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Evaluation of the of Mitigation and Response Strategies used for Drought Management in Makueni County, Kenya

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ABSTRACT

Drought in Kenya is not a new phenomenon. Drought is likely to become even more pronounced during the twenty first century due to climate variability whose impacts include unpredictable weather and seasons; increased frequency and intensity of droughts, floods and wind storms; warmer temperatures, resulting in heat stress, and sea level rise. Little is known and documented about Evaluation of drought mitigation and response strategies in Kenya. This study sought to contribute to closing this knowledge gap with a case study from Makueni County, Kenya. The County is located in the semi-arid environment, which is most often deficient in available moisture for meaningful agricultural engagements. Consequently, one of the unique features of the semi-arid Makueni County is vulnerability to drought events. The objective of this study was to evaluate the mitigation and response strategies adopted for drought Management in Makueni County, Kenya. To achieve the objectives of the study, both primary and secondary data were collected through a descriptive field survey design using focus group discussions, informal meetings, administration of household and institutional questionnaires, field observations, and a critical review of published and unpublished materials. Priority rank of use was used to identify the strategies. The findings of this study are anticipated to inform decision makers, development and Humanitarian actors in Kenya, whose interest is to mitigate, and respond to drought disasters on Kenyans lives, economy and development as a whole. Drought mitigation and timely responses not only saves lives but also saves funds, hence can be used to revamp the economy of the country to significant heights.

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Introduction

Drought is a natural hazard and a threat to people's livelihood and socio-economic development. It is caused by a combination of both climate hazard (the occurrence of deficits in rainfall) and societal vulnerability (the economic, social, and political characteristics that render livelihoods susceptible in the region influenced by the deficits) (UNISDR, 2007).

Drought tends to occur less frequently than other hazards. However, when it does occur, it generally affects a broad region for seasons or years. This can result in a larger proportion of the population being affected than when other disasters occur. Globally, drought disasters account for less than 10 per cent of all disaster occurrences, but they account for nearly 40 per cent of all people affected by natural disasters as noted by Durey *et.al.*(2005). The impact of drought varies regionally and over time. Disasters triggered by prolonged drought in Africa can affect millions of people and contribute to malnutrition, famine and loss of life, whereas droughts in the United States primarily result in economic losses. Severe drought often results in extensive desertification and more frequent sand and dust-storms from arid and semiarid regions (Durey et.al.2005)

Nearly 10 million people in Kenya were affected by the drought and their plight had been worsened by high food prices resulting from both local and global factors. This was the population living in the Arid and Semi-Arid land (ASAL) areas with permanent threat of drought and famine (UNISDR, 2009). Thirty Six (36) out of Kenya's Forty Seven (47) counties are within the ASAL zones where more that 60 percent of households live below the poverty line. The high poverty incidence is perpetuated by climatic shocks, environmental degradation, insecurity and diseases which affect human welfare and animal health (GOK, 2005). Unlike in the developed countries where drought results in economic losses, drought in Kenya is associated with loss of human

life, livestock, physical assets, livelihoods, famine and malnutrition (ISDR, 2007).

In order to mitigate the threat of drought and other natural disasters, various international, regional and national initiatives have been adopted by Kenyan Government such as the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD) in 1992 and 1997 respectively. In the year 2002, Kenya joined other Nations in adopting the Hyogo Framework for Action (HFA) during the World Conference on Disaster Reduction in Kobe, Japan which contains the collective commitment of Governments in reducing societal vulnerability to disasters generally and drought in particular (IFRC, 2002).

Kenya cannot prevent drought from occurring, however, according to Mutie (1993), it can reduce its impact on the people and their livelihood through well planned mitigation and response measures such as better management of natural water storage systems such as the wetlands, dug out dams, prevention of bush fires and better community awareness.

This study, sought to evaluate the effectiveness of mitigation, and response strategies to drought in Kenya. Drought mitigation, preparedness and timely responses save not only lives but also funds, hence can be used to revamp the economy of the country to significant heights. It forms a basis for drought managers and scholars for future studies while carefully informing on policy issues relating to drought disaster management in the country

Objective

Evaluate the mitigation and response strategies adopted for drought Management in Makueni County, Kenya

Research question

What are the mitigation and response strategies adopted for drought management in Makueni County, Kenya

Literature review

Drought Coping Strategies

There are several coping strategies adopted by households (HH) in order to cope with the impacts of drought, which may be classified into three categories. These include autonomous or internal adaptation measures that do not alter the structures of the HH, e.g., the sharing of food with other HHs. Secondly, there are internal coping strategies that may affect the composition of HHs temporarily (Adger et al. 2002)), for instance, the search for waged employment on the labour market, which usually includes migration (Hussein and Nelson 2003) and remittances as earlier stated in Chapter 2, from working relatives (Adger et al. 2002). However, migration is embarked on after the sale of assets and is undertaken as an action of last resort (Blaikie et al. 1994). This is an indication of the importance of such assets to rural populations. Migration is not always an effective strategy, however. It may lead to an increasing shortage of agricultural labour force in the rural areas (Glantz 1987). Finally, there are strategies that involve external assistance, especially reliance on public relief measures (Glantz 1987).

Similarly, in non-famine contexts, poor people may adopt fewer options and cheaper diets,

which are routinely used as a relatively costless way of making limited resources last longer (Longhurst, 1987). Households experiencing food shortage are forced to 'tradeoff' short-run consumption needs against longer-run economic viability (Devereux 1993). HHs therefore decide on whether to sell key productive assets (Longhurst 1987; Devereux 1993) and buy food or hold on to these assets and go hungry as a way of protecting future livelihoods Devereux 1993). These choices may have some implications for the immediate survival and future viability of the HHs.

Such coping strategies show that rural people are able to respond and survive during food crises triggered by drought. Studies show however, that Africans do not always starve as a result of drought-related shocks and food shortages. In fact, Seaman (1993) observes that, in the current development jargon, Africans do not starve, they 'cope'". It is thus a widely known fact that people who are faced with food shortage make strategic decisions about how to meet their deficits in consumption. Case studies conducted in the 1980s from Africa and South Asia suggests that there is a common pattern in the nature and sequence of strategies adopted by rural people experiencing food crisis. Based on these studies, three distinct stages emerged associated with increasing desperation, namely, insurance mechanisms, e.g., savings, disposal of productive assets and destitution behaviour, e.g., migration (Swift et.al, 2001).

Households may also cope by engaging in transfers such as interest-free loans or loans with interest between friends and neighbours (Devereux 1993). Informal safety nets, e.g., the sharing of food among HHs are also adopted. These include vertical transfers, e.g., from richer to poorer HHs as stated above and horizontal transfers, e.g., between equally poor HHs. Vertical transfers are purposely engaged in for affection, duty or patronage without the expectation of reciprocity. On the other hand, horizontal transfers are made in order to spread risk or smooth consumption over time with the anticipation that the assistance provided might be reciprocated in the future when the need arises (Swift et.al, 2001

Institutional Interventions

In the broadest sense institutional arrangements were understood as the rules and norms that govern individual and group behavior (Swift et.al , 2001). They are essential in coping with the impacts of drought. Supplementary supplies of food are made available by social organizations such as the extended family, the market and the state. Inherent in the extended family system is the issue of reciprocal social obligation, which binds people together in rural areas in times of need (Bratton, 1987). For example, the Kenyan government instituted a hunger assistance programme namely, Njaa Marufuku Kenya(NMK) a programme to provide an overall strategies framework for a 10-year action plan for hunger eradication in Kenya feeding programme aimed at malnourished under age five children.

Methodology

To achieve the objectives of the study, both primary and secondary data were collected through a descriptive field survey design using focus group discussions, informal meetings, administration of household and institutional questionnaires, field observations, and a critical review of published and unpublished materials. Priority rank of use was used to identify the strategies.

Results and Discussion

Analysis of the Adoption/Coping Strategies for Mitigation and Response against Drought

Although some of the livelihood strategies may be considered short term coping mechanisms, other strategies may in fact lead to enhanced options or other forward looking strategies that help a household or community survive in the face of drought (Dercon 2000). During the survey, respondents identified eighteen drought coping strategies which were classified into two by the researcher and in line with (Dercon, 2000).

Ex-ante coping strategies including, building up of livestock herds, construction of soil and water conservation structures for crop production, diversification of assets and income, growing of drought resistant crops, looking for employment, merry go round (social networks) and construction of high capacity water reservoirs.

Ex-post coping strategies including enhanced sale of livestock, credits from friends and relatives, reduction of consumption levels, migration, diversification of income, engaging in waged labour, skipping meals, charcoal burning, and consumption of wild fruits, remittances and withdrawal of children from school.

These strategies have been discussed in detail by the researcher in the following section below.

Ex-ante Drought Coping Strategies

Analysis of the existing coping and adaptive strategies against drought was done and ranked. More specifically, the study findings showed that 90% of the households interviewed grew drought resistant crops as a coping strategy to drought, ranked number one in priority of use, 89% of respondents indicated that finding a job was the best strategy in coping with drought, ranked two, 84% indicated diversification of income as drought coping strategy, ranked number three, 76% used building up of livestock herds whilst only 25% used excavation of water reservoirs as their strategy. The results of this variable are presented in Table 4.18 below.

 Table 4.18. Priority ranking of Ex-ante coping strategies used by households.

Coping Strategy	Percentage Using the	Priority Rank
	Strategy	of Use
Building up livestock	76	4
herds		
Soil and Water	36	6
conservation		
Diversification (assets &	84	3
income)		
Growing drought	90	1
resistant crops		
Seeking for Employment	89	2
Merry go rounds (Social	45	5
networks)		
Water reservoirs (pans)	25	7

The respondents prioritized the following strategies as the most frequently used; (90%) growing of drought resistant crops, (89%) searching for waged labour and (84%) diversification of income. The primary goal of the ex-ante risk coping strategies is to smoothen income. The income smoothing strategies are ways in which households used to mitigate income shocks before they actually happen. This is often achieved by adopting conservative production choices and diversifying economic activities.

The respondents provided suitable coping strategies since growing of drought resistant cultivars is not only logical but highly preferred technical thinking to foster increased food production despite persistent droughts. It ensures guaranteed livelihood of the community at all times. Equally, search for waged labour and diversification of income are means geared to harnessing livelihood opportunities of the people. According to the findings, construction of water reservoirs, construction of soil and water conservation structures for crop production, and merry go rounds were reported to be the least used ex-ante coping strategies by 25%, 36%, and 45% of the respondents respectively. These were lowly used possible due to the low income level in the community despite the technical significance of construction of soil and water structures which is a suitable long term measures towards coping with drought. However, merry go round is not a suitable coping strategy as affirmed by the respondents, since the communities most need income to purchase food rather than invest when everybody in the family is hungry.

Ex-Post Drought Coping Strategies

The study findings showed that 70.8% of the respondents used diversification of income as their drought coping strategy which was ranked number 1 in priority of use, 65% mentioned selling of livestock as their drought coping strategy ranked number 2 in priority of use. 54.2% stated charcoal burning, ranked number 4, whilst the least in the rank of use, number 11 was withdrawal of children from school as indicated by 4.2% of the respondents as drought coping strategy. This is as illustrated in Table 4.19.

Table 4.19. Ex-post drought coping strategies used by
households in Makueni County.

Coping Strategy	Percentage using the Strategy	Priority Rank
	the bil ategy	Frequency
Sale of livestock	65	2
Credits from friends and relatives	36	7
Reduction of consumption levels	45.2	5
Migration	35	8
Diversification of	70.8	1
income		
Engaging in waged	57.5	3
labour		
Skipping Meals	37.5	6
Charcoal production	54.5	4
Consumption of wild	9.2	10
foods		
Remittances	25	9
Withdrawal of children from school	4.2	11

This finding supports that of Deaton (1991); Paxson (1992); Rosenzweig (1993) who asserted that households build up wealth to create a buffer in order to smoothen consumption after income shocks. During the study it was observed that charcoal burning had extensively dominated in the study area having an indication of posing serious environmental degradation through indiscriminate cutting down of trees. This shows that unless alternative livelihoods are initiated, it might lead to grave consequences in the future. Though only 4.2% of the respondents stated withdrawal of children from school as a drought coping strategy, the already existing low levels of education with more than 75 % of the respondents having not gone beyond primary level as it has been earlier stated could worsen the situation. Further increasing the number of people with derailed income opportunities hence jeopardising the potential of enhancing the achievement of Millennium Development Goals especially goal number one, and Kenyan's Vision 2030.

Conclusion

The study was able to identify at a least eighteen drought coping strategies that are used by the local communities.

The local communities were able to map and rank the most effective coping strategies, despite their inadequate application of some of these strategies especially the ex-ante strategies due to probable income or capital constraints to facilitate their implementation. Food crops such as maize, beans, sorghum, green grams, and cowpeas were the major crops cultivated. However, the crop loss was mitigated by planting drought resistant crops such as cassava, sorghum green grams and cow peas. It was noted that there was resistance by the farmers in planting these crops.

There was a relationship between the drought knowledge, strategies employed and the impact on agricultural production. It was noted in the priority ranking of use, Ex-ante effective coping strategies were not seriously adopted and implemented by the local communities though the communities affirmed these as the most suitable coping strategies in terms of effective priority ranking scale.

The study noted minimal Non-Governmental Organizations partnership with the Government working in the area to facilitate for the effective drought interventions as seen in other semi-arid areas in the country. This could have been due to lack of Government efforts to lure private investors and agencies that could help in providing and supporting for these effective coping mechanisms.

Recommendations

Drought management literacy should be beefed up among the farmers in Makueni County through training.

The County Government should support drought insurance policies such as crop failure and livestock and encourage farmers to embrace drought insurance.

The concern for drawing appropriate adaptive strategies and streamlining policy strategies for various players towards sustainable livelihood framework for the people of Kibwezi, Makindu and Kathonzweni is vital. This endeavour contributes towards the objective of this study.

A number of livelihood strategies have been adopted for implementation that bear practical results and could offer suitable learning lessons for the Kibwezi, Makindu and Kathonzweni community. Strategies stipulated in the Kenya's Vision 2030 strategy and the Northern Kenya and other arid lands strategies emphasize on recognizing not only the challenges but also their potential. Some of the potentials of these zones are, the livestock sector, renewable energy, and in the region's strategic position as the gateway to markets in the horn of Africa and beyond.

Recommendations for further research

Drought coping strategies used in Makueni County were identified, ranked and their effectiveness analyzed. However, further research is required to quantify the financial implications of the strategies and other benefits so as to identify the most cost effective ones.

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