PN-ABM-177
79133

Postharvest Grain Systems R & D

Technical Assistance Report No. 127
May 1992

NATIONAL FOOD SECURITY STOCK POLICIES AND PROCEDURES IN SUB-SAHARAN AFRICA

Recommendations

KSU
KANSAS STATE UNIVERSITY

Food and Feed Grains Institute
Manhattan, Kansas 66506-2202
USA

NATIONAL FOOD SECURITY STOCK POLICIES AND PROCEDURES IN SUB-SAHARAN AFRICA

Recommendations

Prepared by

Kenneth E. Neils
Carl Reed
and
John D. Lea

for the

AGENCY FOR INTERNATIONAL DEVELOPMENT
DAN-4144-B-00-6002-00, Delivery Order No. 10
Postharvest Grain Systems R&D

at

Kansas State University
FOOD AND FEED GRAINS INSTITUTE
Manhattan, Kansas 66506

CONTENTS

		Page
LIST OF TABLES		v
LIST OF FIGURES		vii
EXECUTIVE SUMMARY		ix
Section		
I	INTRODUCTION	1
II	ECONOMIC AND FINANCIAL ISSUES	3
	Size	3
	Constituting the National Food Security Reserve	16
	Trigger Mechanism for Use of the Security Stocks	18
	Funding Sources	18
III	MANAGEMENT AND INSTITUTIONAL ISSUES	31
IV	TECHNICAL ISSUES	35
	Types of Warehouses	35
	Security Stock Commodities	36
	Maintaining Quality of the Security Stocks	37
	Location of the Security Stocks	38
V	SUMMARY OF RECOMMENDATIONS	41
VI	REFERENCES	47

LIST OF TABLES

Table		Page
1	ADMARC Net Maize Sales	4
2	Target Size and Total Annual Cost for Food Security Stocks in the Four Case Study Countries	6
3	Ratio of Targeted Security Stock to Total Cereals Consumption in Sub-Saharan Africa	10
4	Current Targeted Security Stock Size and the Year of Recommendation	14
5	Correlation Between CB Age and Level of Operation	16

LIST OF FIGURES

Figure		Page
1	ADMARC Net Maize Sales	4
2	Port and Transit Facilities in the SAHEL Countries	24
3	Port and Transit Facilities in the IGADD Countries	25
4	Port and Transit Facilities in the SADCC Countries	26

EXECUTIVE SUMMARY

The objectives of national food security stock polices and procedures in sub-Saharan African countries must be clearly established before food security stock policies can be successfully implemented. In order for the objectives to be met many issues, including the economic and financial sustainability issues, management and institutional issues, and the technical issues, must be given appropriate attention. The approach in tackling these issues varies by region of sub-Saharan Africa and by the degree of donor food aid assistance in supporting national food security stock policies.

I. Recommendations For Economic and Financial Sustainability

A. The holding of price stabilization stocks as a food security objective in sub-Saharan African countries is not advisable as the costs of maintaining the required quantity of stocks is prohibitive. Furthermore, such stocks historically have not been used for their intended purpose but instead as working stocks or simply for selfish and, in many cases, political purposes. This is not to say that supply shortages that cause high prices should be left alone, instead vulnerable populations may need to be compensated for their lack of buying power with direct food aid or through, for example, food-for-work programs.

B. It is recommended that the major objective for national food security stocks in sub-Saharan African countries be for emergency purposes. This study found that the economic and financial sustainability of emergency stocks is, primarily, a function

- of the targeted size as it relates to the total costs of maintaining and replenishing the stock
- the amount of donor support
- the extent of liberalization of the economy
- the trade-off between physical and financial stocks
- the population size and growth rate
- grain supply and demand
- and private sector storage.

Recommendations on these topics, the constitution and utilization of emergency stocks, and food aid emergency procedures follow:

1. It is recommended that "total" costs for security stocks be accounted for, in order for sub-Saharan African countries to be able to determine a target size for emergency food security stocks that is most cost effective and to be able to determine how viable national physical stocks are relative to other alternative stock choices. Until the opportunity cost of capital, depreciation, and, in some instances, transport costs are accounted for, the sustainability and the question of relative efficiency of national physical stocks versus other alternatives will not be properly addressed.

2. It is recommended that donors, in each sub-Saharan African country with a national food security stock, form a cohesive body and encourage the development of a joint domestic government/donor committee that serves as a decision-making body on issues such as the use, replenishment, and funding of the emergency stocks.

3. It is recommended that the use of the emergency stocks be contingent on a plan being in place for replenishing the used stock. In the case of emergency stock distribution on a concessional or free basis, any willingness of the sub-Saharan African country's government to sanction such losses should be based on its willingness to shoulder the resulting costs or its ability to marshal donor support for the emergency.

4. As liberalization results in more uniform trade and pricing policies across borders of countries within a given region, it is recommended that the size of the emergency security stocks in each country be focused on regional aspects that affect the supply and demand of staple commodities in each country and its neighboring countries. In the Southern African Development Co-ordination Conference (SADCC), in particular, the outcome of liberalization may be dramatic increases in regional maize production, greater regional food security, and less need for national maize emergency security stocks at current targeted levels.

It is also recommended that those sub-Saharan countries that have budgeted for security stock maintenance and replenishment and are undergoing grain market liberalization divert financial resources previously directed to subsidizing producer or consumer prices to the many funding activities essential for implementing a successful food security program.

5. As import displacement time is reduced and more efficient and effective food security stock policies and decision-making arrangements are established, not only is it recommended that consideration be given to reducing the targeted national emergency stock size, but also that financial emergency stocks be strongly considered as a substitute for physical stocks in especially non-landlocked sub-Saharan African countries.

6. Because sub-Saharan African populations have increased relative to fixed emergency stock targets, it is recommended that the Government of each sub-Saharan African country evaluate the target size of its emergency stocks in light of its current population, population growth rate, and per capita grain consumption requirement.

7. Before the target size of the national emergency stocks is established to include stocks held by the private sector, it is recommended that

- the entire grain marketing system be fully liberalized
- significant investments (in farm to market roads, in rural electrification, etc.) be made to facilitate genuine private trading operations
- early warning and market information systems be fully developed

- **support be provided for the development of institutions and mechanisms for sustainable financial intermediation.**

Cereal banks, as they are currently conceived and run, are not an appropriate vehicle for emergency stock management.

8. It is recommended that sub-Saharan African nations and donors continue to give priority to purchasing local production for constituting the emergency stocks and not be reliant on imported grains which may not be the preferred grain of the local consumers, may not store as well as local grains, and may give the wrong market signals to local producers.

9. It is recommended that the use of food aid (assumed to be from donors) to support national food security stock policies be seen in the context of an entire structural adjustment program in which the food aid is serving more than one purpose. Food aid assistance can and should serve its useful purpose in food security stock policies more effectively through enhanced use of the following old and new tools and methods:

- Food aid should promote the development and use of disaster preparedness and prevention manuals as they relate to food security stock policies in individual sub-Saharan African countries.

- Triangular transactions, trilateral operations, commodity exchanges and sales, and local purchases should be carried out only after rigorous analysis of the many related factors involved. All such transactions should be carefully monitored and evaluated in terms of their efficiency, cost effectiveness, speed, timeliness of deliveries, appropriateness of commodities, and the broader developmental benefits.

- Training and improvement in early warning systems and informational systems, key to implementing successful food security stock policies and procedures, should be promoted through food aid assistance. This can be done by having international/local committees demand quantitative justification for distributions.

- Funds otherwise earmarked for replenishment of national emergency stocks should be partially diverted over the long-term into relieving the regions of the sub-Sahara of the many infrastructural constraints. Food-for-work projects that avoid many of the pitfalls of such projects, especially the administrative, management, and project identification problems, should be promoted through close coordination with recipient governments.

- It is not advisable for food aid assistance to establish regional security reserves or to enhance the reserves of the international emergency food reserve because such reserves are considered to be less cost effective than national emergency reserves and the source of a great deal of administrative and management bottlenecks.

II. Recommendations on Management and Institutional Issues

Recommendations on these issues relate to the increased emphasis on de-politicizing food security stock policies and food aid such that it does not become a tool of any one political group within an individual sub-Saharan African country.

A. For sub-Saharan African countries experiencing the need to use nominal quantities of security stocks to avoid chronic food shortages of vulnerable populations, it is recommended that an autonomous (yet government and donor funded) public sector food security institution without commercial ties to the market be put into operation. For example, the international/local committees in the Sahel are autonomous and powerful because "all" food aid and funding flow through them. Thus, they can say no to a request to use or replenish the emergency stocks. It is also recommended that a performance contract be established between the institution and the national government.

B. For providing food security to chronically food deficit vulnerable populations and for those unforeseen times when drought disrupts domestic grain production, it is recommended that a coordinating body composed of supportive donors and the recipient country's food security managing institution be formed to handle the food security stock management decisions jointly. The international community should use its controlling influence to develop emergency food distribution networks that can deliver the emergency supplies as directly as possible to distressed individuals rather than organizations.

III. Recommendations on Technical Issues

Recommendations on technical issues in national food security stock policies and procedures include principally storage, handling, quality maintenance, and the location of stocks.

A. It is recommended that the warehouse for storage of the security stocks be secure, 2,000 mt capacity or less, have brick or masonry sidewalls, and be constructed and managed for pests in accord with the FAO Manual of Pest Control for Food Security Reserve Grain Stocks.

B. It is recommended that proper economic incentives be provided to technical grain storage managers and technicians, as such incentives are essential in order to insure the maintenance of a good quality security stock.

C. It is recommended that all security stock managing organizations have a recycling plan for the security stocks. Some portion of the stocks, possibly a third, should be sold or disposed of each year to be replaced with new grain.

D. The appropriate commodities for the security stock depends on many factors. In general, whole grain stores better than processed grain, and traditional varieties store better than improved varieties. With locally or regionally procured grains, there is the problem of insuring the purchase of good quality product. Whether local or imported grains are procured, it is recommended that

the procuring food security stock managing organization have an established program of sampling and inspection at the time of purchasing the grain.

E. It is recommended that security stocks be positioned in strategic points such that the food security stock managing organization can react quickly to emergencies. In practical terms, it is recommended that the location of the security stocks be dependent to a large extent on the quality and quantity of roads throughout the country.

SECTION I

INTRODUCTION

Experience to date with the operation of grain reserve stocks in sub-Saharan Africa has shown that for it to be effective its objectives have to be defined more clearly, in order to assure that it is not released too soon and is available for use when supply conditions warrant. A higher level of technical and institutional support is also required, as well as a greater degree of coordination between the government, the donors and the implementing agency.

Addressing the economic, financial, institutional, political, and technical issues in food security stock policies and procedures in sub-Saharan Africa requires a regional perspective. This report divides the food insecure areas of sub-Saharan Africa into three main regions, the Sahel, the Intergovernmental Authority on Drought and Development (IGADD), and the Southern African Development Co-ordination Conference (SADCC). The Sahelian countries, although having an established management and institutional base for operating food security stock polices and procedures, have had and continue to receive very significant quantities of food aid assistance. The IGADD countries, with the exception of Kenya, have not established a good management or institutional base for operating food security stock policies and procedures, yet these countries have received and continue to receive very significant quantities of food aid assistance. Many of the SADCC countries, except Zambia, Angola, and Mozambique, have a well established management and institutional base for operating food security stock policies and procedures. In addition, most of the countries have the agricultural resource potential to maintain self-sufficiency in maize, their staple crop. The region with the greatest potential to become self-reliant in terms of food security stock is the SADCC region. The Sahelian (or CILSS) region has much fewer agricultural resources and will remain highly vulnerable to especially drought and famine. The IGADD region, except for Kenya and Uganda, has not only agricultural resource constraints but also institutional and political constraints that will need to be addressed urgently in order for these countries to implement sound food security policies.

The following critique of the major issues influencing the success of national food security stock policies and procedures in sub-Saharan Africa is separated into three parts. The first part describes the economic and financial sustainability issues; the second part describes the management and institutional issues, and the third part describes the technical issues. The discussion of these issues may overlap as these issues are not mutually exclusive.

SECTION II

ECONOMIC AND FINANCIAL SUSTAINABILITY ISSUES

A key problem with many failed food security stock policies has been the lack of government economic and financial support. Even if a relatively efficient organization (government agency or parastatal) has been established to manage and/or maintain the food security stock, the lack of total support from the government (including cooperation from donors) has time after time created problems with implementing even the most suitable food security policies in many countries. Many times, however, the food security policy may be one that is from the beginning unsustainable though from a political view the most advisable.

Deciding on the size of the food security stock, how the stock will be constituted, trigger mechanisms for use of the food security stocks, and where the funding for its operations will come from are critical issues that must be given long-term considerations.

Size

The size of the security stock depends on whether the stock is to be used only for emergency purposes or if the stock is to be used for both stabilization and emergency purposes. Where the stock is used for both stabilization and emergency purposes, the stock size is generally much greater. The quantity of security stocks required to respond to genuine emergencies is not as large as the quantity of security stocks required for stabilization, that is, to smooth out normal fluctuations in food supplies (Gerrard, 1986).

In most countries in sub-Saharan Africa that have both stabilization and emergency stocks, the two types of stocks are co-mingled. Determination of the size of the stabilization stocks versus that of the emergency stocks are treated below as separate discussions.

Stabilization Stocks. Stabilization stocks are currently held in the following sub-Saharan African countries: Botswana, Cameroon, Kenya, Malawi, Nigeria, Tanzania, and Zimbabwe. In order to stabilize consumer prices for cereals in these countries, a relatively large stock is needed in particularly those times of the marketing year at which supplies consumed are greater than supplies purchased. In Malawi, for example, the maize sales of ADMARC, the parastatal managing the food security stocks, minus the purchases of maize by ADMARC on a per capita basis for the years 1980 to 1989 is given in Figure 1. The stabilization stock requirements vary from country to country depending upon how self-sufficient the country is in that cereal grain under normal growing conditions, how liberalized the cereals market is, and the extent of competition within the private sector.

Previous Page Blank

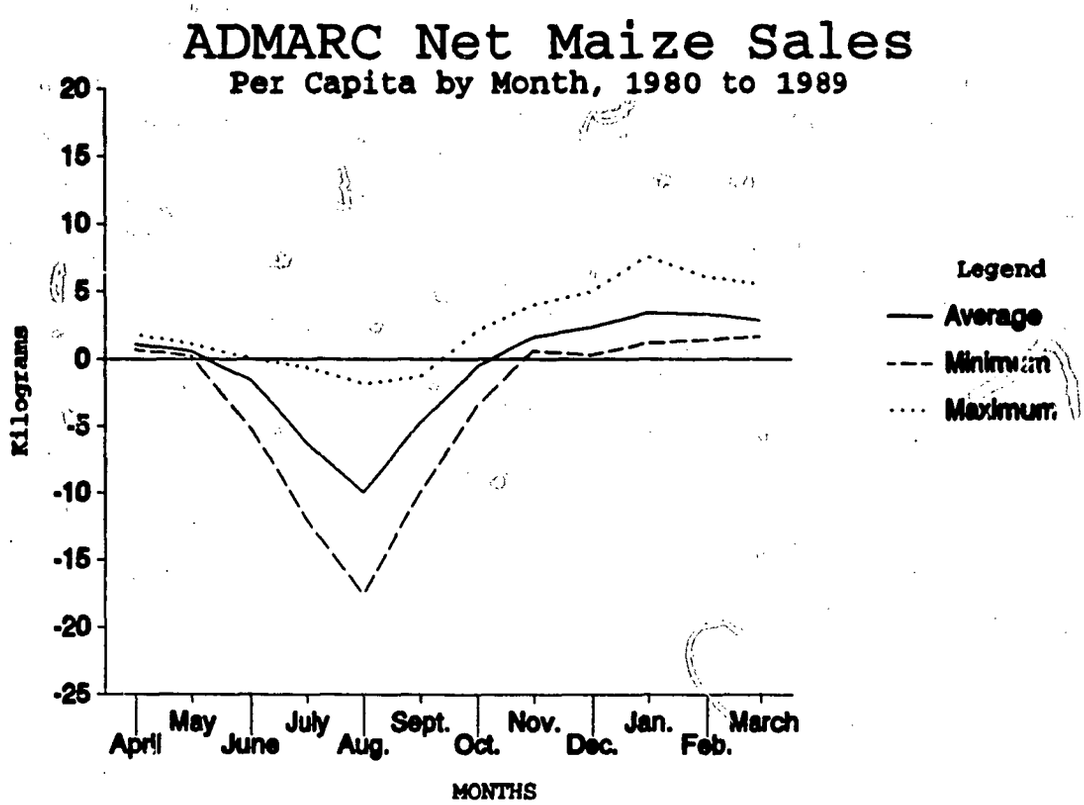

FIGURE 1. ADMARC Net Maize Sales

TABLE 1

ADMARC Net Maize Sales

Per Capita by Month, 1980 to 1989

	Average	Minimum	Maximum
		kilograms	
April	1.10	0.71	1.87
May	0.61	0.26	1.15
June	-1.60	-5.14	0.09
July	-6.18	-11.97	-0.58
August	-9.91	-17.61	-1.83
September	-4.79	-10.00	-1.34
October	-0.57	-3.51	2.12
November	1.68	0.64	4.03
December	2.42	0.33	5.00
January	3.45	1.22	7.61
February	3.38	1.48	6.12
March	2.91	1.72	5.58

Source: ADMARC, Malawi

In sub-Saharan African countries where markets have been liberalized, price stabilization (that is, the stabilization policy of defending ceiling prices) is not being practiced. In the Sahelian countries, maintaining stabilization stocks of cereals is no longer a part of the food security stock policies. When stabilization stocks in many of these countries (e.g., Chad, Mali) had been kept they were too expensive to maintain for the national governments, often used for the wrong purposes, poorly stored, and/or in too small a quantity to defend ceiling prices.

In the SADCC, where market liberalization has been slow and where government politics influence the adaptiveness to changes in efficiency in food security stock policies more so than donor requests, price stabilization programs are intact within the food security policies of many countries. The stabilization stocks function, however, more as working stocks. It is not likely that donors will be responsive (in contributing stocks or other food aid assistance) to requests by governments with such stabilization stocks (co-mingled with emergency stocks) and non-liberalized markets. As a result of the economic and financial constraints, it is recommended, then, that as countries liberalize markets and trade, food security stock policies in the SADCC de-emphasize price stabilization stocks and emphasize only emergency stocks.

Emergency Stocks.

Targeted Size and Costs

The targeted size of the food security stocks is generally based on the minimum quantity of stocks that will keep the country food secure. The economic and financial impacts of maintaining security stock levels that have not been adjusted to reflect current and future resources and needs within the developing country are relatively severe, especially for those countries where government-controlled cereal marketing boards are contracting/eliminating their commodity commercial operations and focusing primarily on managing food security stocks. Governments of developing countries, including those in sub-Saharan Africa, are recognizing that the marginal utility of food security stocks typically decreases with increasing stock quantities while the marginal costs of increasing stock quantities typically remains about the same. An often-used rule of thumb is that it costs two to three times as much to store grain in tropical, developing countries as in industrialized, temperate countries. Since the storage fees paid to U.S. elevators by the U.S. government currently range from 15 to 16 USD/ton/yr (National Grain and Feed Association, 1991), one could estimate that storage costs in the countries targeted for this study would range from 30 to 45 USD/ton/yr. Another subjective cost item is losses. Official estimates of losses, being susceptible to influence by a variety of political and social forces, would be expected to be exceptionally low.

Determining the actual total costs of maintaining the security stocks has been a very weak exercise within most sub-Saharan African countries. Many countries have not properly accounted for the overall costs of emergency stocks or separated the costs of stabilization stocks from the costs of emergency stocks. In the four case studies of this project, the projected total annual cost per metric ton ranged from USD 22.50 to 88.89/mt/year (Table 2). It was obvious that accurate cost records were seldom available. Even the best available records

were suspect because certain items were invisibly subsidized (e.g. project vehicles, fuel and maintenance, expert consultants, project-purchased supplies such as insecticides and tarpaulins), which reduced the reported costs.

With projected total annual cost per metric ton of security stocks varying so much from country to country, it is imperative that stock size recommendations be country specific. That is clear in the four case study countries, where reported costs for emergency stocks in each country are based on a different set of cost items (Table 2).

TABLE 2

Target Size and Total Annual Cost for Food Security Stocks in the Four Case Study Countries

Country	Target Size	Total Cost
	MT	USD/MT/YR
Chad	20,000	22.50[1]
Malawi	180,000	22.50[2]
Mali	58,000	61.50[3]
Zambia	225,000	88.89[4]

[1] Does not include amortization payments, insurance on the stock, grain transport costs to or from the storage facilities, or profit.
[2] Includes $2.47/mt/year for maintenance costs and $20.03/mt/year for opportunity costs (@15 percent interest) on the total maize stored as the food security stock.
[3] Does not include any amortization payments or profit.
[4] Includes $7.11/mt/year for maintenance costs and $81.77/mt/year for opportunity costs (@46 percent interest) on the total maize stored as the food security stock.

It is essential that the total costs (amortization costs, opportunity costs, grain maintenance costs, costs of storage losses, administration costs, etc.) be estimated, otherwise, the overall maintenance costs of physical emergency stocks cannot be compared with, for example, the cost of a combination of physical and financial stocks, the cost of only financial stocks, the cost of grain storage in cereal banks, or the cost of private on-farm grain storage.

Though each of the sub-Saharan African countries accounts for its security stocks using a different set of cost items, it is recommended that a total all-inclusive cost accounting approach to emergency stocks be followed in all sub-Saharan countries. Such an accounting approach would allow these countries to analyze their security stock policies with uniform quantitative measurements. The cost accounting approach would include the following cost items (Note: the cost items

that follow may include items which may not apply to certain countries within sub-Saharan Africa):

- Round-trip grain transport costs to the storage facility if the facility is only used for security stocks. In Malawi, for example, maize purchased by the Government of Malawi from ADMARC is transported from ADMARC's regional warehouses to the centralized security stock storage facilities. The distribution of the maize when emergency conditions arise is another expense, the cost of which depends on the destination. Transport costs in all sub-Saharan countries is expensive, particularly when grain must be transported to very remote areas (which is often the case in the Sahel).

- Interest (as part of amortization costs), opportunity cost of equity capital, depreciation costs for the facilities. There is an opportunity cost of the equity capital (since facilities could be sold and the proceeds used for other investing) but no cash interest expenses if the facilities were donated. In sub-Saharan Africa, most facilities have been donated by various donors. Additional facilities are not needed for storing food security stocks. However, depreciation expenses must be included as facilities will need to be replaced after their useful life. The opportunity cost would be based on the expected nominal rate of return from an investment of the same magnitude with a similar level of risk.

- Opportunity cost of capital (purchasing costs of the grain and the working capital) tied up in the grain. Although long-term grain storage is not a highly risky business, it is certainly not risk-free. The most appropriate nominal opportunity cost of capital may be the actual inflation rate within the country plus a normal real return on warehousing in that country (typically below five percent of the capital costs). An alternative might be to use the cost of financial stock, which would be the actual interest rate on short-term international bank deposits.

- Grain maintenance cost, including the cost of pest control, labor costs, security costs, insurance costs for the grain and facilities, repairs, maintenance, and depreciation to the vehicles and machinery.

- Storage losses, attributable to moving or turning over the grain and quality decline of the product in storage, occurring even under the highest standards of grain maintenance, when stocks are held for prolonged periods. Also, a quality loss charge in respect of the quality difference between old stocks released from the reserve and newer stocks supplied by, for example, the government.

- A handling and management fee payable to the managing organization for looking after the security stocks. In Malawi, a ten percent fee was paid by the Government of Malawi to ADMARC, the food security stock managing organization.

- Administration costs

Most countries in sub-Saharan Africa do not include specific transport costs, amortization costs, opportunity costs for the fixed and working capital, certain grain maintenance costs, and administration costs. The items that represent the greatest percentage of total costs would be the interest and depreciation expenses of the facilities, the opportunity cost of capital, and the transport cost of the food security stock.

To lower the total cost of maintaining emergency stocks, governments of sub-Saharan African countries should consider leasing storage facilities from the private sector. This is predicated on the assumption that the private sector is willing and capable of operating grain handling facilities efficiently and competitively. Although the Government would still own the stocks, it would be able to concentrate its limited budget on the emergency stocks and food security stock policy implementation instead of assuming the additional costs associated with the ownership of the facilities.

Another option less costly for a sub-Saharan African government would be for it to use the system of negotiable warehouse receipts. In this case the government would hold title to enough warehouse receipts to cover the needed grain volumes of the reserve, with stocks being managed by the private sector in bonded warehouses. The government would maintain the quality of its reserve stock by a carefully monitored buying and selling operation of its negotiable receipts (Hugo, La Grange, and Stryker, 1990).

Until all applicable costs are accounted for, governments of sub-Saharan African countries as well as donors will continue to have an incomplete view of the cost effectiveness while the sustainability of national food security stocks will remain in jeopardy.

Size and Donor Support

In sub-Saharan Africa, some countries have been budgeting for the maintenance of the security stock while others have received much donor support. Countries within the Sahel, including Burkina Faso, Chad, Mali, Mauritania, Niger, Senegal, are receiving a great deal of financial support from donors for maintaining their security stocks. In countries such as Burkina Faso, Chad, Mali, and Mauritania, 100 percent of the funding for stock maintenance comes from donors. In the IGADD, donors play a dominant role in financing the maintenance of food security stocks. Only in Kenya, are the national food security stocks financed by the national Government and the stock managing organization. In the SADCC, the maintenance costs for the national food security stocks are part of the government's or the stock managing organization's budgets in Botswana, Malawi, Tanzania, Zambia, and Zimbabwe.

Sahel. The maintenance of food security (emergency) stocks at targeted levels in the Sahel is sustainable only as a result of donor food aid assistance. Since countries within the Sahel are so dependent on donors for supporting their national food security stock programs, these countries are likely to adapt to changes in efficiency in food security stock policies more readily than many countries from other regions of sub-Saharan Africa. It is recommended that donors consider the trade-off between funding the maintenance and replenishment of the present targeted levels of security stocks in the Sahelian countries with the alternative of funding less (than presently targeted) security stocks but more infrastructure (ports, roads, and rail) projects.

IGADD. In the IGADD, Kenya is the only country that is implementing a self-financed food security stock policy. However, the Government of Kenya has not given the NCPB, the security stock managing organization, the fiscal resources necessary to fulfill its mandate, which includes the maintenance of both price stabilization and emergency stocks. NCPB has responded by not buying all the maize available in bumper crop years and by selling less than market demand in scarce years (Pinckney, 1988).

Other countries within the IGADD (except Uganda) receive food aid assistance on a regular basis and have not implemented long-term food security stock management policies. The recommended size of the national food security stock for Ethiopia and Somalia is under consideration by the government and donors within these countries. Since donors have and will continue to play a major role in providing security stocks in most of the IGADD countries, it is recommended that donors form a cohesive body and encourage the development of jointly managed (national government and donors) systems such as those being developed in the Sahel. In several of the nations of the Sahel, e.g., Chad and Mali, this joint management is aimed at insuring timely and adequate response to humans in distress while minimizing the reverse impacts of free or subsidized food. If such donor cohesion and relationship with the recipient government are not followed, many of the more food insecure countries within the IGADD will languish in their own political decisions to food security that'll have dire consequences for the people most at risk.

SADCC. The average food security (emergency) stock per million persons in the SADCC (countries with food security policies, namely, Botswana, Lesotho, Malawi, Tanzania, Zambia, and Zimbabwe (includes stabilization stocks)) is 17,003 mt as compared to the average food security stock of 5,955 mt in the Sahelian countries (Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal). This can be contrasted with an average per capita consumption of cereals in the Sahel of 183 kg/year compared with the SADCC of 145 kg/year (Table 3).

At a cost of at least USD20/mt/year, the expense to these six countries in the SADCC is at least USD ten million for maintaining just 50 percent of the targeted national food security stocks each year. This expense is something these financially strapped countries have had and will continue to have difficulty in meeting.

With more market liberalization and less emphasis on price stabilization stocks, SADCC countries will need to concentrate on making funding consistently available for emergency stocks, whether those stocks be physical or financial. The targeted level of food security stock in any particular SADCC country will need to be adjusted as developments warrant. For example, if the early warning system (EWS) in a particular country becomes efficient enough to project stock out far enough in advance of the time required to import security stock, the targeted level of security stocks may be reduced and, yet, maintain the same degree of insurance.

<u>Liberalization and Size</u>. A country's overall macroeconomic and development policies play at least as important a role, if not more important role than national grain reserves in providing food security. Inappropriate macroeconomic policies such as overvalued exchange rates and cheap food policies are often a major cause of food insecurity. More appropriate macroeconomic policies and broadly based agricultural and economic development are the long-term solutions

TABLE 3

Ratio of Targeted Security Stock to Total Cereals Consumption in Sub-Saharan Africa

Country	Targeted Security Stock Size (SS)	Pop'n Growth Rate[1]	Per Capita Cereals Consumed[2]	1992 Est. Total Consumption Cereals (TC)[3]	SS/TC
	'000 mt	percent	kg/yr	'000 mt	
Botswana	6	3.0	105	142	0.042
Burkina Faso	35	3.3	188	1,820	0.019
Cameroon	6	2.6	78	997	0.006
Chad	20	2.6	128	746	0.027
Ethiopia	204.6	2.9	106	5,448	0.038
Kenya	472.5	4.1	134	3,226	0.146
Lesotho	35	2.7	163	302	0.116
Malawi	180	3.7	155	1,482	0.121
Mali	58.5	1.9	202	1,677	0.035
Mauritania	30	2.5	180	382	0.079
Niger	80	3.0	105	1,619	0.049
Nigeria	250	1.6	67	7,944	0.031
Rwanda	8	2.8	17	121	0.066
Senegal	23	2.7	177	1,339	0.017
Somalia	20	3.0	88	616	0.032
Tanzania	150	3.2	122	3,325	0.045
Zambia	225	3.2	180	1,534	0.147
Zimbabwe	400	3.5	168	1,686	0.237
Total	2,203.6			32,405	
Average	122			1,800	0.068

[1] Source: Hunter (ed), 1991 and Banks (ed), 1990.
[2] Source: USDA/ERS, 1991.
[3] Projected population x per capita consumption.

to both chronic and transitory food security. Broadly-based development brings about not only rising per capita incomes which alleviate chronic malnutrition but also a transportation, marketing, and storage infrastructure which facilitates a more rapid response to transitory food shortages (Gerrard, 1986).

Structural adjustment programs may impact the macro-economy and sector adjustment programs may impact the food sector directly in such a way that a change in food security stocks may be necessary. If the poor are relatively less able to afford staple grains than before and, thus, are made even more vulnerable than before, the targeted food security stock size may need to be adjusted. Food aid may be required to constitute the added need for national food security stocks. Rather than to add to the national food security stocks, food aid could be used to support employment and income-generation schemes in either of two ways:

(1) as part of the wage, either directly, or indirectly by exchanging imported food aid commodities for local foods, and

(2) by providing cash wages through monetized food aid.

An example of a food sector adjustment is a project in Mali that began in the early 1980's and had, inter alia, food security as one of its goals. In exchange for a commitment by the Government to liberalize the cereals market and restructure the parastatal marketing organization, a group of 11 food aid donors, called the PRMC (part of the Cereal Market Restructuring Program), pledged food aid in cereals to ease the process of reform and to provide technical assistance. The donors in Mali have kept to their pledges. The food security stock has been constituted. The PRMC has had a major voice in the use of not only food aid but also the national food security stocks. The Mali project has caught the imagination of the donor community. Attempts are now being made to replicate its basic design in other countries in sub-Saharan Africa.

As countries liberalize their staple grain markets and as the private sector becomes more involved in the marketing and storage of grains, each country needs to rethink what level of food security is required. As markets are progressively more liberalized, countries in the SADCC, especially Malawi, Tanzania, and Zimbabwe, will find it less cost effective to maintain price stabilization stocks large enough to impact prices outside the target band. Also, the price stabilizing agency will find it progressively more difficult and more costly to purchase sufficient quantities of local stocks for price stabilization from the private sector as markets are liberalized. Furthermore, the sustainability of price stabilization programs in sub-Saharan countries with liberalized markets is not probable given that the funding provided for maintaining national security stocks is so meager and all sub-Saharan Africa countries are so financially strapped. In Zimbabwe, a security stock of 400,000 mt of maize represents about 24 percent of the total estimated cereals consumption level in 1992. "A government that holds ten percent of the country's normal production across years will cover the vast majority of shortfalls in annual production" (Pinckney, 1990). Such a high level of security in a fully liberalized maize market would hamper the development of the private sector in both maize storage and marketing. The opportunity cost of such a large emergency stock would also be very high, especially since much of the excess could be exported to other SADCC countries.

As maize markets are further liberalized in the SADCC, so-called stabilization stocks held by parastatals or government agencies will need to serve no longer as working stocks but principally in defending floor and ceiling prices. Since such stabilization operations are unlikely to breakeven, SADCC countries will need to budget for the operations. Most SADCC countries are unable to do so because of serious budget constraints. Neither governments of recipient countries, nor donors are likely to support stabilization operations since both are generally unwilling to make long-term commitments towards such projects (Gerrard, 1986). It is recommended that as markets are liberalized, SADCC countries either trim their stabilization efforts to those that service only a very wide target band (or one tied to the international grain market prices) or not support any stabilization operations.

Also, with liberalization accompanied with improvements in small-holder and large-holder production technology, input supply, and credit availability, the SADCC countries will probably produce, on average, a larger real (adjusting for population gains) quantity of maize (Weber, 1988). As a result, export parity prices (based on local depot delivered prices and world prices minus local transport and handling costs) may fall, while regional (e.g., South Africa) import parity prices fall and international (outside southern Africa) import parity prices (world prices plus foreign and local shipping costs) remain unaffected. The quantity of white maize exportable in the region at a premium (in Malawi, about US$55 per ton) over the world price (the U.S. gulf port price) would likely decrease, unless food aid requests (requested as local purchases, triangular transactions, swaps) increased. Within the SADCC, the difference in the export and import parity prices may remain unchanged. If grain would have to be imported from other southern Africa countries and if security stock storage costs remain about the same, it would be no more profitable than before to store versus to export. The difference in the export parity price and the international import parity price would widen. If grain would have to be imported from international sources and if security stock storage costs remain about the same, it would be relatively more profitable, then, to store more security stocks than to export. However, with greater real supplies of maize and more free trade within the region (i.e., a more food secure region, at least from a national perspective), the targeted level of national emergency stocks may be decreased. Overall, given the above scenario, it would probably be advisable that the level of national security stocks be decreased. Determining the magnitude of the decrease would require further analysis.

Physical Versus Financial Stocks. The requirement for a physical stock stems from the lags in importing and the uncertainty over the availability of foreign exchange funds for commercial grain imports (the quickest source of grain in an emergency). One mechanism for reducing the physical stock requirement is the establishment of a financial reserve of foreign exchange dedicated to the importation of grain when the food situation deteriorates. This would overcome both the foreign exchange availability problem and the time lag problem. A major advantage of a financial reserve is that it can earn interest, whereas physical stocks always deteriorate in quality and usually decline in value.

Under existing macroeconomic conditions in most sub-Saharan African countries, it is not realistic to expect governments to set aside foreign exchange as a reserve, even to support their crucial food security objective. It is difficult enough for these governments to budget for the maintenance of the security stocks. However, these governments may be able to attract donor support for such a financial reserve. The World Food Program (WFP) and other donor organizations have been consistently providing foreign exchange when necessary to help keep these countries food secure. A closer coordination between the donor group and the government of each recipient country would go a long way at addressing the financial stock issue.

It is also important to note that a financial security stock is equally subject to the replenishment problems after draw down as a physical stock, with the added complication that the draw down is in foreign currency (Gray and Baker, 1988). Donor commitment to the establishment of a financial security stock for food security should include its replenishment.

Financial stocks are most appropriate for sub-Saharan African countries with their own ports (Dresrusse, personal communication, 1991). In land-locked countries in the SADCC, IGADD, and in the Sahel, the need for physical security stocks is greater due to the added hardship of depending on neighboring countries' ports and transit facilities when importing grain. In 1992, the drought in southern and eastern Africa is certain to create massive transport bottlenecks as an estimated three million metric tons of maize may need to be imported from overseas for landlocked SADCC countries. Because of the war in Mozambique, Malawi and Zambia are currently and for the unforeseen future will have a difficult time importing through nearby Mozambique ports. Instead cereals may need to be imported at much higher transport costs from Tanzania and South Africa (WFP, 1991).

If a chronic, net importing country's government invested its financial reserve in some short-term financial instrument, it could add to its financial reserve in years when it imports relatively less and draw from the reserve in years when it imports relatively more. If the country is a net exporter in good years and a net importer in bad years, the government would likewise add to the reserve in good years (from the proceeds of the exports) and draw from the reserve in bad years (in order to finance the imports).

If a country decides to go the route of at least a portion of the stock being financial stocks (preferably U.S. dollars if grain imports are expected from the U.S.), the country can try to take advantage of the futures market (e.g., in the U.S. In this case, futures contracts can be purchased of grain (e.g., yellow corn) in advance. Contracts can be rolled over and held in a temporarily staggered portfolio, so that if imports are needed there is no time delay in ordering. The fact that the fund is held in U.S. dollars reduces the risk of financial losses due to exchange rate fluctuations (Ngondo and Kottering, 1991). A well-functioning national early warning system is a must in this case. In addition, scientific information that gives a realistic time-frame for the probability of the next drought should be integrated into a food security strategy and an action plan. In the Sahel, for example, results are now available on an 11.6 year cycle of the droughts in the Sahel plus or minus three years. These results were derived at using both the variations of the flow of the Senegal River since 1900, and the short-term trends due to solar activity. This information, used to predict the return of the rains in 1985 and 1986, has proved correct. If projected, a fair hypothesis is to assume that the next drought might be in 1995/96, or in the worst case in 1992/93 and in the best case in 1998/99 (World Bank, 1990).

Regardless of the circumstances, when depending on financial stocks as a country's food security stock, the procedures for importing must be worked out well in advance so that they trigger off into an automatic chain of actions, including decisions on volume, type, source, contracting of delivery and internal distribution, etc. (Ngondo and Kottering, 1991).

<u>Population, Staple Grain Supply and Demand, and Stock Size</u>. Size of the food security stock should be determined based on assessing the current food security stock needs within the country. The target size for food security stocks in several sub-Saharan Africa countries was based on recommendations made at least a decade ago (Table 4).

In some countries, for example, Ethiopia and Niger, where especially the growth in the famine-affected or vulnerable population has been incorporated into the equation for calculating the targeted size of food security stocks, the targeted national food security stock size has been increased from the near decade-old recommended target levels. In Ethiopia, the target has increased from 180,000 mt to 204,600 mt. In Niger, the target has increased from 50,000 mt to 80,000 mt.

For the past 25 years, food consumption in sub-Saharan Africa has been shifting from traditional staples, such as coarse grains, to non-traditional staples, such as wheat and rice. Between 1961 and 1983, consumption of non-traditional grains, such as wheat and rice, grew much faster than consumption of coarse grains, such as maize, millet, and sorghum (Wilde, 1989). Meanwhile, after peaking in 1967, per capita food consumption has fallen 27 percent since then.

TABLE 4

Current Targeted Security Stock Size and the Year of Recommendation

Country	Current Targeted Security Stock Size (SS)	Year of Recommendation
	'000 mt	
Botswana	6	
Burkina Faso	35	1991
Cameroon	6	
Chad	20	1989
Ethiopia	204.6	1987
Kenya	472.5	1987
Lesotho	35	1977
Malawi	180	1981
Mali	58.5	1977
Mauritania	30	
Niger	80	1985
Nigeria	250	1975
Rwanda	8	1981
Senegal	23	Current
Somalia	20	1986
Tanzania	150	1978
Zambia	225	1988
Zimbabwe	400	Current

In the Sahelian countries, dependence on cereals is among the strongest in the world. Among 94 countries ranked according to the share of cereals in total calorie consumption, all of the Sahelian countries except Mauritania were in the top third. This is explained by the region's natural conditions, which favor

cereals over root crops, and by its poverty, which restrains the demand for highly income-elastic foods such as livestock products, fish, fruits, and vegetables (McIntire, 1981).

It is recommended that each country in the sub-Sahara re-assess the size and the growth rate of its population, the per capita consumption rate of cereals, and the country's food security stock size.

Private Sector Storage, Cereal Banks, and Stock Size. Private storage represents a resource often overlooked when determining food security stock policies. Information on the variability of private grain storage (intra- as well as inter-year) are very difficult to obtain and monitor. Consequently, emergency security stock policies incorporating a percentage in private security stocks are difficult to implement successfully.

In addition to the incentives required before private storage can be tempted to store emergency stocks, it is recommended that investment in all sub-Saharan African countries must be made that facilitates genuine private trading operations, such as rural road construction, strengthening market information systems, removal of restrictive grain movement controls, and support for the development of institutions and mechanisms for sustainable financial intermediation. Until such investments are made, governments in the sub-Saharan African countries are not likely to incorporate private stock-holdings into their security stock size determinations.

In the meantime, governments of sub-Saharan African countries should consider the option of leasing storage facilities from the private sector for storing and maintaining government-owned emergency stocks. Alternatively, a system of negotiable warehouse receipts may serve the government's purpose of storing and maintaining emergency stocks at lower costs than if the government owned the storage facilities outright.

The potential for cereal banks (CB's) adding to the national food security efforts in a sub-Saharan African nation is not good. Despite heavy subsidization, CB's seem to have an uncertain financial record in temporal and spatial arbitrage and a very poor record in grain lending. Dolidon (1980) examined the financial situation of CB's by proxying it with the quantity of grain commercialized. His pessimistic results are given in Table 5.

Dolidon concluded that the system deteriorates over time; the older the CB gets, the less it sells. Similar conclusions have been drawn by other evaluators/donors (CILSS (1990), Catholic Relief Services (1990)). Overall, Sahelian CB's have tended to lose money on their marketing operations due to bad management decisions, bad debts, and embezzlement problems.

Berg (1991) states that the nature of the basic source of CB failures is that the cereals marketing functions that have been given to CB's are inappropriate for collective action. They are better left to private agents.

TABLE 5

Correlation Between Cereal Bank Age and Level of Operation

Years of Operation	CB's in the Sample	Average Sales/CB (metric tons)
1	8	22.6
2	8	12.2
3	4	11.5
4	3	4.2
5	3	1.6
6	1	0

Initial grain grant per CB: 30 tons

CB's, as they are currently conceived and run, are not an appropriate vehicle for emergency stock management. Instead, Berg (1991) advises that the current cereals offices become lean, less demanding financially on state resources, and specialized in security stock management and food aid distribution.

Constituting the National Food Security Reserve

As has been stated previously, stabilization stocks within the SADCC countries function more as working stocks in the commercial market than as price stabilization stocks. Constituting these stocks has simply been a matter of these countries' food security managing organizations, who typically dominate the buying of marketable surplus, buying grain from producers.

Constituting the emergency stocks in sub-Saharan African countries has generally not been as simple as constituting the stabilization stocks or working stocks. In fact, it has been a much more difficult financial problem constituting or reconstituting the national food security reserve than financing the maintenance of the food security stocks. All of the Sahelian countries receive donor support in reconstituting the food security stocks. In the IGADD, Ethiopia, Somalia, and the Sudan depend entirely on donor support for reconstituting the food security stocks. In the SADCC, Malawi and Tanzania have received donor support in reconstituting the food security stocks.

Many operational problems in constituting the national food security reserve must be faced by developing countries. An operational problem that is very costly for many countries, including Tanzania and Zambia, is the requirement by law that the security stock be purchased from areas lacking competitive markets and far away from the security stock storage facilities. This requirement results in maintenance costs being inflated. Both Tanzania and Zambia are located in strategic geographical positions such that if regional trade were liberalized, the free trade (Tanzania with Burundi, Rwanda, and Zaire; and Zambia with Malawi, Namibia, and Malawi) would likely stimulate a significant increase in production of maize in these border areas. Such a development would stimulate economic activity in border areas more than the Government of Tanzania's and Zambia's

present policies of buying from these border areas and transporting the maize to urban storage at tremendous cost. Within the general area of eastern and southern Africa, grain protocols need to be established under the auspices of the PTA (Preferential Trade Agreement for Eastern and Southern Africa) permitting the free movement of grain to and from the adjacent central African countries without the need to pass through formal sector trade and exchange control formalities (Gray, 1990).

Experiences from Sahelian case studies reveals other problems associated with requirements that the national food security stock be constituted from locally grown commodities. There is a natural tendency to use reconstitution purchases to affect prices. Without safeguards (safeguards that normally are not self-generating from competitive forces), this process can generate rents which stimulate political coalitions which can subvert the initially well-motivated and justifiable intentions of the program. In Mali, for example, the President of the Republic suggested, during the study team's visit, that reconstituting the security stock be used to demonstrate the government's support and concern for farmers. To the extent the decision to reconstitute and the timing of the reconstitution becomes a political decision, it will subvert the market-directed allocation of resources and implies a reduction in resource-use efficiency.

Experience in Chad and Mali illustrates problems public agencies can encounter as a result of competition with the private sector while attempting to reconstitute stocks with locally purchased grain. Public sector agencies typically have less flexibility to follow market trends than private sector businesses. This can result, as it has in Chad and in Mali, in the private sector dominating the market by paying prices that are sufficiently higher than the public agency. In Chad, buying operations were taking place some distance from the home office of the public agency. The agency sent buying agents to the distant market with authorization to purchase at a ceiling price. When the agents arrived at the distant location, the local market price had risen above the ceiling. By the time the agents had obtained permission to purchase at a higher price, the local market price had again risen. As a result, the public agency bought no local grain. Coincidentally, this incident was cited as a reason financial stocks were an unattractive alternative to physical stocks.

In Mali, the public agency established buying contracts for certain quantities of grain at certain prices. These contracts were awarded to local merchants. However, because the private market was offering higher prices and/or less stringent contract terms, the contracts were not honored. The fact that the buying operations employed the relatively inflexible mechanism of a contract appeared to have prevented the use of alternative methods. Local or foreign merchants were prevented from supplying the grain by the existence of the contracts.

From the point of view of minimizing the cost of reconstituting the security stock, it would be simplest in countries such as Tanzania and Zambia to purchase by open tender for delivery of grain direct to the point of long term storage (Gray, 1990). It should be obvious that costs for constituting the reserve would also be lower if further development of the national road network and feeder roads to the more remote producing areas were made.

Trigger Mechanism for Use of the Security Stocks

Stabilization stocks are not used in the Sahel and have not been used in the SADCC for purposes of defending ceiling prices. In Malawi, although the Government has stated that stabilization stocks would be released if retail prices reached more than 50 percent above the maximum retail price fixed by the Government, the Government has not instructed ADMARC to release stabilization stocks into the market when such situations occurred.

It is important for the emergency stocks to be available to deal with unanticipated emergencies, and not to be used up in other ways which leave the country exposed to the risk of a delay in response of food aid flows to increased need. Emergency stocks should not be used as working stocks. They are not intended as budgetary support for underfunded, and frequently inefficient, grain marketing agencies (Gerrard, 1986). Those involved in the decision to use the emergency stocks must ask whether the need for using the stocks arises out of a true, unanticipated emergency, or whether there are other ways in which the demand should be met. If, for example, the demand arises out of some element of the structural deficit, then it should not be met by using the security stocks.

The defining characteristic of an emergency should be the requirement for distribution of food on a concessional or free basis. If an emergency is deemed to exist then commodities will be distributed at a financial loss, and there is need for accountability for such losses. The Government's willingness to sanction such losses should be based on its willingness to shoulder the resulting costs or its ability to marshal donor support for the emergency (Gray and Baker, 1988).

Funding Sources

Self-Financing By Developing Countries. Structural adjustment programs have resulted in many sub-Saharan African countries having to decrease government intervention in the domestic grain markets. With the tightening of government budgets, and little or no growth in the economies of these countries for many years, the expense of maintaining food security stocks has been weakly addressed by most governments. It is only in Kenya and some SADCC countries, namely, Tanzania, Malawi, Zimbabwe, Botswana, and Lesotho, where governments have budgeted for security stock maintenance. Once the producer and consumer subsidies are partially or totally eliminated in these countries, there will be the potential for a more adequate budget for the maintenance and replenishment of security stocks. It is recommended, then, that the countries that have budgeted for security stock maintenance and replenishment and are undergoing grain market liberalization divert financial resources previously directed to subsidizing producers or consumers to the many funding activities essential for implementing a successful food security program (national early warning system, training, for example, grain storage managers and technicians, development of private and public marketing infrastructure, free distribution of emergency stocks to vulnerable groups, and maintenance and replenishment of security stocks).

Food Aid Assistance. In sub-Saharan Africa from 1984-88, the cereal volume of food aid to local production averaged 7.4 percent and the food aid to total imports averaged 43.8 percent. This dependence on food aid has been growing by over five percent annually. Cereal food aid has been growing at an annual growth rate of 13.3 percent compared to a rate of growth of total cereal imports of 8.2 percent (FAO, 1991).

Donors to recipient countries and food aid agencies have endeavored to strengthen the efficiency of food aid operations by increasing cost-effectiveness, speeding up delivery and providing food commodities more in keeping with the food habits and customs of beneficiaries. They have sought ways of enhancing the developmental benefits of food aid through stimulating increased food production created by additional demand and by fostering intra-country and inter-country trade (WFP, 1989).

Food aid assistance can serve its useful purposes in food security stock policies more effectively through enhanced use of old and new tools and methods available. The following topics are accompanied with recommendations on such enhancements.

Cooperation Between Food Aid Donors and Food Security Stock Managing Agencies

Of paramount importance in furthering food security within sub-Saharan Africa is the collaboration among donors and aid agencies and government units at the country level. Such cooperation could result in improving individual countries' capacities to conduct food aid transactions through burden sharing, avoiding duplication of activities and drawing on the particular strengths of each party. Full developmental benefits of food aid operations could be achieved if donors and aid agencies developed a common strategy, based on a clear code of conduct, for assisting countries and regions in which food aid transactions were likely to remain or to become significant (WFP, 1989).

The use of food aid to support national grain reserves must be seen in the context of an entire structural adjustment program in which the food aid is serving more than one purpose. Food aid is not only contributing to food security, but it is also helping to bring about and to underwrite some of the costs of policy reform and structural adjustment in the recipient country. The literature on food aid is virtually unanimous that even the best designed food aid projects may not be effective in the context of a bad macroeconomic policy environment. Policy dialogue and inter-donor coordination become important ingredients in any meaningful food aid program under such circumstances (Gerrard 1986).

There is growing support for giving food aid in general more cohesion through coordination and the achievement of a common understanding regarding a country's adjustment program. Food aid has a comparative advantage in supporting adjustment reforms because food aid can be increased in ways that add to the external resources supporting adjustment measures and can be provided in one or more roles which can serve special needs in the adjustment process. There also appears to be growing advocacy by some donors for increasing its use either as a general resource to support macro-economic policy reforms or as a contribution to agricultural and rural development. Particular attention should be given to ensuring that the availability of food aid does not discourage or delay the introduction of policies and programs that would result in the earliest possible resumption of normal production and trade in food and does not lead either to inflation caused by demand for wage increases brought about by food aid or to permanent subsidy schemes (WFP, 1987).

Four key factors have been identified in achieving more efficient food aid coordination, including, (1) the commitment of the recipient government, (2)

cohesive support from several donors plus a clear understanding as to their interrelated roles, (3) making available specific technical assistance to advise government on the measures required, and (4) the identification of one body by the government and donor community to act as coordinator for the supply of food aid and the monitoring of the funds established from food aid sales (WFP, 1987).

Disaster Preparedness and Prevention Measures

In some countries of sub-Sahara Africa (e.g., Zambia and Ethiopia), disaster preparedness and prevention manuals have been prepared typically through donor assistance but unfortunately have not been followed. Such manuals describe the integrated operations and decisions that need to be made by government and others involved in implementing food security policies and procedures in order to prevent a food disaster from occurring. Countries should be strongly urged to establish, widely distribute, implement, and keep updated such operational manuals instead of letting food security policies and procedures be dictated by political developments.

Food aid assistance should be provided in part on the basis of the adoption of famine prevention measures which Mellor (1986) identified as: a substantial surplus of agricultural production beyond the subsistence needs of the rural population; highly developed transportation systems within rural areas, between rural and related urban areas, and with the rest of the world; and a democratic form of government. The first makes a shortage of food and income to buy food less likely, the second makes it possible to deal with food and income shortages if they do occur, and the third ensures that necessary and feasible actions will be taken. In a democratic framework, a free press brings attention to famine even in isolated areas, and public opinion refuses to countenance inaction by the bureaucracy. In sub-Saharan Africa, some of these underlying factors (e.g., grain production and transport infrastructure) preventing famine continue to weaken in sub-Saharan Africa. It is expected that modern famine will tend to be concentrated in areas of marginal production for subsistence, poor transportation systems, and poor political development, especially where governments are unresponsive to human needs of major sections of their rural populations (Mellor, 1986)

Triangular Transactions, Trilateral Operations, Commodity Exchanges and Sales, and Local Purchases from Domestic Production from Cash Resources

Donor countries should make efforts to provide wherever possible cash resources with a view to financing food aid through triangular transactions between themselves, developing food exporting countries and recipient countries, including coverage of shipping costs wherever applicable, and further diversifying the varieties of food provided as aid. Such arrangements would increase the participation of developing exporting countries in providing food aid (WFP, 1989).

Most triangular transactions, trilateral operations and local purchases have been carried out in regularly exporting developing countries. Providing food aid through triangular operations and local purchases has generally compared favorably with delivering food commodities from donor countries in terms of speed and timeliness in so far as regular suppliers are involved. There is a

significant element of risk and uncertainty, however, in purchases from non-regular sources.

Obtaining food produced in developing countries to use as food aid has constraints, including wide fluctuations in production and lack of accurate information, that make advance planning difficult.

Ill-planned food aid transactions and local purchases can result in adverse developmental effects, e.g., sustaining inappropriate agricultural policies, dependence on food aid to stimulate increased food production and trade, inappropriate pricing may lead to distortions both in resource allocations in supplying countries and in protecting production programs that would not be sustainable when food aid ends, trade diversion that would work against comparative advantage, inconsistent and damaging interventions in local commodity and transport markets in supplying and recipient countries, and in distortions between the public and the private sectors (WFP, 1989).

Local food purchases have been hampered by the need to conform to strict quality standards and world market price levels, with insufficient regard to the very specific and often dramatic needs of the situation. In addition, the process of tendering for local purchases has been too complex for emergency requirements (WFP, 1986).

The most difficult aspect of the management of swaps is the determination of the exchange ratio in physical terms or relative prices of the imported and locally swapped commodity.

These transactions are complex and, accordingly, should be carried out only after rigorous analysis of the many related factors involved. Their implementation should also be carefully monitored and evaluated. They may be analyzed from two interrelated aspects: (a) efficiency of food aid operations, including cost-effectiveness, speed and timeliness of deliveries, and appropriateness of commodities, and (b) the broader developmental benefits, including stimulating increased domestic food production by creating additional demand, promoting exports and increasing foreign exchange receipts, fostering intra- and inter-country trade and food security, supporting food strategies or food security plans and programs by helping countries to manage occasional food surpluses, encouraging the improvement of transport, storage, and logistics systems in supplying countries and with neighboring countries, strengthening food management and administration in association with technical assistance and training, and assisting in the restructuring and liberalization of markets (WFP, 1989).

More attention should be given to non-cereal commodities, especially pulses and other minor traded foods in these type transactions. These food commodities would be particularly useful in complementing cereals in the basket of food aid commodities provided by donors.

In certain cases, a premium might be placed on enabling non-regular or emerging source countries to compete as part of a deliberate policy to use these food aid operations, in combination with financial and technical assistance, to increase the capacity of those countries to export their food surpluses more efficiently. In some situations, a premium might be placed on speed of delivery (WFP, 1989).

Training of Local Personnel to Operate Food Security Schemes

In order for administrators and managers of food security in sub-Saharan African countries to maintain adequate food security stock policies and procedures that utilize the information provided by national early warning systems and market intelligence agencies, it is recommended that these people receive periodic training that may not only better equip them for evaluating the information provided to them but also challenge their present food security stock management system. Similarly, increased training would allow greater use of local government officials in supplying information used to identify nutritionally distressed populations.

Improvement in Early Warning Systems and Market, Pricing, and Nutrition Information Systems

Though national early warning systems are in place in most all countries with food security stock polices, the resources available to each system and the quality of each systems' output varies immensely. In Zambia, for example, the lack of local staff within the Early Warning Unit hampers the collection efforts of valuable market data and, furthermore, forfeits the opportunity of critical on-the-job training of local staff. In Malawi, the shortage of staff has left the Early Warning Unit without a trained Malawian to draft the periodic and highly useful early warning reports. Efforts must be made by national governments in the sub-Sahara to eliminate the staffing constraints that currently jeopardize the progress already made in national early warning systems in many African countries. Similarly, an efficient micro-level early warning system (as found in many of the Sahelian countries and in Malawi) to monitor a number of indices affecting the most vulnerable groups or geographical zones in these sub-Saharan African countries is needed. This system is indispensable to complement information given by the national early warning system, as global surpluses may co-exist with deficits amongst certain zones and/or households and individuals.

In many sub-Saharan African countries, market demand, pricing, and nutritional information is not regularly collected due to, primarily, government staffing and transportation shortages. In countries where such information has not been collected regularly and analyzed appropriately, the responsibilities of such collection and analysis could be given to the national early warning unit (as has already been done in many African countries), along with additional staff hirings and transport. The national early warning units, which are given a great deal of support from donors, could then become capable of generating a more complete view of potential food insecurity problems.

It must be emphasized that early warning systems and market information systems by themselves are insufficient. They must be complemented by efficient procedures for the analysis of the information, rapid decision-making, and the mobilization of domestic, and possible international, financial and physical means to procure and supply food to the populations concerned by the crises, combining both public and private sector interventions (World Bank, 1990).

Improvement in Import Displacement Time

Timeliness of the response. In the past, the import displacement time has been significantly longer due to the time it took for the government of these recipient countries to assess the disaster situation and the food aid needs and to find or request from donors the financial means to buy the security stock. The majority of such requests have been submitted several months after completion of the harvest. This suggested a fairly long decision-making process as, for most countries, commodities should have been in the country by March/April to ensure supplies during the lean period May/September. The consequent delay made it sometimes difficult to effect timely delivery during the period of greatest need.

Timeliness of the response has also depended on several other factors, including: the accuracy and speed of supply of the information required for deciding upon requests for assistance, the reaction of donors to requests for the supply of commodities and the purely operational delivery phase which comprises local purchase where possible, ocean and land transportation, and the ultimate delivery of the food aid to the beneficiaries. If delivery schedules could be more efficiently planned to take into account the handling capacity of ports and transportation facilities, and the distribution to ultimate beneficiaries (WFP, 1986), the duration and the variability in import displacement time for many countries could be significantly reduced.

Infrastructure constraints. On many occasions in the past decade as well as in the current year (1992), regional port accommodation, discharge and handling, and overland transport (rail, and road) capacities and costs have been a serious constraint in importing sufficient security stocks into especially landlocked countries in sub-Saharan Africa (WFP, 1991). Port and overland transport infrastructure currently in place in the Sahel, the IGADD, and the SADACC is illustrated in Figures 2, 3, and 4, respectively. Countries like the interior Sahelian and SADCC countries will want to rely more on national grain reserves the greater are the costs of transporting food between the country's major port and its major producing and consuming areas, and the more unstable are the world markets for its agricultural imports and exports (Gerrard (1986); McIntire, 1980).

In the SADCC, it is most probable that the annual (for sure, the seasonal) supply of transport (especially train) services for hauling cereals from South Africa to the landlocked SADCC countries is perfectly elastic up to some point at which it becomes perfectly inelastic. For southern and eastern Africa, this year may be a once in 50 years' or more (that is a highly unusual and improbable) drought that not only results in the exhaustion of national food security stocks but also may result in the maximum point of supply of transport services having been reached long before the landlocked SADCC countries have enough maize to get them through this crop year. The drought has occurred after early season rains and after initial favorable crop reports by the national early warning units in these land-locked countries. What does this say about the national food security stock policies in these countries? Are the targeted levels of security stocks sufficient or is the impact of 1992's drought so much an aberration that such a drought cannot feasibly be planned for? It is probably the case that these landlocked countries could not feasibly (from primarily a financial point of

PORT AND TRANSIT FACILITIES IN THE SAHEL COUNTRIES

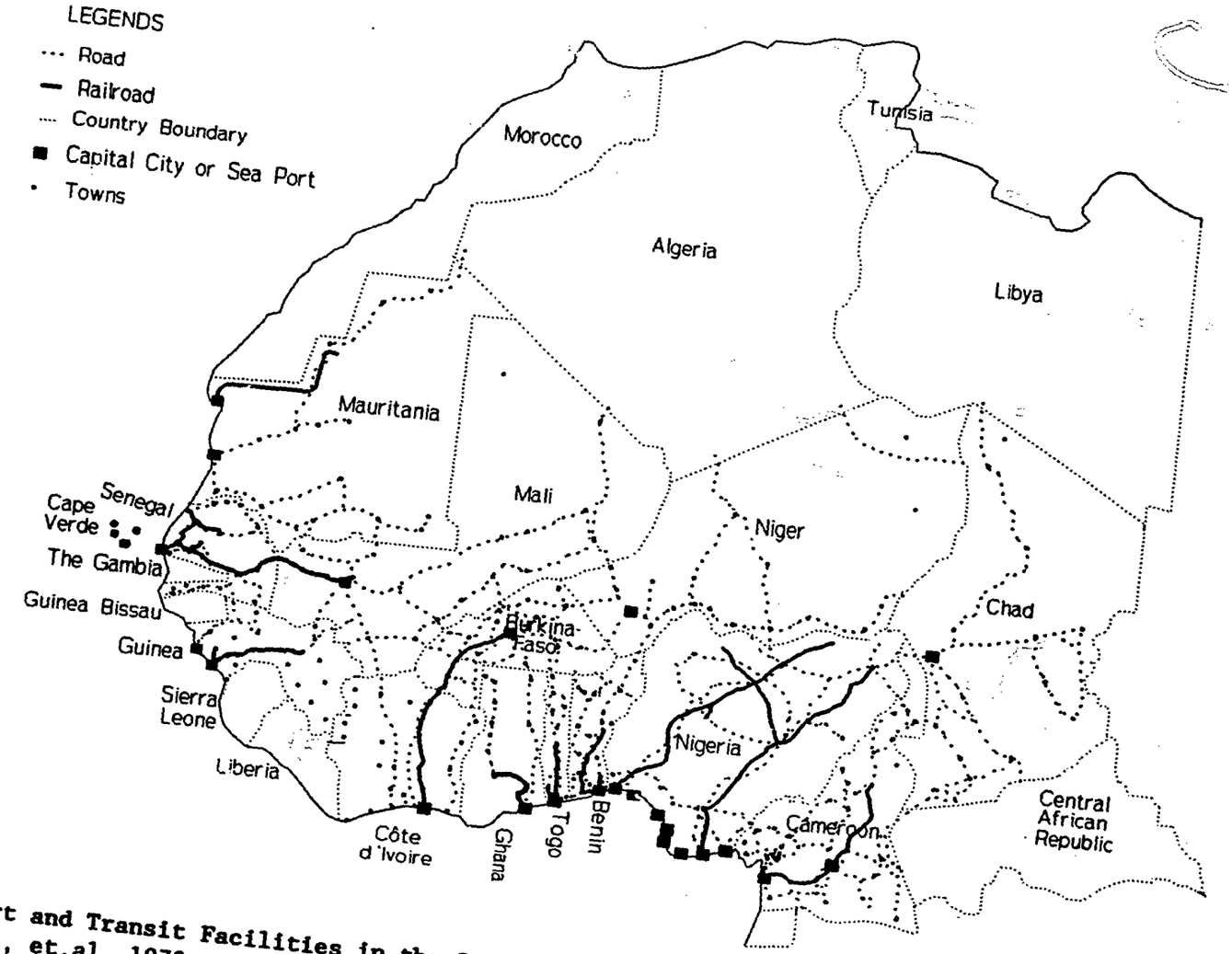

FIGURE 2. Port and Transit Facilities in the SAHEL Countries
Source: Synge, et.al, 1979

PORT AND TRANSIT FACILITIES IN THE IGADD COUNTRIES

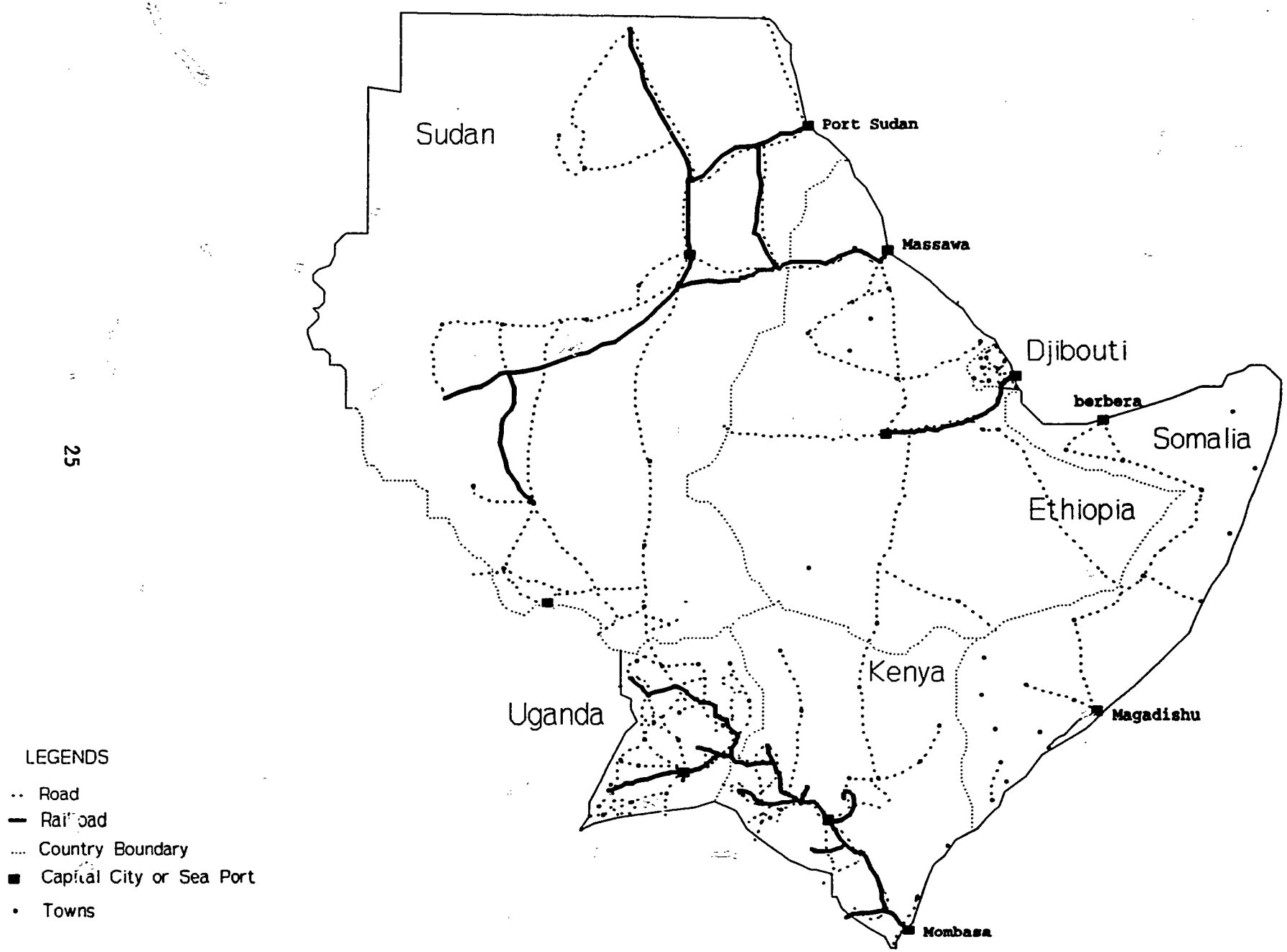

FIGURE 3. Port and Transit Facilities in the IGADD Countries
Source: Synge, et.al, 1979

PORT AND TRANSIT FACILITIES IN THE SADCC COUNTRIES

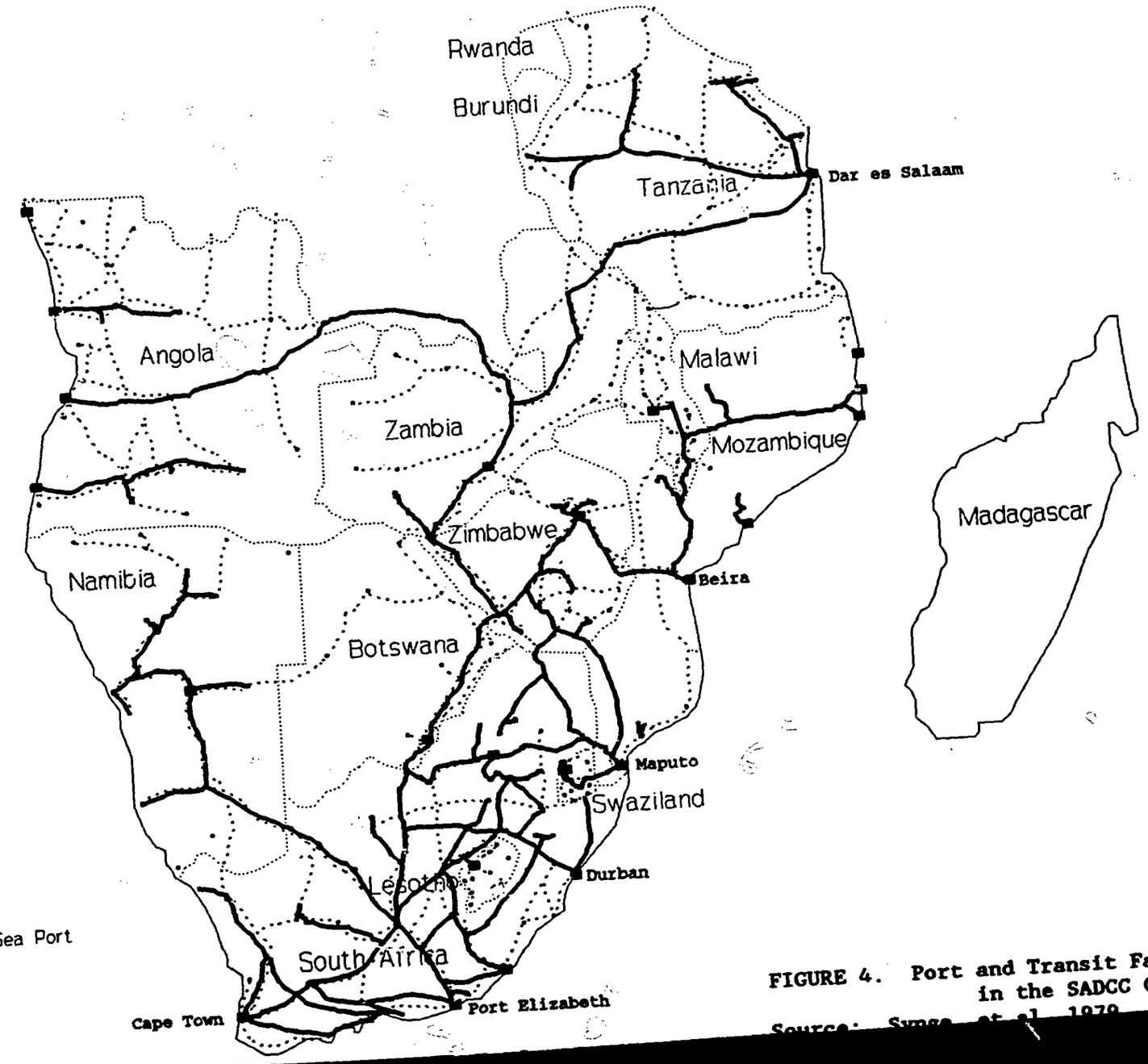

FIGURE 4. Port and Transit Facilities in the SADCC Countries

Source: Synge et al. 1979

view) have kept the quantity of stocks sufficient to prevent maize shortages in these countries. In the long term, it is recommended that investment be made in the transport sector by these sub-Saharan African countries (with donor support) in order to alleviate transport bottlenecks as experienced in southern Africa in 1992. Development of the transport sector will result in the need for less security stocks by especially landlocked countries in sub-Saharan Africa (McIntire, 1981). Improvement of transport facilities would also allow land-locked countries to move towards replacing a portion of their physical food security stocks with financial security stocks.

In the Sahel, despite government's good will and a spirit of solidarity among Sahelian countries and their neighbors, the massive influx of emergency food aid has raised serious problems because it has heavily taxed fragile ports, railway and road infrastructures of the transit countries. For example, in Burkina Faso, where there is only one railroad (linking Abidjan (Ivory Coast) to Ouagadougou) separated in ownership into two national companies, some disruption in traffic has occurred and uncertainties in traffic flow are arising on the Ivorian side, which may jeopardize efficient food imports in case of emergency (World Bank, 1990). As in the SADCC, the transport sector in the Sahel needs considerable investment attention in order to alleviate transport problems which are sure to surface when food shortages become emergencies.

Food-for-Work Projects. When relief efforts arising from food emergencies start, early attention is profitably given to use of food aid to prevent future disaster, for example, by paying labor to build irrigation and water control schemes, and by building the base for future growth through food-for-work projects that build rural roads and other elements of infrastructure. It would also be well to use food in this manner after the passing of the emergency, taking advantage of administrative structures built for the emergency and thereby maintaining those structures for rapid expansion with the onset of subsequent famine (Mellor, 1986).

Sub-Saharan African countries should refrain from adding to their targeted food security stock when more important uses of the food aid for food-for-work feeder road projects exist. Food aid may be provided to support food-for-work projects in the home location of rural vulnerable populations. Such projects may address the root causes of recurrent emergencies and food shortages and may have a very strong positive effect on structural adjustment goals (FAO, 1991).

There are a number of elements of food-for-work programs which argue against their use. Firstly, because of the transitory nature of food emergencies, food-for-work programs may have difficulty maintaining adequate continuity of management, capital resources and job focus to complete useful projects. Secondly, designing truly useful projects that can be completed within single transitional periods or across several years of short periods is quite difficult. The problem of maintaining continuity can be addressed through the use of private voluntary organizations with a continuing presence in the region. Thirdly, the skills and locations of the nutritionally distressed people participating in such programs are other constraints on the types of projects that can be undertaken. The requirement for working excludes the very young, the very old, the handicapped, and some single parents who must care for children. "The

International Food Policy Research Institute has demonstrated the need for a significant capital component in implementing food-for-work schemes. Without an appropriate capital investment, the durability of the construction projects is compromised" (Rubey, Staatz, and Weber, 1990).

Perhaps an ideal alternative to food-for-work would be some form of food-for-education that would use the food to attract people to existing extension education programs. Cash-for-work programs have been proposed as a method of reducing the logistical problems and the disincentive to food marketing development of food-for-work programs. In spite of its acknowledged constraints, food-for-work remains in place in several nations. In Burkina Faso, the WFP's food-for-work program is the largest in that nation.

Regional and International Emergency Food Reserves

Regional Grain Reserve. Although there are benefits to be had from regional cooperation in food security their realization may be elusive (Hubbard, et.al., 1992). It is not considered prudent for regional grain reserves to be established at this time because of the many problems that could arise including the following:

1. For a regional reserve to work, there would need to be cooperation necessary to diminish fears of cheating. Fear of moral hazard is one reason why CILSS members might reject a truly regional grain reserve; it is a legitimate fear that can be appeased only by having established procedures for measuring and reporting production and trade statistics.

2. There is also the probability that the world prices used to estimate the values of compensation will change after requests are submitted.

3. A reserve that expands consumption and imports may provide a form of moral hazard to be found in expansionist macroeconomic policies or distorted price policies. Some agreement would need to be found on common sale prices of food bought with compensation and on official prices for domestic compensation. This agreement would account for differences in cost and price structures, especially between coastal and interior nations.

4. Although regional reserves could exploit some of the imperfect correlations among production shortfalls in the region, the possible savings from aggregation might be dissipated entirely by increased costs of transport, administration, and stock rotation, especially if reserves are held in interior countries (McIntire, 1981).

5. A regional financial fund in the Sahel for food import assistance or for net export assistance may alleviate some of the above mentioned problems. McIntire (1981), using a simulation model, found that a regional fund in the Sahel for food import assistance would have to hold substantially smaller amounts of money to cover 95 percent of simulated shortfalls than would seven national funds operating

independently. However, there would need to be some mutual agreement among the countries within the region as to the appropriate trigger mechanism for the stocks. Presumably, some countries might call the need for financial stocks an emergency while other countries disagree, making the decision process next to impossible.

International Emergency Food Reserve (IEFR). The IEFR, established in 1975 and administered by the WFP, constitutes the only international mechanism (aside from a small sub-set of regular WFP resources) which is specifically intended for responding to food emergencies. It has a minimum annual target of 500,000 tons of cereals to be met by voluntary donor contributions. At least one-third of the contributions to the Reserve should be in the form of cash. Meeting the needs of protracted refugee operations represents the greatest use of the IEFR resources. The resource capacity of the present IEFR for meeting the needs of other food emergencies is not great.

It is not recommended that the minimum annual target size of the IEFR be increased in order to meet the potential emergency stock needs of developing countries. It is more cost effective and efficient for financial and/or physical stocks to be held as a national emergency reserve (with close coordination between donors and the recipient country's government) than as an international emergency food reserve burdened by administrative bottlenecks.

SECTION III

MANAGEMENT AND INSTITUTIONAL ISSUES

A major institutional issue faced by each sub-Saharan African country with a food security stock policy is the selection of the managing organization for the food security stock. In a number of sub-Saharan African countries, namely, Tanzania and Zambia, the designated food security stock managing organization (National Milling Corporation in Tanzania, and the Zambia Federation of Cooperatives in Zambia) had been a regular grain market buyer and seller and had mismanaged funds budgeted by the respective governments for food security stock maintenance. The funds in both cases were used for meeting commercial market objectives. This conflict of interest problem should not be institutionalized when food security matters are at stake.

Other sub-Saharan African countries, who have experienced poor harvests have left the management of food security stocks in the hands of the general government and, consequently, have been beset with long import delays while bureaucratic procedures are established. The recommendation for these countries has been to give to a public sector institution the mandate to advise the government on the need for imports and the resources to actually undertake such trade (Gray, 1990).

To what extent is it realistic to expect public sector national food security stock policies to be managed independently of political pressure? For a country that is generally self sufficient, release from stocks will be popular (in political terms) when prices would otherwise rise, but support for such a program will wane in times of abundance. Producers will complain of the price depressing effect of stock release, but support accumulation as providing a necessary floor to the market. Price stability as such is likely to be politically popular if only for the fact that consumers will be restless when prices rise and producers upset when they fall. In political terms, a buffer stock scheme appears to be a way of buying relative peace.

Food security stock policies should be carried out in a way that minimizes its perverse impacts on emerging private marketing networks and emerging political systems. There appears to be a growing international constituency supporting more direct person to person aid as a means to combat profiteering by non-needy but powerful individuals. Thus, there is increased emphasis on de-politicizing food security stock policies and food aid such that it does not become a tool of any one political group.

For developing countries experiencing the need to use nominal quantities of security stocks to avoid chronic food shortages of vulnerable populations, an autonomous public sector food security institution without commercial ties to the market needs to be in position. Such an institution should have a Board of Directors composed of both national government officials and private sector industry representatives. Its budget for food security stock activities should be born by the local government or if financially impossible through donor support and the local government. A performance contract, such as those in place in various sub-Saharan African countries, e.g., Kenya and Malawi, should be established between the institution and the national government.

Previous Page Blank

For providing food security to chronically food deficit vulnerable populations and for those unforeseen times when drought disrupts domestic grain production, it is recommended that a coordinating body composed of supportive donors and the recipient country's food security managing institution be formed to handle the food security stock management decisions (importation, distribution, etc.) jointly. By forming such a joint coordinating body, the activities of the reserve would be made more transparent, a development that has made food security stock policies generally more effective in many countries, especially those in the Sahel. It also behooves the sub-Saharan African countries to establish such a joint coordinating body because advance planning for international emergency relief operations today requires innovative approaches to overcome the financial and technical obstacles to speedy delivery of available relief supplies to the stricken areas (FAO, 1991). Many of the financial and technical approaches to overcome these obstacles have been evaluated in Sections II and VI of this study. Without direct donor participation in the decision making process, import time delays and misuse of the stocks once they do arrive are highly probable.

Joint coordination of food security stock management policies has been achieved in some Sahelian countries by the political and economic necessity of allowing those who contribute food aid resources a major voice in determining how the resources are used. States with little resources of their own and with no competing donors to turn to for aid have had little choice but to accept the suggestions of donors willing to provide aid. Even though those donors who have provided aid have had the major influence on the use of the aid, the use of this power has been tempered by the presence of observing local and international organizations serving on the joint management committee. In Chad, for example, the meetings of the joint food aid management committee are, by official decree, open to all persons capable of advising the committee on food aid matters (GOC, Article 5, Arreté No. 369/MSAPS/DG/87, creating the Comité d'Action Pour La Securité Alimentaire et l'Aide d'Urgence, CASAU, 1987).

Joint coordination and the interest of donors to insure that food aid is reaching the truly needy has resulted in the development of monitoring systems designed to identify needy people and to conduct follow-up audits of food distributions. The means of accurately identifying distressed persons is being developed by European-financed programs such as the European Association for Health and Development. These programs are based on observations of the health of individuals, their accumulated resources, and their incomes. Market information based programs assist in identifying people by identifying areas where prices are changing and the rate of change in prices. When such information is widely reported and the market is liberalized, it encourages market-directed responses to the situation.

Joint supervision of the delivery and distribution process has been improved by increasing the disaster identification system's ability to target the desired recipients. This is done by focusing on progressively smaller administrative divisions. At first, the system could only identify regions or sub-regions in need of food aid. With more cooperation of trained observers within the local government, this ability has been enhanced to identify sub-sub-regions and even individual villages that are in nutritional distress. The lower the administrative level at which the delivery is made, the more interested individuals become in the process and the more transparent it becomes. Thus, joint supervision is

approached from two levels: from the national level, where both domestic and international officials are concerned that needy people receive the food intended for them; and the local and even individual level where the actual recipients can help insure that the food is distributed as intended.

When the food is delivered to mid-level public administrators for distribution, there is a tendency for them to respond to local political pressure. This political pressure is often not aligned in a way that gives the greatest priority to those with the greatest need because the needy are often members of minority groups. It is often politically easier to simply divide the received food equally among all groups. This results in those in need receiving less than intended. Designating that the food be distributed in specific administrative subdivisions, such as a particular village, means that the regional administration is relieved of the political problem of choosing to which sub-regional division, villages in this case, should receive the aid. This allows a politically neutral method of by-passing politically powerful but unessential sub-divisions. In a sense, this allows the local administrators to oversee the process as desired by national level officials while minimizing the local political cost of doing so. Following-up the distribution process with an independent audit, furthers this process of de-politicalization reduces the scope for economic corruption.

Examples of programs which include these components are those operating in Mali and in Chad. In Chad, all food distributions are monitored by local representatives and the receipt of the report is a condition precedent for receiving further aid. The right to perform independent inspections of the distribution process has been assured to the donors by the 1990 convention relating to the rights and responsibilities of the government and the international donors (GOC, Accord-Cadre sur les Principes Generaux d'Utilisation et de Gestion d'un Stock de Securité Alimentaire d'Urgence en Republique de Tchad, 1990). In Mali, the auditing process has been carried out by joint domestic/international committees which have included USAID officials.

The international community should use its controlling influence to develop emergency food distribution networks that can deliver the emergency supplies as directly as possible to distressed individuals rather than organizations. Components of an accurately targeted program are:

1. joint, domestic and international, supervision

2. a means of accurately identifying distressed persons

3. a jointly supervised delivery process which contains mechanisms to insure the transparency of the entire process. Transparency implies that all citizens can observe the operation of the process (from decision-making through implementation)

4. independent auditing of the emergency food distribution process which will make public reports of the process and the results.

The international community should attempt to create similar programs in all countries needing emergency food aid. These attempts should be most successful in countries with the greatest need of assistance, becoming less and less successful (in terms of exerting controlling influence) as nations become more and more capable of financing and managing their own programs.

SECTION IV

TECHNICAL ISSUES

The technical issues in food security stock management include principally storage, handling, quality maintenance, and location of stocks.

Types of Warehouses

Details of warehouse construction, as well as pest management, have been well presented in "Manual of Pest Control for Food Security Reserve Grain Stocks", a 1985 publication of the FAO Plant Production and Protection Program series, number 63. Every USAID mission involved in the support of a security stock scheme should have a copy and should promote its use by the organization managing the stock. In addition, lessons learned in the case studies suggest that for Africa, the following major points would be the ideal relative to warehouse selection or construction.

1. Security stock warehouse should be used for that purpose only. Dedicating warehouses to reserve stock may reduce the flexibility and efficiency of the managing agency's overall warehousing plan, but it simplifies pest control and reduces cross-contamination. Pest control must be simplified in the extreme or it will not be done.

2. Security stock warehouses should be no larger than 2,000 t capacity. Construction cost per ton is a little higher in the small warehouses, but savings in pest control and reduced damage is worth it.

3. Security stock warehouses should be located inside a guarded compound. If pesticides are to be kept at each site, a separate store should be provided inside the compound.

4. Security stock warehouses should have brick or masonry sidewalls. Metal is cheaper initially, but repair costs and losses to pests due to greater access, higher temperatures, etc., are also higher.

5. Security stock warehouses should have skylights. Clear plastic panels or other materials should be used to provide light. Cleaning and inspection is more efficient and more likely to be done in a lighted warehouse, and pest control and control of petty theft is easier.

6. Security stock warehouses should have stops of metal or masonry several feet from the building in front of the doors. Truck drivers stop when they hit something.

7. Security stock warehouses should have swinging, not sliding, metal doors in metal frames. Sliding doors are very difficult to rodent-proof and are a constant repair headache. In climates with extended wet seasons the door area should have an overhang large enough that loading can take place under a roof.

Previous Page Blank

In some African countries, complexes of upright silos are used for security grain reserves. These grain elevators provide several advantages. First, automated handling of bulk grain is much faster and less labor-intensive than bag handling. Second, bulk-stored grain is more secure in time of civil disturbance than sacks of grain in warehouses. Also, pest control is easier and more effective for several reasons, especially in concrete, as opposed to metal, silos. However, in the areas wherein food security is most important, elevators are not generally an attractive site for the strategic grain reserve (SGR). Grain elevators require a higher level of technical knowledge and administration than do warehouses. Often all moving parts must be imported. The machinery is subject to breakdown. They are huge consumers of electricity, and are useless in a power failure unless equipped to generate their own power. The concrete facilities are much more expensive to build than warehouses. Therefore, in the poorest countries, where donors are most likely to be large investors in the food security, grain elevators are least useful.

Security Stock Commodities

The appropriate commodities for the security stock depends on many factors. Where relatively large groups of people exist from year to year on the brink of disaster, the security reserve tends to be a surge tank of processed commodities. The stocks are often used to feed malnourished, displaced people who have no way to process grain. In this situation there is little choice but to stock the traditional program-type foods, CSB, flours, fortified flours and grits, etc. They are very difficult to maintain free of infestation under tropical conditions, and should be "recycled" (disposed of and replaced with new) every nine to 12 months, even under good management.

Where the security stock is used for sale or in limited free-distribution programs to people who have not been displaced, local millets and sorghums, or grain procured in the region, appear to have several advantages. The first advantage, of course, is that they are locally available and known to the population. The second advantage is that they are easier to store. U. S. grains are more infestable, sometimes markedly so, and are not the commodities of choice from the standpoint of quality control. Except in countries with seacoasts, the U. S. commodities arrive infested, and are difficult to disinfest.

However, with locally or regionally-procured grains, there is the problem of insuring the purchase of good quality product. If the agency that manages the security stock has trained people and a good program of sampling and inspection at purchase, local purchase will usually provide significant advantages over imports. If not, imported grain may be no worse than local grain in terms of quality control.

Adequate inspection systems and record-keeping relative to quality are commonly weak points of the agencies that manage SGR's. Sampling and inspection is used to determine the value of grain purchased locally, as mentioned above. To do this successfully requires a trained and well-supervised staff, and a set of inspection equipment at each buying station.

Even if only imported commodities are used for the SGR, the managing agency must have a system of sampling, inspection, and record-keeping in place. The

information generated by these procedures is important to the donor as well as to the managing agency. The donors must know if their commodities arrived at the security reserve warehouses in good condition. The managing agency's inspection reports provide a check against other sources of information. Also, and more importantly, donors supporting the reserve should have an objective measurement of the degree to which the quality of the commodities is being maintained. Systematic, objective sampling, inspection, and reporting provides a mechanism for evaluation. The agency's warehousemen, too, should use inspection reports in their storage and handling decisions.

Maintaining Quality of the Reserve Stock

Detailed instructions on all aspects of pest control are provided in the FAO "Manual of Pest Control for Food Security Reserve Grain Stocks". The case studies emphasized the importance of administration to the success of quality maintenance programs. In general, the use of carefully-negotiated performance contracts between the agency managing the security stock and the funding agencies seems to produce the best results. Many of the agencies that have been given the responsibility of managing SGR's developed during a time when losses were subsidized and the official monopoly had little incentive to maintain grain quality.

Proper economic incentive stimulates the managing agency to invest the desired level of effort in quality maintenance. On the other hand, government officials often do not understand the cost of quality maintenance and are reluctant to pay for it. The donor who has provided a high-quality commodity, and the recipients, of course, are the losers when the donated commodity is allowed to deteriorate in storage. A performance contract provides the funding agency the opportunity to spell out its requirements relative to quality maintenance, and the managing agency the opportunity to obtain reimbursement for necessary costs.

Another common problem for the agency managing the security stock is too many bosses. Especially now, when because of market liberalization, etc., donor funding is so important to the former parastatals, they are anxious to do whatever donors want. However, this means that the warehouse manager, who should be making decisions based on considerations of pest control and efficient handling, is required to respond to decisions made for political or funding reasons. The government and donors must work through one spokesperson relative to issues that affect warehousing of the SGR.

For example, if the warehouseman is required to loan security stock grain for a program use, to be replaced with whatever the individual donor can provide, whenever he can get it there, the proper planning of the SGR is disrupted. If the warehouseman is required to accept infested commodity because the donor is politically important, the success of the pest control program at the entire site may be compromised. The warehouseman should not be expected to receive orders or instructions from WFP, USAID, DANIDA, and his government boss all in the same week. For technical reasons he must have one boss, and the political powers must let the technical man make the technical decisions.

A prime example of a decision that, ideally, should be made by trained technical people, but that, in reality, is always made by administrators, budgeters,

politicians, etc. is the "recycling" plan. When grain is not used for emergencies, it remains in the SGR. The longer it is stored, the more likely it will suffer deterioration. (This is not to say that new grain is less vulnerable to deterioration than old grain, only that the probabilities of something bad happening in 30 months is higher than for two months). Therefore, SGR's are recycled. Some portion of the grain, often a third, is sold or otherwise disposed of each year to be replaced with new grain, if there was no emergency to utilize this amount of grain. The typical scheme is that, barring emergencies, grain purchased two years ago will be replaced with this year's grain, etc. so that no grain must be stored more than three years.

Ideally, the maximum storage time would depend on technical considerations such as type of commodity, moisture content, and climate. Because the rate of deterioration of a stored food commodity depends on so many things, especially effectiveness of pest control, there are no fixed recommendations on allowable storage time. A few general rules follow. Given that the packaging materials, handling of the commodities, etc. are equal:

- processed commodities are more vulnerable in storage than the raw commodities from which they were made;

- traditional (not hybrid), local grain is more durable in storage than imported grain;

- small, hard millet, sorghum, or corn is more durable in storage than large soft grain of the same type;

- cool-dry climates are ideal for long-term storage whereas hot-wet climates are the worst;

- climates that have a cool or dry (or cool-dry) season are more desirable for long-term storage than climates with no break in the heat and/or humidity.

Location of Security Stocks

The location of security stocks is derived from the relationship between the economic savings of centralization and possible logistical benefits of decentralization. The benefit from centralization arises out of economies of scale of storage costs and from the fact that a single stock can address several, independent risks simultaneously, so that the total stock can be smaller. For example, in Ethiopia, if the probability distribution for the change in the famine affected population were constructed for each region, it may be possible to calculate the level of protection provided by a grain security of any given size. The quantity of security stocks in each region of the country could, then, be determined based on protecting, say, 80 percent of the emergency cases, that is, four years out of five. In most years, the number of famine affected people moves both up and down at different degrees in different regions. A single stock, allocated to several regions can be smaller than the sum of individual stocks, each addressing the needs of one region.

The countervailing advantages of decentralizing the emergency stocks are that stocks will be closer to where they will be needed; and the warehouses provided to accommodate the stock may be more useful as distribution points during a famine than a single warehouse complex at a central location. There may also be logistical benefits in decentralizing storage facilities to assist distribution of normal food aid (Hindmarsh, et.al., 1987).

In practical terms, the location of the food security (emergency) stocks depends to a large extent on the quality and quantity of roads throughout the country. If roads are adequate, the emergency stocks should be located within or adjacent to the primary deficit provinces to reduce logistical difficulties and to facilitate the rotation of stocks, keeping in mind, of course, that the location of installed storage capacity will largely define where the stocks can be located in practice. The emergency stocks should be located close to planned or installed milling capacity to facilitate the rotation and distribution of stocks. Finally, the stocks should, as far as is possible, be located in climatically favorable locations (Coopers and Lybrand Associates, 1987).

In many countries, the emergency stocks are located at strategic points within the country in order to be able to react quickly to emergencies. Countries with decentralized security stocks include Burkina Faso, Ethiopia, Kenya, Mali, Niger, Tanzania, Zambia, Zimbabwe. In the Sahelian countries, village cereal banks supported to a great extent by donor funding are serving as decentralized security stock storage facilities. Since many of these villages where these banks are located are periodically not approachable by transport, market failure and access to cereal stocks is a pending problem were it not for the banks.

If cereal banks are to be promoted as part of an overall food security scheme, technical problems must be overcome. For a multitude of reasons, cereal banks can only be used for short-term storage, as between primary and secondary harvest, or at most from harvest to harvest. Warehouses managed by part-time volunteers do not lend themselves to longer-term management. While it is true that in the Sahel farmers have developed techniques for maintaining their family-level long-term reserve, those techniques are not adapted to the requirements of warehousing.

Cereal bankers must run all the risks of deterioration that warehousemen everywhere assume. But their remoteness, their small scale, and the often voluntary nature of their administration create obstacles to pest control. In many places, these problems were the reasons that centralized grain parastatals were created in the first place. Where do they get training in warehousing and pest control? How do they finance sprayers, insecticides, fumigants, etc.? Where do they find fumigators? These are some of the reasons cereal banks may fit into an overall food security scheme, but not as the holders of long-term reserves.

Countries with security stocks located in one location include Chad and Malawi. In Malawi, it is recommended that the emergency stocks be decentralized into various provinces for purposes of improving access to food for rural households.

SECTION V

SUMMARY OF RECOMMENDATIONS

The objectives of national food security stock polices and procedures in sub-Saharan African countries must be clearly established before food security stock policies can be successfully implemented. In order for the objectives to be met many issues, including the economic and financial sustainability issues, management and institutional issues, and the technical issues, must be given appropriate attention. The approach in tackling these issues varies by region of sub-Saharan Africa and by the degree of donor food aid assistance in supporting national food security stock policies.

I. Recommendations For Economic and Financial Sustainability

A. The holding of price stabilization stocks as a food security objective in sub-Saharan African countries is not advisable as the costs of maintaining the required quantity of stocks is prohibitive. Furthermore, such stocks historically have not been used for their intended purpose but instead as working stocks or simply for selfish and, in many cases, political purposes. This is not to say that supply shortages that cause high prices should be left alone, instead vulnerable populations may need to be compensated for their lack of buying power with direct food aid or through, for example, food-for-work programs.

B. It is recommended that the major objective for national food security stocks in sub-Saharan African countries be for emergency purposes. This study found that the economic and financial sustainability of emergency stocks is, primarily, a function

- of the targeted size as it relates to the total costs of maintaining and replenishing the stock
- the amount of donor support
- the extent of liberalization of the economy
- the trade-off between physical and financial stocks
- the population size and growth rate
- grain supply and demand
- and private sector storage.

Recommendations on these topics, the constitution and utilization of emergency stocks, and food aid emergency procedures follow:

1. It is recommended that "total" costs for security stocks be accounted for, in order for sub-Saharan African countries to be able to determine a target size for emergency food security stocks that is most cost effective and to be able to determine how viable national physical stocks are relative to other alternative

Previous Page Blank

stock choices. Until the opportunity cost of capital, depreciation, and, in some instances, transport costs are accounted for, the sustainability and the question of relative efficiency of national physical stocks versus other alternatives will not be properly addressed.

2. It is recommended that donors, in each sub-Saharan African country with a national food security stock, form a cohesive body and encourage the development of a joint domestic government/donor committee that serves as a decision-making body on issues such as the use, replenishment, and funding of the emergency stocks.

3. It is recommended that the use of the emergency stocks be contingent on a plan being in place for replenishing the used stock. In the case of emergency stock distribution on a concessional or free basis, any willingness of a sub-Saharan African country's government to sanction such losses should be based on its willingness to shoulder the resulting costs or its ability to marshal donor support for the emergency.

4. As liberalization results in more uniform trade and pricing policies across borders of countries within a given region, it is recommended that the size of the emergency security stocks in each country be focused on regional aspects that affect the supply and demand of staple commodities in each country and its neighboring countries. In the SADCC, in particular, the outcome of liberalization may be dramatic increases in regional maize production, greater regional food security, and less need for national maize emergency security stocks at current targeted levels.

It is also recommended that those sub-Saharan countries that have budgeted for security stock maintenance and replenishment and are undergoing grain market liberalization divert financial resources previously directed to subsidizing producer or consumer prices to the many funding activities essential for implementing a successful food security program.

5. As import displacement time is reduced and more efficient and effective food security stock policies and decision-making arrangements are established, not only is it recommended that consideration be given to reducing the targeted national emergency stock size, but also that financial emergency stocks be strongly considered as a substitute for physical stocks in especially non-landlocked sub-Saharan African countries.

6. Because sub-Saharan African populations have increased relative to fixed emergency stock targets, it is recommended that the Government of each sub-Saharan African country evaluate the target size of its emergency stocks in light of its current population, population growth rate, and per capita grain consumption requirement.

7. Before the target size of the national emergency stocks is established to include stocks held by the private sector, it is recommended that

- the entire grain marketing system be fully liberalized

- **significant investments (in farm to market roads, in rural electrification, etc.) be made to facilitate genuine private trading operations**

- **early warning and market information systems be fully developed**

- **support be provided for the development of institutions and mechanisms for sustainable financial intermediation.**

Cereal banks, as they are currently conceived and run, are not an appropriate vehicle for emergency stock management.

8. It is recommended that sub-Saharan African nations and donors continue to give priority to purchasing local production for constituting the emergency stocks and not be reliant on imported grains which may not be the preferred grain of the local consumers, may not store as well as local grains, and may give the wrong market signals to local producers.

9. It is recommended that the use of food aid (assumed to be from donors) to support national food security stock policies be seen in the context of an entire structural adjustment program in which the food aid is serving more than one purpose. Food aid assistance can and should serve its useful purpose in food security stock policies more effectively through enhanced use of the following old and new tools and methods:

- Food aid should promote the development and use of disaster preparedness and prevention manuals as they relate to food security stock policies in individual sub-Saharan African countries.

- Triangular transactions, trilateral operations, commodity exchanges and sales, and local purchases should be carried out only after rigorous analysis of the many related factors involved. All such transactions should be carefully monitored and evaluated in terms of their efficiency, cost effectiveness, speed, timeliness of deliveries, appropriateness of commodities, and the broader developmental benefits.

- Training and improvement in early warning systems and informational systems, key to implementing successful food security stock policies and procedures, should be promoted through food aid assistance. This can be done by having international/local committees demand quantitative justification for distributions.

- Funds otherwise earmarked for replenishment of national emergency stocks should be partially diverted over the long-term into relieving the regions of the sub-Sahara of the many infrastructural constraints. Food-for-work projects that avoid many of the pitfalls of such projects, especially the administrative, management, and project identification problems, should be promoted through close coordination with recipient governments.

- It is not advisable for food aid assistance to establish regional security reserves or to enhance the reserves of the international emergency food reserve because such reserves are considered to be less cost effective than national emergency reserves and the source of a great deal of administrative and management bottlenecks.

II. Recommendations on Management and Institutional Issues

Recommendations on these issues relate to the increased emphasis on de-politicizing food security stock policies and food aid such that it does not become a tool of any one political group within an individual sub-Saharan African country.

A. For sub-Saharan African countries experiencing the need to use nominal quantities of security stocks to avoid chronic food shortages of vulnerable populations, it is recommended that an autonomous (yet government and donor funded) public sector food security institution without commercial ties to the market be put into operation. For example, the international/local committees in the Sahel are autonomous and powerful because "all" food aid and funding flow through them. Thus, they can say no to a request to use or replenish the emergency stocks. It is also recommended that a performance contract be established between the institution and the national government.

B. For providing food security to chronically food deficit vulnerable populations and for those unforeseen times when drought disrupts domestic grain production, it is recommended that a coordinating body composed of supportive donors and the recipient country's food security managing institution be formed to handle the food security stock management decisions jointly. The international community should use its controlling influence to develop emergency food distribution networks that can deliver the emergency supplies as directly as possible to distressed individuals rather than organizations.

III. Recommendations on Technical Issues

Recommendations on technical issues in national food security stock policies and procedures include principally storage, handling, quality maintenance, and the location of stocks.

A. It is recommended that the warehouse for storage of the security stocks be secure, 2,000 mt capacity or less, have brick or masonry sidewalls, and be constructed and managed for pests in accord with the FAO Manual of Pest Control for Food Security Reserve Grain Stocks.

B. It is recommended that proper economic incentives be provided to technical grain storage managers and technicians, as such incentives are essential in order to insure the maintenance of a good quality security stock.

C. It is recommended that all security stock managing organizations have a recycling plan for the security stocks. Some portion of the stocks, possibly a third, should be sold or disposed of each year to be replaced with new grain.

D. The appropriate commodities for the security stock depends on many factors. In general, whole grain stores better than processed grain, and traditional varieties store better than improved varieties. With locally or regionally procured grains, there is the problem of insuring the purchase of good quality product. Whether local or imported grains are procured, it is recommended that the procuring food security stock managing organization have an established program of sampling and inspection at the time of purchasing the grain.

E. It is recommended that security stocks be positioned in strategic points such that the food security stock managing organization can react quickly to emergencies. In practical terms, it is recommended that the location of the security stocks be dependent to a large extent on the quality and quantity of roads throughout the country.

The above recommendations have focused on the national food security stock policy issues as they currently exist throughout the sub-Saharan African countries. Many sub-Saharan African countries are experiencing such rapid changes in their marketing systems, in the public and private sector roles in the economy, and in the relationship between the food security stock managing institution and the donor community that the above recommendations will need to be adapted and continually revised to meet to each country's individual but ever-changing food security needs.

SECTION VI

REFERENCES

Agricultural Development and Marketing Corporation, various unpublished documents, Blantyre, Malawi, 1991.

Banks, A.S., T.C. Muller, S.M. Phelan, E. Tallman, and E.H. Rutkowski, Political Handbook of the World: 1990. New York: CSA Publications, 1990.

Berg, Elliot and Lawrence Kent, The Economics of Cereal Banks in the Sahel, Development Alternatives, Inc., prepared for USAID, March 1991.

Catholic Relief Services, Summary Report on Revolving Funds by Project Zone, Computer output report, Dakar, Senegal, October 30, 1990.

CILSS (Coordinator), Plan Cerealier du Burkina Faso, Ministere de l'Agriculture et de l'Elevage, July 1990.

Coopers and Lybrand Associates, National Cereals and Produce Board, Reorganization Study - Interim Report, Republic of Kenya, March 1987.

Dolidon, Denis, Evaluation du Programme de Banques de Cereales de la FOVODES, report prepared for Oxfam, Burkina Faso, 1980.

Dresrusse, GTZ, personal communication, 1991.

FAO, A Grain Reserve System for the Sahel: Summary of a Feasibility Study Prepared on Behalf of CILSS, Rome, July 1981.

FAO, Manual of Pest Control for Food Security Reserve Grain Stocks, FAO Plant Production and Protection Program Series, Number 63 Rome, 1985.

FAO, The Contribution of Food Aid to Food Security, Rome: FAO Committee on World Food Security, CRS: 85/3, Add. 2, 1985.

FAO, Prospects for Food Aid and its Role in the 1990's, Committee on World Food Security, Sixteenth Session, Rome, March 11-15, 1991.

Food Studies Group, Agricultural Marketing and Pricing in Zimbabwe, University of Oxford (England), December 1990.

Gerrard, Christopher D., Food Aid to Support National and Regional Food Reserves in LDCs: A Literature Review, CIDA, April 1986.

Government of Chad, Comité d'Action Pour La Securité Alimentaire et l'Aide d'Urgence, CASAU, Arreté No. 369/MSAPS/DG/87, 1987.

Government of Chad, Accord-Cadre sur les Principes Generaux d'Utilisation et de Gestion d'un Stock de Securité Alimentaire d'Urgence en Republique de Tchad, 1990.

Previous Page Blank

Gray, John G. and Andy A. Baker, A Review of the Marketing of Basic Food Commodities in Tanzania with Particular Reference to Pricing, Distribution and Market Roles, April 1988.

Gray, John, Agricultural Adjustment Program (TANAA) Grain Marketing and Strategic Reserves Visit Notes, Food Studies Group, Queen Elizabeth House, Oxford, UK, September 1990.

Hindmarsh, P.S., P.S.Tyler, A.J.K.Bisbrown, G. Shuttleworth, M.K.Griffiths, C.P.Crossley, and Alebachew Bekele, The Size, Location, Infrastructure and Management of a Food Security Reserve to Assist Famine Relief in Ethiopia, Overseas Development Natural Resources Institute (England), R1452(R), July 10-August 1987.

Hubbard, Michael, Nicoletta Merlo, Simon Maxwell, and Enzo Caputo, Regional Food Security Strategies: The Case of IGADD in the Horn of Africa, Food Policy, Volume 17, Number 1, pp. 7-21, February 1992.

Hugo, Cornelius, Mark La Grange, and Harold Stryker, Reactivating El Salvador's Public Grain Handling and Storage Facilities Within the Private Sector, prepared for USAID/El Salvador, San Salvador (El Salvador), October 1990.

Hunter, Brian (ed.), The Statesman's Year-book: Statistical and Historical Annual of the States of the World for the Year 1991-1992. New York: St. Martin's Press, 1991.

IGADD, Study of Traditional Farm Storage and Food Reserves at Different Levels of the IGADD Region, AGRISYSTEMS, International, Ltd., UK, AGRISYSTEMS, Overseas, Ltd., UK, AGRISYSTEMS, Srl, Italy, AGRISYSTEMS, Eastern Africa, Ltd., Kenya.

Konandreas, Panos and Dino Francescutti, A Model for Assessing Food Security Interventions: An Illustration Based on Honduras, FAO, Rome, August 1991.

McIntire, John, Food Security in the Sahel: Grain Reserves or Foreign Exchange Assistance?, International Food Policy Research Institute, Washington, D.C., March 1980.

McIntire, John, Food Security in the Sahel: Variable Import Levy, Grain Reserves, and Foreign Exchange Assistance, Research Report 26, International Food Policy Research Institute, Washington, D.C., September 1981.

McKenzie, James, National Maize Reserve Policy & Related Issues, Presented to the National Economic Monitoring Implementation Committee of Malawi, 1990.

Mellor, John W., Prediction and Prevention of Famine, Federation Proceedings, Vol. 45, No. 10, September 1986.

National Grain & Feed Association, Grain Merchandising and Storage in 1990-1991, Washington, DC, 1991.

Ngondo, A. and Köttering, Tanzania: Comprehensive Food Security Programme, Phase II, Marketing, 1991.

O'Rourke, Jon, Changing Food Consumption Patterns in Sub-Saharan Africa, USAID FVA/PPM, August, 1989.

Pinkney, Thomas C., Storage, Trade, and Price Policy Under Production Instability: Maize in Kenya, International Food Policy Research Institute, Research Report 71, Washington, D.C., December 1988.

Rubey, Lawrence M., John M. Staatz, and Michael T. Weber, Targeted Consumer Food Subsidies and the Role of U.S. Food Aid Programming in Africa: A Workshop Report, Department of Agricultural Economics, Michigan State University, East Lansing (Michigan), November 1990.

Shuttleworth, G., Grain Marketing Interventions by the State: What to Do and Why to Do It, Institute of Development Studies, University of Sussex, Sudan Food Security Workshop, October 3-5, 1988.

Subrahmanyam, Advisor, FAO, personal communication, 1991.

Synge, Richard and Gill Garb (editors), Traveller's Guide to Africa 1980 (Third Edition), London: IC Magazines Ltd., 1979.

United States Agency for International Development, Famine Early Warning System (FEWS) Project. Southern Africa Drought: Current Conditions and Concerns, 1992.

United States Department of Agricuture, Economic Research Service, Washington, D.C., November, 1991.

Weber, Michael T., John M. Staatz, John S. Holtzman, Eric W. Crawford and Richard H. Bernsten, Informing Food Security Decisions in Africa: Empirical Analysis and Policy Dialogue, American Journal of Agricultural Economics, Vol. 70, No. 5, December 1988.

Wilde, Parke, Changing Food Consumption Patterns in Sub-Saharan Africa, USAID FVA/PPM, August 1989.

World Bank, Burkina Faso: Towards Achieving Food Security, Report No. 8761-BUR, June 1990.

World Food Program (WFP), Food Aid Policies and Programmes, Role of Food Aid in Strengthening Food Security in Developing Countries, Eighth Session, Rome, October 22-31, 1979.

WFP, Evaluation of Emergency Operations: Lessons from the African Food Crisis, Twenty-second Session, Rome, October 20-31, 1986.

WFP, Roles of Food Aid in Structural and Sectoral Adjustment, Twenty-third Session, Rome, May 25 - June 5, 1987.

WFP, Report of Food Aid Policies and Procedures, Twenty-seventh Session, Committee on Food Aid, Rome, May 29 - June 2, 1989.

WFP, A Study of Commodity Exchanges in WFP and Other Food Aid Operations, Relief and Development Institute, London, Occasional Papers #12, March 1990.

WFP, The Food Aid Monitor: World Food Aid Flows, Transport and Logistics, INTERFAIS, Number 7, Rome, June 1991.