

Barbados National Drought Early Warning and Information System
Implementation Plan

Draft Terms of Reference

Adapted from the Jamaica National Drought Early Warning and Information System
Implementation Plan

- 1.1 Barbados the country
- Barbados is the most easterly of the Caribbean countries and is 166 sq miles. Located at 13.04 lat 59.50 long.



Climate

- Wet and dry season. Wet season starts in June and ends in November and dry season starts December through to May. Dry season precipitation varies between 37.8 mm to 61.6 mm and wet season precipitation 99.7mm to 178.6 mm
- The geology of the island is predominantly limestone with an exception in the Scotland District which is clayey geology.

- Water Resources

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- Barbados is the 15th most water scarce country in the world. It suffers from saline intrusion in the dry season, particularly along the west coast. On average 54 million gallons of renewable water is available per day. Usage per person is typically 34 million per day for general consumption (excluding agriculture

Experiences with drought and water shortage

- In recent times there were the 1997 and 2009 droughts.
 - The 1997 drought resulted in significant impacts to the agriculture sector as well as localised water shortages in higher elevations on the island.
 - In particular a number of wells in the farming areas went dry which led to a situation where crop production and animal production dropped.
 - There was death of animals due to lack of foliage and water.
 - This led to an increase in the importation of crops that could have been locally grown.
 - As a result there was a full economic impact due to the increase in the importation bill and the rise in prices for these commodities.
- As Barbados always tries to ensure that there is a 10% reserve for the population the country fell below this level during this event. The impact from this drought triggered the need for a desalination plant. In addition there was a mains replacement programme that was initiated as a result of the 1997 drought.

- In 2008 and 2009 Barbados also experienced a drought together with other Caribbean countries. However due to the implementation of measures, in response to the 1997 drought Barbados fared well. Whilst other countries were asking why Barbados was not rationing, there was no reason since the measures from 1997 that were working. Also since Barbados is a ground water country and ground water is more resilient to drought than surface water, the effects of the drought were delayed and well levels remained normal.
- In general during the dry season Barbados faces the challenge of increased bush fires. There was significant increase in fires in early 2010 this was an effect of the drought conditions faced in the early part of the 2010.

1.3 CC Projections for future

- CC projections indicate that Barbados will experience shorter wet seasons with intense rainfall and longer dry season. Increase in daily and night time temperatures. As a result of increase in daily temperature, this will result in a faster evaporation rate from plants and therefore will lead to low production and productivity of the plant. As it relates to animals, higher night temperatures could result in less meat production and less milk production. For flowering plants higher night temperatures may lead to reduced flowering and reduced production of fruit/ crops

2.0 Planning for Drought - Establishing Early Warning and Information Systems

- **2.1.1 The overall goal of this committee is to oversee and manage the activities of the networks/working groups of DEWIS.**
- **2.1.2 This committee should comprise the Directors/Heads (or their selected representatives) of the following institutions:**
- Minister of Home Affairs (responsibility for Disaster Management)
- Ministry of the Environment
- Drainage
- Government Information Service
- BWA
- Met Services
- Agriculture
- UWI, CERMES
- Ministry of Health,
- DEM
- Barbados Agriculture Society
- CIMH
- Ministry of Tourism
- Ministry of Finance (the help facilitate sourcing of funds)

2.1.4 Terms of Reference of this committee are to:

- **2.1.5** This committee reports to the National Drought Management Committee.
- Meet on a **quarterly-per-year** basis, or as regular as possible during drought events
- Liaise with the membership of each network/working group under DEWIS
- Discuss reports provided by working groups with the membership
- Provide updates to the NDMC after delivery of reports, and in particular during drought events

2 National Drought Monitoring Network (NDMN)

- **2.2.1** The overall goal.

To detect impending drought and provide relevant information and warning to government and relevant stakeholders. This is bolstered by a comprehensive network of data collection.

- **2.2.2** The DMN is a working group comprising the following:

- Met
- BWA
- CIMH
- Min Agriculture
- BAS (impact on crops)
- Fire

- **2.2.3** The scope of work of the NDMN is envisaged to be.
- Collection, analysis, dissemination of data to:
 - Develop and maintain an inventory of rainfall/water monitoring instruments
 - Monitor climate, water and soil moisture resources
 - Forecast drought conditions for localized sites
 - Ensure adequate spatial coverage of data collection sites
- a. Provide recommendations to agencies for where the next best sites for station placement are
 - Maintenance and Sustainability of stations
- c. Budget allocation for establishing new data collection sites and maintaining existing ones
 - Provide technical advice to DEWIS committee
 - Liaise with AEOC to provide, explain and interpret early warning information for all levels of society
 - Maintaining a central database (climate, agricultural and hydrological) for Drought (Inventory and subsequent coordination)
 - Review and develop systems to maintain data (climate, agricultural and hydrological) quality and integrity
- Develop means for dissemination of information using all means possible

•2.2.4 Terms of Reference for the NDMN

- 1. Provide technical advice and recommendations to the NDMC to include trends - observed
- and predicted - that could result in drought conditions
- 2. Meet quarterly and as necessary
- 3. Monitoring and meeting should be intensified during episodes of drought
- 4. Use the most appropriate tools and methodology to communicate trends and technical information
- 5. To provide the triggers for Early Warning Information and Decision-making

•2.2.5 Reports to the DEWIS Committee

2.3 Awareness, Education and Outreach Working Group (AEO)

- 2.3.1 The objectives of this Working Group are:

- • To inform and update the public on drought conditions, impacts and responses in a timely manner.
- • To build drought awareness at all educational levels (schools, communities, groups, farmers and other stakeholders), including information on magnitudes in losses to the economy.
- • To encourage drought mitigation measures within all sectors.
- • To provide public awareness to encourage the use of available technology and resources.

- 2.3.2 The members of this Working Group should include:

- GIS
- Fire
- Media liaison
- Ministry of Education (targeting schools)
- Met Services
- Ministry of Agriculture
- BAS
- 4H
- DEM- DEO representative (rotate??)
- CYNNet

- **2.3.3** The scope of work of the Committee is envisaged to be.
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- (i) Public awareness and outreach- Via
 - Community workshops and outreach programme
 - News release/press conferences,
 - **Creating a drought hazard mascot**
 - **Drought Tournaments (plan testing)**
 - Advertisements,
 - Focus group discussions including amongst specialist sectors

- Interviews,
- Service clubs,
- Mass communications,
- Social media,
- Web portal,
- Specialized groups, e.g. use of farmers market
- Drought awareness days/week/month
- (ii) Education – schools-
- Integrate drought awareness in all levels of school curriculum.
- Development and promotion of drought management activities.
- Provide resource personnel for drought awareness
- Identify capacity and resource needs required to carry out the WG objectives and recommend to the Committee for action
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.4 Information Portal Working Group

- **2.4.1** The objectives of this Network is to ensure the timely dissemination of real-time information to the public and within the stakeholders of the drought committee. To establish a portal to serve as a repository for drought information.
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- **2.4.2** This Working Group should comprise the following:
 - GIS
 - Ministry of Agriculture
 - BWA
 - Met
 - CIMH
 - Future Center Trust
 - National Union of Farmers

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- **2.4.3** The scope of work of the Committee is to:
 - Establish a web portal at the CIMH, GIS, Met Office or Ministry of Agriculture
 - Establish a structure for a Drought Early Warning and Information Systems portal to be hosted by _____ (TBD)
 - Collect information from stakeholder information agencies
 - Establish a drought web-page to host the latest research and information on drought
 - Disseminate Drought forecasting information for the Web Portal to be linked to webpages such as DEM, Met Services.
 - Disseminate Drought information on measures geared at reducing risks.
 - Provide linkages with different agencies for information sharing.
 - Provide a basis of public awareness on drought condition.
 - Establish a social media interface (blog, Facebook, Twitter, etc.)

2.5 Research Network

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- **2.5.2** The Research Network should comprise of the following:
 - Ministry of Agriculture (Extension Officers do research; Agronomy Section)
 - CIMH
 - University of the West Indies (CERMES)
 - Ministry of Health
 - Statistical Service
 - Ministry of Finance and Economic Affairs (Economic Affairs)

2.5.3 The scope of work of the Committee is envisaged to be.

- The collection and analysis of drought impacts (Damage and Loss).
- To quantify the economic losses of different impact levels of drought.
- To determine the threshold for triggering sector-based impacts and responses (e.g. agriculture, tourism, water, ecosystems)
- To develop and apply predictive models for drought scenarios.
- To develop and maintain an inventory of research institutes and their data base and capacity.
- To create a central repository of data related to drought.
- Providing budgetary allocations for research.
- To establish avenues for and carry out research related to effective information dissemination and communication of drought information.

2.5.4 Terms of Reference for this Network are:

- Develop an Information Sharing Policy
- Making recommendations for priority research areas.
- To advocate for policy changes based on research findings.
- To recommend changes in (including marketing strategies) agricultural products as a
- means of addressing food security. Identifying drought tolerant crops