Community and Technology inter–linkages for Drought Risk Assessment and Monitoring in Kenya

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Drought Early Warning System (EWS)

- 80% of Kenya is vulnerable to drought
- The EWS of the NDMA aims to give information that help trigger interventions to respond to drought in a timely manner.
- The system is community based, with data collected at the household level
- To achieve this, triangulation of indicators to characterize drought conditions, including trends and specific thresholds are critical
Drought Indicators

- **Physical indicators**
  Rainfall, Effective soil moisture, Surface water availability, Depth to groundwater, etc.

- **Biological/ Agricultural indicators**
  Vegetation cover & composition, Crop & Fodder yield, Condition of domestic animals, Pest incidence, etc.

- **Social indicators**
  Food and Feed availability dietary diversities, Land use conditions, Livelihood shifts, Migration of population, Markets operations, resource conflicts, etc.
Current Early Warning System Model of NDMA

Takes household as unit of analysis considering different livelihood polygons and looks at 3 different categories of indicators;

1. Environmental Indicators

- They give trends on the environmental stability
- Rainfall: onset, quantity, spatial distribution, temporal distribution
- Forage (Pasture and browse) in terms of quality and quantity – trends
- Water sources: changes in water sources, distances traveled
2. Rural Economy Indicators

- They measure food availability and effects to food security
- Livestock body condition in various areas
- Livestock diseases
- Timeliness and condition of various crops in different livelihood zones
- Presence of crop pest and diseases
- Productivity: Livestock and Crops
3. Human Welfare Indicators

- Measure access and utilization of food
- Market prices; Prices of livestock, food crops. Terms of Trade (ToT)
- Markets Functionality
- Trends in food consumption scores and availability at household level
- Health and Nutrition: Nutritional status of children 12–59 months – (MUAC Measurements)
Data Collection (Currently)

- Collected across sentinel in 23 counties by field monitors
- There are appx. 334 Sentinel sites across the area covered each with 1 enumerator (Field Monitor)
- Data from the sentinel sites is used to inference what happens in other areas of the livelihood
- Household Data Collection – Questionnaires (HHA)
- Community Key Informants questionnaires (KIA)
- Observations
- Secondary Data – Trends Building
- Use of Geo Technology (RFE and NDVI) limited
- Analysis done and monthly bulletin produced example
Sampling

- Purposive sampling;
- Used in selecting the areas to be used as a sample unit
- The sample unit is selected purposively to meet a certain criteria.
- Population Distribution and Density
- Geographic Scatter of the area
- Security
- Accessibility
Random sampling; used to select households to be used as sampling units
In this all the households stand an equal chance of being selected
Total Population of the sample site taken into consideration
Sampling interval determined by 30 Number of targeted respondents
The selected households interviewed for an year (12 months)
Current Risk Model

- Risk = F(Hazard + Vulnerability)
- The risk of a negative outcome, is a function of the probability and severity of a hazard event as it interacts with the vulnerability of people.
- The trend in each indicator is monitored with respect to the “normal” range.
Current Challenges

- Vastness and lack of homogeneity of the sample sites and livelihoods
- Linking the Current EWS with response (Triggering for Response)
- Current Model does not have distinct way to classify alert, alarm, emergency and recovery phases of Drought Cycle
- Low capacity of remote sensed data for triangulation at the county level
- Limited access to Remote sensed data at national level – Only rely on FEWSNET
Proposed improvements/Opportunities

- The Early Warning Phases will exist: Normal, Alert, Alarm, Emergency and Recovery
- Access to spatial data for triangulation with the other available data
- Drought Early Warning and Impact Monitoring System (DEWIMS) to include new indicators and better ways of collecting data for existing indicators
- Create livelihood decision tree based on Geo-spatial, Biophysical and Socio-economic indicators
Examples of Use of Geo-technology in Drought Monitoring in Turkana

- Turkana county lies in North West of Kenya, it’s the largest in landmass, most vulnerable to drought with highest poverty level index in the country.
- March – April May (MAM) Rain Season 2013 rainfall amount was above normal (Slide 14)
- Onset late and Cessation Early, – Slide 15
- Temporal Distribution Poor– Most rain Falling in April (Slide 15–17)
- Overall outcome – WRSI for Rangeland remained poor or improved on western and northern parts which are Insecure grazing areas (Slide 18).
Seasonal Averages (MAM)

March - May 2013 Rainfall Distribution Turkana County

March - May Rainfall Distribution (Long Term) Turkana County

[Map showing rainfall distribution with administrative boundaries]
Rainfall Estimates for Kibish, Turkana 2013 compared to Long term

Source: NDMA/FEWSNET
May Rainfall (current vs Long Term)

May 2013 Rainfall Distribution Turkana County

May Rainfall Distribution (Long Term) Turkana County
Thank You

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