REPUBLIC OF RWANDA

MINISTRY IN CHARGE OF EMERGENCY MANAGEMENT

(MINEMA)

NATIONAL CONTINGENCY PLAN FOR DROUGHT

Kigali, October 2018

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.

KAMAYIRESE Germaine
Minister in Charge of Emergency Management

ACKNOWLEDGMENT

This drought contingency plan was made for the Republic of Rwanda, with technical support of the members of the National Platform for Disaster Management.

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 in Charge of Emergency Management 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 who participated in the process of reviewing and updating this contingency plan.

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 in Charge of Emergency Management

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ACRONYMS

DCP	Drought Contingency Plan
DCS	Disaster Communication System
DIDIMAC	District Disaster Management Committees
EWS	Early Warning System
FRT:	First responders' teams
MINAGRI:	Ministry of Agriculture
MINALOC:	Ministry of Local Government
MINECOFIN:	Ministry of Finance and Economic Planning
MINEMA:	Ministry in Charge of Emergency Management
MOE:	Ministry of Environment
MoH:	Ministry of Health
NADIMAC:	National Disaster Management Committee
NPDM:	National Platform for Disaster Management
NDMP	National Disaster Management Policy
NDRMP	National Disaster Risk Management Plan
NGO	Non-Governmental Organizations
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
RWFA:	Rwanda Natural Resources Authority
RRC:	Rwanda Red Cross
RSB:	Rwanda Standard Bureau
SEDIMAC	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 MINEMA 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 MINEMA 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 guidelines:

- for managing drought emergencies
- To provide relevant relief (food, water) to affected communities
- To provide special agriculture input and tools to control the drought (seeds, fertilizers, pesticides, irrigation equipment)
- To mobilize affected communities to actively participate in mitigation, control and management through rational use of available resources
- To strategize response mechanisms to effectively reduce consumption of available resources (water, agriculture products) with the least adverse impact on the affected communities

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

1.3.1. 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.

1.3.2. 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.

1.3.3. 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.

1.3.4. 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.

1.3.5. 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).

1.3.6. 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).

1.3.7. 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’’.

2. DROUGHT AND WATER SHORTAGE

In Rwanda drought risk is commonly associated with impacts of shortage of rainfall. Drought impacts increase with its duration. The extent of drought impacts is dependent on many factors including climate variability, water use and available water bodies.

2.1. Contingency Planning and Drought Cycle Management

2.1.1. Contingency planning

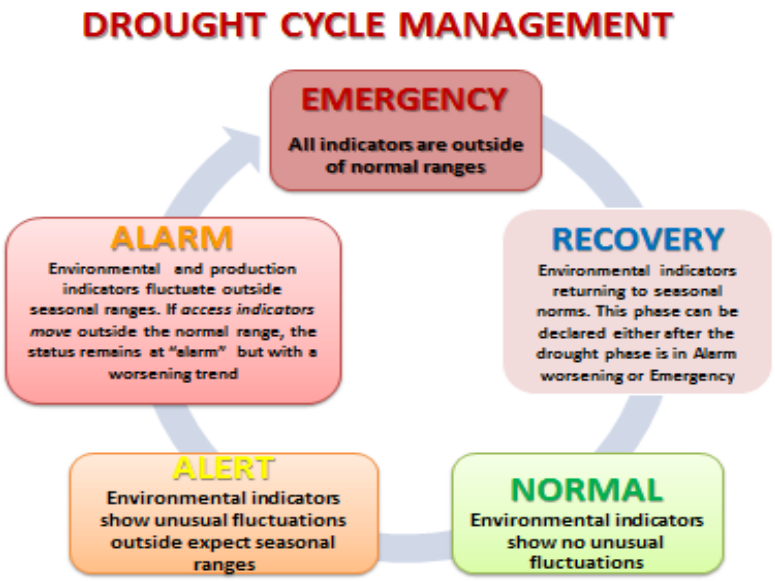
The MINEMA will promote different approaches/tools that address the underlying structural causes of vulnerability and reduce the impacts of shocks. In this regard, the use of drought risk reduction, climate change adaptation and social protection strategies all have an important role to play at different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

2.1.2. Drought cycle



Source

Specify indicators for each phase

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.

3. PLANNING ASSUMPTION AND DROUGHT SCENARIO

INDICATORS		ABNORMAL DRY	MODERATE DROUGHT	SEVERE DROUGHT	EXTREME DROUGHT	EXCEPTIONAL DROUGHT
		Most probable	**Probable**	**Probable**	**Less probable**	**Less probable**
Dryness in month		Less than 3	3-6	6 -12	Above 12	Above 12
Growth of crops		Water stress and Stunting	**Drying**	**No major crops**	**No major crops**	**No vegetation**
Planting/Sowing		Slow	No planting in non-irrigated land	No planting in non-irrigated land	No planting	No planting
Food shortage (households not having food)		Limited food availability	3-10%	10-25%	25-50%	Above 50%
Water shortage	**Live stock**	Limited water access	Water available for less than 70% of livestock	Water available for less than 50% of livestock	Water available for less than 20% of livestock	Water available for less than 5% of livestock
	Human water supply	Reduced quantity in supplied water	Restricted to Twice a week	Restricted to once a week	Restricted to once a month	Restricted to less than once a month
Damage to crops and pastures		Less than 10% of cropped area	10-25% of cropped area	25-50% of cropped area	50-70% of cropped area	Over 70% of cropped area
Crop or pasture losses (Targeted harvest)		Less than 10%	10-25%	25-50%	50-70%	Over 70%
Migrations of people for 5 successive days		Less than 10	10-30	30-100	100-200	More than 200
Agriculture product Price increase		5-20%	20-100%	100-200%	200-300%	Over 300%
Increase of Diseases		10‰	20-50‰	50-75‰	75-100‰	Over 100‰
School dropout		Less than 5%	5-20%	**20-50%**	**50-75**	Over 75%
Human Deaths within one month		No deaths	1-5 wit	**5-10**	**10-20**	20-30
Livestock deaths within one month		No deaths	1-50	**50-100**	**100-200**	Over 200

3.1. Main scenario

Due to climate change and variability observed for last two decades, it is expected that in two years to come abnormal dry, moderate and severe droughts may occur and 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 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.

3.2. 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.

3.3. 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.

3.4. 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.

4. DROUGHT MANAGEMENT

4.1.MITIGATING DROUGHT EFFECTS

4.1.1. Agricultural 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.

In additional to efficient use of water in irrigation for optimum agriculture production, the Ministry of Agriculture through its institutions (RAB and NAEB) and Projects has among the others to ensure the increased Agriculture production and its sustainability (by making agriculture economically and financially profitable for farmers even form small scale level farmer), so that people may invest proudly in Agriculture activities. This can be achieved in collaboration with MINEACOM by encouraging Made in Rwanda even in Agriculture by mobilizing people to primarily consume locally produced products.

The observed challenge of mismatching of production cost of agriculture products and selling prices may lead to lower benefits of farmers from their activities and get discouraged to grow more crops (or keeping livestock) in better conditions by investing in Irrigation and improved agriculture input uses, which can cause food shortage despite all measures taken in food security assurance. Therefore, there is need to set up or improve polices with regards to **prices set up mechanism for agricultural commodities**.

4.1.2. Conjunctive Management and Groundwater Storage

Deficiency of precipitation during drought periods results in water shortage for various activities / sectors. The impacts of droughts on water resources include reduction in runoff, stream flow/river flow, ground water recharge. The impacts on water resources eventually in return affect also both water supply and demand.

Considering the above, it is necessary to set up appropriate water management for mitigating the droughts impacts. The strategies which can be used to mitigate droughts risks related to water are the following:

- Increasing available water supplies: Increase storage capacity (reservoirs), ground water recharge and conjunctive use with surface water, locating new potential resources/Locating new Standby resources (for emergency), emergency water supply by water tankers, treatment and reuse of wastewater

- Improving demand management (in all sectors/users): Water-saving irrigation techniques (drip, sprinkler, etc.), Reviewing water allocation, encourage water saving technology, Inventory private wells and negotiate their public use, Adopting/reviewing water tariffs

Appropriate water management is of paramount importance to mitigate droughts risks, which could otherwise affect water users. Hence, it is necessary that all relevant institutions come together and apply the mitigation strategies. The related responsibilities for all relevant institutions need to be

clearly defined.

4.1.3. 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.

4.1.4. 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.

A special attention should be given to land development (Irrigation and drainage, terracing, water retention ditches construction, water diversion ways construction, …) for agriculture use, and also to land planned for food production and security.

Reforestation can not only improve the eco-environment situation but can also mitigate the risk of drought especially to local farmers.

The agriculture policy should ensure the food security which reduces the vulnerability and mitigate drought risks.

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.

4.1.5. 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.

S/N	ACTION	Lead institution	Participating institutions	Performance indicator
Improving agricultural techniques				
	Promote mechanisms to prevent food shortages through effective storage system, irrigation system and enhancing drought-resistant crops and livestock;	MINAGRI	RAB, Districts	Number of storage facilities established at sector/community level Number of additional hectares under irrigation Number of households using small scale irrigation scheme and using drought resistant crops
	Increase the number terraces in drought prone areas	MINAGRI	RAB, Districts	
	Promote multi-cropping and drought resistant crops in prone areas to sustain production;	MINAGRI	RAB, Districts	
	Promote crops varieties growing in short vegetation cycle along with drought resistant crops to maximize the production in drought affected areas	MINAGRI	RAB, Districts	
Water resource management				
	Maximize efforts to improve water resource management to build resilience to drought stresses;	RWFA	WASAC, MINAGRI, REMA, Meteo	
	Put in place a suitable way to ensure fair water supply in drought prone areas	WASAC	MININFRA, Private operators (water supply), Districts,	
	Improve water supplies through -storage capacity increase, - ground water recharge and conjunctive use with surface water -locating new potential resources/Locating new standby resources (for emergency),	WASAC	MININFRA, Private operators (water supply), Districts,	

	Encourage water saving technology (water demand management)	WASAC	MINALOC, MINAGRI, RAB, Districts,	
	Orient extension of water supply system to drought prone areas	WASAC	MININFRA, Private operators (water supply), Districts,	
ECOSYSTEM AND LAND USE				
	Enforce national land use guidelines	RLMUA	MINILAF, MINALOC, Districts, MINAGRI, RHA	
	Increase afforestation and ecosystem restore especially in drought prone areas	RWFA	MoE, Districts	
COORDINATION				
	Regularly map and monitor drought prone areas	MINEMA	MINAGRI, MINALOC, MoE, RWFA, Meteo	
	Strengthen joint planning, monitoring and evaluation mechanisms in pre, during and post drought phases;	MINEMA	MINAGRI, MINALOC, MoE, WASAC, RAB, RWFA,	
	Build the capacity of local government entities and communities in planning and management of the water resources with effective participation and accountability;	MINALOC		
	Ensure ownership and responsibilities to decentralized entities in mitigating, responding and recovering from drought effects.	MINEMA	MINALOC	
	Increase and assure profitability of agriculture produces at farm level through policies review and/or initiation and set up	MINAGRI	MINICOM, MINALOC	Number of farmers shifting from subsistence agriculture to professional
	Increase capacity of farmers and agriculture technicians to mitigate drought	MINAGRI	MINALOC, Districts	Number of farmers applying drought mitigation strategies

4.2. 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.

4.2.1. 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.

4.2.2. 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.

4.2.3. National Response

Following the 2014 emergency drought crisis in Kayonza and Bugesera the NADIMAC 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.

4.3. 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 NADIMAC is required. A final drought report summarizing the response actions, experience gained and recommendations for next steps will be produced by the Task Force.

5. INSTITUTION'S ROLES AND RESPONSIBILITIES

5.1. 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	MINEMA	MINAGRI, RAB, RWFA, WASAC

Improve monitoring of key Indicators of drought and drought impacts.	MINEMA	MINAGRI, RAB, RWFA, 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.	RWFA	WASAC, RAB
Augment real-time monitoring of groundwater data with additional reservoirs	RWFA	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	RWFA	REMA, WASAC
Develop reporting method for collection of drought impacts data and information.	MINEMA	RWFA
Communication/Coordination and Planning		
Update Drought Contingency Plan	MINEMA	MINAGRI, RWFA, 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.	MINEMA	RWFA
Educate water users & agencies on how to use climate information to plan for mitigation and drought response	RWFA	WASAC
Provide public general information on drought as it relates to wildfire issues	MINEMA	REMA, RWFA
Provide farmers with awareness campaign on coping with drought.	MINAGRI	MINEMA, RAB
Conduct drought preparedness workshops for the purpose of Developing proper indicators for each region and Assess potential needs for regional assistance	MINEMA	MINAGRI
Prepare and update informational brochure on drought for general public	RWFA	MINEMA

Develop coordination and communication protocol between national, district and community levels	MINEMA	NPDM, DIDIMAC
Clarify emergency response procedures responding institutions	MINEMA	NPDM
Arrange for funding mechanisms to support drought relief, groundwater projects, conservation, recycling and other water management projects to assist regions in dealing with drought.	MINEMA	MINECOFIN, RWFA
Develop risk-based vulnerability assessment for each basin /watershed.	RWFA	MINEMA
Prepare a "Map of Drought Vulnerability" showing areas where drought is more likely to upset water supplies.	RWFA	MINEMA, 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	RWFA	NPDM
Negotiate agreement for drought contingency water supplies.	MINEMA	WASAC, RWFA

5.2. 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	MINEMA	MINAGRI, RWFA, RMA, WASAC
Convene Drought Monitoring Committee and Impact Assessment Work Groups (situation and assessment reports)	MINEMA	NPDM
Designate agency spokesperson(s) to interact with the public and media	NADIMAC	NPDM
Issue a Drought Advisory and press release	NADIMAC	NPDM
Direct national agencies/institutions to conserve water at national facilities	NADIMAC	NPDM

Communicate conditions, reinforce general Conservation tips. Hold drought preparedness workshops.	MINEMA	NPDM
Accelerate work with local governments and water providers on public awareness and outreach.	MINEMA	NPDM, DIDIMAC
Review laws to reduce impediments to providing water supplies to communities in emergency need, adapt/modify as necessary. (short term)	NADIMAC	NPDM
Monitoring		
Collect "regional"[1] impact data and information	MINEMA	RWFA, 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	RWFA	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	MINEMA	RWFA, MINAGRI
Communicate drought severity through normal channels.	MINEMA	MINAGRI, WASAC, RWFA
Conduct workshops or other methods of communication in drought stricken areas to provide information on assistance available.	MINEMA	NPDM
Enhanced Media Outreach and provide Assistance to communities for conservation and drought education.	MINEMA	MINAGRI, WASAC, RWFA
Monitoring		
See actions in Stage 1		

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

Local Assistance		
Prepare to directly assist isolated, rural systems who are at most risk and have the least resources for responding.	MINEMA	NPDM
Work with local water sources managers (cooperatives, community leaders) and local government in urban areas with robust water management infrastructure, resources and coordination.	RWFA	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	RWFA
Conservation		
Increased water savings with heightened Water Conservation efforts (Save our Water Campaign)	RWFA	RAB, WASAC
Encourage national facilities (including universities, prisons, Refugee camps, schools, hotels, offices) to reduce water use	WASAC	MINEDUC, MINIJUST, MINEMA, RWFA, RSB
Implement other reductions consistent with and similar to local community reductions.	NPDM	DIDIMAC
Provide financial assistance to drought impacted areas and sectors	MINEMA	MINECOFIN, NPDM
Hold more water in reservoirs in case next year is a dry one. Start planning for any needed temporary engineering solutions.	RWFA	MINEMA
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	NADIMAC	NPDM
Identify criteria thresholds for Emergency Proclamation	MINEMA	RWFA, WASAC, RAB
Initiate implementation of Emergency response plan and identify enforcement procedures	MINEMA	NPDM
Coordinate responses to emergency	MINEMA	NPDM, NPDRR

conditions		
Increased media outreach (and enhanced assistance to communities for conservation and drought education)	MINEMA	MINAGRI, RWFA, WASAC
Communicate conditions, promote general conservation tips, and provide information on drought mitigation and response options.	MINEMA	NPDM
Continue intelligence gathering and situation reporting	MINEMA	DIDIMAC, RWFA, WASAC
Work with local health directors to assess public health threats and take appropriate actions	MINISANTE	MINEMA, RBC
Provide regular situation reports to MINEMA, and appropriate agencies	DIDIMAC	SEDIMACs
Prepare a request for Presidential Disaster Declaration	NADIMAC	NPDM
Monitoring		
Appoint the drought management focal persons	NPDM	
Emergency notifications received by the warning agencies and passed on to Drought Management focal	MINEMA	RMA, RWFA, RAB
Local Assistance		
Coordinate with local government to facilitate declaration of Drought Emergency in affected area(s).	MINEMA	DIDIMAC, SEDIMACs
Deploy emergency conveyance/interconnections as needed.	MINEMA	MINAGRI, WASAC
Coordinate mutual aid assistance	MINEMA	NPDM
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	RWFA, MINEMA
Impose necessary restrictions as needed for affected areas	RNP	WASAC, RWFA
Conduct assessment and Provide required relief assistance to affected communities	MINEMA	NPDM

Initiate and facilitate greater use of recycled water.	RWFA	WASAC, MINAGRI,
Conservation		
Work with local water agencies in highest levels of conservation which could include elimination of non-essential water use	WASAC	RWFA, RNP
Require public and private facilities to eliminate watering non-essential outdoor watering (exceptions for wildlife protection).	RNP	WASAC, RWFA
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	NADIMAC	NPDM
Activate the L4 emergency response	NADIMAC	NPDM
Staff the disaster and emergency operation room	MINEMA	NPDM
Facilitate Mutual Aid requests for Assistance to provide increased security by law enforcement due to severe water cutbacks.	RNP	NPDM
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.	MINEMA	NPDM

5.3. 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.	NADIMAC	NPDM
Monitoring:		
Ongoing monitoring of recovery (reservoir replenishment and longer term climate data)	MOE	REMA RWFA
Assure replenishment of reservoirs and groundwater resources.	RWFA	WASAC, REMA
Monitoring of groundwater levels including	REMA	RWFA
Facilitation of watershed and local planning for drought:		
Manage pasture, rangelands and forest recovery	MINILAF	MoE, MINAGRI, RWFA, REMA
Local Assistance		
Reduction-of-herd recovery assistance for dairy and cattle operations.	MINEMA	NPDM
Provide technical assistance to districts requesting help in phasing out drought rates and returning to standard water rates.	NPDM	DIDIMAC
Pasture rehabilitation - Country provides assistance in form of :		
Loans and Grants	NPDM	DIDIMAC
Technical Assistance	NPDM	DIDIMAC
Actions to diminish first flush concerns (For example: sediment transport off of denuded lands due to drought and/or wildfire)	REMA	RWFA

REFERENCES

1. National Disaster management Policy, MIDIMAR (2012)
2. National Disaster Risk Management Plan, MIDIMAR (2013)
3. Floods and drought monitoring reports, RWFA (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)