

## LESSONS LEARNT ON EARLY WARNING SYSTEMS FOLLOWING THE CARIBBEAN 2017 HURRICANE SEASON

<b>Project Title</b>	<b>Lessons Learnt on Early Warning Systems Following the Caribbean 2017 Hurricane Season</b>	
<b>Project Reference</b>	CREWS/RProj/05/Lessons Learnt Caribbean	
<b>Geographic coverage</b>	Regional	
<b>Timeframe</b>	8 months, December 2017 – July 2018	
<b>Implementing Partner</b>	World Meteorological Organization (WMO)	
<b>Summary of overall cost of the Project</b>	a. Project/Program Amount :	USD 280,000
	b. Implementing Partner fees :	USD 36,000
	c. Total:	USD 316,000
	d. Other resources	USD 100,000 from Canada Government funded project: 'Building Resilience to High-Impact Hydrometeorological Events through Strengthening Multi-Hazard Early Warning Systems'
<b>Additional Implementing Partners</b>	No	
<b>Allocations requested by additional implementing Partners</b>	a. Project/Program Amount :	not applicable
	b. Implementing Partner fees :	not applicable
	Total:	not applicable
<b>Main objective</b>	<b>Draw lessons regarding the end-to-end aspects of early warning systems in the Caribbean following the 2017 hurricane season and reassess and validate the priority investments needs to guide further CREWS and other projects.</b>	
<b>Project sponsor</b>	Caribbean Institute for Meteorology and Hydrology (CIMH)	
<b>Other partners</b>	Caribbean Disaster Emergency Management Agency (CDEMA).  Through CIMH and CDEMA, the lessons will be drawn from a consultative process with the states/territories affected by the hurricanes and in particular Dominica, St Kitts & Nevis, St Martens, St Barthelemy, St Martin, Turks and Caicos, Dominican Republic, Antigua and Barbuda, Cuba, Montserrat and Haiti. Other partners involved in early warning systems in the region will be consulted. As well as the Weather Services of countries and territories in the region.  World Bank and UNISDR will assist the process.	
<b>Initial state of play - project rationale</b>	a. Vulnerability, exposure to risks, disasters impacts (on people and economy)	The passage of Hurricanes Irma and Maria through the Lesser and Greater Antilles in September 2017 resulted in significant loss of life and monumental damage which will negatively impact the economies of these states territories for the foreseeable future and perhaps up to a decade or more in the case of the Commonwealth of Dominica. In the wake of both storms, it is anticipated that all aspects of

		<p>the resilience of Caribbean states and dependent territories to severe weather and climatic events will be assessed and appropriate solutions developed and implemented as was the case following the severe drought of 2009-2010 that had significant impacts on the Caribbean.</p> <p>Placed within the context of current climate change scenarios for the Caribbean, in particular, the prediction that climate change will result in more intense and likely catastrophic hurricanes and an increasing frequency of deep convective rainfall events, the Hurricanes Irma and Maria provide significant opportunities to assess the resilience of the Caribbean states and territories (as individual states or interconnected social systems, economies and markets) for future climate scenarios. The passage of the two systems therefore provides a unique opportunity for regional governments and the international community to reassess priority actions and investment strategies aimed at increasing the resilience of Caribbean states and territories to extreme weather and climate events.</p>
	b. Status of the EWS, DRM agencies and NHMSs, actors / players present	A key part of this reassessment has to be in the area of weather and climate early warning systems and data/information systems which represent key components of the region's resilience framework. Key components of the weather and climate early warning system in the Caribbean include but are not limited to (i) the capability (inclusive of human and technical capacity) of National Meteorological and Hydrological Services and the arrangements between services, (ii) national and regional communications infrastructure, (iii) observation and warning networks, (iv) data sharing arrangements between national and regional entities, the public and sectors and (v) the integration of NMHSs operational procedures and information with downstream users such as national and regional disaster management offices. From the assessment, the necessary improvements can be designed and implemented to improve the performance and resilience of the system.
	c. Projects and programs dealing with EWS and hydromet under implementation or preparation	There is the potential for a significant level of funding, in place, or planned, for strengthening weather and climate observation and early warning networks and platforms in the Caribbean.
	d. Positioning of CREWS support: complementarity and synergies with the existing programs	If properly aligned, outcomes from this project could significantly enhance the performance and resilience of weather and climate observation and early warning systems in the Caribbean.
Project design	a. Project Outputs	<p><b>Component 1: A comprehensive evidence-based multi-agency assessment of the regional climate and hydro-meteorological early warning systems to be carried out taking into consideration evidence emerging from the performance of local, national and regional early warning system associated with Hurricanes Irma and Maria.</b></p> <p>The assessment should be completed within a 3-6</p>

		<p>month period to minimize the impacts on the schedules of existing projects.</p> <p>The results of the assessment would then inform the implementation of the CREWS project as well as inform investments under other projects currently being implemented or planned.</p> <p>The assessment will align with internationally agreed principles for effective early warning and the related CREWS analytics methodology.</p> <p>Activity 1.1: Expert reviews of early warning effectiveness in affected countries for each of the elements</p> <p>Activity 1.2: Regional consultations on findings of the review targeting ongoing post-disaster assessments.</p> <p>Activity 1.3: Develop costed recommendations for strengthening end-to-end early warning systems in the region</p> <p><b>Component 2: Strengthen immediate weather forecasting over the Eastern Caribbean with particular focus on impacted states and territories</b></p> <p>Timeframe: 8 months</p> <p>It is recognized that the SWFDP, when fully implemented and mainstreamed, has the potential to be a critical part of the EWS infrastructure in the Caribbean. The primary goal of the early release of funds will be increase the lead times of severe weather forecasts to all impacted governments and states to take the appropriate actions needed to protect vulnerable populations.</p> <p>Activity 2.1: Development of the SWFDP Website with Meteo France Martinique.</p> <p>Activity 2.2: Training on NWP/EPS interpretation and use - a week training at CIMH for SWFDP participating countries.</p> <p><b>Component 3: strengthening the gender perspective of early warning systems in the Caribbean post-2017 hurricane season</b></p> <p>Timeframe: 8 months</p> <p>Activity 3.1: Contribute from a gender perspective to the expert reviews of early warning effectiveness in affected countries for each of the elements</p> <p>Activity 3.2 Hold a training workshop with Women Groups, local implementation partners to develop an overall understanding of gender-based needs for early warning systems in the region, related roles and responsibilities and gender inclusive decision making.</p>
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	b. Implementing time frame	Component 1: 3-6 months Component 2: 8 months Component 3: 8 months
	c. Contribution to CREWS Programming Framework	This project will contribute to the achievement of the following outputs in the CREWS Programming framework: <ul style="list-style-type: none"> <li>Regional (cascading) weather and climate monitoring and prediction products with facilitated access for CREWS Project Countries;</li> <li>Pooled (regional) trainings for high impact sectors (disaster risk management, health, agriculture)</li> <li>Regional monitoring, forecasting and warning products for extreme events (flood, drought, extreme heat, other weather events);</li> <li>Regional inter-governmental organizations strengthened to support NMHSs and early warning capacities.</li> <li>NMHSs' service delivery improved including development of impact based capacity and tailored information for risk management.</li> <li>Targeted education and public awareness programs available for warning systems and related public action.</li> </ul>
<b>Organization and operating procedure</b>	a. Institutional framework	A Coordinating Programme Officer will be appointed for the project at CIMH. Guidance and advise will be provided by a Steering Group composed of CIMH, CDEMA, WMO, World Bank, UNISDR, CREWS Secretariat and experts from Weather Services of affected States Territoires.
	b. Monitoring and evaluation system	The World Meteorological Organization (WMO) adopted the Results-based Management Framework in 2008 with four pillars namely WMO Strategic Plan, WMO Operating Plan, WMO Results-based Budget and WMO Monitoring and Evaluation (M&E) System. The WMO M&E System is used to monitor results at two levels, namely outputs/deliverables and outcome, that is to collect, analyse and report monitoring data at two levels: output and outcome. Monitoring at the outputs/deliverables level is intended to provide the management with information to improve the implementation of activities to realize the desired outputs for the benefit of Members. The monitoring at output level tracks implementation of activities in the WMO Operating Plan in terms of status, timeliness, cost, outputs, risks and constraints. Monitoring at the outcome level is focused on establishing the impacts of the achieved results on Members based on the Key Performance Indicators (KPIs).
<b>Project viability and sustainability</b>	a. Main identified risks	This is a low risk project. Possible risks include regional organization being overwhelmed with demand and initiatives, requiring additional capacity to support this project.
	b. Critical assumptions	Given the low risk nature of this project, in case of capacity issue in the regional organization, the Implementing Partners will
	c. Judgment on the project sustainability	The nature of the projects deliverables, namely to guide upcoming larger investment flows in the region, reflect a strong level of sustainability of the project results.