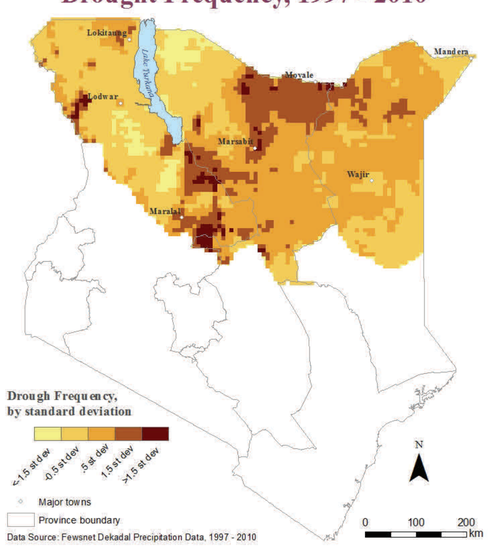
Vulnerability to Conflict and Natural Disaster: A Case of Northern Kenya, 1997 - 2010


Turkana herdsman with their cattle in Northern Kenya
Source: IRIN photography

Introduction

In many countries and international organizations, disaster risk reduction and conflict prevention/conflict resolution/ peace building have been handled quite separately, even though both are related to incidence of humanitarian emergencies and the requirement for response. Contexts in which conflicts and disasters overlap are daily realities for affected communities as well as the government, and the local and international organizations that serve them. Kenya is a prime example and faces multiple hazards and violent conflict. The negative consequences of the interface between conflict and disaster can be exacerbated by separate organizational responses to the situation, either blind to the prevailing environment of conflict or the natural disaster risk.

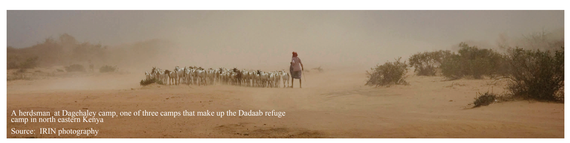
Drought Frequency, 1997 - 2010



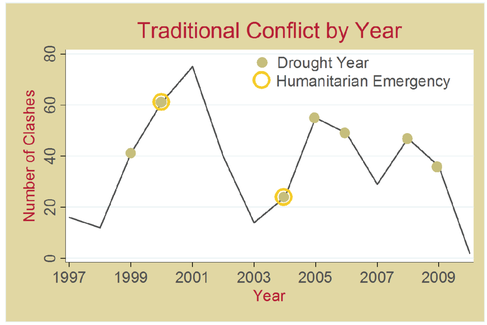
Where disaster and conflict intersect, future risks of crisis are increased, mitigating capacities undermined, and recovery efforts hampered. The goal of this project was to analyze the geospatial relationship between incidences of drought and conflict in order to make a case for integrated programming, and identify some of the causes of conflict vulnerability for better targeted preventive programming.

Question 1: What is the geospatial relationship between drought, pastoral conflict, and humanitarian emergencies in Northern Kenya?

Question 2: What are some of the underlying causes of conflict in Northern Kenya?


A herdsman at Dagahaley camp, one of three camps that make up the Dadaab refuge camp in north eastern Kenya
Source: IRIN photography

Traditional Conflict by Year



Methodology

To address whether a relationship exists between traditional conflicts (defined as ethnic clashes, clashes over scarce resource, or cattle rustling) with incidences of drought I used an Ordinary Least Squares regression to regress conflict on drought years, controlling for how arid the region was, from 1997 to 2010. In addition, change in conflict from drought to non-drought years was observed using kernel density and spatial analysis.

Once that relationship was established, causal variables of conflict were identified from the literature: proximity to a water source, proximity to ethnic boundaries, and population density proxied by distance to road and major towns. The variables were then classified by the following rubric:

classification	description
5	< 5 kilometers
4	5-10 kilometers
3	10-15 kilometers
2	15-20 kilometers
1	> 20 kilometers

The greater the proximity the more vulnerable it was presumed the area was to conflict and therefore it was assigned a higher classification.

Frequency of drought was calculated by summing FEWS NET decadal rainfall data from 1997 to 2010. The yearly summation was then divided by annual yearly rainfall in Kenya calculated from a 50 year period. Where the calculated rainfall was below 75 percent of the long-term annual rainfall it was categorized as a drought year, as defined by the US Weather Bureau. The binomial drought variable was then summed to create an overall frequency of drought, ranging from 0 to 13, representing the number of years in the 13 year span that the area experienced drought. The value was then reclassified into five categories by standard deviation.

The resulting drought index was summed with the proximity variables to create an overall conflict vulnerability index. The vulnerability index was then overlaid with the conflict data to view how accurately it captured areas that were potentially conflict prone due to the selected proximity variables and drought frequency.

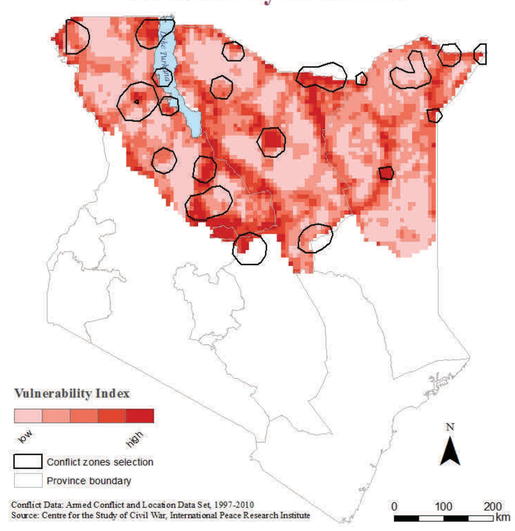
Results

The regression results confirmed that traditional conflict was significantly higher in drought years. Interventions that do not account for the complex interplay between conflict and drought have the potential to worsen tensions and increase risk. For example, programs that are meant to reduce conflict risk by incentivizing a more sedentary lifestyle for pastoralists have the negative impact of destroying the surrounding environment due to overuse of pasture by the cattle. This can potentially result in a community and environment that are more vulnerable to the impact of drought. A clearer realization about the cyclical and self-reinforcing nature of conflicts and natural disasters could lead to programming that would not exacerbate the risk of one while trying to reduce the risk of the other in areas prone to both conflict and natural disaster.

The summed vulnerability map shows a relationship between conflict and the utilized causal variables. Areas that are identified as vulnerable but do not experience conflict offer an opportunity for potential future research on why those locations might be more resilient, and therefore identify possible effective conflict prevention strategies.

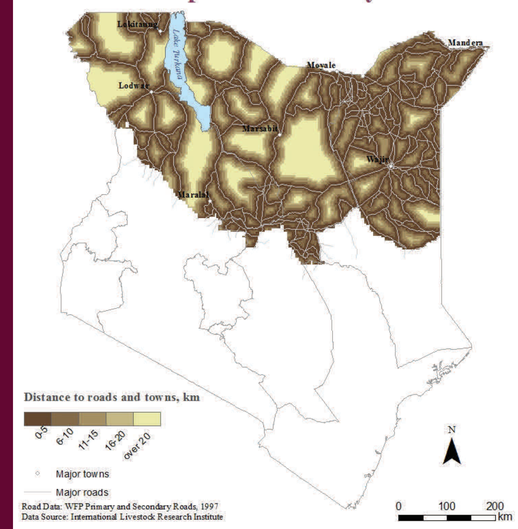
There are some limitations with the analysis. The variables used only offer a very basic explanation of vulnerability to conflict and drought and are all weighed equally. Future research should consider exploring other possible causal variables and consider assigning appropriate weights. A better understanding of shared root causes of both conflict and drought vulnerability could translate into more effective preventive programming that simultaneously addresses conflict and natural disaster risk.

Vulnerability to Conflict

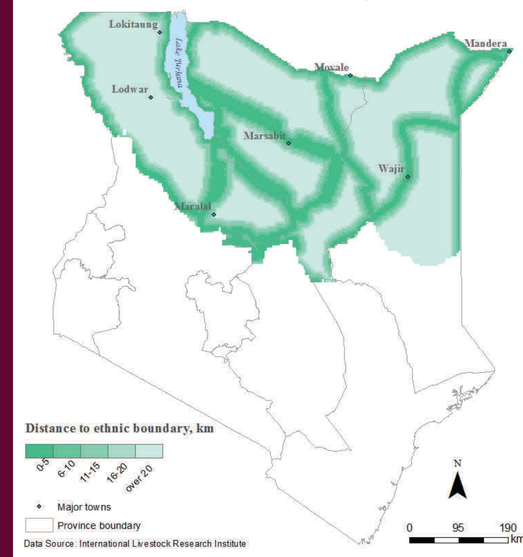


Cartographer: Anastasia Marshak **Date**: May 4th, 2012
Data Sources: FEWS NET, International Livestock Institute, Armed Conflict and Location Data Set, World Resource Institute, GIS Mdrive
Projected Coordinate System: WGS 1984 UTM Zone 37S

Population Density



Ethnic Boundary



Access to Water