

The Status and the Effects of Food Insecurity on the Livelihood Opportunities and Options in Semi–arid Parts of Makueni District, Kenya

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ABSTRACT— *Makueni district has experienced food insecurity over the years due to a combination of physical and human factors. The problems of food insecurity in the district and its implication have profound effects on the livelihoods among the rural households particularly in terms of economic and social status of the inhabitants. This paper has analyzed the status and the effects of food insecurity on the rural livelihood opportunities in Makueni District. The paper has also addressed options for sustainable food security such as income generating activities and resource management systems. The paper is based on a research carried out in the district between 2003 and 2008. A questionnaire was administered to 200 households' for collecting information on food insecurity status at household level and effects on rural livelihoods. The findings of the investigation indicate that over 35% of the households are at food risk and only 6.5% are food secure. The high risk of food insecurity has contributed to collapse of agro–pastoral systems which have been used for economic sustainability by the indigenous Akamba community for years. In addition, food insecurity has reduced rural employment opportunities and other income generating activities thus eroding purchasing power of the rural households. The paper examines various options available to promote food security and increase rural opportunities including adaptive coping strategies applied by households during food shortages, improving water harvesting techniques and adopting new approaches in economic empowerment and less vulnerable for the inhabitants.*

Keywords— food insecurity, livelihood systems, economic sustainability.

1. INTRODUCTION

Makueni District is located in the southern end of Eastern province and covers an area of 7965.8 square kilometers with a projected population of 912,689 and an annual growth rate of 2.4% (Republic of Kenya, 2001). The district has recently been subdivided into four new districts, namely Makueni, Mbooni, Kibwezi and Nzau Districts. The district has experienced food insecurity over the years thus becoming a major recipient of food relief. There are three main livelihood zones in the district; high potential zone, (cash crops/food crops/horticultural crops), medium potential (food crops/cotton/livestock) and low potential zone (drought resistant crops/irrigation activities/livestock). A research carried out in five divisions of the district between 2003 and 2008 using a sample of 200 households, indicates that the major cause of food insecurity in the district is attributed to both physical and human factors. This includes poor performance and distribution of rainfall, especially in the marginal mixed farming zones; low adoption rates in growing drought tolerant crops; use of uncertified seeds; poor access to farm inputs and poor post harvest food management. The district has experienced climate changes due to human impact as well as social – economic transformation which have negatively affected rural livelihood systems.

Food insecurity has been defined as physical and economic in access by all human beings at all times to basic foods they need for a healthy and active life (IFPRI 1995; Chinyemba 1997; FAO 1997 and Gladwin *et al* 2001). This implies three different aspects; availability, sustainability and accessibility of food. Lack of these three aspects either by away of farm produce or market purchase results into food insecurity which is a common phenomena in the district. This paper which is based on a research carried out in 5 divisions of Makueni Districts namely: Kasikeu, wote, Kathonzweni, Makindu, and Kibwezi conceptualizes food insecurity as a household inability to command an adequate amount of food through one or a combination of existing sources (production, purchase and donations). The high risk of food insecurity has contributed to the collapse of agro – pastoral systems and reduced income generating activities thus eroding the purchasing power of the rural households in the study area.

2. STATUS OF FOOD SECURITY IN MAKUENI DISTRICT

The general pattern of food security in Makueni District is characterized by considerable seasonal fluctuations which contribute to unstable levels of food availability at household level being fairly stable only in the high potential livelihood zone located on the hill masses of Kilungu and Mbooni. The most affected areas are the low potential livelihood and marginal zone which are classified under semi – arid lands. The district mainly grows maize, beans, pigeon peas, millet and sorghum. The production of these food crops has been analyzed for a period of ten years from 1992 to 2001 in order to determine food security trends in the entire district. The following is the analysis of the performance of the food crops for a ten year period

2.1 Maize

Maize is the most popular cereal crop among the farming household but seasonal production shows significant fluctuations as indicated in figure 1 below.

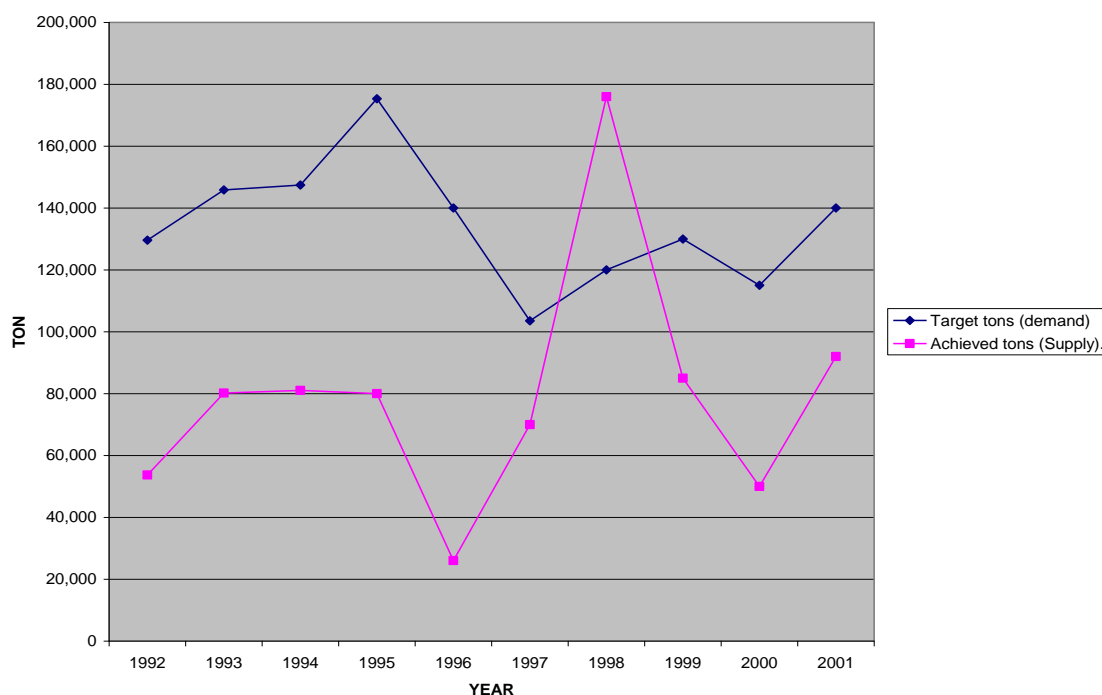


Fig. 1 maize productions in tons from 1992-2001

The demand of maize is higher than the supply hence households have been unable to meet food requirements through farm production. The situation was bad particularly in 1992, 1996, 1997 and 2000 when the actual production (supply) was far below 50% of the expected production (demand) as shown by Wambua (2008).

The production decline has been attributed to; low and unreliable rainfall which appears heavy on the first 3 days and decreases with time which causes moisture stress leading to withering, stunted growth, and abortions in the field crops; low soil fertility due to continuous cultivation without proper use of manure or fertilizer; decreasing farm size due to population growth; inadequate use of appropriate technologies; limited access to credit facilities and high cost of farm inputs.

Efforts to improve maize production were made through introduction of katumani composite maize variety by Katumani Dry Land Research Station in Machakos way back in 1966. The aim was to come up with maize variety suitable in semi-arid areas. However, the adoption has not been successful due to diverse socio – economic and institutional factors. Results from the field research shows that only 25% of hectares cultivated under food crops are planted with katumani maize as indicate in figure 2 below

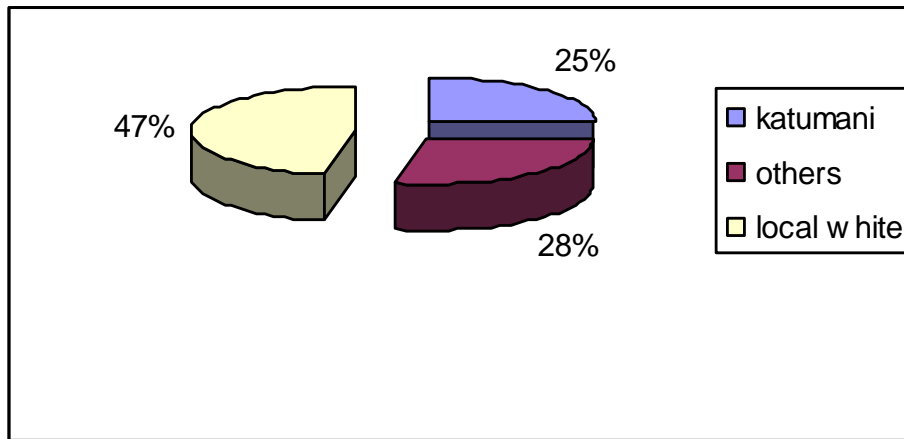


Fig. 2 percentage of different maize varieties grown by households
 Source: Field data (2003-2007)

Farmers have continued growing the familiar local white maize whose failure rate is high in semi-arid areas. Therefore, despite the suitability of Katumani variety in the marginal areas of Makueni district, its adoption rate has been very low due to human attitude and failure of extension officers in advising the farmers accordingly.

2.2 Pulses

Pulses including beans, pigeon peas and cow peas are cultivated in the study area. These food produce are important because they are mixed with maize to prepare a popular meal among the Akamba people known as “Muthokoi”. However, the average beans’ production (supply) for the ten years indicated was 4,023,882 tons against demand of 31,430,000 tons, leaving a deficit of 84.2% (Wambua, 2008). The year 1997 was the worst because production went down to 12,116 tons compared to expected production of 30,150 tons as shown in figure 3 below. As a result, most of the bean supplies are from outside the district especially Loitokitok, Taveta and Tanzania

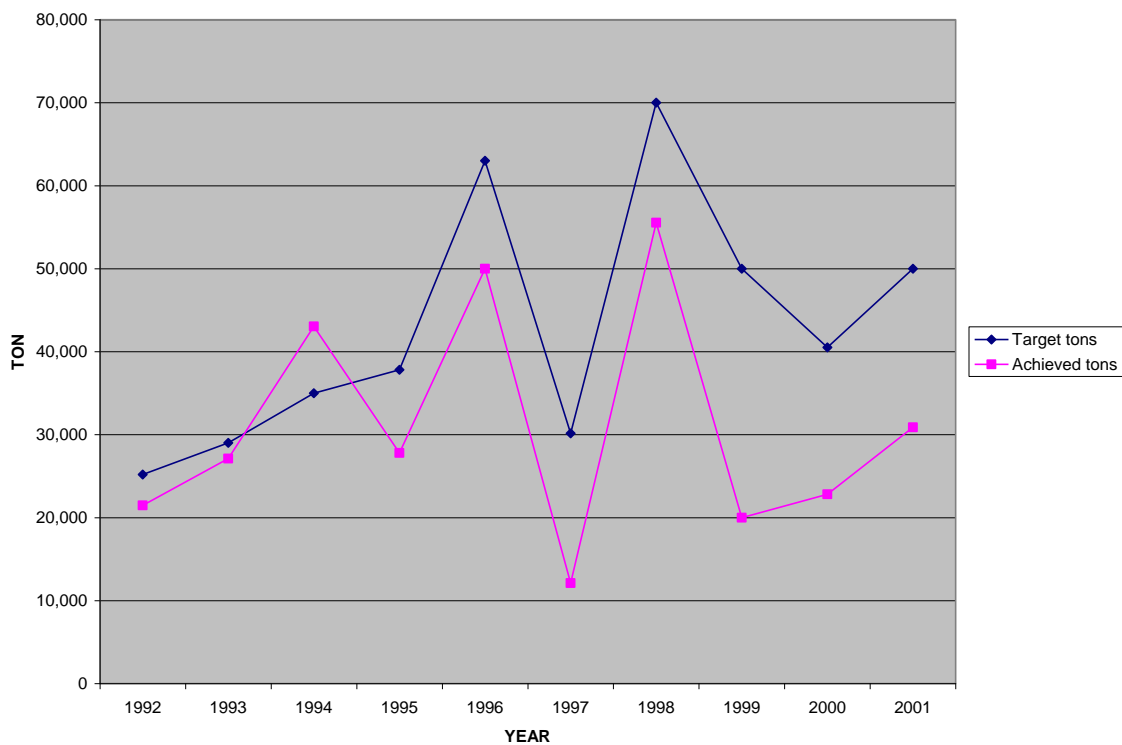


Fig. 3 Beans production in tons between 1992 and 2001
 Source: Field data (2003-2007)

The major contributing factor to low production of beans is lack of planting seeds because household deplete their seed stock long before the start of rains. The production has also been affected by rainfall variability and poor soil fertility. Due to moisture stress, the lowland areas experience premature drying of beans leading to perennial shortages of pulses.

The other types of pulses are pigeon peas and cow peas whose average production for the ten years was 4,340,000 tons against a demand of 12,520,000 tons thus representing a deficit of 65.4% (Wambua, 2008). The major decline for pigeon peas was noted in 1993, 1997 and 1998 as shown in figure 4 below.

Pigeon peas are the alternative to beans in preparation for the Akamba staple diet. The production has been declining despite the fact that the district is one among the major suppliers of pigeon peas in the country. Low production has been caused by lack of planting seeds as well as infestation by pests and diseases because many farmers cannot afford to purchase adequate agro-chemicals to eradicate pests and diseases hence this contributes to low yields and high post-harvest losses. The early and medium maturing pigeon peas varieties perform better than the late maturing pigeon pea but the former are not popular among the farmers. This applies to other pulses like cow peas. The net effect is low yields leading to food shortages

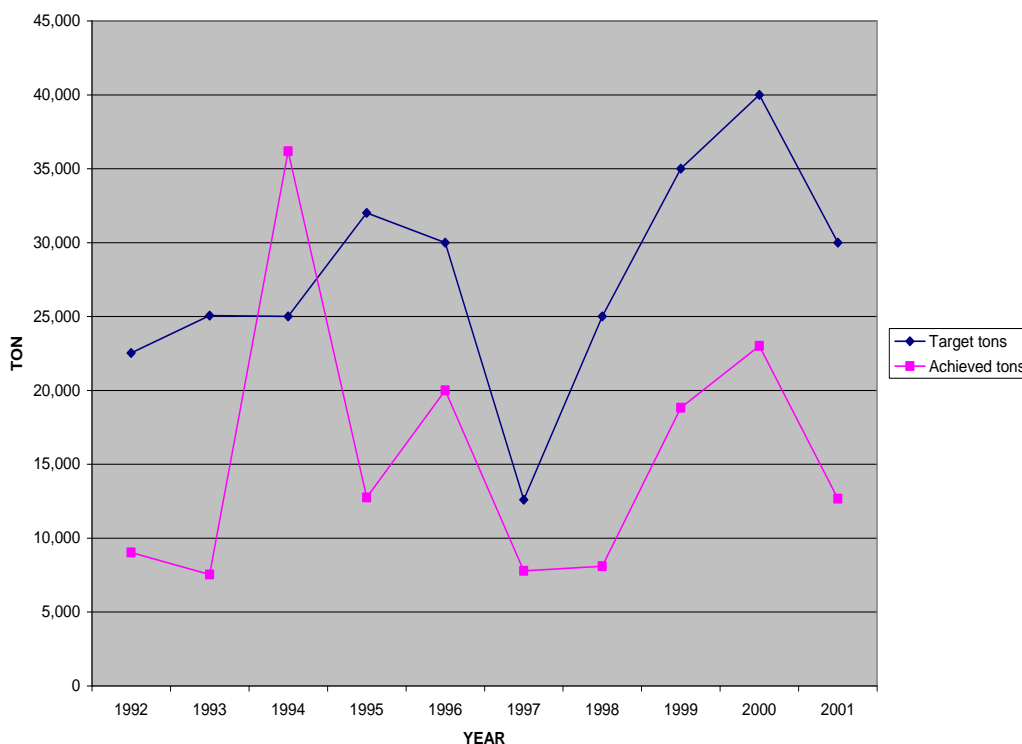


Fig. 4 Pigeon peas production in tons between 1992 and 2001
Source: Field data (2003-2007)

2.3 Traditional cereals

The performance of traditional crops such as millet and sorghum has declined for the last 10 years by 43.2%. Average production was 3,095,000 tons while demand was 4,549,000 tons. These crops are the best suitable in marginal lands but farmers have not taken the advantage. Increased traditional food crop production implies reduction in food insecurity problem. The year 1993 was the worst hit because the production declined by 75% as shown in figures 5 and 6 below.

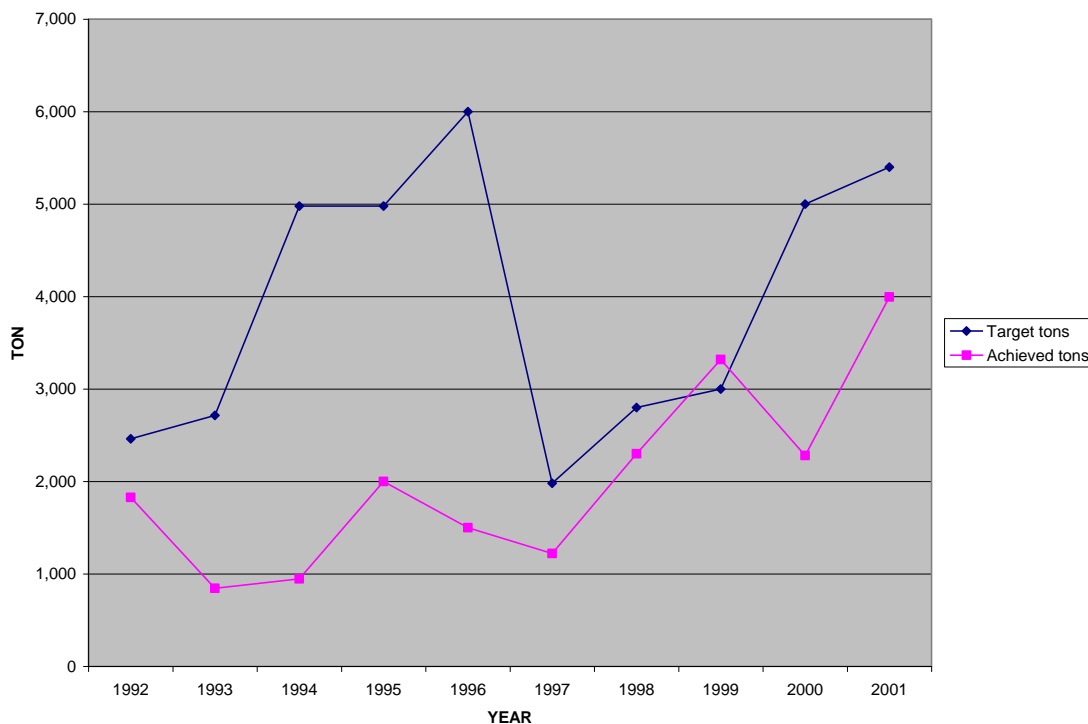


Fig. 5 millet production in tons between 1992 and 2001
 Source: Field data (2003-2007)

The drop in production has been associated with socio – economic characteristics of the households. About 40% of the households interviewed complained of labor shortage to scare away birds because of free primary education which has reduced household labor while 50% showed negative attitude due to low consumption of millet and sorghum.

Therefore, traditional food stuffs are regarded as unpalatable, labor intensive and of low economic value when compared with maize. The situation is contrary to early years of 1950s to 1970s when traditional food crops had a great share in farmers' calendar and food insecurity was not as severe as witnessed today in the study district.



Fig. 6 sorghum production between 1992 and 2001
 Source: Field data (2003-2007)

When average food shortage was computed for all the crops, the results showed that the district has experienced a food deficit of 50.1% which indicates that food demand outstrips food supply thus leading to food insecurity. The purchasing power of households has been eroded due to high poverty levels leading to food insecurity at household levels as shown in the table 1 below.

Table 1: household food security status

Status of households	Frequency	Percentage
High food insecure (always)	70	35%
Moderate food insecure (occasionally)	117	58.3%
Low food insecure	13	6.3%
Total	200	100%

Source: field survey data 2001 -2006

Findings indicate that 35% of the households are food insecure throughout the year, 58.3% are moderately food insecure and only 6.3% are food secure. The high food insecure households consume less than 135kgs of assorted cereals and legumes per month for an average of six family members. Their earnings which go to food purchase are below ksh. 927 per person per month as recommended by FAO /World Bank (Republic of Kenya 2000; 2005). Such households have limited food access from either farm production or market purchase hence their survival is pegged on food relief services among other social safety nets.

The situation of food insecurity was severe in Makindu, Kibwezi, and Kathozweni divisions which are relatively semi-arid. Generally, less than 25% of the households had an average of 2 bags of 90kg of maize reserved from previous harvest. Subsequently, the divisions benefited from food relief services as shown in table 2 below. It can be concluded that the situation of household food insecurity is a real problem

Table 2: Food relief distribution 2002

Division	Agency	Maize bags(50kg)	Metric tons
Makindu	AMREF-	16137	806
Kibwezi	Kenya	23760	1189
Kathonzwe	AMREF-	21090	1054.5
ni	Kenya	10953	547.7
Wote	World Vision	3708	185.4
Kasikeu	World Vision		
	AMREF-		
	Kenya		
TOTAL		75,648	3782.6

Source: AMREF- Kenya, Makueni office 2003

2.4 Adaptive coping mechanisms

The coping strategies devised by rural population in the district shows that 22.5% of the household interviewed rely on social safety nets or seeking assistance as a source of food. These involve intra and inter household exchange networks. Most of these exchanges are aimed at making food available either in the face of shortfall or when a given social occasion is too demanding for a single household to handle i.e. marriage, burial ceremonies and other social functions. However, with the current cost of living, individualism and reduced proximity, the social safety nets are diminishing and getting restricted to close kinsmen. Another coping strategy used is changing feeding habits during food shortage periods including skipping a meal preferably lunch so that once they did eat, they would be satisfied.

2.5 Effects of food insecurity on the rural livelihood systems

Food insecurity has negatively affected the rural livelihood system of the Akamba people. The problem has immensely contributed to human suffering, high rate of school drop out, rural–urban movement and poor health status among the disadvantage members of households (Mainly children, women and the elderly) as discussed in the following sections.

2.5.1 Education as household socio – economic power

Food insecurity has contributed to low primary school enrolment and high school drop out. Households channel most of their resources to food purchase to the detriment of other basic needs such as education. The field research carried out in the district shows that 30% of the 200 household heads interviewed had no formal education, 40% had attained primary education while only 29% had gone to secondary and post secondary levels. These statistics shows that few students go to secondary school because of lack of fees. Lack of education reduce people's ability to take advantage of the opportunities around them and has often been associated with increased poverty and reduced employment skills which is vital towards income generating activities. Therefore, reducing food insecurity implies more resources will go to education and subsequently improve economic base for the rural households in Makueni District.

2.5.2 Source of income

According to 1999 population census (republic of Kenya 2000), 57% of the population in Makueni District is classified as economically inactive. About 25% of the population relies on farm activities while 13% is in formal employment and only 5% relied on family business activities. The implication is that, majority of the population relies on a few who are working and running business and therefore exerting a lot of economic pressure on the available resources.

According to the research findings, the household occupation in the 5 divisions sampled indicated 5.0% as small scale traders (sales of handicrafts, clay pottery and charcoal burning among others), 13% as medium businesses (retail shops and livestock sales) and 10% in the formal employment. The last category is peasant farmers representing 64% who rely on sales of farm produce.

2.5.3 Agro – pastoral livelihoods system.

In the marginal mixed farming livelihood zones, the volume of livestock offered for sale has been on the increase mainly to purchase food. During famine, households are forced to dispose off their cattle, Sheep and goats at depressed prices in order to purchase grain for consumption. The conditions of the animals deteriorate due to scarce forage availability and increased distances to watering points. After disposing off the draught animals, farmers face challenges during farm preparation.

In addition, food insecurity affects land resources in the rural areas where farming is a way of life. Most of the farmers have over utilized their land in pursuance of food production hence leading to land fragmentation. Land fragmentation has also been increased by rise in farming population within the rural areas of Makueni District. The study shows that 40% of the households owned 1 to 5 hectares of land due to either population growth or after selling part of their land leading to collapse of agricultural livelihood system.

3. OPTIONS TOWARDS SOLVING FOOD INSECURITY PROBLEM

Options available include promoting traditional food crops (such as sorghum and millet) and encourage farmers to grow Katumani composite maize variety which are drought resistant and can withstand moisture stress. There is need to change the negative attitude and perception towards traditional food production by popularizing the existing traditional food products through diversification of the cooking techniques.

More emphasis on soil and water conservation technologies needs to be encouraged particularly in areas experiencing environmental degradation. Areas of the district where soil and water conservation have been implemented shows significant improvement in food security. This creates opportunities for farmers to realize better yields in the semi-arid areas where rains are low, erratic and poorly distributed.

Improvement of water harvesting techniques would promote food security and improve rural livelihoods. Prolonged droughts, coupled with the siltation of water pans and dams, have resulted into quick drying up of water resources. Makueni District reported scarcity of safe water at rates in excess of 80% during the poverty report carried out by the ministry of finance and planning in 2000. About 7.5% of the households harvest water from house roofs during rains. Problem of water in the district is affecting food security because people walk long distances ranging from 5 to 15 km in search of water for domestic and livestock. This leads to waste of valuable man hours (5-8 hours per day) which can be used to generate incomes. There is need of drilling more boreholes and damming some of the rivers to harvest rain water. The district has less than 25 reliable boreholes and protected springs which are below expectation. There is need to

reduce sand harvesting business along the rivers because it has contributed to rivers dry up earlier than they used to in the past.

There is need for economic empowerment to promote food production and accessibility. Findings from the study showed that over 70% of the rural households were food insecure because of low income, limited sources of income and economically inactive population. The paper recommends policies aimed at increasing sources of income such as setting up medium financial institutions able to lend money at affordable interest rates to farmers. The international agencies, Non Governmental Organization's and other organizations operating in the study area should help Community Based Organization (CBOS) with seed money which can be revolving among members through borrowing as currently practiced in Makindu division. Therefore, food insecurity problem require interdisciplinary approach because of cross-cutting issues in human and physical environment which interplay and in term, affect food security level and communities livelihoods.

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