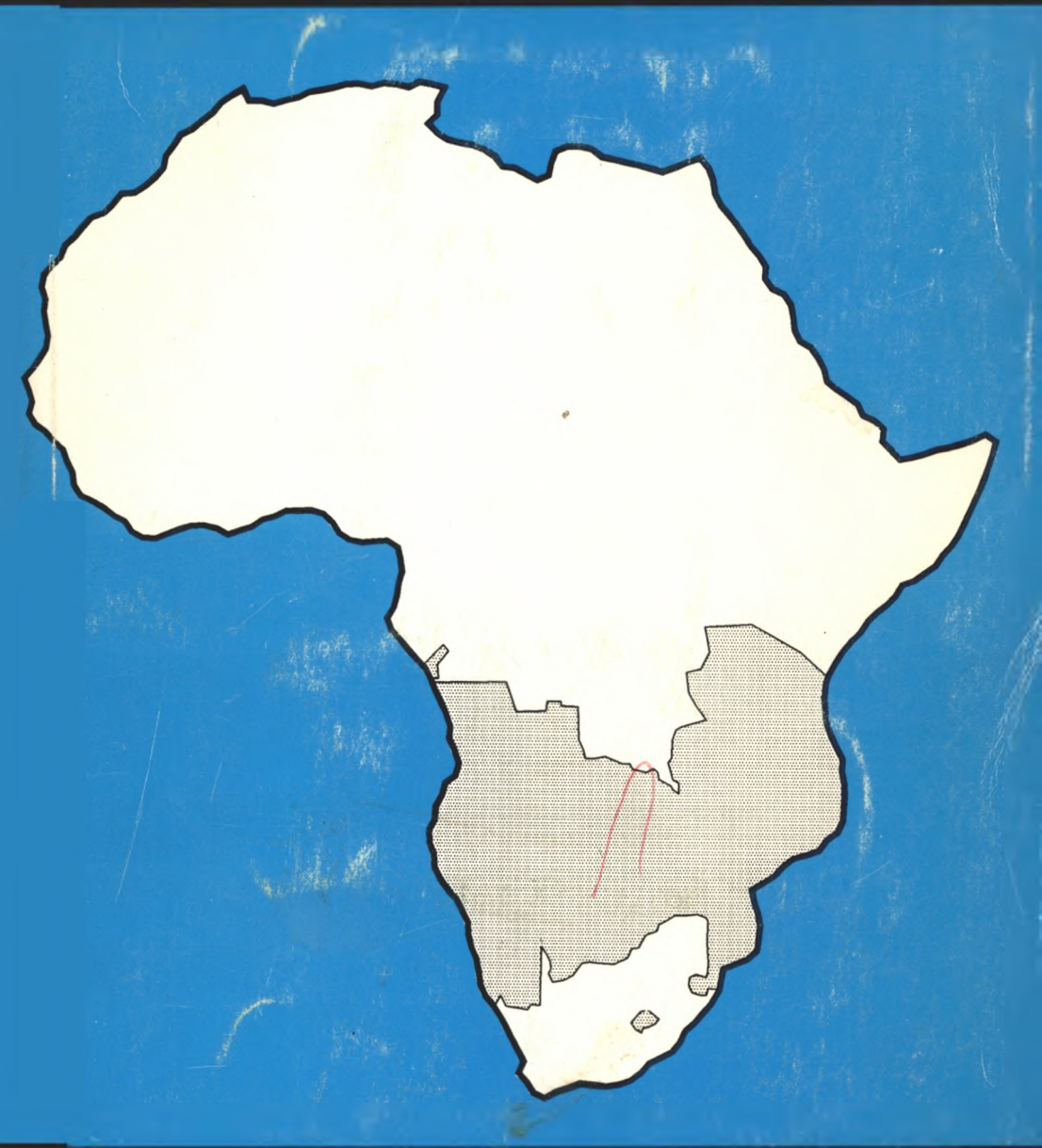
Market Reforms, Research Policies And SADCC Food Security



Edited by

Mandivamba Rukuni & J.B.Wyckoff

University of Zimbabwe UZ/MSU Food Security Research in Southern Africa Project

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Department of Agricultural Economics and Extension
University of Zimbabwe
P.O. Box MP 167
Mount Pleasant, Harare, Zimbabwe
Telex 26580 UNIVZ ZW
Fax 263-4-732828
Telephone 303211 Ext.1516

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Household Food Security in Tanzania: Preliminary Findings From Four Regions

H.K.R. Amani and W.E. Maro[1]

INTRODUCTION

Six years ago the Government of Tanzania began to take policy measures to improve food availability and accessibility at the national and household levels. The Government realized that to attain food security, policies to increase the productivity and earning power of poor households as well as improve the efficiency of food markets were necessary.

Several policy measures have been taken since 1984 to increase food production in the short-run. First was an increase in real producer prices. This was made possible by the removal of consumer and input subsidies. Second, the Government reduced internal trade barriers on food items by "tolerating" the marketing activities of private traders -- this measure provided farmers (in some parts of the country) with alternative buyers for their food crops and improved food availability in urban areas. Third, a partial import liberalisation measure increased the availability of "incentive goods" in the rural areas. This encouraged the production of agricultural crops.

Policy interventions to increase access to food have included reorganization and rationalisation of the marketing and distribution systems, nutrition programmes and food relief, and, above all, an increase in real producer prices. Amani, *et al.* (1987), showed that there has been an increase in real income among the rural population largely due to increases in agricultural producer prices.

Little is known about the impact of these policies on household food security, food production, consumption, income generation and marketable surplus. Some of the unresolved issues include:

[1]Professor and Head, and Research Fellow, respectively, Department of Economics, University of Dar es Salaam.

- How have farming households responded to the new policy environment in terms of changing cropping pattern, consumption and marketing strategies (including where and when to sell)?

- What are the major sources of household income?

- Has the policy of "tolerating" private traders improved farmer's access to markets?

- Has improvement in household food availability (if any) led to access to food by all household members?

This paper provides a descriptive analysis of rural households' food security in Tanzania and sheds some light on these issues. The analysis is based on a first phase, baseline survey undertaken in March 1990. The survey gathered information on households, villages, food prices and marketing activities. Data entry for villages, private traders and food price information has not been completed. Hence, this paper concentrates on analysing household data.

AREAS OF STUDY

Four regions were purposely selected to represent food surplus and food deficit regions (Mtwara, Arusha, Ruvuma, and Singida). In each region, two districts were selected to represent surplus and food deficit areas of the region. The districts included in the study are: Newala (deficit) and Masasi (surplus) in Mtwara; Tunduru (deficit) and Songea Rural (surplus) in Ruvuma; Singida Rural district (self sufficient) in Singida Region and; Babati (surplus) and Monduli (deficit) in Arusha Region. For each district, two wards accessible to researchers were selected. Three villages were randomly selected from each ward and it was planned to select twenty households from each village for a total sample of 960 households. However, Manyoni district[2] was excluded so more than twenty households were drawn from each of the other villages to total 240 for the Region. At the same time, only 188 of 240 households were interviewed in Arusha because some of the respondents could not be reached. Hence, this survey covered a total sample of 907 households.

In contrast to the Singida Region, Arusha, Mtwara and Ruvuma are border regions with some "across the border trade" in food crops.

HOUSEHOLD CHARACTERISTICS

The average sampled household size ranged from 4,8 to 6,9. Most of the households were headed by males, the proportion varying from region to region. It was 90,8 percent in Mtwara; 95,9 percent in Ruvuma; 92,9 percent in Singida; and 96,8

[2]Manyoni district in Singida Region was not covered due to impassable roads during the first phase of data collection.

percent in Arusha. The education level of heads of households is generally very low averaging one year of formal education for both sexes. This varies among regions.

An insignificant proportion (0,7 percent) of heads of households have attained levels of education above form four (Junior secondary school level). This appears to have affected the modernization of agriculture in the areas studied and in the country as whole. About 75 percent of the surveyed households indicated that they have no idea of current recommendations on modern farming.

The age-composition of household members reveals high dependency ratios, *i.e.*, members from ages 0 to 14 and over 62. It is 42,2 percent in Masasi, 45,7 percent in Newala, 46,9 percent in Tunduru 41,7 percent in Songea Rural, 48,6 percent in Singida Rural, about 52 percent in Babati and 49,6 percent in Monduli. Given the low level of agricultural technology used, such high dependency ratios appear to increase the burden on the agriculturally active household members and/or leads to less available food for each member.

The main occupation of the sampled households is farming. Because of differences in agroeconomic locations, the four regions show different cropping patterns with some difference within a region. In Mtwara, the major food crops are cassava root, (local) maize, peas and sorghum/millet. Major cash crops include cashewnuts, tobacco and sesame.

In Ruvuma, farmers give priority to (local) maize, cassava root, paddy, beans and sorghum/millet as food crops and cashewnuts, sunflower, sesame and tobacco as cash crops. Cashewnuts are a particularly important cash crop in Tunduru and as is coffee in Mbinga District. Farmers in the drought region of Singida grow (local) maize, sorghum/millet, beans and cassava root mainly for food, and sunflower, cotton and sesame as cash crops. In the studied areas of Arusha, the main food crops include (hybrid) maize, local maize, peas and beans; the main cash crops are coffee and sunflower. Although some of these crops are also grown during the short rains, farming is mainly done during the main (long) rainy season.

YIELDS

Average yields per hectare of each crop for each season are shown in Table 1 and 2. Overall, yields per hectare are higher in Arusha and Ruvuma regions as compared to Mtwara and Singida regions. There are also significant differences in yields between the main and short seasons with yields being substantially higher during the main season except for hybrid maize in Ruvuma and Tobacco in Mtwara. Reliability of rainfall during the main farming season, together with the availability of agricultural inputs, normally explains the difference in yields between the two seasons.

Table 1
Average yield : main season
(kgs/ha)

CROP	MTWARA	RUVUMA	SINGIDA	ARUSHA
		Food Crops		
Local Maize	550,0	1 311,7	623,8	1 069,8
Hybrid Maize	664,9	2 268,7	-	1 875,7
Paddy	865,8	1 148,4	-	3 054,5
Wheat	-	222,4	-	556,0
Beans	-	455,4	456,2	733,3
All Peas	406,2	447,3	459,3	472,2
Sorghum/Millet	386,1	901,9	614,8	1 095,7
Cassava Root	1 711,4	4 041,4	1 479,2	444,8
Groundnut	1 221,0	439,4	553,5	-
Vegetable	0	120,8	127,1	-
		Cash Crops		
Tobacco	2 223,9	20 161,0	-	-
Coffee	-	-	-	848,4
Cotton	-	-	5 010,4	-
Sunflower	-	839,6	740,2	1 241,7
Sesame	33,6	1 250,5	222,4	-
Cashewnut	441,2	1 073,4	0	-

Source: Survey data.

Table 2
Average yield : short season
(kgs/ha)

CROP	MTWARA	RUVUMA	SINGIDA	ARUSHA
	Food Crops			
Local Maize	289,1	3 335,9	-	830,3
Hybrid Maize	481,4	889,6	-	1 067,5
Paddy	444,8	0	-	-
Wheat	0	-	-	-
Beans	-	282,1	0	556,0
All Peas	95,3	-	-	-
Sorghum/Millet	0	0	0	889,6
Cassava Root	247,1	0	-	-
Vegetable	-	996,1	-	-
	Cash Crops			
Tobacco	4 781,4	-	-	-
Cotton	-	-	1 779,1	-
Sunflower	-	-	0	0
Cashewnut	1 186,1	-	-	-

Source: Survey data.

CONSUMPTION PATTERNS

The consumption pattern in each region is influenced by what can be produced at minimum risk of crop failure. In Arusha and Ruvuma, maize is the most preferred staple food. In Mtwara and parts of Singida, where maize does not grow very well due to climatic factors, cassava and sorghum/millet are most preferred. In years when maize output is good, small grains (sorghum/millet) are used for beer brewing and/or stored in household storage facilities for future use.

Judging from households' response to each crop (Tables 3 to 6) it is apparent that household consumption dominates their production decisions. There are differences in food crop production objectives between male and female headed households, Table 7.

Table 3
Objectives in planting food and cash crops : proportion of households in Mtwara Region

Crop	Consume Only %	Sell Only %	Sale and Consumption %	Consumption and Gifts %
Local Maize	47,6	-	52,4	-
Hybrid Maize	-	-	100,0	-
Paddy	12,5	75,0	-	12,5
Wheat	-	-	100,0	-
All Peas	41,7	-	58,3	-
Sorghum/Millet	45,0	-	55,0	-
Cassava Root	25,6	-	74,4	-
Groundnuts	14,3	-	85,7	-
Vegetables	14,3	-	85,7	-
Cashewnuts	-	57,1	42,9[a]	-

[a] Mainly for beer brewing.
Source: Survey data.

Table 4
Objectives in planting food and cash crops: proportion of households in Ruvuma Region

Crop	Consume Only %	Sell Only %	Sale and consumption %
	Food Crops		
Local Maize	51,2	2,3	46,5
Hybrid Maize	12,5	12,5	75,0
Paddy	29,2	-	70,8
Beans	81,3	6,3	6,2
All Peas	-	-	100,0
Sorghum/Millet	87,5	6,3	6,2
Cassava Root	80,0	13,3	6,7
Groundnuts	77,8	-	22,2
Vegetables	60,0	-	40,0
	Cash Crops		
Tobacco	-	100,0	-
Sunflower	18,2	72,7	9,1
Cashewnuts	15,4	61,5	23,1
Sesame	25,0	25,0	50,0

Source: Survey data.

Table 5
Objectives in planting food and cash crops: proportion of households in Singida Region

Crop	Consume Only	Sell Only	Sale and Consumption	Consumption and Gifts	Others
		Food Crops			
Local Maize	87,0	2,2	10,8	-	-
Beans	88,9	-	11,1	-	-
All Peas	100,0	-	-	-	-
Sorghum/Millet	72,9	4,2	18,8	-	4,1
Cassava Root	100,0	-	-	-	-
		Cash Crops			
Cotton	-	100,0	-	-	-
Sunflower	10,0	90,0	-	-	-
Sesame	100,0	-	-	-	-

Source: Survey data.

Table 6
Objectives in planting food and cash crops: proportion of households in Arusha Region (%)

Crop	Consume Only	Sell Only	Sale and Consumption	Consumption and Gifts	Others
		Food Crops			
Local Maize	73,1	7,7	19,2	-	-
Hybrid Maize	64,9	2,7	32,4	-	-
Paddy	33,3	-	66,7	-	-
Beans	34,8	4,3	56,5	4,4	-
All Peas	19,2	73,1	7,7	-	-
Sorghum/Millet	55,6	11,1	11,1	-	22,2
		Cash Crops			
Coffee	-	100,0	-	-	-
Sunflower	-	100,0	-	-	-

Source: Survey data.

Table 7
Differences in production objectives for local maize: male and female headed households (%)

Region	Consume Only	Sell Only	Sale and Consumption	Consumption and Gifts	Others
Mtwara:					
Male headed	41,7	-	58,3	-	-
Female headed	83,3	-	16,7	-	-
Ruvuma:					
Male headed	52,6	2,6	44,8	-	-
Female headed	40,0	-	60,0	-	-
Singida:					
Male headed	86,0	2,3	11,7	-	-
Female headed	100,0	-	-	-	-
Arusha:					
Male headed	76,0	8,0	16,0	-	-
Female headed	-	-	100,0	-	-

Source: Computed from survey data.

MARKETING STRATEGIES

A number of factors influence farmers marketing strategy including purchases and sales of food crops. In terms of sales, current producer price is a function not only of supply but of the number of buyers and their ability to buy and pay on time. The number of buyers is, to a large extent, a function of food availability. For purchases, major factors include local availability of food, household income, household food stocks, and food transfers, mainly through food gifts. The transfer of food as gifts is a cultural practice in some areas but often is a function of quantity harvested.

FOOD CROPS MARKETING

The marketing seasons for the studied regions are quite different. For Mtwara, the marketing season is concentrated during the October-December period as compared to July-October in Ruvuma, June-August in Singida and August-October in Arusha. The proportion of households not selling any food crop is 40,4 percent in Mtwara and 51,6 percent in Singida compared to the surplus regions of Ruvuma, (21,7 percent) and Arusha (27,8 percent). Only a small proportion of those households which sold food crops sold to official marketing agents. The role of private traders is very significant in Arusha, Singida and Ruvuma. Singida is generally a food deficit region. Arusha and Ruvuma are food surplus regions and easier to access -- hence, they attract private traders.

The most typical method of payment is cash. However official agents continued to buy on credit, particularly in those areas where private traders did not operate. Farmers continue to sell to NMC and Cooperative Unions when there are no alternative markets.

A few households in Ruvuma (25 percent) and Arusha (32 percent) sold to the Cooperative Unions because it was easier to get agricultural inputs since they are official fertilizer marketing agents.

SOURCES OF FOOD

About 61 percent of the sampled households purchased food during the March 1988-February 1990 period. Most households buy their food from other farmers and private traders. National Milling Corporation and Cooperative Unions Primary Societies play an insignificant role in selling food to rural households. Seasonal sources of food are mostly private traders in the hunger period (March-June) and farmers selling surpluses during the post-harvest period (July-December) Table 8.

REASONS FOR BUYING FROM THIS SOURCE

The main sources of purchased food at the regional level are "other" farmers (43-63,8 percent) and private traders (29,8 to 47,7 percent) although the order of importance is sometimes different among regions. More purchasing households bought food during the July-December 1989 period (40,7 to 55,3 percent in the different regions) than in any other period. This is usually the marketing season when food prices are relatively low. A substantial proportion of households also bought food during the hunger period, *i.e.*, the early part of 1990, when food prices were higher due to a lower supply (23,4 to 34,1 percent).

The most important food crops bought during July-December 1989 were local maize and rice for Mtwara; beans and sembe (maize flour) for Ruvuma; local maize and rice for Singida; and local maize and hybrid maize for Arusha. During the pre-harvest period, the most important food crops purchased by households were: beans, peas, cassava root and vegetables in Mtwara; local maize, paddy, rice and sembe in Ruvuma; local maize in the case of Singida and; rice and to a lesser extent, maize in Arusha.

Sources of seasonal purchases are mainly farmers and private traders although there are slight differences in ranking by each major food crop. Table 8 shows details of sources of purchased food by regions. Overall, very few households purchased food from official agents. Even when primary societies have stocks of food, there are no arrangements to sell it to those who need it. In many cases, farmers who sold crops during the hungry period are those who have overestimated their household food requirements and, as the new harvesting season approached, they had to clear their food reserves.

A large proportion of households which purchased food did so because they had no own-stock. Only a small proportion purchased food because of low prices or increased household size. Looking at food purchases during different periods, the "none in own stock" reason still prevails, particularly during the period preceding harvest, Table 9.

Table 8
Seasonal sources of main food crops by region

Crop	Region	Source	March 1989 to June 1989	July 1989 to December 1989	January 1990 to February 1991
Local Maize	Mtwara:	Private traders	66,7	53,3	100,0
		Other farmers	33,3	46,7	0,0
	Ruvuma:	Private traders	-	0,0	16,7
		Other farmers	-	100,0	83,3
	Singida:	Private traders	40,7	30,0	51,4
		Other farmers	48,1	70,0	40,0
		CU/primary society	11,1	-	-
		NMC	-	-	8,6
	Arusha:	Private traders	28,6	30,4	35,7
		Other farmers	71,4	65,2	64,3
		CU/primary society	-	4,4	-
Rice	Mtwara:	Private traders	100,0	75,0	100,0
		Other farmers	-	25,0	-
	Ruvuma:	Other farmers	-	100,0	50,0
		Black market	-	100,0	50,0
	Singida:	Private traders	66,7	25,0	100,0
	Arusha:	Private traders	33,3	75,0	100,0
		Other farmers			-
Beans	Mtwara:	Private traders	100,0	100,0	100,0
	Ruvuma:	Other farmers	100,0	53,3	50,0
		Private traders	-	-	-
		NMC	-	-	50,0
	Singida:	Private traders	-	100,0	-
Sorghum	Mtwara:	-	-	-	-
	Ruvuma:	Other farmers	100,0	-	-
	Singida:	Other farmers	100,0	-	-
	Arusha:	-	-	-	-
Dona	Mtwara:	Private traders	-	-	100,0
		NMC	-	100,0	-
	Ruvuma:	-	-	-	-
	Singida:	-	-	-	-
	Arusha:	-	-	-	-
Sembe	Mtwara:	Private traders	-	-	100,0
	Ruvuma:	Private traders	-	100,0	-
	Singida:	-	-	-	-
	Arusha:	-	-	-	-
Groundnuts	Mtwara:	Private traders	-	-	100,0
		Other farmers	100,0	-	-
	Ruvuma:	Private traders	50,0	-	-
		Other farmers	50,0	100,0	-

Source: Survey data.

Table 9
Reasons for purchasing food at different periods:
(% of households responding)

Region	Source	March 1989 to June 1989	July 1989 to December 1989	January 1990 to February 1991
Mtwara:	None in own stock	93,8	77,8	80,8
	Prices are lower	6,2	0,0	3,8
	Increase in household size	0,0	8,3	0,0
	Others	0,0	13,9	15,4
Ruvuma:	None in own stock	100,0	82,1	77,8
	Prices are lower	0,0	10,7	11,1
	Increase in household size	0,0	0,0	0,0
	Others	0,0	7,2	11,1
Singida:	None in own stock	80,0	79,7	88,1
	Prices are lower	12,0	13,6	2,4
	Increase in household size	8,0	0,0	0,0
	Others	0,0	6,7	9,5
Arusha:	None in own stock	89,5	90,0	86,4
	Prices are lower	5,25	5,0	0,0
	Increase in household size	0,0	0,0	4,5
	Others	5,25	5,0	9,1
Total		100,0	100,0	100,0

Source: Survey data.

A large proportion of the sampled households did not purchase any food (53,8 percent) in Ruvuma, 66,5 percent in Mtwara, 55,8 percent in Arusha and 46,7 percent in Singida). These households may not be self sufficient but, rather, they have no other source of income to purchase food. Ninety five percent of the households surveyed earned income only from farming. The problem of food access appeared to be more serious during the hunger period when the average number of meals taken by each household member was below the normal three meals for adults and four to five meals for children below age five, Table 10.

There are limited opportunities for off-farm employment in the studied rural areas. The main sources of off-farm income, for the 35 percent of households which received such income, are small business (mainly operating small shops), beer brewing and carpentry. Effort should be directed towards creating off-farm income generating projects, particularly following the farming season, as a strategy for alleviating food insecurity for households without adequate production or without other sources of income to purchase food.

The average number of meals per household member is higher in the food surplus regions of Ruvuma and Arusha. About 94 percent of the sampled households in Arusha and 54,5 percent in Ruvuma had three meals on average. In Singida and Mtwara, on the other hand, less than fifty percent of the households had three meals or more during the hunger period. These households had run out of food stocks and had no income to purchase food.

Table 10
Average number of meals during the hunger period

Region	Household	Children Below Age 5
Mtwara	2,3	2,5
Ruvumba	2,6	2,8
Singida	2,3	2,7
Arusha	2,9	3,4

Inadequate food production and lack of income to purchase food has compelled some of the households to exchange household labour for food. About 5,8 percent of the sample in Mtwara, 2,9 percent in Ruvuma, 10 percent in Singida and 2,5 percent in Arusha exchanged labour for food during the hunger period (January-February 1990). The main food items received in exchange for work completed are: cassava root, sorghum/millet and peas in Mtwara; local maize, rice and beans in Ruvuma; (unrefined maize) flour in Singida and; hybrid maize, local maize, beans and sorghum/millet in Arusha region.

SUMMARY

The focus of the government's food security policy has centered on extracting food from rural areas for urban consumers. This focus implicitly assumes that rural households are food self-sufficient. But this study has shown that a large proportion of households in food deficit areas and, to a much lesser extent, in food surplus regions do not produce enough food for own consumption, leave alone surplus food for the market. Many of the deficit households do not have other sources of income to purchase food. For the few with the ability to buy, food may not be available.

The official marketing agents generally operate a uni-directional distribution system, *viz.*, from rural to urban centers or to the strategic grain reserve. Even when there are stocks of grain in primary society godowns (storage sheds), there are no arrangements to make it available to potential buyers unless there is famine in the area. Even then, the authority to sell food has to come from higher authorities. Although private traders are playing an increasingly significant role in food distribution in some areas, their activities are restricted by poor road infrastructure and/or low production. Even where the roads are good and marketable surplus is high, there are still some barriers to private investment in grain marketing. Apart from private traders, some farmers also sell food to deficit households. Whether this source of purchased food is available every year or whether food from this source is sold at stable prices, is unknown.

Private traders are playing a significant role in terms of buying activities. They could play a much bigger role if their operations were legally recognized. They also need assistance in getting credit for purchasing crops and for erecting storage facilities in

rural and urban areas. These actions could reduce food supply fluctuations and possibly reduce price fluctuations, particularly during the hungry season. Government support for investment in private storage facilities and improvement of rural roads infrastructure may encourage more private traders to trade between food deficit and food surplus areas. The market liberalization policy, that began in 1984, has not, unfortunately, led to a competitive market in some areas. Food trade is largely between surplus and deficit households. To be effective, market liberalization must go hand in hand with policies that create an environment for entry and investment in food trade.

To improve food security in the deficit/dry areas like Singida, the production of drought-resistant food grains such as sorghum/millet needs to be encouraged to increase food supplies. This strategy should be combined with a strategy to increase household incomes through expansion of off-farm employment opportunities and/or encouraging the production of high value crops.

Targeted food aid and nutrition programmes should be continued in the short-run. Unfortunately, the sources of food aid are NMC godowns located far away from deficit areas. Given the poor transport infrastructure in the country, it takes a while before food reaches needy areas. There is a need, therefore, to establish food reserves in deficit areas and prepare financially viable targeting mechanisms for alleviating food insecurity during the hungry season.

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