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Thematic Programme of Action F Integrated flood management

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Relevant regional partners¹

CCCCC, CDEMA, CIMH, GWP-C, IFIs, UNEP
CAR-RCU, UWI

Relevant national partners¹

National Emergency Management
Organisations, Ministries of Finance,
Ministries of Works, Departments
of Planning, government agencies
responsible for drainage and
hydraulic works, irrigation
system managers

Summary

Flood risk ranks high amongst the disaster risks facing Caribbean islands, and considerable work is ongoing in the region under the umbrella of DRM. However, approaches to flood risk management can be fragmented and vary from country to country. Opportunities exist at the regional level to strengthen and harmonise flood risk management tools and planning processes. Ensuring that modelling, mapping and decision making tools are fit for purpose, and that relevant stakeholders have the capacity and mandate to use these tools is crucial to managing flood risk especially as climate changes in future. Furthermore, opportunities exist to take a more strategic, long-term view of flood risk management considering future development in a changing climate, as well as focussing on shorter term disaster responses. This thematic area does not attempt to overlap with the body of work already ongoing in the region, but to strengthen the tools and approaches specific to integrated flood management.

The Programmes in this Thematic Programme of Action focus on the effective management of flood risk in terms of both strategic management and the decision support tools which underpin flood risk management.

Programme F.1 – Integrated flood management policy and planning

Programme Objectives: Supporting planning authorities and NEMOs to take a strategic and integrated approach to managing flood risk

Programme F.2 – Flood risk management tools and evidence

Programme Objectives: Providing decision support tools to support planning departments, NEMOs and other stakeholders to assess and manage flood hazards and risks

¹Partners identified are indicative, not exhaustive, and are intended as a starting point

Integrated flood management								
Programme F.1 – Integrated flood management policy and planning								
Programme Objectives: Supporting planning authorities and NEMOs to take a strategic and integrated approach to managing flood risk								
Alignment with SDGs	6.1 Water supply	6.2 Sanitation	6.3 Water quality	6.4 Water efficiency	6.5 IWRM	6.6 Water ecosystems	11.5 Water related disasters	13 Climate change
Alignment with Regional CARICOM Climate Change Framework	Adaptation policy, strategy, capacity and awareness		Implementing adaptation measures		Low carbon development	Vulnerability reduction		Forest management
Indicative cost	Low cost research and stakeholder engagement work.							
Lead time	Short.							
<p>In order to successfully manage flood risk a policy dialogue on the institutional roles and responsibilities at regional and national level is required. This should include the role of national agencies in guiding development away from areas of high flood risk, and of the most appropriate measures to manage existing flood risk in terms of insurance, investment in physical infrastructure, and operational flood risk management responses. This Programme may contain the following activities:</p> <ul style="list-style-type: none"> • Policy dialogue on current approaches to flood risk management, including sharing best practice from across the region and internationally; • Development of approaches for integrated land and water management in urban areas, incorporating drainage, flooding and wastewater management considerations, and links to issues which exacerbate flooding such as poor land stewardship and solid waste management around watercourses; • High level political awareness to raise the profile of integrated flood management, including the development and enforcement of planning regulations for risk reduction and sustainable development; • Evaluation and appraisal of the costs and benefits of flood risk management options, including the costs of inaction and the financing constraints; • Assessment of the institutional capacity needs for flood risk management; and • Assessment of the public perception of flood risk management in terms of risk preferences, opportunities and constraints to behavioural change. <p>Relevant regional experience: This Programme would integrate within existing work being carried out by CDEMA, and other regional stakeholders working under the CDM strategy and Hyogo Framework for Action. GWP-C is also working on Integrated Urban Water Management (IUWM), which would be relevant to this Programme. UWI is also working on pilot projects in the region which are relevant to public perception and government policy on flood risk management.</p>								

Integrated flood management								
Programme F.2 – Flood risk management tools and evidence								
Programme Objectives: Providing decision support tools to support planning departments, NEMOs and other stakeholders to assess and manage flood hazards and risks								
Alignment with SDGs	6.1 Water supply	6.2 Sanitation	6.3 Water quality	6.4 Water efficiency	6.5 IWRM	6.6 Water ecosystems	11.5 Water related disasters	13 Climate change
Alignment with Regional CARICOM Climate Change Framework	Adaptation policy, strategy, capacity and awareness		Implementing adaptation measures		Low carbon development	Vulnerability reduction	Forest management	
Indicative cost	Low cost policy work, medium cost associated with survey data, tool development and capacity building.							
Lead time	Short, this builds on existing work.							
<p>Accurate and cost effective flood risk modelling and mapping are required to support strategic planning and operational flood risk management. Typically, this will include hazard and vulnerability assessment as well as flood forecasting and warning systems. Progress has been made in developing such tools and approaches over the past decade or so but opportunities exist to build on and harmonise these across the region. This Programme would provide an opportunity for the region to increase the robustness and accuracy of flood risk assessment tools and outputs. A regional approach allows for economies of scale in tool development, data collection, modelling expertise and capacity development. This Programme could incorporate the following activities:</p> <ul style="list-style-type: none"> • National level stakeholder dialogue on the flood risk information products required for a range of decision making, including strategic land and water use planning, development control and operational flood risk management; • Development and harmonisation of technical approaches for flood risk modelling, mapping and forecasting, building on regional and international best practice, and developing methods appropriate to national and site specific flood risk modelling. This should include detailed financial plans for the ongoing support and development of operational systems; • Development of future scenarios of development vulnerability and future hazard risk to investigate the impact of flood risk on future economic development; • Identification of integrated approaches to managing flood risk, including the use of green infrastructure and 'soft' catchment management interventions, through pilot projects; • Development and sharing of key datasets to support flood risk modelling and mapping, including basic hydro-meteorology datasets and high resolution topographic survey data, which is critically absent across much of the region; • Roll out of modelling approaches to generate systematic flood hazard and flood risk datasets across the region, utilising existing asset data such as housing, roads and other critical infrastructure; • Capacity development at regional and national level to ensure effective utilisation and updating of flood risk modelling and mapping outputs; and • Financing plan for continued maintenance and sustainability of a flood risk management toolbox, with technical support capabilities at a regional level, housed within an appropriate regional organisation, and with national focal points. <p>Relevant regional experience: This work builds on and expands the existing work being undertaken by CIMH and will complement national flood risk management activities. UWI is also progressing the development of hydrological and hydraulic flood modelling capabilities through pilot projects in the region. Partnering with CDEMA at the regional level and national stakeholders involved in flood risk management and land use planning will be required to ensure outputs are appropriate and fit for purpose.</p> <p>This Programme could also build on the tools developed through the CHARIM project, in which UWI has been involved.</p>								

Immediate projects identified by regional partners

Regional organisations have identified project concepts within programme areas articulated above which can be implemented in the short term. Relevant regional project concepts for this thematic area and programmes are presented below.

Regional Agency	Possible Regional / International Partner	Confirmed Regional / International Agency Project Partner	Scope / Possible Project Countries	Possible / Proposed National Partners	Project Title	Project Description
GWP-C	UNEP-CAR / RCU, GIZ, CARPHA		Regional	Disaster Agencies, Water Resource Agencies	Integrated Flood Management Demonstration Project	While IFM has been gaining traction and increasingly applied across the globe, this has not been reflected in the Caribbean. In particular, there is little Caribbean awareness and acceptance of the environmentally friendly ecosystem and watershed approaches utilised in IFM. Apart from a few ecological studies, e.g. Boodram (2009), there is little acknowledgement of the ecological values of floodplains and the need to maintain natural riverine processes for ecosystem services. There has been some progress in terms of flood hazard mapping and flood warning systems by national and regional disaster agencies which are key elements of IFM, but these tend to be carried out in isolation of the other aspects of IFM and not incorporated into a holistic IFM approach. Most of the existing IFM research and case studies are derived from large river basins often in temperate areas. There are fewer examples of IFM small island watersheds or from tropical climates. In particular, it is not known how IFM environmentally friendly and ecological approaches can be modified or adapted to suit the tropical small island watershed context. The proposed demonstration project seeks to address the issues outlined above.
	UNEP (GEF/ CREW)				Integrated Urban Water Management	Development of an IUWMM Programme, including integrated Urban Flood Management, wastewater management etc.

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UWI Mona, Dept Of Geography and Geology and Environmental Management Unit		UWI Mona, UWI St Augustine,	Initially Jamaica, then replication to other countries.	Water Resources Authority of Jamaica, Met Service Of Jamaica, ODPEM Jamaica.	Flood risk assessment for the Caribbean with impact of climate variability	Flood hazard mapping and modelling for the watersheds in Jamaica (Yallahs and Negril), and Trinidad and Tobago (Caroni). No detailed flood risk map exists based on social and physical vulnerability. The project would be developed for watersheds studied in past projects for Jamaica and Trinidad and extended to other Caribbean islands. The proposed work entails detailed mapping of infrastructures, costs and damage assessments. It also includes data collection on types of houses and other infrastructures, cost per roof, material of the houses. Physical and social vulnerability assessments and risk maps are important to this project.
CIMH	CDEMA			National Disaster Agencies		Flooding and resultant massive economic losses are common throughout the Caribbean. To address this CIMH has established a real time flood forecasting system. The proposed project builds on the existing system to include forecasting for related disaster phenomenon which are also triggered by high rainfall events.
CDEMA	CIMH			National Disaster Agencies	Development of guidelines for early warning systems for floods	While there has been work on early warning flood systems in the region, for maximum efficiency, certain minimum standards must be met and programmes of an ideal system should be identified. This project seeks to establish these regional guidelines for adaptation and modification as needed at the national level.
CDEMA					Developing a model national disaster volunteer programme	After natural disasters, volunteer support is useful for recovery attempts. A model for managing this human resource would allow for maximum efficiency. This regional model can be adapted to the national context as needed.

CCCCC	Caribbean Community Climate Change Centre
CDEMA	Caribbean Disaster and Emergency Management Agency
CDM	Comprehensive Disaster Management
CERMES	Centre for Resource Management and Environmental Studies
CHARIM	Caribbean Handbook on Risk Management
CIMH	Caribbean Institute of Meteorology and Hydrology
DRM	Disaster Risk Management
GIZ	Gesellschaft für Internationale Zusammenarbeit
GWP-C	Global Water Partnership Caribbean
IBRD	International Bank for Reconstruction and Development
IFIs	International Financial Institutions
IFM	Integrated Flood Management
IUWM	Integrated Urban Water Management
NEMOs	National Emergency Management Organisations
OECS	Organisation of Eastern Caribbean States
UNEP CAR/ RCU	United Nations Environmental Program Regional Coordinating Unit for the Caribbean Environment Programme
UWI	University of the West Indies



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