REPUBLIC OF RWANDA

MINISTRY OF DISASTER MANAGEMENT AND REFUGEE AFFAIRS

(MIDIMAR)

NATIONAL CONTINGENCY PLAN FOR DROUGHT

Kigali, January 2015

ACKNOWLEDGMENT

This drought contingency plan was made for the Republic of Rwanda, with technical support of the members of the National Platform for disaster Risk Reduction.

I wish to acknowledge and thank the individuals, who were very resourceful during the process of compiling this plan. In particular I thank resource persons at the Ministry of Disaster Management and Refugee Affairs namely Mr URAMUTSE Gilbert and BUDEDERI Eric and I thank Mr NTIVUGUZWA Telesphore of the Ministry of agriculture, Mr MUHUTU Jean Claude from the Rwanda Agriculture Board and Mr UWIZEYE Emmanuel from the Ministry of Natural Resources.

I thank also the members of the national platform for disaster risk reduction for their proofreading and technical validation

I however reiterate the need of collaboration of all stakeholders as their support will also be needed in reviewing and adapting this plan when necessary but more importantly to implement it in order to mitigate drought risk, prepare and respond to and recover from effects of drought if it occurs.

Sincerely,

HABINSHUTI Philippe
Director
Disaster Response and Recovery Unit
Ministry of Disaster Management and refugee Affairs

FOREWORD

Over the last three decade, the world has experienced numerous challenges due to climate change and environment degradation. The most important challenge is the drought due to excessive diminution of rainfall for a period changing from 3 months up to three years. This rainfall diminution has important negative impacts to the ecosystems but directly impact is felt by communities who depend to rain water to cultivate and get agricultural products.

Rwanda makes non exception to this reality. The climate changes effects have an important impact to the population through the regular flash floods and some periodic drought cases.

We recognize the efforts that have been made to restore the environment and the ecosystem especially in the east-south part of the country, we also recognize that in the last ten years non serious drought has been identified but we give importance of the impact of dryness to the communities especially in the eastern province, and that is why this plan comes to ensure that necessary efforts are being carried out to mitigate the remaining risks. We also welcome this plan as a tool that may support the preparedness, response and recovery intervention in case our country or a given districts faces the impact of drought, being a meteorological, hydrological, agriculture and socio economic drought.

Successful implementation of this DCP plan will certainly contribute to the improvement of early warning systems for drought detection, reporting mechanisms, and cross-sector collaboration, all aimed at improving response to all kinds of emergencies that may arise from a drought related issue.

I therefore call upon all government departments, development partners, districts and sectors to support this Drought Contingency Plan, to ensure its successful implementation.

MUKANTABANA Séraphine
Minister of Disaster Management and refugee Affairs

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ACRONYMS

DCP	Drought Contingency Plan
DCS	Disaster Communication System
DDMC	District Disaster Management Committees
EWS	Early Warning System
FRT:	First responders' teams
MIDIMAR:	Ministry of Disaster Management and Refugee Affairs
MINAGRI:	Ministry of Agriculture
MINALOC:	Ministry of Local Government
MINECOFIN:	Ministry of Finance and Economic Planning
MINIRENA:	Ministry of Natural Resources
MoH:	Ministry of Health
NDMEC	National Disaster Management Executive Committee
NDMTC:	National Disaster Management Technical Committee
NDMP	National Disaster Management Policy
NDRMP	National Disaster Risk Management Plan
NGO	Non-Governmental Organizations
NPDM:	National Platform for Disaster Risk Reduction
OR	Operation Room
PDNA	Post Disaster Needs Assessment
RAB:	Rwanda Agriculture Board
RBC:	Rwanda Biomedical Center
REMA:	Rwanda Environment Management Agency
RMA	Rwanda Meteorology Agency
RNP:	Rwanda National Police
RNRA:	Rwanda Natural Resources Authority
RRC:	Rwanda Red Cross
RSB:	Rwanda Standard Bureau
SDMC	Sector Disaster Management Committee
WASAC	Water and Sanitation Corporation

1. INTRODUCTION

1.1. Concept and background

Rwanda water resources especially in eastern province have been stressed by periodic drought cycles and unprecedented restrictions in water diversions in recent years. Climate change is expected to increase extreme weather. It is not known if the current effects will abate soon or if it will persist for many years. However, it is certain that this is not the last climate change effects that the country will face.

In response to the recent drought and famine cases the MIDIMAR has prepared in partnership with key government and non-government institutions a drought contingency plan to take immediate, mid and long term actions to manage the crisis.

This DCP contains strategies and actions national institutions may take to mitigate, prepare for, respond to, and recover from droughts. Some components of this plan may be applied to water shortage events that occur in the absence of a drought.

The purpose of the DCP is to minimize drought impacts by improving institutional coordination; enhancing monitoring and early warning capabilities; water shortage impact assessments; and preparedness, response, and recovery programs.

The plan identifies an integrated, regional approach to addressing drought, drought action levels, and appropriate institutional responses as drought conditions change.

An effective DCP will need transparent coordination and clearly defined roles and responsibilities of all involved institution at both national and local level, and the timely dissemination of information to decision-makers.

An Interagency Drought Task Force (Task Force) will be convened to provide coordination among agencies and it will work under the existing national disaster management technical committee.

The Task Force will be chaired by the MIDIMAR with assistance from MINAGRI, RAB and WASAC mainly.

The task force will coordinate over all drought activities but will focus on emergency response and recovery efforts.

The Task Force will ensure accurate and timely distribution of water supply data and drought forecasts to water managers and the public. Committee member consist of representatives from agencies responsible for monitoring weather and water supply data, disaster management, environment management, agriculture, natural resources, security and local government.

The purpose of the DCP is therefore to minimize drought impacts by improving agency coordination; enhancing monitoring and early warning capabilities; water shortage impact assessments; and preparedness, response, and recovery programs.

The DCP includes a coordinated government strategy to prepare for, respond to, and recover from droughts and water shortages , and identifies an integrated regional approach to assessing droughts, drought action levels, and appropriate agency responses as drought severity changes.

To accomplish the above purpose, the Drought Contingency Plan:

- Recommends a general framework for agency planning and coordination to facilitate drought response and management.
- Identifies activities and strategies that may be implemented to minimize drought impacts on vulnerable regions

These activities include actions that may be implemented before, during, and after a drought with respect to planning and coordination, monitoring,
local assistance and conservation programs.

- Identifies the national and local structures/agencies that have the lead or supporting roles in managing the drought response activities.
- Promotes effective use of public and private resources to manage response and mitigation efforts.

1.2. PURPOSE

The purpose of this Drought Contingency Plan is:

- to provide contingency plans to manage drought and emergency conditions
- to continue to deliver a cost effective, adequate, safe and reliable supply of high quality water even during a water crisis
- to identify successful public information strategies which will motivate the community to reduce normal consumption to drought allowances.
- to recommend a programmed response for each stage which would most effectively reduce water consumption to the available supply with the least adverse impact on the communities in the activation area

1.3. DEFINITION OF TERMS AND CONCEPTS

With respect to the concerned matter, a few conceptual and operational definitions of terms and concepts related to drought are highlighted below and modified based on UNISDR's terminology on disaster risk reduction (2009) and on the National Disaster management policy

a) Drought

According to UNISDR (2009), a broad definition of drought is a deficiency of precipitation over an extended period of time, usually a season or more, which results in a water shortage for some activity, group, or environmental sectors. In order to explicitly define drought contingency plan and planning, it was necessary to further provide the various definitions of drought as may be relevant.

b) Meteorological drought

According to UNISDR (2009), Meteorological drought is usually defined by a precipitation deficiency over a pre-determined period of time.
A general working definition of meteorological drought is 'a reduction in rainfall supply compared with a specified average condition over some specified period (Hulme, 1993). Therefore meteorological drought is a deficiency of precipitation (intensity) from expected or normal that extends over a season or longer period of time (duration) and is insufficient to meet the demands of human activities and the environment. This is the most important type of drought which drives the other type of droughts discussed below.

c) Agricultural drought

Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, soil water deficits, reduced ground water or reservoir levels needed for irrigation, and so forth.

d) Hydrological drought

Hydrological drought usually refers to a period of below normal stream flow and depleted reservoir storage during which stream flow is inadequate to supply established uses under a given system.
It results from following periods of extended precipitation shortfalls that impact water supply potentially resulting in significant societal impacts.

e) Socio-economic drought

Socio-economic drought occurs when the demand for socio-economic goods exceeds supply as a result of a weather-related shortfall in water supply (combination of meteorological and hydrological drought impacts) or human induced factors (from increased population and poor production from deficiency or poor technology).

f) Contingency planning

A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Contingency planning is a management tool used to analyze the impact of potential crises and ensure that adequate and appropriate arrangements are made in advance to respond in a timely, effective and appropriate way to the needs of the affected population (IASC, 2007).

g) Drought cycle management (DCM)

Drought cycle management is a cyclic process that acknowledges drought as a cyclic event and defines what actions to be taken in different stages of ''a drought''.

1.4. UNDERSTANDING DROUGHT AND WATER SHORTAGE

The onset of drought is a gradual phenomenon, whereas water shortage may be sudden, as would occur if an earthquake causes massive and cascading levee failures, resulting in a shutdown of the rivers and other water sources export water pumps.

With the exception of impacts to dryland farming and grazing, drought impacts may occur slowly over seasonal periods, and the effects may linger for years after the end of the event.

In Rwanda drought risk is commonly associated with impacts and below normal precipitation. Drought impacts increase with the length of a drought, as water supplies in reservoirs are depleted and groundwater levels decline due to increased pumping. The extent of drought impacts is dependent on many factors including climate, water use, available water supplies and geography.

1.5. Contingency Planning and Drought Cycle Management

1.5.1. Contingency planning

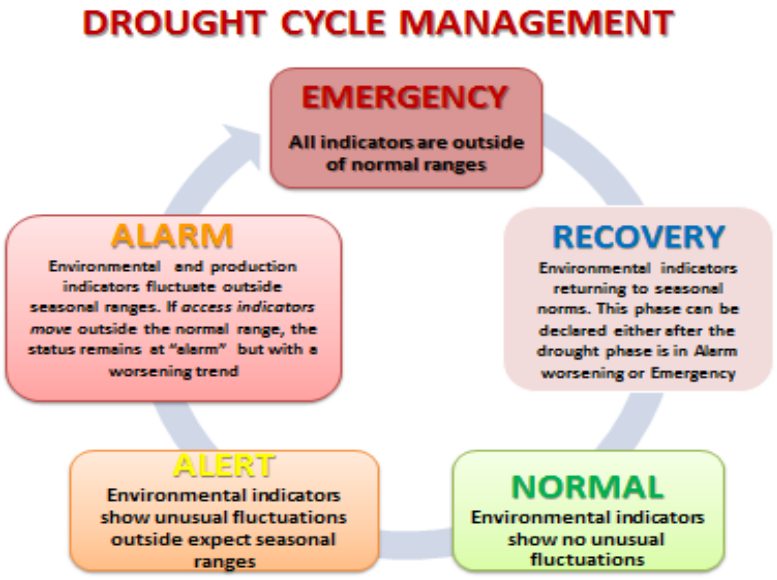
The MIDIMAR will promote different approaches/tools that address the underlying structural causes of vulnerability and reduce the impacts of shocks. In this regard, the use of drought risk reduction, climate change adaptation and social protection strategies all have an important role to play at different times and in different ways in reducing vulnerability and building resilience.

The ultimate objective of the drought response system is to promote early mitigation efforts that reduce the time that elapses from the point when warning of drought stress is given and the

point when response at county level starts. Drought mitigation activities will take a livelihood perspective and be specifically designed to support local economies and promote linkages with long-term development strategies. This is expected to reduce considerably the losses of assets by households during drought crises and contribute to enhance resilience.

The contingency planning process adopted by MIDIMAR is based on the drought cycle management approach, which can be understood in terms of five phases that can be categorized into normal, alert, alarm, emergency, and recovery, with different types of interventions tailored to the various phases. DCM describes in a general way how to reduce vulnerability (& increase resilience) of populations to drought through proper planning. The aim is also to use funds more effectively: making investment in drought preparedness during the normal and alert stages means that less money should have to be spent during the emergency phase. Early warning systems and the warning stages that are derived from them are an effective way of triggering interventions to manage drought.

1.5.2. Drought cycle



Each phase will require specific drought mitigation activities to support livelihoods and minimize depletion of assets. Some drought management models run together 'alert' and 'alarm' warning stages as a single stage. This simplifies the warning stages but it loses a sensitive transition and decision point since the alert stage is extremely important for early action that can reduce the later social and economic impact of drought, saving people and money. Running 'alert' and 'alarm' together as a single stage disguises this trigger.

2. PLANNING ASSUMPTION AND DROUGHT SCENARIO

2.1. Main scenario

In the year 2016, Rwanda will experienced Medium, Severe and extreme drought for a period of 12 months which will cause serious negative impacts to socio-economic set up of the Rwandan community residing in Kayonza, Nyagatare, Bugesera, Kirehe and Ngoma Districts from the Eastern Province of Rwanda. Almost 200 human deaths are expected to occur due to hunger, famine, and water borne diseases and animals are dying others are migrating in other regions. The effects of drought within 6 months are to be managed by the Government of Rwanda using the existing means and capacities.

Three possible scenarios for the identified sectors have been developed, indicating the most likely scenarios and highlighting key cross cutting issues to be considered such as Famine or Food Insecurity, Shortage of water or and water borne diseases. Some other key sectors will be affected like: Protection, Environment and Early Recovery and Gender. Focus is on how each hazard would affect various sectors in the event of a disaster. In coming up with scenarios it was important to separate the norm from disasters to enable the scenarios to cater for disasters rather than respond to a normal development activity. The following are 3 levels of expected drought in Rwanda.

2.2. Medium Drought

In the said province the predicted drought will last for a period of 3 months. Medium drought will cause a minimal hunger and famine to an estimated 2,000 number of people; this will further affect the performance of school going children at an estimated drop out of 400 students. Due to this drought some wild animals are expected to go out of Akagera National park due to outbreak of wild fires caused by either poachers or self-caused fires and this will cause Human-wild life conflict. Due to hunger and famine that will hit the eastern province poaching is likely to increase and subsequently this will affect tourism performance. Food insecurity will be observed and spread to some residents to all districts of eastern province. About 300 people are expected to migrate to neighboring districts and beyond the national borders of Rwanda.

2.3. Severe Drought

It is predicted that after a period of six months the drought will highly spread and further negatively affect the said Province, hunger and famine will increase and an estimated 4,000 number of people will be affected, this will automatically affect the performance of school going children, about 800 will drop out and this will rise the crime rate such as drug abuse due to redundancy of youth, subsequently it will affect general human security as the redundancy and hunger will cause some young girls joining ill groups like prostitution and other related crimes in trying to earn a living. With this kind of situation unwanted and unplanned pregnancy will rise and family conflict will also rise, detaining centers of police accommodate 300 detainees at every district for 24 hrs and courts of law

will be jammed at least lower courts will be receiving 30 suspects every day. Poaching and other environmental crimes will rise about 100 buffalos and Hippopotamus will be killed for meat, an estimated 60 Sq kms of Akagera National Park will be burnt and this will raise the number of wild life animals moving out of the park to the community an estimated 30 elephants and 50 Hippopotamus will cause Human wild life conflict to the communities around the park.

About 800 people will be internally displaced and about 670 people will go out country to Burundi, United Republic of Tanzania and Uganda, this will affect the international relations of Rwanda and the neighboring countries. Kwashiorkor and other water borne diseases will increase and an estimated 460 people will be admitted to different district hospitals. This will subsequently lead to toll death of about 200 people.

2.4. Extreme Drought

It is predicted that after a period of 12 months the drought will be highly and severely increased and spread to other parts of the whole region and beyond this will further negatively affect both human and none human life. Cases of famine and hunger will rapidly increase from 4,000 to 6,000. This will affect the general performance of the GDP of the country and automatically will negatively affect the standards of living of the general population of the Province. Poaching will increase due to hunger and famine of the communities around the protected area. School dropout will increase and about 2,000 younger girls will drop out of the school. The drop out of the younger girls will raise the prostitution level which will lead to RUM (Rural urban migration) Drug abuse and trafficking will also increase to about 700 cases, which will cause insecurity in the Region consequently it will affect the whole Country. The prices of food will increase by at least 70%, and this will affect the inflation rate in the country

In addition, 200 people are estimated to die due to hunger, water borne diseases and famine, about 290 children less than 5 years are expected to have malnutrition cases which will affect their social and psychological thinking and quick development of their knowledge and education skills.

About 17,000 people will be internally displaced in that year and 900 will cross the borders to either United Republic of Tanzania or Uganda in searching for food and casual employment. Human trafficking is likely to increase due to famine and hunger; about 600 boys and girls will be trafficked through Uganda and United Republic of Tanzania. An estimated 400 youth especially boys are likely to join armed rebels of DRC. Almost all boarding secondary schools will cross up their operations. All milking diary extension centers of eastern province close their operations. About 3,000 Teachers and other casual laborers will lose their jobs, creating un employment problem.

3. DROUGHT MANAGEMENT

3.1. PREPARING FOR A DROUGHT

3.1.1. Agricultural Water Use Efficiency

The Agricultural Water Use Efficiency Strategy describes the use and application of scientific processes to control agricultural water deliveries and use, and achieve beneficial outcomes. The Strategy includes:

- An estimation of net water savings resulting from implementation of efficiency measures as expressed by the ratio of water output to water input;
- Resulting benefits; and
- Strategies to achieve water use efficiency and its benefits.

However, with increased agricultural water use efficiency, there is a corresponding potential for decrease in groundwater recharge that surface water irrigations provide in some areas. The estimation of net water savings is the reduction in the amount of water used that
becomes available for other purposes, while maintaining or improving crop yield. Net water savings recognizes:

- uptake and transpiration of water for crop water use,
- the role, benefits, and quantity of applied water that is recoverable and reusable in the agricultural setting, and
- The quantity of irrecoverable applied water that flows to salt sinks, such as the ocean and inaccessible or degraded saline aquifers, or evaporates to the atmosphere, and is unavailable for reuse.

The benefits, in addition to water savings, may include water quality improvements, environmental benefits, improved flow and timing, and often increased energy efficiency.

3.1.2. Conjunctive Management and Groundwater Storage

Conjunctive groundwater management refers to the coordinated and planned use and management of both surface water and groundwater resources to maximize the availability and reliability of water supplies in a region to meet various management objectives. Surface water and groundwater resources typically differ significantly in their availability, quality, management needs, development and use costs. Managing both resources together, rather than in isolation, allows water managers to use the advantages of both resources for maximum benefit.

Drought relief for urban and agricultural water users and potential induced groundwater recharge could be gained through groundwater substitution transfer and agricultural water transfers.

3.1.3. Ecosystem Restoration

Ecosystem restoration improves the condition of our modified natural landscapes and biological communities to provide for their sustainability and for their use by current and future generations. Successful restoration increases the diversity of native species and biological communities and the abundance and connectivity of habitats. This can include reproducing natural flows in streams and rivers, curtailing the discharge of waste and toxic contaminants into water bodies, controlling non-native invasive plant and animal species, removing barriers to fish migration in rivers and streams, and recovering wetlands so that they store floodwater, recharge aquifers, filter pollutants, and provide habitat.

These conflicts repeatedly disrupt water supplies often during droughts. Thus, one result of ecosystem restoration activities could be a more reliable water supply.

3.1.4. Land Use Planning & Management

Integrating land use and water management consists of planning for the housing and economic development needs of a growing population while providing for the efficient use of water, water quality, energy, and other resources. The way in which we use land (the pattern and type of land use and transportation and the level of development intensity) has a direct relationship to water supply and quality, flood management, and other water issues.

Land use resource management strategy brings together many concepts which if adopted together will make existing and future land development more efficient in use of water and hence makes communities more sustainable and resilient to the effects of drought.

3.1.5. Drought Monitoring And Forecasting

Monitoring and forecasting are essential to support effective drought responses. The ability to assess and predict drought require an extensive, long-term monitoring and data collection effort. Being proactive to drought management requires continuous monitoring of indicators to help predict the onset and extent of drought, as well as to help determine when to relax restrictions and return to normal operations. Real-time weather water supply data will be compared with historical records to evaluate drought.

3.2. RESPONDING TO A DROUGHT

Local government, water agency, and individual actions are usually the first line of drought response before impacts become severe and reach emergency level.

National assistance may become necessary if drought persists and impacts exceed the local capacity to respond. If resources are exhausted or inadequate to respond to a drought or water Shortage, the situation may next request a ministerial declaration for humanitarian assistance.

The following describes local and national drought response.

1. Local Response

Local governments and water suppliers are responsible for managing their water system to ensure an adequate and safe water supply. Drought response at the local level is commonly voluntary or mandatory conservation imposed under local regulations. The district disaster management committee may proclaim a local emergency when the conditions of disaster or extreme peril exist. The proclamation enables the district to use emergency funds, resources, powers, and to promulgate emergency orders and regulations as per the district disaster management plan.

2. Water Agency Response

Implementing enhanced water conservation programs and calling for customers to achieve either voluntary or mandatory water conservation goals or targets are common urban water supplier actions. Increases in customers' water rates – either to encourage conservation or to react to increased costs associated with acquiring supplemental water sources or implementing conser vation programs – are common drought outcomes.

3. National Response

Following the 2014 emergency drought crisis in Kayonza and Bugesera the NDMEC convened to monitor the social and economic impacts of the drought and to provide drought relief to impacted communities primarily located in different sectors of cited districts.

The Committee was comprised of various institutions which coordinated with local and non-profit agencies on drought relief. Food distributions through the local food for work were held for two months in various sectors
The Committee also coordinated strategic meetings with local community to listen to the needs of each sector and involve the population in mitigation mechanisms.

Such system aligned to the National Disaster management policy and the disaster management law shall apply and become operational through the sector intervention plans per the level of drought effects.

3.3. RECOVERING FROM A DROUGHT

The actions in this phase are intended to provide early recovery from, not long-term mitigation, of drought impacts. These actions sometimes overlap those for drought response because drought impacts often linger long after an end of a drought. Some agency drought response activities may continue to occur as well as continuous monitoring of drought indicators. National actions may include post drought evaluation, replenishment of water supplies, and economic and natural

resources recovery. The government may continue to assist with implementation of district and national relief programs (for example, food distributions, special water supply etc.) for individuals, farmers, and others impacted by the drought until the programs phase out or are called to an end.

Follow-up with drought-impacted community water systems may be needed to restore operations and ensure system improvements and modifications are in compliance with applicable standards.

A final meeting of the Task Force (or After Action Debriefing/Report) is needed for debriefing and identifying success, lessons learned, and recommended improvements.

Appropriate amendments to legislation will be noted and a debriefing to the NDMEC is required. A final drought report summarizing the response actions, experience gained and recommendations for next steps will be produced by the Task Force.

4. INSTITUTION'S ROLES AND RESPONSIBILITIES

4.1. Potential Actions by institution in Preparing for a Drought

Drought Indicators: Current Water Conditions are at normal levels. No drastic water conservation measures are necessary, although water conservation should always be practiced. The water reservoirs (sources rivers and lakes) are full or nearly full and runoff across the state is at normal levels.		
ACTION	**LEAD INSTITUTIONS**	**INVOLVED INSTITUTIONS**
Monitoring		
Work with local government and communities representatives to develop drought metrics (indicators) with the goal of providing early detection and determination of drought severity	MIDIMAR	MINAGRI, RAB, RNRA, WASAC
Improve monitoring of key Indicators of drought and drought impacts.	MIDIMAR	MINAGRI, RAB, RNRA, WASAC
Improve system of stream gaging for the purpose of managing water resources in low flow conditions and improving the accuracy of seasonal runoff and water supply forecasts.	RNRA	WASAC, RAB
Augment real-time monitoring of groundwater data with additional reservoirs	RNRA	WASAC

Improve wildlife and habitat monitoring and develop an accessible and standardized database for reporting habitat conditions, populations, and human-wildlife contact incident	RDB	REMA, MINALOC
Improve groundwater monitoring and assessment	RNRA	REMA, WASAC
Develop reporting method for collection of drought impacts data and information.	MIDIMAR	RNRA
Communication/Coordination and Planning		
Update Drought Contingency Plan	MIDIMAR	MINAGRI, RNRA, WASAC
Develop a "national Drought Status" public information strategy that communicates current drought to the public and decision-makers. Investigate most appropriate mechanism to communicate information, e.g. newspaper, mail, radio, website etc.	MIDIMAR	RNRA
Educate water users & agencies on how to use climate information to plan for mitigation and drought response	RNRA	WASAC
Provide public general information on drought as it relates to wildfire issues	MIDIMAR	REMA, RNRA
Provide farmers with awareness campaign on coping with drought.	MINAGRI	MIDIMAR, RAB
Conduct drought preparedness workshops for the purpose of Developing proper indicators for each region and Assess potential needs for regional assistance	MIDIMAR	MINAGRI
Prepare and update informational brochure on drought for general public	RNRA	MIDIMAR
Develop coordination and communication protocol between national, district and community levels	MIDIMAR	NDMTC, DDMC
Clarify emergency response procedures responding institutions	MIDIMAR	NDMTC
Arrange for funding mechanisms to support drought relief, groundwater projects,	MIDIMAR	MINECOFIN, RNRA

conservation, recycling and other water management projects to assist regions in dealing with drought.		
Develop risk-based vulnerability assessment for each basin /watershed.	RNRA	MIDIMAR
Prepare a "Map of Drought Vulnerability" showing areas where drought is more likely to upset water supplies.	RNRA	MIDIMAR, WASAC, REMA
Investigate opportunities for regional drought planning through IRWM to facilitate drought response and assist IRWM planning efforts in developing regional responses to drought	RNRA	NDMTC
Negotiate agreement for drought contingency water supplies.	MIDIMAR	WASAC, RNRA

Table 2 – Potential Actions by Agencies in Responding to a Drought

Level 1 - Abnormally Dry (Raising Awareness of Drought)		
ACTION	**LEAD INSTITUTIONS**	**INVOLVED INSTITUTIONS**
Drought Indicator–The precipitation, snowpack, or runoff is lower than normal, or reservoir levels are below average. Conservation measures should be increased voluntarily, to help manage the state's current water supply		
Communication/Coordination and Planning		
Activate Drought Operations Center for central point of contact and information	MIDIMAR	MINAGRI, RNRA, RMA, WASAC
Convene Drought Monitoring Committee and Impact Assessment Work Groups (situation and assessment reports)	MIDIMAR	NDMTC
Designate agency spokesperson(s) to interact with the public and media	NDMEC	NDMTC
Issue a Drought Advisory and press release	NDMEC	NDMTC
Direct national agencies/institutions to conserve water at national facilities	NDMEC	NDMTC
Communicate conditions, reinforce general Conservation tips. Hold drought preparedness workshops.	MIDIMAR	NDMTC

Accelerate work with local governments and water providers on public awareness and outreach.	MIDIMAR	NDMTC, DDMCs
Review laws to reduce impediments to providing water supplies to communities in emergency need, adapt/modify as necessary. (short term)	NDMEC	NDMTC
Monitoring		
Collect "regional"[1] impact data and information	MIDIMAR	RNRA, RAB, WASAC
Facilitation of watershed and local planning for drought		
Seek funding to provide assistance to water systems in need of developing storage and infrastructure improvements	RNRA	MINECOFIN
Level 2 - First Stage Drought (Voluntary Conservation, heightened awareness, increased preparation)		
Drought Indicator – The precipitations, snowpack, or runoff is lower than normal, or reservoir levels are below average. Conservation measures should be increased voluntarily, to help manage the state's current water supply		
All actions in Level 1 plus: **Communication/Coordination and Planning**		
Develop Emergency Action Plan including: • Developing information necessary for an Agricultural Emergency Disaster Declaration • Development of mandatory conservation measures • Development of mandatory curtailment measures • Identify priorities for surface water supplies	MIDIMAR	RNRA, MINAGRI
Communicate drought severity through normal channels.	MIDIMAR	MINAGRI, WASAC, RNRA
Conduct workshops or other methods of communication in drought stricken areas to provide information on assistance available.	MIDIMAR	NDMTC
Enhanced Media Outreach and provide Assistance to communities for conservation and drought education.	MIDIMAR	MINAGRI, WASAC, RNRA
Monitoring		

[1] Regional may refer to provincial, district or sector administrative entities

See actions in Stage 1 **Local Assistance**		
Prepare to directly assist isolated, rural systems who are at most risk and have the least resources for responding.	MIDIMAR	NDMTC
Work indirectly on local water sources managers (cooperatives, community leaders) and local government in urban areas with robust water management infrastructure, resources and coordination.	RNRA	WASAC
Facilitation of watershed and local planning for drought		
Expedite water transfers by providing assistance in the form of technical resources, emergency infrastructure, arbitrating supply disputes, etc.	WASAC	RNRA
Conservation		
Increased water savings	RNRA	REMA, WASAC
Initiate heightened Water Conservation efforts (Save our Water Campaign)		
Encourage national facilities (including universities, schools, offices) to reduce water use	WASAC	RNRA
Implement other reductions consistent with and similar to local community reductions.	NDMTC	DDMCs
Provide financial assistance to drought impacted areas and sectors	MIDIMAR	MINECOFIN, NDMTC
Hold more water in reservoirs in case next year is a dry one. Start planning for any needed temporary engineering solutions.	RNRA	MIDIMAR
Level 3 - Severe Drought (Mandatory conservation, emergency actions)		
Drought Indicator – Reservoirs are low; precipitation, snowpack and runoff are all well-below normal, and forecast to remain so. Mandatory conservation may need to be enacted in communities that do not have adequate water supplies.		
All actions in Level 1 & 2 plus: **Communication/Coordination and Planning**		
Convene Interagency Task Force following Emergency Drought Proclamation	NDMEC	NDMTC
Identify criteria thresholds for Emergency Proclamation	MIDIMAR	RNRA, WASAC, RAB

Initiate implementation of Emergency response plan and identify enforcement procedures	MIDIMAR	NDMTC
Coordinate responses to emergency conditions	MIDIMAR	NDMTC, NPDRR
Increased media outreach (and enhanced assistance to communities for conservation and drought education)	MIDIMAR	MINAGRi, RNRA, WASAC
Communicate conditions, promote general conservation tips, and provide information on drought mitigation and response options.	MIDIMAR	NDMTC
Continue intelligence gathering and situation reporting	MIDIMAR	DDMC, RNRA, WASAC
Work with local health directors to assess public health threats and take appropriate actions	MINISANTE	MIDIMAR, RBC
Provide regular situation reports to MIDIMAR, and appropriate agencies	DDMCs	SDMCs
Prepare a request for Presidential Disaster Declaration	NDMEC	NDMTC
Monitoring		
Appoint the drought management focal persons	NDMTC	
Emergency notifications received by the warning agencies and passed on to Drought Management focal	MIDIMAR	RMA, RNRA, RAB
Local Assistance		
Coordinate with local government to facilitate declaration of Drought Emergency in affected area(s).	MIDIMAR	DDMCs, SDMCs
Deploy emergency conveyance/interconnections as needed.	MIDIMAR	MINAGRI, WASAC
Coordinate mutual aid assistance	MIDIMAR	NDMTC
Conservation		
Encourage public and private l facilities to reduce water use by 20%.	WASAC	RNP
Level 4- Extreme Drought (Maximum mandatory conservation)		
Drought Indicator – Reservoirs are low; precipitation, snowpack and runoff are all well-below normal, and forecast to remain so. Mandatory conservation may need to be enacted in communities that do not have adequate water supplies.		
All actions in Level 1 - 3 plus:		
Local Assistance		

Facilitate the provision of water hauling assistance/relief to communities.	WASAC	RNRA, MIDIMAR
Impose necessary restrictions as needed for affected areas	RNP	WASAC, RNRA
Conduct assessment and Provide required relief assistance to affected communities	MIDIMAR	NDMTC
Initiate and facilitate greater use of recycled water.	RNRA	WASAC
Conservation		
Work with local water agencies in highest levels of conservation which could include elimination of non-essential water use (No outside watering)	WASAC	RNRA, RNP
Require public and private facilities to eliminate watering non-essential outdoor watering (exceptions for wildlife protection).	RNP	WASAC, RNRA
Level 5 - Exceptional Drought (Water supplies cut off, maximum response)		
Drought Indicator – Extremely dry conditions persist across the state. Water safety, supply, and Qualities are all at risk, due to shortages. All sectors of water usage are facing hardship as a result of inadequate supply and dry conditions.		
All actions in Level 1 - 4 plus: **Communication/Coordination and Planning**		
Declare a water supply or water shortage emergency	NDMEC	NDMTC
Activate the L4 emergency response	NDMEC	NDMTC
Staff the disaster and emergency operation room	MIDIMAR	NDMTC
Facilitate Mutual Aid requests for Assistance to provide increased security by law enforcement due to severe water cutbacks.	RNP	NDMTC
Conservation		
Water use cut back to health and safety needs only	RNP	WASAC
Other		
Coordinate the movement of population out of areas without supply with local government.	MIDIMAR	NDMTC

Table 3 – Potential Actions by Agencies in Recovery from a Drought

Drought Indicators – Current Water Conditions throughout the State are at normal levels. No drastic water conservation measures are necessary, although water conservation should always be practiced. The state's reservoirs are full or nearly full and runoff across the state is at normal levels		
ACTION	**LEAD INSTITUTIONS**	**INVOLVED INSTITUTIONS**
Communication/Coordination and Planning		
Identify and communicate when drought Restrictions set should ease or cease.	NDMEC	NDMTC
Monitoring:		
Ongoing monitoring of recovery (reservoir replenishment and longer term climate data)	MINIRENA	REMA RNRA
Assure replenishment of reservoirs and groundwater resources.	RNRA	WASAC, REMA
Monitoring of groundwater levels including	REMA	RNRA
Facilitation of watershed and local planning for drought:		
Manage pasture, rangelands and forest recovery	MINIRENA	RNRA, REMA
Local Assistance		
Reduction-of-herd recovery assistance for dairy and cattle operations.	MIDIMAR	NDMTC
Provide technical assistance to districts requesting help in phasing out drought rates and returning to standard water rates.	NDMTC	DDMCs
Pasture rehabilitation - Country provides assistance in form of :		
Loans and Grants	NDMTC	DDMCs
Technical Assistance	NDMTC	DDMCs
Actions to diminish first flush concerns (For example: sediment transport off of denuded lands due to drought and/or wildfire)	REMA	RNRA
Provide deferred maintenance assistance for pumps, farming equipment and other water related infrastructure.	RNRA	WASAC

References

1. National Disaster management Policy, MIDIMAR (2012)
2. National Disaster Risk Management Plan, MIDIMAR (2013)
3. Floods and drought monitoring reports, RNRA (2011, 2012, 2013)
4. National Contingency Plan for floods and landslides
5. UNISDR Drought Contingency Plans and Planning in the Greater Horn of Africa (2012)