to insurance.</p> <p>R.3.3. Develop and disseminate guidelines for best practices to ensure access to insurance to crops and animals.</p>	<p>3.1. Flood and drought insurance made mandatory in legislation for housing, agriculture activities and key/critical infrastructure.</p> <p>3.2. Guidelines for the implementation of risk reduction measures for accessing insurance (flood and drought) developed and disseminated.</p> <p>3.3. Risk transfer and financial mechanisms identified for floods and drought.</p> <p>3.4. Guyana insured for flooding (excess rainfall) with the CCRIF.</p> <p>3.5. Training workshops to government officials and private sector on risk transfer and financial mechanisms conducted.</p> <p>3.6. Government buildings and housing, and critical infrastructure in key sectors such as tourism, education, health, agriculture (including the private sector) insured against floods and drought.</p> <p>3.7. National financial strategy for the management of the impacts of extreme events developed</p>	<p>Flood and Drought Insurance Project</p> <p>CCRIF Insurance Project</p> <p>Contingency Funding and Financial Management Strategy Project</p>

Preparedness/Response Related SO and Activities		Outcome 6 Organizations at all levels with a high level of preparedness to provide an adequate and timely response to the impacts and consequences of floods and droughts.	
SO	Activities	Outputs	Projects
SO4 To establish a continuous preparedness process in Guyana, ensuring a consistent adequate level of preparedness and response capacity for responding to floods and droughts through the ongoing improvement of contingency planning and emergency resources at all levels.	<p><u>National.</u></p> <p>N.4.4. Revision of the CDC structure, positions, functions, legislative authority (as embedded in the draft DRM Bill and draft DRM Policy (2011)), and name to ensure it is structured as a DRM organization and enabled to address and coordinate all DRM components.</p> <p>N.4.5. Revision of the National Disaster Preparedness and Response Structure with a view to making it a national DRM structure, focused on all DRM components.</p> <p>N.4.6. Revision of all national and regional sub-committees to ensure that together they comprehensively cover all DRM components, covering key hazards, all sectors and all levels.</p> <p>N.4.7. Revision of the National DRR Platform, its role, composition and functions, with a view to DRM.</p> <p>N.4.8. Finalize the establishment and integration of the volunteer corps into the national DRM structure, into preparedness initiatives and into emergency response planning and relevant plans</p> <p>N.4.10. Design and implementation of a national simulation exercise programme for testing and updating plans and ensuring they are well known, practiced and up to date.</p> <p>N.4.12. Assess the need for equipment, hardware and software and technical staff for EWS.</p> <p>N.4.13. Design and implementation of a national DRM training programme</p> <p>N.4.14 Design and implementation of a National DRM Public Education and</p>	<p>4.5. New CDC structure designed reflecting DRM.</p> <p>4.6. Current National Disaster Preparedness and Response Structure revised to reflect DRM and integrating volunteer corps.</p> <p>4.7. Number, composition and terms of reference of all national DRM sub-committees revised to reflect DRM.</p> <p>4.8. All national, regional and local DRM committees and sub-committees established and operating.</p> <p>4.9. National DRR Platform role, functions, composition and terms of reference revised</p> <p>4.12. National simulation exercises programme designed and implemented.</p> <p>4.15. National DRM training programme designed and implemented.</p> <p>4.16. National DRM Public Education and Awareness Plan and Strategy designed and implemented.</p> <p>4.17. New NEOC structure, role & responsibilities</p> <p>4.18. Personnel and equipment for NEOC hired/trained/purchased.</p> <p>4.19. National EOC manual and SOPs revised.</p> <p>4.20. Regional and local EOC guidelines designed.</p> <p>4.21. Regional and local DRM committees and sub-</p>	<p>EOC Improvement Project</p> <p>DRM Training Project</p> <p>DRM Simulation Exercises Project</p> <p>National DRM Public Education and Awareness Plan and Strategy Project</p> <p>Improving the National DRM Structure and Organizations Project</p>

	<p>Awareness Plan and Strategy.</p> <p>N.4.15. Revision of NEOC structure, roles and responsibilities and then revision of NEOC manual, SOPs, staffing and equipment.</p> <p>N.4.16. Design of model regional and local EOC manuals to be adapted at regional and local levels.</p> <p>Regional</p> <p>R.4.1. Establish regional DRM committees including regional DRM sub-committees, ensuring that all DRM components are addressed.</p> <p>R.4.2. Establish all local DRM committees (i.e. neighbourhood or community district DRM committees and EOCs) including local DRM sub-committees, ensuring that DRM components are addressed.</p> <p>R.4.3. Design, establish and properly equip all regional EOCs.</p> <p>R.4.4. Design, establish and properly equip all local EOCs.</p> <p>R.4.7. Design and deliver a community-based DRR/DRM capacity building programme.</p>	<p>committees established and operating.</p> <p>4.22. Regional and local EOCs established.</p> <p>4.23. Personnel and equipment for EOC hired/trained/purchased.</p>	
Preparedness/Response Related SO and Activities		Outcome 7 All needed laws and policies completed, and all plans completed, revised and tested for IDRM in Guyana.	
SO	Activities	Outputs	Projects
<p>SO4</p> <p>To establish a continuous preparedness process in Guyana, ensuring a consistent adequate level of preparedness and response capacity for responding to floods and droughts through the ongoing improvement of contingency planning and emergency resources at all levels.</p>	<p>National</p> <p>N.4.1. Design/revision/finalization of the DRM Bill, including integration of the relevant aspects of the NIDRMP.</p> <p>N.4.2. Revise the draft DRM Policy (2011) to ensure it adequately covers all five DRM components, and is comprehensive and compatible with the NIDRMP as well as supporting and aligned with the revised DRM Bill. Ensure gender, environmental and CC issues are also considered.</p> <p>N.4.3. Design of other relevant policies (such as evacuation, shelter management policy, relief policy, donations policy, waste disposal) and revision of existing legislation to ensure comprehensive integration of DRM, gender, environmental and CC issues, and compatibility with the NIDRMP.</p> <p>N.4.9. Establish a national emergency planning process, including continuous</p>	<p>4.1. DRM Bill designed and enacted.</p> <p>4.2. Draft DRM Policy revised.</p> <p>4.3. DRM (including gender, environmental and CC issues) introduced in existing legislation in Guyana for all sectors (health, education, agriculture, sea defence, environment, etc.).</p> <p>4.4. New DRM policies designed (shelter management, evacuation, relief, donations, waste disposal).</p> <p>4.10. Current emergency plans revised and harmonized.</p> <p>4.11. Drought emergency response plan designed.</p> <p>4.13. Regional and local emergency response plans designed (flood and drought).</p> <p>4.14. Revision and testing of EWS for floods and</p>	<p>Legislation and Policies Project</p> <p>Early Warning Systems Enhancement Project</p> <p>Emergency Planning Project</p>

	<p>updating and an assessment of linkages between and consistency/harmonization among all plans at all levels</p> <p>N.4.11. Enhancement of the EWS Plan for flood and drought.</p> <p>N.4.17. Identification of specific measures to integrate gender issues into DRM processes.</p> <p><u>Regional/Local</u></p> <p>R.4.5. Design and test emergency response plans at the regional level and ensure they are compatible with those at the national and local levels.</p> <p>R.4.6. Design and test emergency response plans at the local level and ensure they are compatible with those at the regional and national levels.</p>	design of EWS for drought.	
Recovery Related SO and Activities		<p>Outcome 8 Organizations at all levels adequately prepared to start recovering immediately after the floods and droughts in Guyana.</p> <p>Outcome 9 A National Contingency Fund established and operating in the country</p>	
SO	Activities	Outputs	Projects
<p>SO5</p> <p>To establish recovery mechanisms from the impacts of floods and drought to ensure the continuity of operations of the government, the private sector and communities through early recovery, business continuity, rehabilitation and physical and social reconstruction initiatives.</p>	<p><u>National</u></p> <p>N.5.1. Design a National Early Recovery Plan for floods that include actions for all three levels: national, regional and local.</p> <p>N.5.2. Design a National Early Recovery Plan for droughts that include actions for all three levels: national, regional and local.</p> <p>N.5.3. Design of COOPs and BCP guidelines for the government and the private sector based on vulnerability assessments.</p> <p>N.5.4. Design of COOPs for government offices and key/critical national infrastructure based on vulnerability assessments.</p> <p>N.5.5. Design of BCPs for the private sector.</p> <p>N.5.6. Design and delivery of a national training programme for COOPs and BCPs.</p> <p>N.5.7. Revise/update and enhance the National Contingency Fund and its</p>	<p>5.1. National Early Recovery Plan for floods designed.</p> <p>5.2. National Early Recovery Plan for droughts designed.</p> <p>5.3. Guidelines for the design of COOPs and BCPs for the government and the private sector designed.</p> <p>5.4. Awareness sessions to promote COOPs and BCPs conducted.</p> <p>5.5. Training COOPs and BCPs workshops delivered</p> <p>5.6. COOPs and BCPs designed for government and private sector.</p> <p>5.7. Contingency Fund for floods and droughts mechanisms revised.</p>	<p>Early Recovery Project</p> <p>Contingency Funding and Financial Management Strategy Project</p>

	<p>mechanisms, including addressing the enabling environment.</p> <p>N.5.8. Hold awareness raising sessions for government and the private sector about the need for recovery, COOPs and BCPs in Guyana.</p> <p><u>Regional/Level.</u></p> <p>R.5.1. Design COOPs for government offices and key/critical infrastructure at the regional and local levels.</p> <p>R.5.2. Design of BCPs for the private sector at the regional and local levels.</p> <p>R.5.3. Workshops for training in COOPs and BCPs for the regional and local levels.</p>		
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Annex VII – Summary of Possible Sources of Funding

Name of Project	Objectives	Description	Funding	Period
<p>EU-funded Project⁶⁴ Implemented through CDB and CDEMA</p>	<p><i>R1 - Capacity of the CDEMA CU and National Disaster Offices Strengthened for Implementation of CDM</i></p> <p>i. Institutional Capacities of <i>National Disaster Offices</i> in the CARIFORUM region are strengthened, through training and capacity building.</p> <p>ii. Strengthened national-level mitigation, management and coordination of recovery and rehabilitation from natural hazards, and the effects of climate variability and change.</p> <p><i>R2 – Improved National and Regional Resilience through Strengthened Early Warning, National Risk Profiling and Community-based DRR</i></p> <p>i. National and regional capacities for EWS are strengthened.</p> <p>ii. Improved integration of disaster risk considerations into planning and decision-making frameworks at national and sub-national levels in selected CARIFORUM countries.</p> <p>iii. Increased resilience at the community level in CARIFORUM countries to the challenges posed by natural hazards and climate events.</p> <p><i>R3 – Sector Resilience Strengthened in Key Sectors</i></p> <p>i. Critical infrastructure in the transportation and water sector in CARIFORUM countries is more resilient to natural hazards and prepared for climate change and climate variability.</p> <p>ii. Barriers removed and opportunities created for mainstreaming DRR and CCA in the public sector, particularly, with the ministries of Finance and Economic Development.</p>	<p>This Result Area will focus specifically on these main areas: i) Provision of training to <i>National Disaster Offices</i> and other relevant national and regional agencies that help to strengthen DRM capacity for the national level; ii) Strengthening <i>National Disaster Offices</i> and supporting their implementation of the CDM Strategy through the CDEMA-managed Country Directed Fund. Countries will have the opportunity to select interventions from a suite of activities to strengthen their capacities in a responsive manner, based on key country-specific priorities and challenges.</p> <p>This Result Area (R2) is focused on strengthening resilience at different levels. First, it will address EWS at regional and national levels, building on recent progress made through EU-funded projects and others. The project would therefore promote the collection, sharing and utilization of data in the form of modelling and other decision-making and planning aspects. Activities would be defined with greater clarity through a responsive process. Second, it is focused on the need to establish national risk profiles in countries in the region. These assessments and risk profiles would provide an evidence-based understanding of the type, magnitude and special distribution of disaster risks to which states are most prone. This could greatly assist in strategic planning for response and provide valuable input to development planning decision-making. Lastly, community-based DRR and CCA activities will be targeted through this Result Area, in turn furthering regional progress made in strengthening local-level resilience which needs continued support.</p> <p>This Result Area (R3) will be partially delivered through CDB’s Disaster Management Operation Guidelines (DiMSOG). National and regional agencies will be able to submit proposals for undertaking initiatives in target areas. This will allow the project to be flexible and responsive to national and regional needs and priorities and to allow the most appropriate agencies to undertake the work. For the community-based DRR initiatives, support will be delivered through the multi-donor Community Disaster Risk Reduction Facility (CDRRF) at the CDB, which is focused on CCA and DRR at the community level.</p> <p>This Result Area will be delivered through two components:</p> <p>A. A resilience-based approach to critical infrastructure. This component will be delivered through the following actions:</p> <p>i. Review and adaptation of risk and resilience decision-making standards and approaches for roads and transport infrastructure and water and waste water utility systems;</p> <p>ii. Development of a regional road resilience and regional utility resilience index;</p> <p>iii. Training of assessors in regional road resilience and regional utility resilience index;</p> <p>iv. Pilot application of adapted decision-making tools in CARIFORUM countries; and,</p> <p>v. Identification, preliminary design and costing of feasible technologies for CCA and resilience building for participating pilot countries.</p> <p>B. Mainstreaming DRR and CCA in the ministries of Finance and Economic Development, through: Conducting a Knowledge, Attitude and Perception (KAP) study of the relevant ministries; Based on results of KAP, identifying and developing training, strategies, and tools necessary for mainstreaming DRR and CCA in relevant ministries; and, Pilot mainstreaming in three countries</p>	20 M Euros	2013-2018

⁶⁴ The projects listed in this Annex are additional to those mentioned in the NIDRMP. Those projects might still have funds for the Strategy projects. Further projects may be found, as this list is preliminary.

Name of Project	Objectives	Description	Funding	Period
<p>Community DRR Trust Fund. Implemented through CDB with funding from CIDA, DFID and soon the EU as well.</p>	<p>It is focused on CCA/DRR initiatives at the community level and will be implemented as a responsive Fund: resiliency building</p>	<p>The Community Disaster Risk Reduction Program (CDRRP) is a CDB-managed 6-year trust fund with a budget of US\$ 23.04M, to which CIDA is contributing US\$ 20M, CDB US\$ 2.028M and participating countries US\$ 1.014M as well as in-kind contributions. The programme is designed to reduce the severity of natural hazards and disaster risks and climate change impacts through demonstration projects at the community level. Based on the results of these demonstration projects, it will contribute to the currently limited regional body of extant knowledge on how to increase community resilience in the face of prevalent natural hazards.</p> <p>Programme activities fall under three main components:</p> <p>(1) <u>Demonstration projects</u>: Ideas for such projects will be garnered from referrals from other development partners, and regional organizations such as CDEMA, and a competitive call for proposals from the CDB member countries themselves. For those initiatives that are approved (based on established selection criteria), the programme will enter into agreements with the governments of the states concerned. CDB will then establish baselines, carry out the demonstration projects, and monitor and record the results. It is anticipated the demonstration projects will be undertaken in 15 to 17 communities at an average cost of US\$ 500,000 to US\$ 750,000 each.</p> <p>(2) <u>Knowledge products</u>: From the experience gained with implementation of the demonstration projects, CDB will develop case studies and other knowledge products, such as publications and videos for DRR at the community level. Importantly, this will be evidence-based, building on national baselines and demonstrated results, and will provide documented lessons learned for areas where such documentation was lacking up to now. Finally, the programme will undertake a targeted strategy of dissemination of the new knowledge, case studies and other knowledge products, with a focus on reinforcing the sustainability of the interventions at the community level.</p> <p>(3) <u>Skills and capacities</u>: From the new knowledge of disaster risk mitigation measures at the community level, CDB and regional specialists will train and sensitize government agencies, local officials, community workers and community-based organizations on resources and approaches for tracking, monitoring and reducing natural hazard impacts at the community level. Programme personnel will also devise and test methodologies for inclusion in the CDB's Country Poverty Assessment (CPA) process, in order to enhance them with regard to DRM and Climate Change Adaptation (CCA) vulnerabilities. This will involve the development of guidelines and quality standards for the conduct of disaster risk mitigation-enhanced CPA assessments.</p>	<p>25 M USD</p>	<p>6 Years</p>
<p>CDM Harmonized Implementation Programme. Supported by CIDA, AusAID, UKAID with contributions from donors including CDEMA's Participating States</p>	<p>Aimed at enhancing institutional support and community resilience to mitigate and respond to and recover from the adverse affects of climate variability and change and disasters. The programme is unique as it promotes a multi-donor harmonized approach for the support of the enhanced CDM Strategy.</p>	<p>The estimated cost of the programme is US\$ 11,706,192, of which CIDA and the DFID have committed to provide US\$ 7,931,150. Complementary contributions to the broader CDM programme are currently being provided by donor partners, such as the EU, USAID, ACP/EU, Government of Turkey, CDEMA and participating states in the amount US\$ 3,775,042.</p> <p>The programme is a direct contribution to the CIDA Caribbean Disaster Risk Management Program (CDRMP) 2008-2012; the DFID Draft Regional Assistance Plan for the Caribbean 2007-2010 and the enhanced CDM Strategy and Programming Framework 2007-2012.</p>	<p>US \$11,706,192</p>	<p>The 5 year programme ends in December 2014⁶⁵</p>

⁶⁵ Department for International Development (DFID). (2012). *Project Details. Caribbean Comprehensive Disaster Management Harmonised Implementation Programme.* [http://projects.dfid.gov.uk/project.aspx?Project=114170].

<p>Canada Caribbean Disaster Management Fund (CCDNF)</p>	<p>The Canada Caribbean Disaster Risk Management (CCDRM) Fund is one component of CIDA's larger Regional Caribbean DRM Program. The CCDRM Fund is designed to support non-government organizations, community groups as well as government agencies wishing to undertake small-scale projects at the community level to reduce the risks from natural hazards (e.g., floods, droughts, storms and hurricanes) and climate change.</p>	<p>The CCDRM Fund will give priority to small-scale projects designed to strengthen communities to withstand the adverse effects of natural disasters and climate change. The Fund will seek to target low-income and rural communities and populations located in high-risk areas prone to disasters. Proposals should contribute to at least one of the following areas of DRM:</p> <ol style="list-style-type: none"> 1. Building the capacity of communities and local level organizations in disaster preparedness, risk reduction, risk prevention and resilience building. 2. Improving coordination and collaboration between community organizations and other partners for undertaking CDM. 3. Strengthening environmental resilience by conserving environmental resources and enhancing environmental conditions. 4. Strengthen structural resilience through improving and/or retrofitting critical physical infrastructure to better withstand the effects of disasters. 5. Improving community awareness and knowledge of DM and related safety procedures such as contingency planning and safe building techniques. 6. Developing and strengthening EWS at the community level for DRR. 7. Enhance adaptation to climate change and climate variability in the community. 	<p>In the range of CDN\$ 25,000 to CDN\$ 75,000 per project (will not exceed the local currency equivalent of CDN \$100,000 for projects up to two years in duration.)</p>	
<p>Emergency Preparedness and Disaster Relief Programme (PED). PAHO.</p>	<p>PAHO has the Emergency Preparedness and Response Programme (PED) for Latin America and the Caribbean (LAC) with the objectives of:</p> <ol style="list-style-type: none"> 1. Improving disaster preparedness in the health sector 2. Protecting health services from the risk of disasters 3. Supporting countries to respond to health needs during emergencies 4. Strengthening partnerships with National and international actors <p>With support from the CIDA and the OFDA/USAID. With substantial contributions in 2011 from the Department of Humanitarian Aid and Civil Protection of the European Commission (ECHO); Spanish Agency for International Development Cooperation (AECID); DFID; Bureau of Population, Refugees and Migration of the US Department of State; World Bank and the Government of Finland.⁶⁶</p>	<p>PAHO supports Caribbean countries in the design of Health Sector Disaster Plans and in vulnerability assessment and mitigation of health facilities. PAHO provides disaster relief assistance related to health after disasters.</p>	<p>Unknown.</p>	<p>PAHO support to Caribbean countries is continuous.</p>

⁶⁶ Emergency Preparedness and Disaster Relief Programme (PED). (2011). *Annual Report*. PAHO.

<p>CCRDR. Canadian Red Cross. Joint Initiative of the Canadian Red Cross, the International Federation of the Red Cross and CIDA to enhance community resilience to disaster risk in the Caribbean region.</p>	<p>To enhance community resilience to disaster risk in the Caribbean region at the Regional, state and community levels.</p>	<p>More specifically, the project:</p> <ol style="list-style-type: none"> 1. Supports civil society engagement in the implementation of a CDM strategy, through knowledge and experience sharing with regional and national actors to prioritize vulnerable communities; 2. Establishes a DRR Reference Centre in Barbados to provide technical training and expert advice and promote community resilience in the Caribbean; and 3. Provides direct community-based DRR programming through three Red Cross National Societies (Dominica, Jamaica and Guyana) in collaboration with national DM agencies and other partners. Forty-five (45) communities (equally divided between Jamaica, Guyana and Dominica) will have successfully completed a DRR process (risk assessment, preparedness teams, mitigation projects) by the end of the 3-year sub-project. 	<p>CDN\$ 3,458,775.00 provided by CIDA.</p>	<p>Three years: January 2011- December 2013</p>
<p>Global Facility for Disaster Risk Reduction (GFDRR). World Bank.</p>				
<p>Caribbean Catastrophe Risk Insurance Facility. Excess Rainfall Coverage.</p>	<p>To provide coverage of excess rainfall.</p>	<p>CCRIF's excess rainfall coverage will be produced separately from the currently available hurricane and earthquake policies. The product aims to reasonably replicate the overall impacts of extreme rain events and will be offered to Caribbean governments in 2010.</p>	<p>To be determined by the country insured and the CCRIF and the particular characteristics of the disaster.</p>	<p>Excess rainfall coverage offered to CCRIF member countries from 2010 (Guyana is not Member Country)</p>

<p>Caribbean Catastrophe Risk Insurance Facility. Climate Risk Adaptation and Insurance in the Caribbean.⁶⁷</p>	<p>To design and implement products that combine risk reduction and insurance to protect the livelihoods of low-income groups in the Caribbean.</p> <p>The programme helps vulnerable farmers and day labourers in the Caribbean adapt to the impacts of weather-related extreme events by linking loss avoidance and reduction (such as adaptive agricultural techniques, building safer structures) with financial risk management tools.</p>	<p>The “<u>Loan Portfolio Cover</u>” (LPC) is a trigger-based insurance policy designed to provide portfolio level protection against loan default for lender institutions such as development banks and credit unions that have significant portfolios of individual and MSME loans exposed to weather risks.</p> <p>An important feature of the LPC is an SMS-based warning system for bank clients. This system is a technically simple way to inform bank clients about upcoming weather events via mobile phones. People will receive explicit warning in case of upcoming weather events and so they have the possibility to react in time and to secure their assets. Such a system – properly managed and accepted by clients - could lead to a significant reduction of loan default losses, which is in fact one of the intended side effects.</p> <p>The “<u>Livelihood Protection Policy</u>” (LPP) is a trigger-based insurance policy designed to help low-income people cope with the severe impacts on their livelihoods following extreme weather events. The general impact of such a policy would be to stabilize the financial situation of vulnerable people and avoid the necessity to apply other risk management strategies (use of savings, sale of assets, family loan, credits etc.) that puts additional pressure on people’s financial situation and that threaten to send them back into poverty. The main objective is to provide individuals with sufficient money as soon as possible after an extreme weather event to allow them to quickly start rebuilding their farm/small enterprise and/or livelihood. A further (secondary) benefit could be that such policies could serve as (conditional) collaterals for loans, as banks no longer run the risk of losses from natural hazards losses within their portfolios and, therefore, should be willing to offer loans to such clients.</p> <p>An important feature of the LPP is an SMS-based warning and claims notification system. The SMS warning system is a technically simple way to inform policyholders about upcoming weather events via mobile phones. People will receive explicit warning in case of upcoming weather events and so have the possibility to react in time and secure their assets. Such a system – properly managed and accepted by policyholders - could lead to a significant reduction of losses, one of the desired side effects.</p>	<p>2 M Euros</p>	<p>2011-2014</p>
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⁶⁷ (n.d.). *Climate Risk Adaptation and Insurance in the Caribbean, Project Brochure No. 2*. [http://www.ccrif.org/sites/default/files/CRAI/ClimateRiskAdaptationInsurance_Caribbean_brochure.pdf].

<p>DRM Sub-Regional Program under the Asia-Caribbean Pacific (ACP)-EU Natural Disaster Facility</p>	<p>The overall objective of the Disaster Risks Management Sub-Regional Program for the Caribbean is to enhance the human safety level of the populations and to reduce the social, economic and environmental costs of natural disasters in the Caribbean region.</p> <p>The project will:</p> <p>(i) Provide technical, institutional, resource and capacity-building assistance to Caribbean ACP States in National DRM to support the implementation of the CDM Strategy and Framework;</p> <p>(ii) Seek to reduce the vulnerability levels of selected communities through a process of identifying, analyzing and evaluating risk, leading to the development of strategies to treat/mitigate existing and future risk;</p> <p>(iii) Facilitate the translation of the model evacuation policy into French for distribution to French-speaking states.</p> <p>The Project seeks four results:</p> <ol style="list-style-type: none"> 1. Increased Regional Coordination and Effectiveness of CDEMA 2. Improved National Disaster Plans 3. Improved Coordination of Disaster Coordination 4. Enhanced Community Resilience Planning 	<p>This project directly supports the CDM Strategy and Programming Framework, Priority Outcome 3, which promotes “<i>mainstreaming of DRM at national levels and incorporation into key sectors of national economies (including tourism, health, agriculture and nutrition)</i>”; and Priority Outcome 4, which promotes “<i>the enhancement of community resilience in CDEMA states/territories to mitigate and respond to the adverse effects of climate change and disasters.</i>” The project will be beneficial to the directors of <i>National Disaster Offices</i> within the CDEMA Participating States in undertaking planning and institutional arrangements for building more resilient communities. Governments of participating states of CDEMA will ultimately benefit from improved capacity for making planning arrangements and become better prepared and more resilient communities in the face of future disasters.</p>	<p>The EU has made available €1.8 million for defined activities to be implemented under the Disaster Risks Management Sub-Regional Program in the Region.</p>	<p>A 2-year period, ending November 14, 2011. (However, there might be some funds left.)</p>
<p>CDB. Proactive Assistance to Bank Borrowing Members (BMCs) to Reduce Risk.</p>	<p>To provide Proactive Assistance to BMCs to reduce risk through:</p> <p>(i) institutional foundation for DRM and CCA strengthened;</p> <p>(ii) CDM and CCA knowledge managed and available to users;</p> <p>(iii) DRM and CCA risk reduction measures mainstreamed into different economic sectors;</p> <p>(iv) DRM and CCA risk reduction measures implemented;</p> <p>(v) community resilience enhanced.</p>	<p>BMCs for proactive interventions in DRM and CCA will include grants, loan financing, and blends of loan and grant funds. Programme areas to be considered by CDB under the scope of proactive assistance to BMCs for risk reduction include:</p> <p>(a) institutional strengthening and capacity building for DRM and climate change response;</p> <p>(b) development of databases and monitoring tools for DRM and CCA including support for scientific modelling of climate change;</p> <p>(c) mainstreaming of DRM and CCA into economic and physical planning processes, and business continuity planning;</p> <p>(d) implementation of risk reduction measures (preparedness, mitigation and prevention); and</p> <p>(e) building of community DRM and climate change resilience.</p> <p>CDB can also provide Assistance for Post Disaster Response to Reduce Vulnerability through Emergency Relief Grants (ERG), Immediate Response Loans (IRL) and Rehabilitation and Reconstruction Loans (RRL).</p>	<p>See DiMSOG 2009.</p>	