

# **Drought conditions and management strategies in Rwanda**

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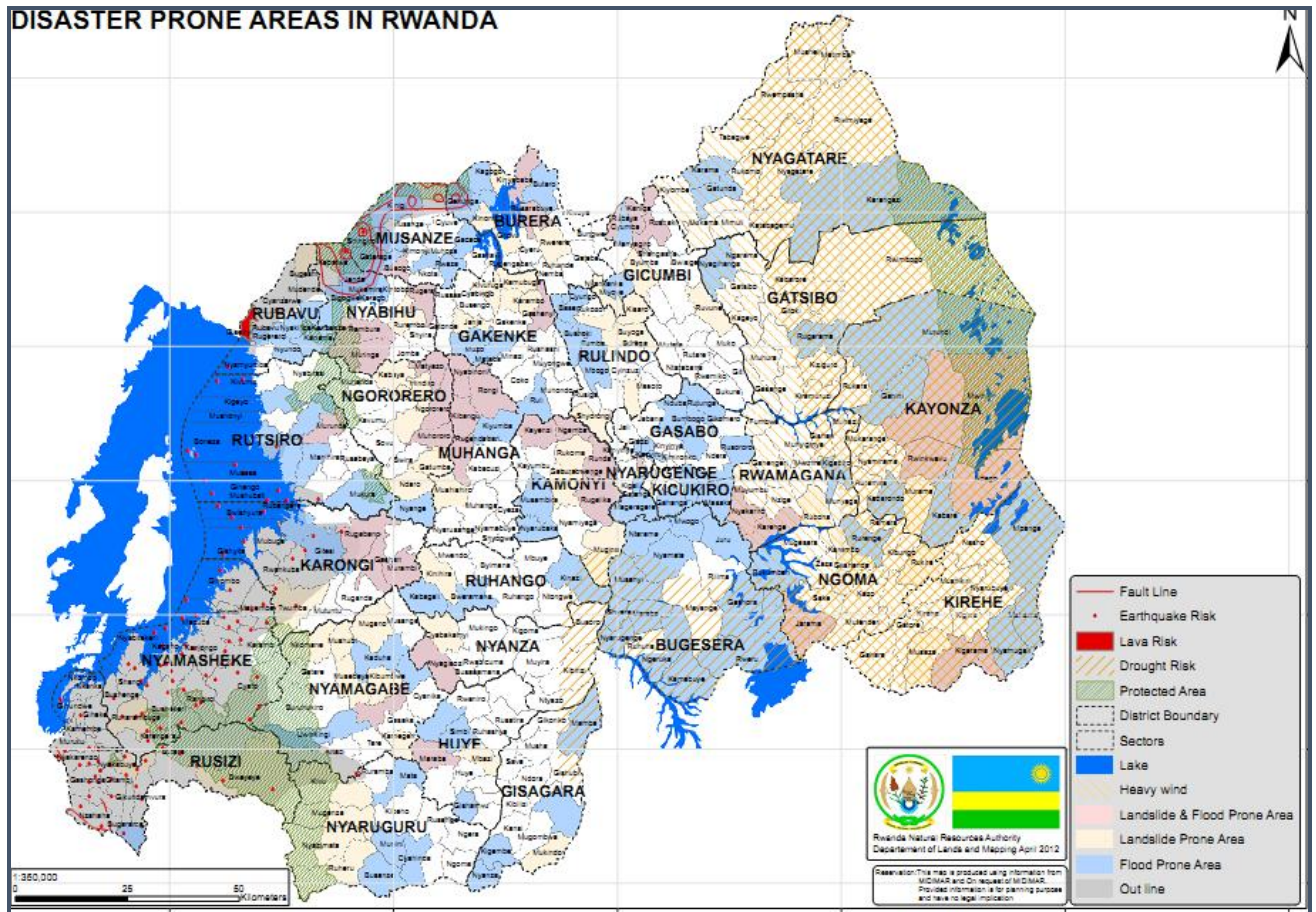
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## **Background:**

Rwanda is located in central-eastern Africa bordered by Uganda, Tanzania, Burundi and Democratic Republic of Congo. It has a total area of 26,338 km<sup>2</sup> with a population of 11.4 million people. Rwanda has a tropical-temperate climate with a bimodal rainfall pattern with peaks in the months of April and November. Between the two rain seasons are two dry periods, a short one between December and February and a long one from June to August. Rainfall ranges from about 900 mm in the east and southeast to 1500 mm in the north and northwest volcanic highland areas. Agriculture accounts for 40% of GDP and provides employment for 80% of the population

Climate change has resulted in Rwanda experiencing recurrent droughts and poor rainfall as never before. Rainfall trend analysis of rainfall is showing that rainy seasons are tending to become shorter but with higher intensity. This tendency has led to decreases in agricultural production due to drought events especially in dry Eastern Areas; whereas in the North and Southern Region there is severe landslides, soil erosion due to heavy floods resulting in destruction of infrastructure and crops including loss of human and animal lives. The Climate change induced droughts are now threatening Rwanda's twin goals of food security and poverty reduction. The WRSI for maize (a proxy indicator for drought prone areas) shows that Eastern Rwanda is the most vulnerable drought prone area. Figure 1 shows the disaster prone areas in Rwanda highlighting eastern Rwanda (Kayonza, Kirehe and Nyagatare) as most drought prone areas

Figure 1. Extent of drought affected areas of Rwanda



**Drought monitoring and early warning systems:**

Although Rwanda is yet to put in place Early Warning Drought monitoring and early Warning systems, the country has a national disaster policy which stipulates that it shall be the responsibility of every Ministry and Public Institutions of the Government of Rwanda to take measures necessary for prevention of disasters, mitigation, preparedness and Capacity-building related to its mandate. Therefore, Ministry of Agriculture and animal Resources is in charge of drought management, while Ministry of Disaster Management is in charge of coordination of all disaster related activities with focus on relief. Rwanda has also two main agencies which provide information for disaster related Agro-Met Forecast. The Rwanda Meteorological Agency is in charge of meteorological monitoring and the Rwanda National Resources Agency (RNRA-IWRM) is in charge of hydrological monitoring

**Vulnerability assessment:**

Drought has impact on farmers with crop failures while livestock lack pastures and water. Drought prone area in Rwanda hosts a national park where in case of drought, wildlife is also threatened by pasture shortage, sometimes accompanied by bush fires. Table 1 shows the affected sector of the economy in their priority

Table 1: Drought Impact on the Sectors of the economy

<b>DROUGHTS</b>	Agriculture	Reduced crop harvest
		Loss of livestock
		Additional costs of livestock maintenance, veterinary costs, supplemental feeding, etc
	Fisheries	overfishing
		Reduction in fish production from aquaculture
	Forestry	Increased tree loss from illegal felling, fires, grazing, diseases
	Energy	Reduced hydropower production from low water levels
		Cost of importing higher-cost power from neighbours and provision of replacement generators
	Industry	Loss of income from industries that reduced production because of power shortages
		Permanent loss of employment from industries that relocated to other countries
	Tourism	Reduction in wild life viewing opportunities
	Water Supply	Increase in the cost of vendor-supplied water in urban areas; more time spent queuing
		Increased time spent searching for water in rural areas
		Increased pumping of groundwater in urban areas

**Emergency relief and drought response:**

Rwanda has implemented many measures to be food secure country and these measures include irrigation techniques to mitigate drought and local communities are trained on

low cost irrigation like rainwater harvesting, water storage , pumping from water bodies, drought resilient seeds, food stocks where community keeps the excess of their crop that can be used in case of drought. Rwanda put much effort in afforestation of drought prone zones. In case of drought, ministry of disasters management and ministry of agriculture collaborate for mitigation.

### **Practices to alleviate drought impacts:**

Irrigation has been identified as a key strategic activity in the Agriculture sector framework known as ‘SPAT’ (Strategic Plan for Agriculture Transformation) to achieve food security and reduce dependency on rain-fed agriculture. Other practices to alleviate droughts include;

- Afforestation,
- Rainwater harvesting
- Water storage (Dams)
- Food chain management
- Disaster management policy and disaster institutional and legal framework
- Climate Change Adaptation measures (including a National adaptation program of action to climate change (NAPA))

### **The need for knowledge and skills on drought management:**

An assessment of the knowledge and skills gap in Rwanda shows that the country requires to;

- To put in place a Drought Early Warning system
- Institute a Drought management policy
- Put in place a crop monitoring model to improve on crop advisories to farmers
- Build up the capacity of vulnerable communities through drought management demonstration projects.