

Global Assessment Report  
on Disaster Risk Reduction



Case study on understanding food security trends  
and development of decision-support tools and  
their impact on a vulnerable livelihood in East  
Africa

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### **Draft: Case-study on understanding food security trends and development of decision support tools and their impact on a vulnerable livelihood in East Africa.**

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#### **Abstract:**

East Africa is one of the highly to extremely food insecure regions of the world, due to recurrent droughts, chronic poverty, civil conflict, escalating commodity market prices, diseases and national and regional policies which do not address themselves to the current and long-term underlying casual factors of food insecurity in the region.

In this case-study, FEWS NET highlights its activities within the Disaster Risk Reduction (DRR) framework in the region focusing on a vulnerable marginal agricultural livelihood area in Kenya and demonstrates how its early warning and monitoring information and well targeted response has played a critical role in mitigating food insecurity in the focus area.

FEWS NET is a USAID funded global project, which has over two decades of experience in providing timely, credible and actionable information on prevailing food security conditions in region. In the process, it has managed to establish an invaluable knowledge base of the underlying food insecurity issues based on working closely with local and international partners in pertinent food security activities which address food availability, accessibility and health issues filtered through comprehensive livelihoods socio-economic databases. FEWS NET recognizes the importance of working with multi-agencies due to mandate which is multi-sectoral nature.

The results of the case-study indicate a systematic improvement in food security conditions based on Coping Strategy Index (CSI) trend analysis for the past 10 years despite the increasing frequency of severe and prolonged droughts owing mostly to timely early warning decision support information coupled by well targeted short-term or emergency interventions by national and international response agencies.

The case-study, further addresses itself to possible long-term DRR policies and programs in support of sustainable livelihoods within this focus area, based on trend analysis of its improving terms of trade in livestock with improved markets infrastructure, land and water resources management despite the recurrent droughts and unfavorable long-term climatic outlook scenario's in this area.

## 1. Introduction

Famine Early Warning Systems Network (FEWS NET) is a USAID funded global project, which was established in Sub-Saharan Africa in the mid-80's following severe famine in parts of Western and Eastern Africa countries. The project's mandate focuses on provision of timely and reliable decision support information on food security to national, donor and international response agencies. The project also focuses on user-driven capacity building initiatives intended to ensure sustainable technology transfer.

In accomplishing its objectives, FEWS NET has managed to strengthen its collaboration with its implementing partners and local Government institutions through its field staff, who have established an invaluable knowledge base of the underlying food insecurity casual factors, based on comprehensive seasonal field assessments of key indicators on food availability, accessibility and health issues filtered through house hold economy analysis framework (HEA). The regularly updated livelihoods database at household level forms the basis for its analysis framework in identifying geographical areas of food security concern, vulnerability to hazards, income and food sources and the house-hold coping strategies. This approach has made it feasible for FEWS NET and partners to regularly provide actionable reports which answer to the following basic questions:

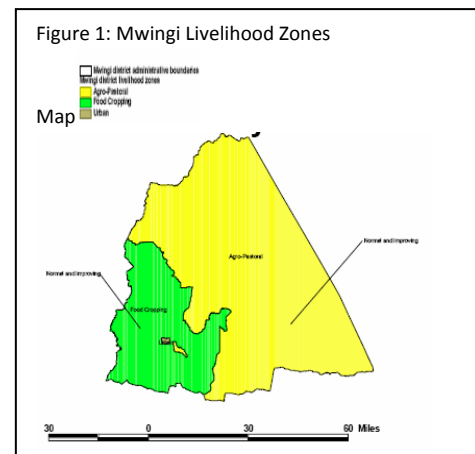
- “Which population groups are facing or at risk of food insecurity?, why?, and for how long?”
- “What are the best ways to mitigate adverse trends or shocks to livelihood systems?”

It is against this background, that this case-study focuses on Mwingi district a highly food insecure region of Kenya to assess the efficacy of Kenya Food Security Steering Group (KFSSG) and FEWS NET activities within the Disaster Risk Reduction (DRR) framework. The experience gathered is expected to inform policies on sustainable livelihoods in the study area.

## 2. Case-Study Area & Justification

This case-study focuses on Mwingi district of Kenya, due to the following reasons:

- Highly food insecure region of Kenya, which relies heavily on rain-fed agro-pastoral livelihood.
- Offers unique insights on both crop and livestock production as food and income sources in a semi-arid (rainfall amounts between 500-700mm per year) region.
- Extremely high poverty levels of 60% of the total population (based on the 1 US Dollar criteria).
- Availability of field and complementary remotely sensed data critical for the study.
- Existence of well structured food security information system and response agencies with the support of Government.



- Easily accessible for regular seasonal food security assessments and has an established district drought monitoring unit under the World Bank funded Arid Lands Resource Management Project (ARLMP).

Figure 1., depicts Mwingi’s livelihood zones map based data provided by KFSSG with agriculture (crop and livestock) accounting for 70-80% of its food and income sources, while labor and remittances/ relief aid account for the remaining 20-30%. Their heavy reliance on rainfed agriculture makes the community susceptible to weather/climate vagaries, hence creating an interesting case-study on how this community copes with these shocks and whether it’s coping strategies are sustainable in the long-term based on recent past climatic trends and foresee-able climatic outlook scenario’s.

### 3. Analysis Approach & Data

The objective of this case-study seeks to demonstrate the following:

- Linkage of FEWS NET activities to DRR framework.
- Efficacy of food security early warning information to contingency/response planning and implementation.
- Impacts of localized coping strategies and emergency external relief support systems.
- Potential long-term food security outlook scenarios and how they can inform on future policies and development programs in similar livelihoods.

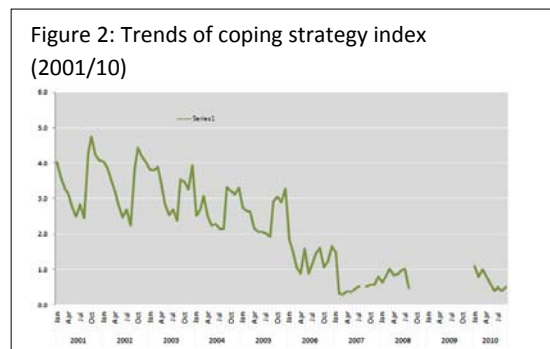
The following datasets were used in this case-study;

- Agro-Climatic datasets; weather/climate, NOAA/NDVI and Agriculture production statistics.
- District livelihood zones data.
- Key commodity prices.
- Statistics of population requiring food aid.
- Coping strategy index.

The analysis approach focused on first identifying the food (in)security trends in the district and the casual factors, both climatic, non-climatic and the resilience of the local communities.

### 4. Food security trends

Coping strategy index (CSI), a well recognized indicator of early warning and response on food insecurity



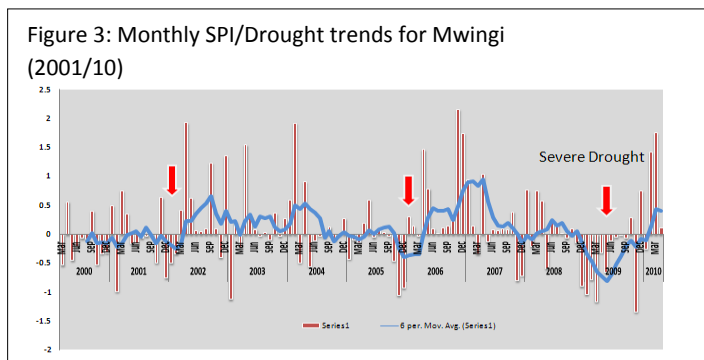
in region was used to assess the current trends in the district (Dan Maxwell et al, 1999). CSI is based on field assessment of how people survive when they do not have food and money to purchase basic food requirements. The higher the CSI values, the more food insecure and vice versa. Long-term CSI trends are also critical in assessing the efficacy of early warning and response systems in a localized area with similar

environmental conditions and livelihoods. Figure 2, shows declining CSI trends in Mwingi, implying systematic short-term improvements on food insecurity conditions over the past 10 years. The downward trend is marked after 2006 period. What could have happened to reverse the overall food insecurity trend in the district?. Are their discernible intra-seasonal trends imbedded in the analysis and if they are what do they signify?.

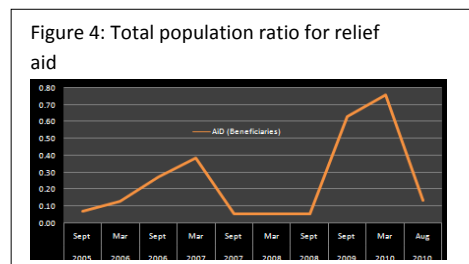
It is clear from the CSI trend analysis (data by Mwingi/ALRMP unit) that there is an intra-seasonal signal which corresponds well to “hunger/lean” periods between sowing and harvesting timeframes and the overall seasonal activities in the district. Further analysis was undertaken to relate CSI trends with the prevailing local weather/climate patterns, more specifically rainfall variability.

### 5. Climate variability

Monthly standard precipitation/rainfall index (SPI), an indicator of meteorological drought was analyzed for Mwingi district to determine the drought frequency and possible impacts on agricultural production risks. The results, in Figure 3, show an interesting pattern of increased frequency (6 out of 10 years) and severity of droughts in the district i.e 2000, 2001/2, 2005/6,



2007 and 2008/9, which are contrary to the improving food security trends seen on the CSI trends for the corresponding period in Figure 2 above. So, what has been happening in the district to mitigate the communities against the known recurrent droughts? i.e. the severe 2008/10 droughts?, is it better multi-sectoral response planning to mitigate food insecurity based projected drought conditions?.



The analysis of targeted relief beneficiaries in Figure 4, indicate an increase in numbers of beneficiaries, between, 2008/2010.

Over 70% of the estimated total population of 377,000 was targeted for relief aid support at the peak of the 2008/9 severe drought event. The beneficiaries’ number dropped following the 2009/10 El-Nino’s wetter-than-normal conditions in the district. This shows that there is a direct link between

increasing severe drought frequency, in its various facets, and increasing number of food insecure populations. Does this mean that they were significant improvements in food security early warning systems information to trigger timely and well targeted response?.

The period of significant decline in CSI, or, improved food security conditions in Mwingi coincide well with advent of FEWS NET and partners Food Security Outlook (FSO) scenario products (IRI report,2004). FSO is a dynamic decision support tool, which integrates interpreted seasonal climate forecasts impacts, non-climatic factors with available livelihoods database to estimate food security outcomes at the end of the season. The FSO products are particularly reliable during strong ENSO events, i.e El-Nino and La-

Nina events which are associated with extreme climatic events, such as wetter- and drier-than-normal conditions in the district. The FSO product, has over time, been refined to answer to contingency/response planning questions and are well served by pre- and post-seasonal food security assessments carried by KFSSG. Consequently, providing a reliable understanding of the prevailing and projected food security conditions in any given livelihood zone. Due to the efficacy of the FSO as an early warning and monitoring (specific-area of food security concerns) tool, it has lent its usefulness to FEWS NET global activities across other parts of Africa, Asia and Central America.

In 2008/9, FEWS NET/Kenya with partners issued a FSO with a lead-time of 3-6 months, allowing for adequate time for contingency and response planning. Under the auspices of Kenya Food Security Steering Group (KFSSG), the Government of Kenya (GoK), donor community and donor agencies were informed of the projected food insecurity scenario's based on the forecast severe drought impacts induced by the La-Nina episode and other underlying food security factors, such as high commodity market prices and structural poverty in some parts of Kenya, including Mwingi district. Figure 5, shows the food security outcome after the successive failure of the seasonal rains during the period under review. The FSO product coupled with area-specific continuous monitoring of food security

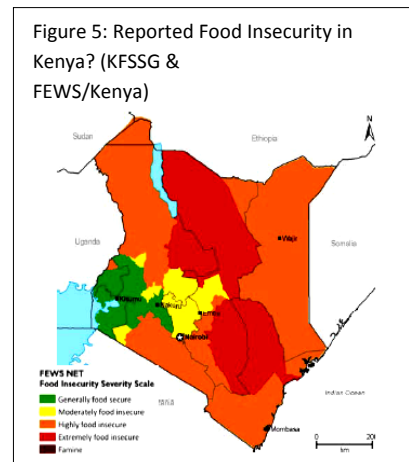


Figure 5: Reported Food Insecurity in Kenya? (KFSSG & FEWS/Kenya)

indicators in the district by multi-agencies; including FEWS NET, WFP, UNICEF and ALRMP drought monitoring unit led to better identification and targeting of food insecure population and type of short-term interventions required to cope with the situation. Underscoring, the importance for developing and establishing the necessary capacities and coordination between early warning and response institutions in dealing with food security related risks. This can serve as a viable national early warning and food security monitoring model, which can be replicated in other FEWS NET countries.

Computation of food security risk trend analysis is based on meteorological drought (SPI) and vulnerability/coping strategy (CSI) within the DRR framework.

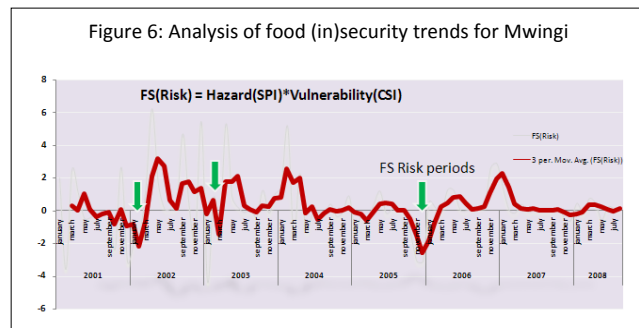
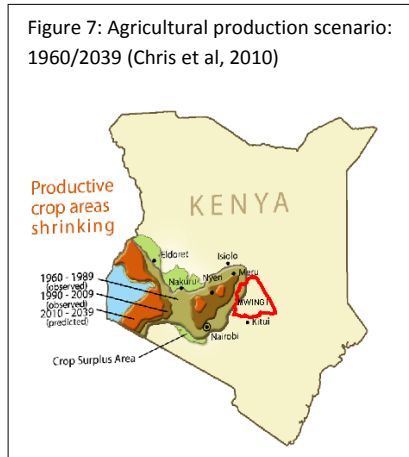


Figure 6, clearly identifies the recent past food security trends and serves well as indicator of food security severity and duration. Missing CSI data for 2009/10 did not allow for computation of the current food security conditions in the district.

However, this mainly addresses the short-term and/or emergency food insecurity risks and responses, but does not address itself to long-term developmental programs and policies which may guarantee sustainable livelihoods.

## 6. Climate change

As demonstrated above, there is a direct link between crop production risks and climate variability trends. Long-term crop production risk scenarios require a good understanding of the projected climate trends at a suitable scale, specifically focusing on rainfall and temperature trends. **Figure 7, shows that the high potential crop production areas are likely to shrink due to the current trends of declining rainfall especially in eastern and central parts of Kenya (Chris Funk,2010 – personal communication),including Mwingi district.** This means, increased risk of insufficient food production or availability in the district for the projected period. This coupled with increasing population growth rate of 2.4% per annum, will imply higher consumption demands, in tandem with increased food insecurity and over reliance on relief support leading to widespread poverty and destitution.

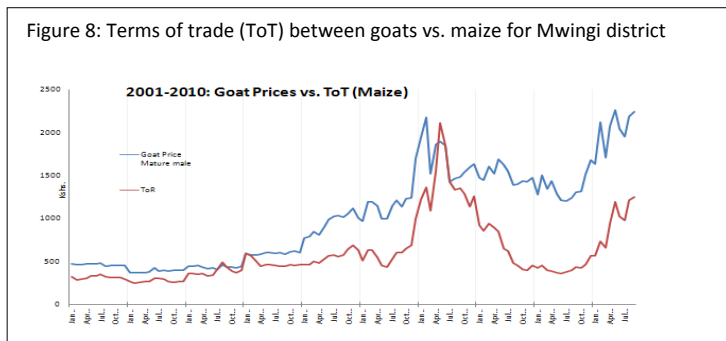


This leads to a fundamental, yet critical question on what needs to be done in the long-term to alleviate the current and projected food insecurity risks in the district?

## 7. DRR policy issues

Better water and land resources management seems to be an obvious option given the projected unfavorable cropping conditions occasioned by recurrent droughts. The GoK has already embarked on several water resources management projects in the district which could help support irrigation schemes in some parts of the districts, holding promising for increased horticultural/cash-crop farming and employment. However, this requires sustainable financial and technical resources and political good-will to support these projects.

Other viable options address land suitability – if this rangeland has the capacity for livestock (goats and cows) rearing and with what benefit to poor house-holds?.



**Terms of trade (ToT) for goats versus staple maize prices over past 10 years, show huge and favorable prospects for improved house-hold income, as indicated in Figure 8.** The significant increase in goat prices since 2005 versus maize prices, if sustained by GoK policies may provide a comparable advantage for this marginal agricultural livelihood and a gradual shift

to a more profitable and sustainable livelihood. The question is how? and what will be main drivers to achieve these goals?. The rapidly increasing population by almost 30% in 10 years is a good indicator of growing demand for beef, besides the insatiable international (United Arab Emirates) consumer demand

for goat meat, milk and other surrogate products. Goats are hardy animals that can survive well in this area with little or no significant investment, apart from pre-requisite need for political-good-will in the country to improve the local livestock markets and trade infrastructure and pricing.

## **8. Conclusion**

- KFSSG model works well.
- Impacts of improved EWS and Response.
- Application of DRR framework; SPI \* CSI.
- Agricultural production scenarios and food security outlook projections.
- Importance of markets and policies – alternative & sustainable livelihoods.
- Need for institutionalization of Drought Management Authority (Legality & Resources).