

October 2018

# POLICY BRIEF

## DROUGHTS IN EASTERN KENYA: *WHAT THIS MEANS FOR DROUGHT MANAGEMENT*



### Key Messages

1. The frequency and severity of drought varies in eastern Kenya with a given event. Although moderate droughts are the most common in the area, extreme droughts have been experienced in the drier agro-ecological zones of Kitui and Tharaka-Nithi Counties. These variations are important for effective management of droughts, inclusive of resource allocation.
2. In eastern Kenya, sometimes the long (March-May) and short (October-December) rains fail in the same (calendar or cropping) year. This

adversely affects people's livelihoods, especially livestock and crop farming. Minimizing livelihood losses associated with drought requires strengthened monitoring and early warning systems.

3. The short rains - the main growing season in eastern Kenya, is more vulnerable to drought than the long rains. Sensitizing agro-pastoralists to optimize both seasons should reduce vulnerability to drought and encourage planting during the long rains season.

## Introduction

The Kenya government and international humanitarian agencies spent a combined total of US\$ 1.56 billion on drought mitigation from 1998 to 2011<sup>[1]</sup>. These droughts occurred in the arid and semi-arid areas of Kenya, which account for 80% of the total land mass. If this situation (where it is becoming more expensive to mitigate drought) is not reversed, the country's ability to achieve the Big Four Agenda will be seriously undermined. Food security is a central pillar to the realization of Vision 2030 as well. Improving drought management system is key to reducing the number of food insecure people in Kenya who were estimated at 2.6 million by January 2017<sup>[2]</sup>. Improved monitoring of drought and timely

dissemination of early warning information are strategies to mitigate the adverse effect of drought. Increased knowledge and skills of early warning systems among stakeholders has the potential to reduce drought related risk and improve resilience of semi-arid communities, such as those found in Eastern Kenya. Effective early warning and monitoring of drought depend on knowledge of occurrence rate and spatial spread of drought. Such knowledge informs planning, implementation and funding of drought responses by government and humanitarian agencies. Against this background, this brief highlights the frequency of occurrence and severity of drought between 1973 and 2013 in eastern Kenya (Figure 1).

## When did Eastern Kenya Experience Droughts?

Droughts are classified into three categories according to their magnitude: extreme, severe, and moderate droughts. The two growing seasons – the long rains and short rains experienced varying magnitudes of drought between 1973 and 2013. For the period of study, all the nine sites experienced 11 droughts, 7 of which were during the short rains and the rest during the long rains. More than half the years analysed experienced drought during the short rain season (Figure 2). The high frequency of droughts in eastern Kenya explains the persistently low yield of the lead crops such as sorghum, cowpeas and millet<sup>[3]</sup>. This results in relatively high levels of poverty and overreliance on relief food – especially in Makueni, Kitui and Tharaka-Nithi counties<sup>[4]</sup>.

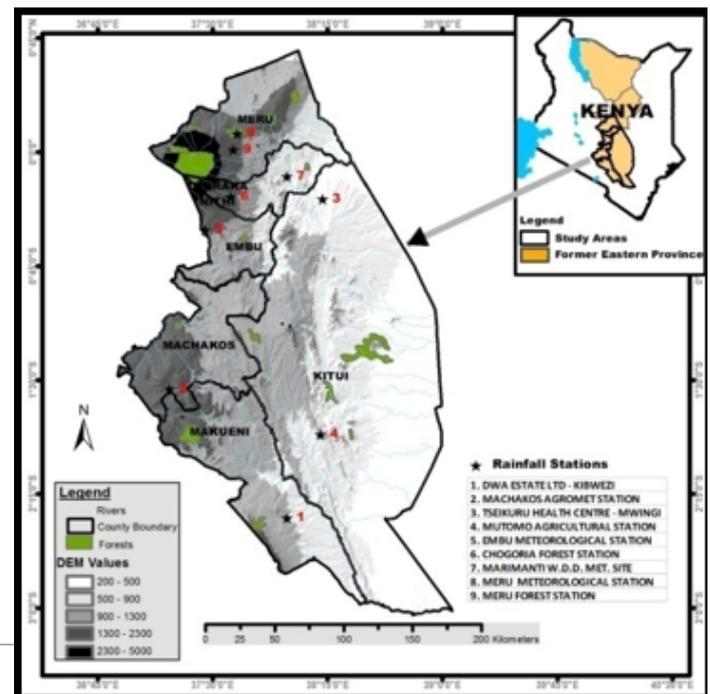


Figure 1: Eastern Kenya and sampled study sites

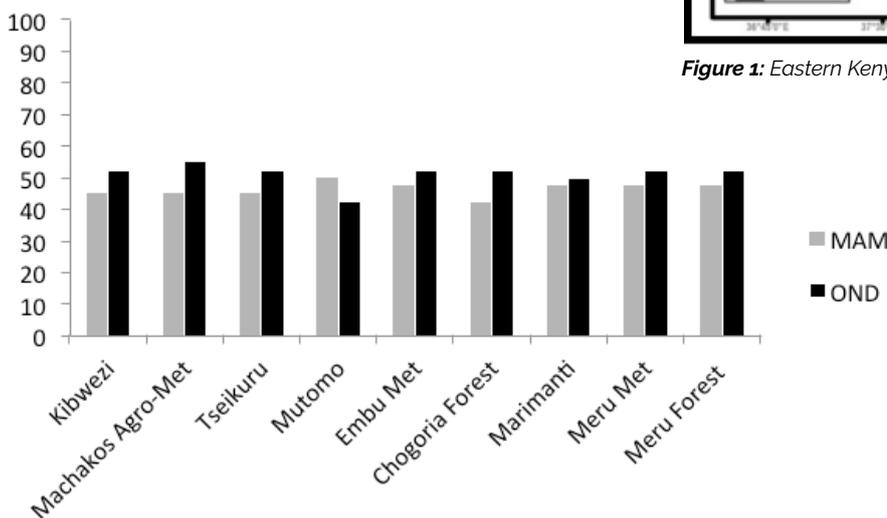


Figure 2: Percentage of drought years by sampled stations in Eastern Kenya.

## Which are the Most Affected Areas?

Kitui county is the most affected with drought. The county recorded the highest number of droughts during the short rains seasons (Mutomo- 9; Tseikuru – 8). While Machakos County (Machakos Agro-Met station) had the least number of droughts during the short rains – six. There were also differences in the occurrence of droughts. In 1987, 1998 (short rains), 1984, 2005, and 2011 (long rains) droughts were more severe in Meru, Embu and Tharaka-Nithi

Counties (high altitude areas) than in Kitui, Makueni and Machakos Counties (low altitude areas). In a related instance, droughts of 1984, 2009, 2011 (short rains) and 1987 (long rains) were of lesser magnitude (moderate or mild) in Kitui, Makueni and Machakos counties when compared to Embu, Tharaka-Nithi and Meru counties. These findings are an indication of the influence of altitude and hinterland to droughts in Eastern Kenya.

## Total Rainfall Failure in both Short and Long Rains.

In some instances, both the long and short rains failed in the same (calendar or cropping) year. This happened in 1975/1976 (Tseikuru, Mutomo and Marimanti), 1983/1984, 1996 (Mutomo), 2000 (Kibwezi, Machakos Met, Tseikuru, Mutomo, Embu Met, Chogoria, Meru Met, Meru Forest), and 2005

(Tseikuru, Embu, Chogoria, Meru Met, Meru Forest). Consecutive droughts aggravate the impact of droughts on livelihoods and natural resources upon which people depend on. For an agropastoralist, failure of both rain seasons has negative impacts on crop yields, pasture and water availability.

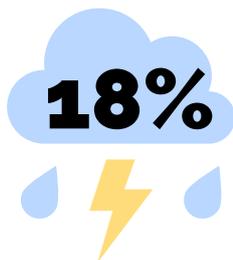
## How Severe are the Droughts?

Moderate (MD) droughts are the most common in both rainy seasons. However, severe droughts (SD) are reported in the driest agro-ecological zones of Kitui and Tharaka-Nithi counties (Tseikuru and

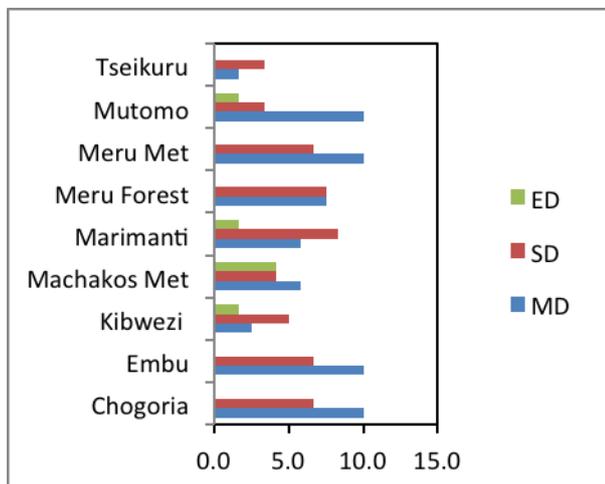
Marimanti – long rains; and Mutomo – short rains) (Figure 3). More droughts are reported in the short rains season - underscoring the vulnerability of this season to drought.

## Occurrence Rate of Drought

### SHORT RAINS

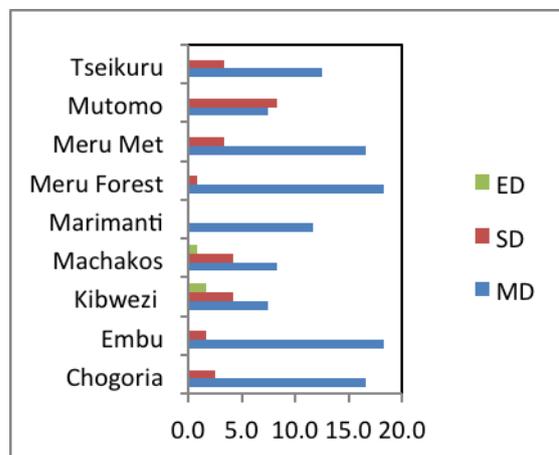


### LONG RAINS



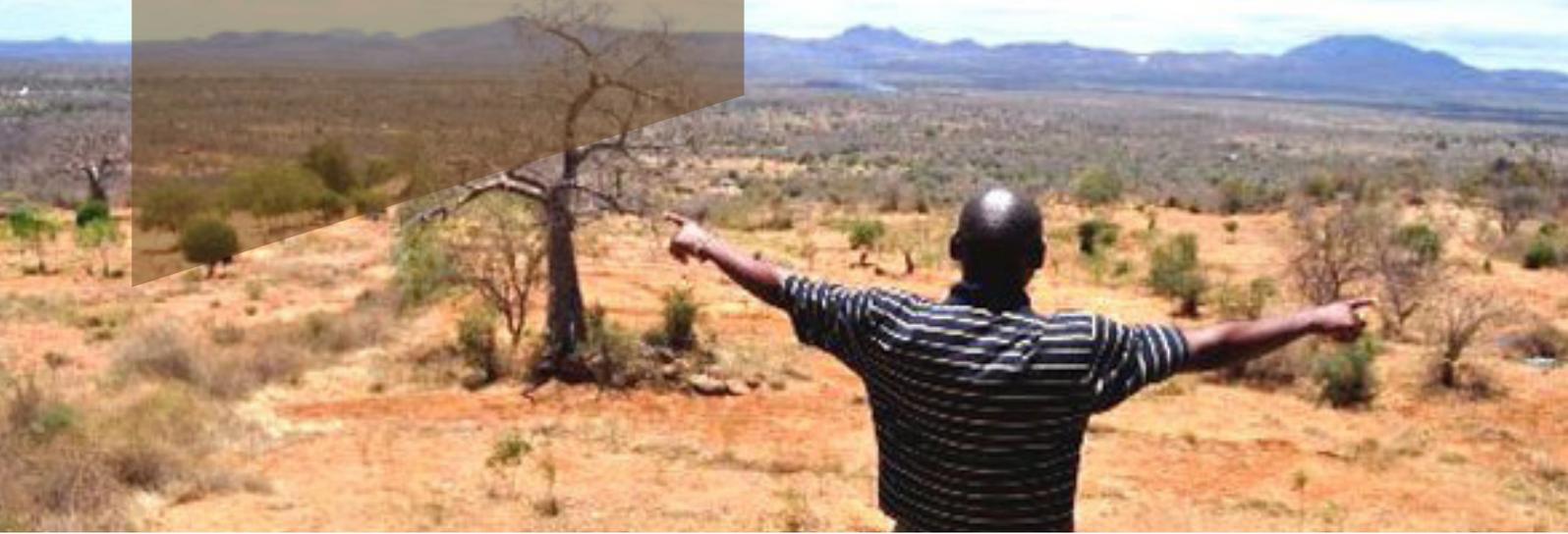
(a) Long rains

Despite the vulnerability, agro pastoralists in eastern Kenya rely mostly on the short rain season<sup>[4,5,6]</sup>. To reduce risks associated with drought, overreliance on the short rains needs to be re-assessed. Farmers need to increase area under crop during the long rains growing season. This will require the initiative of practitioners in the agriculture sector to intensify awareness and offer incentives to encourage farming during the long rains.



(b) Short rains

Figure 3: Severity of droughts during the short and long rain seasons



## Way Forward

1. The severity of droughts in eastern Kenya varies from one county to another and one event to another. Thus, location specific monitoring based on an established index, can supply effective information to guide drought management strategies. Thus, county – level meteorological representatives should partner with local-level institutions (such as schools and churches) in expanding weather observation stations. This will improve data collection.
2. The short rains season is more vulnerable to drought than the long rains season. The current preference for the former as the main growing season needs to be evaluated. There is need for sensitization of agropastoralist – highlighting the risks associated with each of the growing season. Sensitization should lead to informed cropping system that recognizes the vulnerability of both rainy seasons

## About the Brief

This brief is based on a report derived from a CV Raman International Fellowship for African Scientists titled Analysis of Meteorological Drought in Semi-arid Eastern Kenya for the period 1973-2013. The research was undertaken by Charles W. Recha (2018) in collaboration with Prof. A.P. Dimri of Jawaharlal Nehru University, New Delhi. The Project was funded by the Federation of Indian Chambers of Commerce and Industry (FICCI).

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