



The Programme for Building Regional Climate Capacity in the Caribbean (BRCCC Programme)

**Component 4.1: Development of the Regional Climate Centre (RCC)
Technical Area III: Development of Seasonal Forecasting Capabilities to apply to
Climate-Sensitive Sectors in the Caribbean**

**TERMS OF REFERENCE FOR
THE CONSORTIUM OF REGIONAL SECTORAL EARLY WARNING INFORMATION SYSTEMS
ACROSS CLIMATE TIMESCALES (EWISACTS) COORDINATION PARTNERS**

Prepared by: The Caribbean Institute for Meteorology and Hydrology (CIMH)
The Caribbean Agricultural Research & Development Institute (CARDI)
The Caribbean Disaster Emergency Management Agency (CDEMA)
The Caribbean Public Health Agency (CARPHA)
The Caribbean Tourism Organization (CTO)
The Caribbean Hotel & Tourism Association (CHTA)
The Caribbean Water and Wastewater Association (CWWA)

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1. BACKGROUND

1.1. The Programme for Building Regional Climate Capacity in the Caribbean (BRCCC Programme)

The impacts of climate variability and change pose a serious threat to the social and economic development of the Caribbean region. These impacts include damage and loss associated with changing weather and precipitation patterns, more frequent and intense storms, more frequent and intense flooding and drought; sea level rise that is accelerating coastal erosion and threatening infrastructure; saltwater intrusion to coastal aquifers that threatens freshwater supplies; and increased air and sea surface temperatures that influence hurricane severity. These impacts are projected to be exacerbated in the coming years, threatening infrastructure, energy production, economic activity, agricultural productivity, coastal ecosystems and reefs, fisheries, industrial production, urban and rural development, community livelihoods and well-being.

The Programme for Building Regional Climate Capacity in the Caribbean (BRCCC Programme) funded by the generous support of the American people through the United States Agency for International Development (USAID), executed by the World Meteorological Organization and implemented by the Caribbean Institute for Meteorology and Hydrology (CIMH); aims to assist the CIMH in building its institutional capacity and infrastructure to deliver climate products and services to climate sensitive sectors in the Caribbean region as part of its goal to become the WMO Regional Climate Centre (RCC) for the Caribbean. More importantly and in combination with achieving the goal of CIMH being an RCC, the BRCCC Programme also seeks to address the constraints outlined above.

The support being provided by the USAID are to strengthen the CIMH to support its ability through:

1. Supporting institutional enhancements;
2. Increasing the range of products and services delivered to stakeholders;
3. Enhancing human and technical capacities at the CIMH and in National Meteorological and Hydrological Services (NMHS) in the Caribbean; and
4. Improving service delivery mechanisms to national, regional and international stakeholders.

1.2. Early Warning Information Systems Across Climate Timescales (EWISACTs)

Climate variability and change occur on timescales ranging from sub-seasonal to seasonal to decadal and beyond, making it necessary to develop effective Early Warning Information Systems across Climate Timescales (EWISACTs). An important component of the BRCCC Programme is the establishment of EWISACTs. Early Warning Systems (EWS)

are recognized by the *Regional Comprehensive Disaster Management (CDM) Strategy and Programming Framework 2014-2024*¹ and the *Implementation Plan for the 'Regional Framework for Achieving Development Resilient to Climate Change'*² as critical to the effective management of climate-related disasters and adaptation to climate variability and change. EWISACTs can improve the effectiveness and efficiency of sustainable planning, adaptation and mitigation strategies across major weather and climate-sensitive socio-economic sectors. If well aligned with priority sectors, sectoral EWISACTs can support regional growth resilient to climate risks.

2. THE CONSORTIUM OF REGIONAL SECTORAL EWISACTS COORDINATION PARTNERS

A formalized sectoral mechanism in which regional sectoral partners are supported by CIMH to drive the development and implementation of sectoral EWISACTs, not only fosters sectoral ownership of this agenda, but also lays the foundation for the sustainability of sectoral EWISACTs long after the completion of the BRCCC Programme. The Consortium of Regional Sectoral EWISACTs Coordination Partners is therefore conceived to be a key mechanism to champion the design, development and delivery of tailored climate products and services in the agriculture and food security, disaster risk management, energy, health, tourism and water sectors³. The Consortium of Regional Sectoral EWISACTs Coordination Partners will work together in raising sectoral awareness about EWISACTs and formalizing an approach to the co-development of climate products and services. By providing an opportunity for representing sector issues, positions and recommendations related to weather and climate at the meetings of the Consortium of Regional Sectoral EWISACTs Coordination Partners, the Consortium is intended to facilitate the consultative and participatory processes necessary for successful EWISACTs development and implementation.

2.1. Role

The Consortium of Regional Sectoral EWISACTs Coordination Partners will:

1. Provide strategic and technical guidance and support to CIMH on the development and implementation of regional sectoral EWISACTs;
2. Advise on the design, development and delivery of tailored climate products and services in six climate-sensitive sectors;
3. Provide a forum for initial and periodic review of relevant technical documents related to sectoral climate products and services;

¹ Developed by the Caribbean Disaster Emergency Management Agency (CDEMA) in 2014.

² Developed by the Caribbean Community Climate Change Centre (CCCCC) in 2011.

³ The Global Framework for Climate Services (GFCS) has five initial priority sectors: agriculture and food security, water, health and disaster risk reduction and energy. The tourism sector has been identified as an additional priority sector for the Caribbean region.

4. Identify critical gaps and opportunities for inter-sectoral linkages and synergies at the regional and national levels;
5. Facilitate the visibility of sectoral EWISACTs at the regional and national levels; and
6. Nurture opportunities to promote technology and knowledge transfer and facilitate the sustainability of sectoral EWISACTs outputs.

2.2. Chairmanship

The Consortium will be chaired by the Principal of the CIMH or the Principal's designate. The Chair is responsible for:

- Liaising, where necessary, with members of the Consortium to enhance collaboration and partnership;
- Convening meetings of the Consortium;
- Ensuring that an accurate record of the discussions and decisions of each meeting is prepared and forwarded to Consortium members; and
- Ensuring adequate follow-up on the meeting decisions of the Consortium.

2.3. Membership

In addition to the Chair, the members of the Consortium will be representatives from lead regional sectoral institutions with technical expertise in the areas of agriculture and food security, energy, health, disaster risk management, tourism and water:

1. Agriculture and food security – Caribbean Agricultural Research & Development Institute (CARDI);
2. Health – Caribbean Public Health Agency (CARPHA);
3. Disaster risk management – Caribbean Disaster Emergency Management Agency (CDEMA);
4. Tourism - Caribbean Tourism Organization/Caribbean Hotel & Tourism Association (CTO/CHTA);
5. Water – Caribbean Water and Wastewater Association (CWWA); and
6. Chair and climate services provider – Caribbean Institute for Meteorology and Hydrology (CIMH).

Particular consideration will be given to a regional organisation that will support the Energy portfolio of the Consortium.

The Consortium reserves the right to review membership status periodically and make adjustments in this regard.

The specific responsibilities of sectoral partners are detailed in Appendix 1.

2.4. Observer Status

To facilitate broader consensus and buy-in, observer status will be accorded to relevant regional level organisations, namely the CARICOM Secretariat and the Organisation of Eastern Caribbean States (OECS) Commission.

The Consortium reserves the right to review observer status periodically and make adjustments in this regard.

2.5. Meetings

The Consortium will govern the conduct of its meetings. Meetings will be convened at times convenient to Consortium members. A quorum of four (4) partners will be necessary to convene a meeting.

2.6. Frequency of Meetings

The Consortium will meet as frequently as is deemed necessary. However, it is envisioned that Consortium meetings will be convened within every 6 month period.

2.7. Venue of Meetings

Meetings of the Consortium generally will be held in Barbados. To the extent where possible, the work of the Consortium will be conducted through virtual meetings and e-mail.

2.8. Agenda

The Agenda will be prepared by the Chair, following consultation with the members of the Consortium.

2.9. Secretariat

CIMH will provide administrative services to the Consortium.

2.10. Communication

The preparation of the records of all official meetings of the Consortium will be the responsibility of the CIMH and will be forwarded to the Consortium members no later than four (4) weeks after the conclusion of meetings.

2.11. Decision-Making

Decisions will be made by consensus. A majority of the representatives (.ie. 4 partners) of the Consortium will constitute a quorum for decision-making. If a quorum cannot be achieved, then documents and key decisions will be circulated to members with a clear deadline date for feedback. If no feedback is received, documents will be deemed approved.

2.12. Duration of the Consortium

The Consortium is formed to provide oversight for the development and implementation of sectoral EWISACTs under the BRCCC Programme and beyond. The BRCCC Programme commenced in January 2014 and is expected to conclude in January 2017. It is expected that the Consortium will continue to work on the sectoral EWISACTs agenda even beyond this time.

2.13. Funding of Consortium Activities

CIMH will provide support for the work of the Consortium for the duration of the BRCCC Programme, up to January 2017. Beyond this, CIMH through it's own efforts, and complemented by those of Consortium partners, will investigate avenues for longer term funding support.

Appendix 1:

TERMS OF REFERENCE FOR REGIONAL SECTORAL EARLY WARNING INFORMATION SYSTEMS ACROSS CLIMATE TIMESCALES (EWISACTS) PARTNERS

1. INTRODUCTION

Regional coordination of activities under the Sectoral EWISACTs component of the BRCCC Programme will be facilitated through six (6) sectoral partner agencies (see Section 2.3 on Membership above). Appendix 1 of this TOR presents the sector-specific responsibilities for: 1) the Caribbean Agricultural Research & Development Institute (CARDI) as the Agriculture and Food Security EWISACTs regional sectoral partner, 2) the Caribbean Disaster Emergency Management Agency (CDEMA) as the Disaster Risk Management EWISACTs regional sectoral partner, 3) the Caribbean Public Health Agency (CARPHA) as the Health EWISACTs regional sectoral partner, 4) the Caribbean Tourism Organization (CTO) and the Caribbean Hotel & Tourism Association (CHTA) as joint tourism EWISACTs regional sectoral partners, and 5) the Caribbean Water and Wastewater Association (CWWA) as the Water EWISACTs regional sectoral partner for the period October 2015 – December 2016.

The CIMH in its role of Chair of the Consortium and as a regional climate services provider will partner with the above named agencies in their execution of sector-specific responsibilities. These are outlined below.

2. SECTOR-SPECIFIC RESPONSIBILITIES

The **Agriculture and Food Security EWISACTs Partner** will:

1. Support the co-development and co-implementation of an Agriculture Sector Work Plan for the period January – December 2016;
2. Facilitate broader dialogue and sustained engagement with regional and national agricultural governance mechanisms, plans and programming (e.g. through the Ministers of Agriculture);
3. Provide support to the convening of outreach and training workshops;
4. Facilitate the promotion of an agriculture sector EWISACTs through existing and proposed platforms (e.g., meetings, conferences such as the Caribbean Week of Agriculture, website, traditional and social media and the forthcoming Caribbean Society for Agricultural Meteorology (CARISAM));
5. Support the principle of data sharing between CIMH and the CARDI membership;
6. Facilitate the identification and sharing of textual and georeferenced sectoral datasets for integration into the Caribbean Dewetra platform;

7. Facilitate the identification and sharing of historical climate-related impact data to Caribbean agricultural systems for input into the Caribbean Climate Impacts Database;
8. Support the conduct of research that examines associations between climatic variables and relevant agricultural productivity outcomes (e.g., crop simulation modelling to assess crop sensitivity to temperature and rainfall extremes), as well as, research to identify remedial measures;
9. Assist in the coordination of the receipt of feedback from CARDI Member Countries on work related to an agriculture EWISACTs (e.g., baseline surveys, the coordination of interviews);
10. Provide technical input that contributes to the tailoring and validation of Agroclimatic Bulletins produced by CIMH;
11. Promote the dissemination of climate information to the farming community through various platforms (e.g., the CARDI website, social media); and
12. Facilitate the embedding of agriculture climate services webpage links hosted on the RCC website with the CARDI Resources webpage.

The Disaster Risk Management EWISACTs Partner will:

1. Support the co-development and co-implementation of a Disaster Risk Management Sector Work Plan for the period January – December 2016;
2. Facilitate broader dialogue and sustained engagement with regional and national DRM governance mechanisms (e.g., the Comprehensive Disaster Management Coordination and Harmonization Council, National Disaster Management Committees, Country Centred Work Programmes, National Disaster Management Plans);
3. Provide support to the convening of outreach and training workshops;
4. Facilitate the promotion of a DRM sector EWISACTs through existing platforms (e.g., Technical Advisory Council (TAC) meetings, the 9th CDM conference, Sector Sub-Committee meetings, the CDEMA website, traditional and social media such as the CDEMA Twitter account);
5. Support the principle of data sharing between CIMH and the CDEMA membership;
6. Facilitate the identification and sharing of textual and georeferenced sectoral datasets for integration into the Caribbean Dewetra platform;
7. Facilitate the identification and sharing of historical climate-related impact data to major socio-economic sectors for input into the Caribbean Climate Impacts Database;
8. Support the conduct of research or a review of research that examines associations between climatic variables and socio-economic outcomes;
9. Assist in the coordination of the receipt of feedback from CDEMA Member countries on work related to a DRM EWISACTs (e.g., baseline surveys, the coordination of interviews);

10. Provide technical input that contributes to the tailoring and validation of DRM specific climate bulletins produced by CIMH;
11. Promote the dissemination of climate information to National Disaster Management Organisations (NDMOs); and
12. Facilitate the embedding of DRM specific webpage links hosted on the RCC website with the CDEMA Resources webpage.

The **Health EWISACTs Partner** will:

1. Support the co-development and co-implementation of a Health Sector Work Plan for the period January – December 2016;
2. Facilitate broader dialogue and sustained engagement with regional and national health governance mechanisms, plans and programming (e.g., through the annual Chief Medical Officer meeting, the annual Health Minister’s meeting);
3. Provide support to the convening of outreach and training workshops;
4. Facilitate the promotion of a health sector EWISACTs through existing platforms (e.g., the CARPHA Annual Scientific Research Conference, the CARPHA website, traditional and social media);
5. Support the principle of data sharing between CIMH and the CARPHA membership;
6. Facilitate the identification and sharing of textual and georeferenced sectoral datasets for integration into the Caribbean Dewetra platform;
7. Facilitate the identification and sharing of historical climate-related impact data to Caribbean health systems for input into the Caribbean Climate Impacts Database;
8. Support the conduct of research or a review of research that examines associations between climatic variables and relevant health outcomes;
9. Assist in the coordination of the receipt of feedback from CARPHA Member Countries on work related to a health EWISACTs (e.g., baseline surveys, the coordination of interviews);
10. Provide technical input that contributes to the tailoring and validation of health climatic bulletins produced by CIMH;
11. Promote the dissemination of climate information to the health provider community through various platforms (e.g., the CARPHA website, social media); and
12. Facilitate the embedding of health climate services webpage links hosted on the RCC website with the CARPHA Resources webpage.

The joint **Tourism EWISACTs Partners** will:

1. Support the co-development and co-implementation of a Tourism Sector Work Plan for the period January – December 2016;
2. Facilitate broader dialogue and sustained engagement with regional and national tourism governance mechanisms, plans and programming (e.g., the Tourism

- Ministerial Council, the CTO Board of Directors, the CTO Executive Sub-Committee of the Board of Directors, the CHTA Executive Committee, the CHTA Board of Directors, the CHTA Committees, National Hotel Associations, National Tourism Emergency Management Committees, and strategic partner agencies such as the Association of Caribbean States, the Organization of American States and the World Travel and Tourism Council);
3. Provide support to the convening of outreach and training workshops;
 4. Facilitate the promotion of a tourism sector EWISACTs through existing platforms (e.g., meetings and conferences such as the Caribbean Travel Marketplace⁴; the Caribbean Hospitality Industry Education Forum (CHIEF); and the Sustainable Tourism Conference⁵; the CHTA/Caribbean Alliance for Sustainable Tourism (CAST) Sustainability Webinar Series; the CHTA and CTO's websites, as well as, traditional and social media such as the CTO Facebook, Twitter, LinkedIn, and Youtube channel and the CHTA website, as well as, the CHTA/CAST webpage);
 5. Support the principle of data sharing between CIMH and the CTO membership;
 6. Facilitate the identification and sharing of textual and georeferenced sectoral datasets for integration into the Caribbean Dewetra platform;
 7. Facilitate the identification and sharing of historical climate-related impact data to Caribbean tourism systems for input into the Caribbean Climate Impacts Database;
 8. Support the conduct of research or a review of research that examines associations between climatic variables and relevant tourism productivity outcomes;
 9. Assist in the coordination of the receipt of feedback from CTO Member Countries on work related to a tourism EWISACTs (e.g., baseline surveys, the coordination of interviews);
 10. Provide technical input that contributes to the tailoring and validation of tourism climatic bulletins produced by CIMH;
 11. Promote the dissemination of climate information to the tourism provider community through various platforms (e.g., the CTO website, social media); and
 12. Facilitate the embedding of tourism climate services webpage links hosted on the RCC website with the CTO Resources webpage.

The Water EWISACTs Partner will:

1. Support the co-development and co-implementation of a Water Sector Work Plan for the period January – December 2016;
2. Incorporation of aspects of the Water Sector Work Plan 2016-2017 into the CWWA (2015-2017) Strategic Plan;

⁴ Usually convened in January.

⁵ Usually held in April.

3. Facilitate broader dialogue and sustained engagement with regional and national water resource management governance mechanisms, plans and programming (e.g., annual and national meetings, conferences and other duly convened meetings of the CWWA);
4. Provide support to the convening of outreach and training workshops;
5. Facilitate the promotion of a water sector EWISACTs through existing platforms (e.g., the CWWA website - <http://www.cwwa.net>, social media and publicity platforms of the Caribbean Water Operators Partnership (CariWOP⁶);
6. Support the principle of data sharing between CIMH and the CWWA membership and partners;
7. Facilitate the identification and sharing of textual and georeferenced sectoral datasets for integration into the Caribbean Dewetra platform;
8. Facilitate the identification and sharing of historical climate-related impact data related to drought and excess precipitation for input into the Caribbean Climate Impacts Database;
9. Support the conduct of research that examines associations between climatic variables and relevant sector specific outcomes;
10. Assist in the coordination of the receipt of feedback from CWWA Member Countries on work related to a water resources management EWISACTs (e.g., baseline surveys, the coordination of interviews);
11. Provide technical input that contributes to the tailoring and validation of water resources management climate bulletins produced monthly by CIMH;
12. Promote the dissemination of climate information to Water Authorities and water professionals through various platforms (e.g., the CWWA website, social media);
13. Facilitate the embedding of water resource management webpage links hosted on the RCC website with the CWWA Resources webpage; and
14. Facilitate (through cost sharing) the meeting of the Consortium within CWWA regional workshops/conferences, where possible beyond the BRCCC Programme.

⁶ CWWA has a formal MoU with the CariWOP.

About the Caribbean Institute for Meteorology and Hydrology (CIMH)

The CIMH is an Institution of the Caribbean Community (CARICOM) and the technical Organ of the Caribbean Meteorological Organization (CMO). The mandate of the CIMH is to assist in improving and developing the National Meteorological and Hydrological Services (NMHSs), as well as, providing the awareness of the benefits of Meteorology and Hydrology for the economic well-being of the CIMH Member States. This is achieved through training, research, investigations, and the provision of related specialized services and advice. The specific functions of CIMH include:

1. **World Meteorological Organization (WMO) Regional Training Centre (RTC):** CIMH trains professionals in operational meteorology and hydrology and the climate sciences. CIMH is also responsible for the delivery of courses for the completion of the BSc Degree in Meteorology at the University of the West Indies.
2. **Centre for research in Meteorology, Hydrology, Climatology and Associated Sciences:** The Institute is the leading institution in the English-speaking Caribbean engaged in focused and inter-disciplinary research in tropical meteorology, tropical climatology, hydrology and water resources management. This often necessitates collaboration with other relevant regional national and international organisations.
3. **Regional Climate and Hydrological Data Centre:** Since its inception, the Institute has been used by Member States of the CMO as a location for the region's climate data archive. As part of this responsibility, the Institute is responsible for collecting the region's climate data, quality assuring the data, archiving the data and disseminating the data to regional and international stakeholders.
4. **Regional Instrument Centre (RIC):** In its capacity as the RIC for Member States of the CMO, the Institute supports instrument calibration, instrument maintenance and repair, identification of appropriate instruments for the region and instrument procurement and installation. In addition, the Institute conducts training programmes in instrument maintenance and calibration for persons from and outside of the region. The Institute is also active in research and development leading to the development of new instruments and better instrument maintenance programmes.
5. **Regional Centre of Excellence for Training in Satellite Meteorology:** CIMH is one of the network of thirteen training Centres of Excellence worldwide established by WMO that actively participating in the Virtual Laboratory for Training and Education in Satellite Meteorology (VLab) programme. These Centres are working together to improve the utilization of data and products from meteorological and environmental satellites.
6. **Regional Climate Centre:** CIMH has already established itself as the primary provider of climate services and products to the several socio-economic sectors in the Caribbean. Seeking to establish itself as a WMO Regional Climate Centre for the Caribbean, CIMH launched the Demonstration Phase in April 2013, as it builds toward full designation.
7. **Caribbean Centre for Climate and Environmental Simulations (CCCES):** The CCCES was established in 2014 at the CIMH through support from the USAID BRCCC Programme. The CCCES is part of the region's strategy to build and sustain regional resilience to the risk posed by climate change, increasing climate variability, extreme weather and increasing environmental degradation and change. The CCCES addresses resilience in these areas by providing CARICOM scientists, engineers and researchers with state-of-the-art computations resources to conduct complex simulations and analyses within and across disciplines on a range of scenarios (cover varying spatial and temporal scales) to adequately identify, bound and mitigate the drivers of risk to the social and economic development of the Caribbean.