

PN-ABA-188
56905

A REPORT ON THE
FOOD SECURITY OF THE
SOUTHERN AFRICAN REGION

Prepared for the
Office of Southern African Affairs,
Africa Bureau,
Agency for International Development

Mark Eugene Smith
February 16, 1980

TABLE OF CONTENTS

Definition of Food Security	i
Summary	ii
Angola	1
Botswana	7
Lesotho	15
Malawi	22
Mozambique	28
Namibia	34
Swaziland	38
Zambia	44
Zimbabwe/Rhodesia	52
Republic of South Africa	57

This report will use the following definition of food security, being:

" . . . the need to ensure the availability at all times of adequate supplies of basic food-stuffs, primarily cereals, so as to avoid acute food shortages in the event of widespread crop failures or natural disasters, to sustain a steady expansion of production and reduce fluctuations in production and prices."*

*FAO, Report of the Food Security Policy Formulation and Project Identification Mission to the People's Republic of Mozambique. Rome, April, 1979, p.16.

Summary:

Southern African food security is precarious. A key to improving food security is increased food production, but this is difficult since soil and weather conditions limit productivity. Livestock overgrazing contributes to severe erosion and human population pressures are also threatening several nations. It is questionable whether Botswana, Lesotho, and Namibia will ever become food self-sufficient because of a lack of water and arable land in relation to their populations. Only through careful government action backed by much international assistance will their food self-sufficiency or food security become reality. On the other hand, Angola, Mozambique, and Zambia have proven their agricultural potential in the past, but present political difficulties and market inefficiencies have caused all three to become heavily dependent upon imports. Among the majority-ruled nations, Malawi, with its small size, relatively good soils, freedom from the RSA, and strong emphasis in agriculture has developed the best food security in the region.

The poor marketing systems, caused in part by a lack of trained personnel, are the prime constraint to better food security in each country of the region. The marketing systems of the former Portuguese colonies in the region are still being rebuilt. Agricultural trade in Namibia and Zimbabwe/Rhodesia is controlled by a minority primarily interested in boosting their commercial production. Likewise the markets of Lesotho and Swaziland are dominated by the Republic of South Africa (RSA), and so are mainly geared toward those farmers who are already commercialized. Botswana loses some of its food production to the RSA because of its poor

internal market system and subsequent lack of incentives to market domestically. Zambia's system is inefficiently operated and subject to political vagaries so that the production potential has been stifled. On the other hand, Malawi possesses the most successful marketing system in the region. Local traditions stymie the efforts of many nations to encourage greater production and marketing. Anthropological studies are warranted to determine how to channel local traditions to boost production instead of destroying them. Subsistence farmers must be encouraged to enter the market, but they will not do so unless a favorable and reliable market system exists.

Except for the white areas of the region, poor transportation is a ubiquitous problem. The internal transportation system of each country is founded upon colonial, export-oriented trade. Now, farm-to-market roads are needed throughout the region, not only to boost marketed production, but to ease the distribution of inputs and food to those who need it in rural areas. Improved international links are needed by the landlocked countries to allow flexibility in transporting imports and exports. A prime example of this is Zambia, which must rely heavily upon one overburdened corridor for its foreign trade.

Analysis of grain storage and food reserve policies is difficult because information is sketchy. Storage in general is inadequate. It is doubtful if Angola and Mozambique have reserves given the immediate food need before them. Botswana and Lesotho are making attempts to create reserves, but it is questionable if Swaziland has taken such action. Malawi seems to have the region's best reserve program, with a large storage capacity. Zambia, on the

other hand, has not adhered to its program and has exported food in the past.

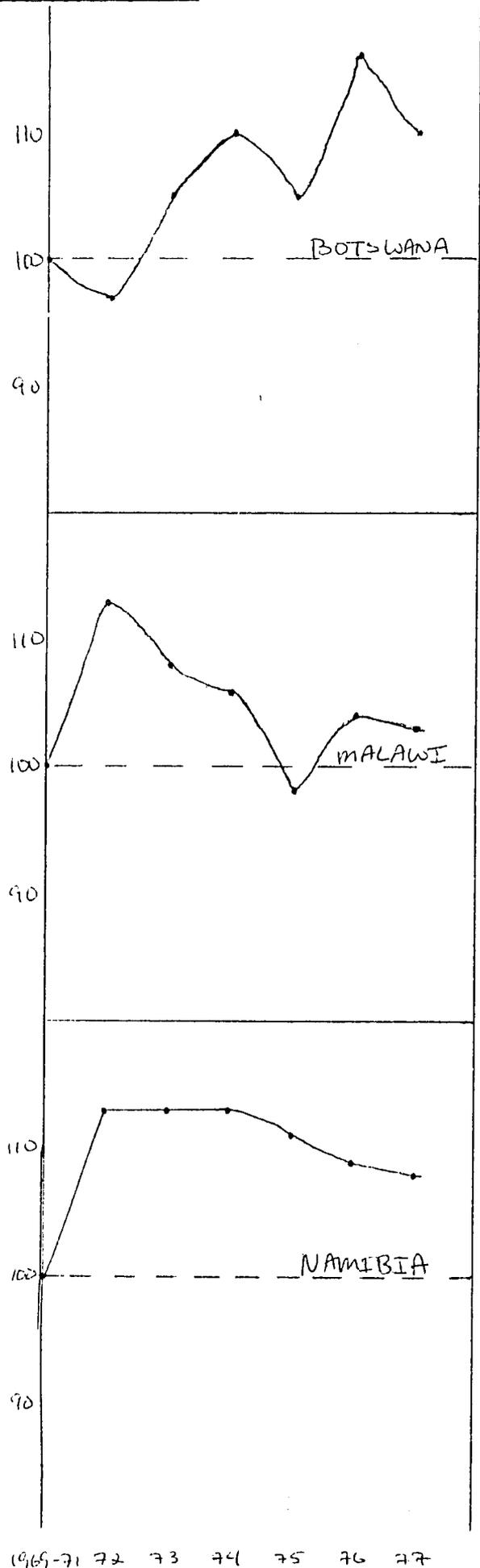
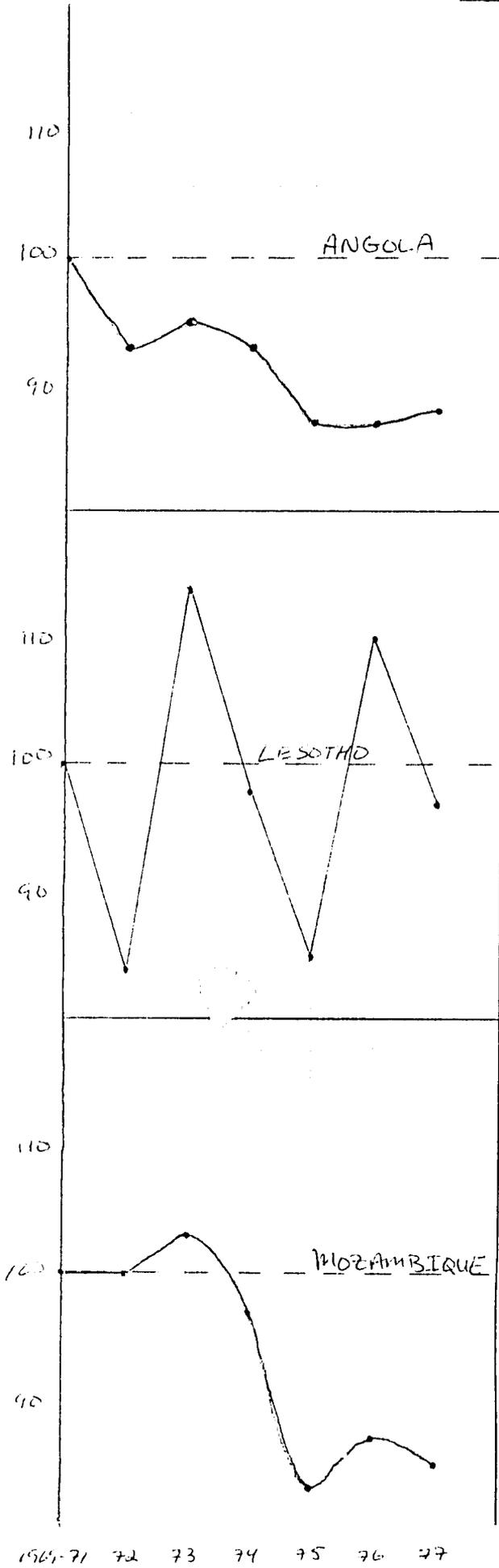
As political pressures rise for majority rule in the RSA, the instability of the region will rise as well. Should chaos develop in the RSA and commercial food production decline, the food supplies of almost half the region's population (including that of the RSA) would be seriously jeopardized. In addition, access to Botswana, Lesotho, and Swaziland would be severely impaired, and trade routes to Zimbabwe/Rhodesia and Zambia would also be hurt. The Mozambican and Tanzanian ports, already backlogged, would be hard pressed to handle increased trade, and no other routes presently give access to the landlocked countries.

In the time required to alleviate the problems of inefficient marketing systems, poor natural endowment, inadequate transportation, and dependence on the RSA, the food deficit of the region will increase if the declining trend in per capita food production experienced by many of the countries continues. Besides donors, the key food supplier now is the RSA, but its future reliability is questionable. With its rapidly growing population, Malawi may become unable to export food. Zambia has the greatest potential to soon supply grain to the region. A fairly intact Zimbabwe may be able to export some food, but its chief value will be to supply manufactured goods to its neighbors, although problems of financing may be expected. Further in the future, Angola may be able to export food, but it is presently linked to Zambia only by one railroad and to Namibia by a few roads. The other countries will generally rely on imports through the decade. The problem remains that long before several of the region's countries become

food self-sufficient, without massive assistance, the malnourishment now experienced by many will grow worse.

PER CAPITA FOOD PRODUCTION INDICES
 (1969-71 = 100)
 SOURCE: FAO, 1977 Production Yearbook

V



PER CAPITA FOOD PRODUCTION INDICES
(1969-71 = 100)

SOURCE: FAO, 1977 Production Yearbook

vii

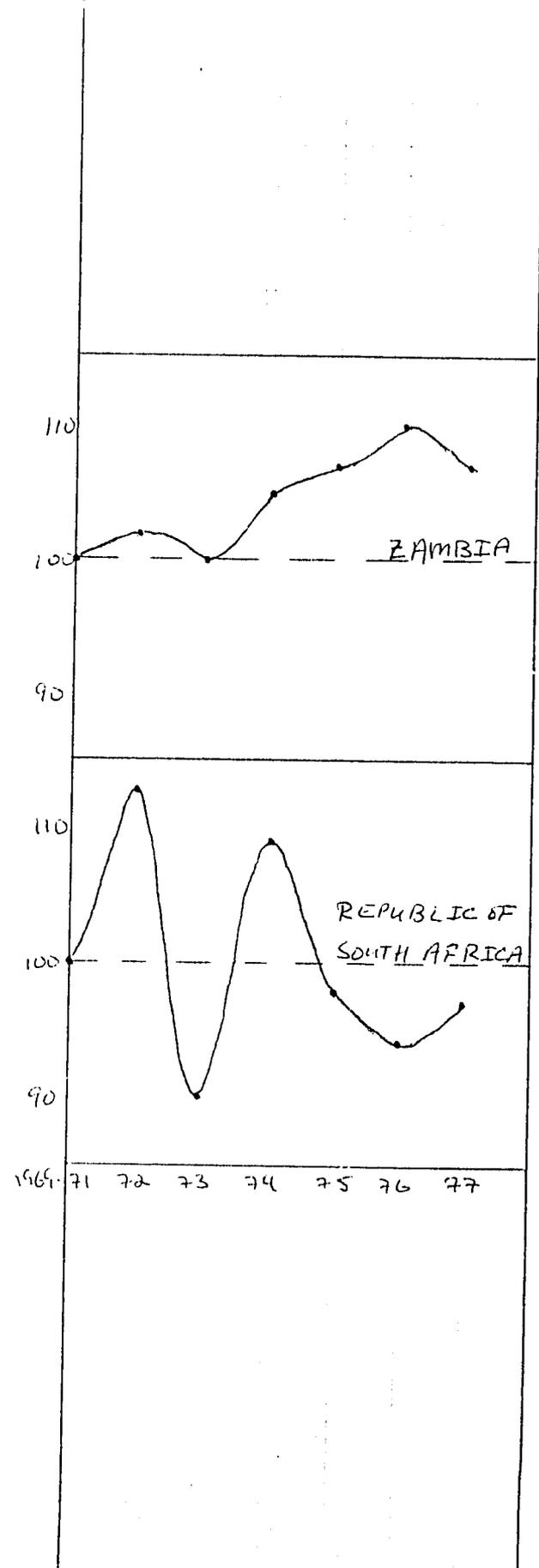
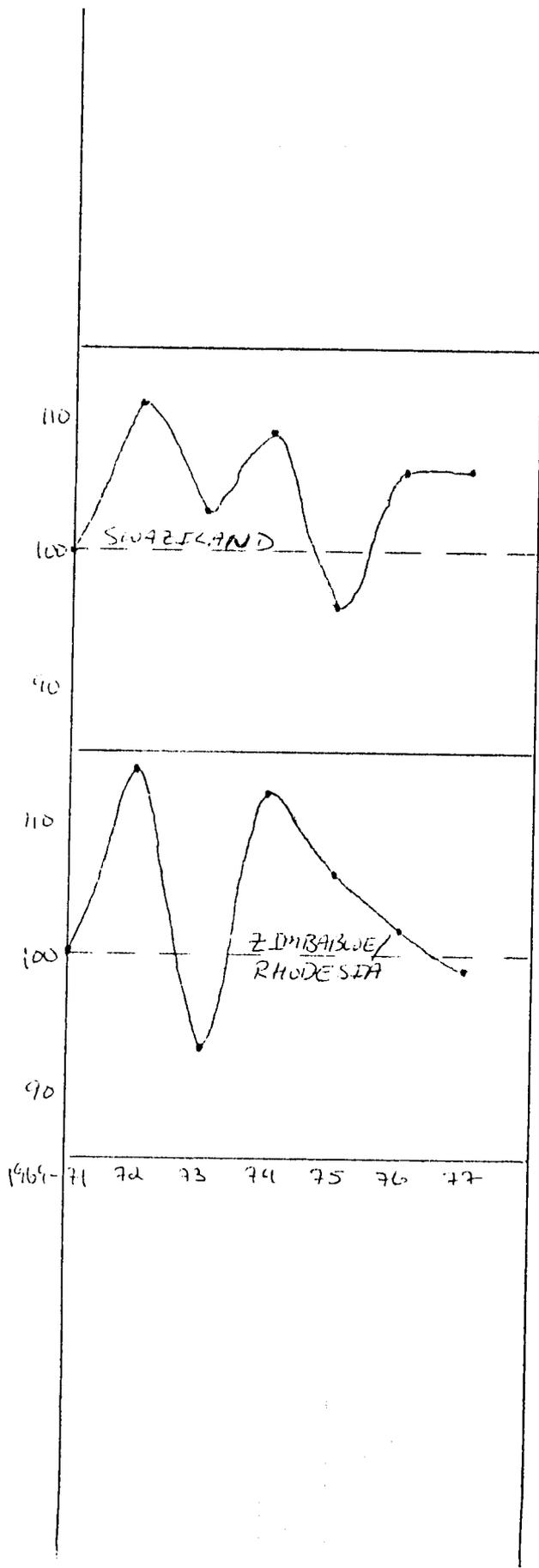


TABLE I - POPULATION, FOOD SUPPLY AND NEED FOR IMPORTS

COUNTRY	POPULATION			FOOD SUPPLY DATA FOR 1978 ⁴				PERCENT OF FOOD NEED SUPPLIED BY IMPORTS ²
	1978 TOTAL ('000) ¹	1967-77 GROWTH RATE % ¹	% RURAL ²	RECOMMENDED FAO MINIMUM CALORIC INTAKE (CALORIES)	INTAKE AS % OF RECOMMENDED MINIMUM	UNMET FOOD NEEDS ('000MT) WITH SKEWED DISTRIBUTION ³ WHEAT EQUIV. CORN EQUIV. ⁵		
ANGOLA	7,180 ³	2.45 ³	85	2300	67	1,065	987	½ of marketed staples (1978)
BOTSWANA	729	2.5	82	2320	73	91	84	½ of consumption
LESOTHO	1,276	2.1	95	2280	95	81	75	½ of maize and wheat consumed
MALAWI	5,677	2.5	90	2320	93	411	381	no significant amt. of staples
MOZAMBIQUE	9,751	2.2	90	2340(?)	73	1,213	1,125	massive amounts
NAMIBIA	1,250 ³ (1977)	3 ³	98	2315(?) ⁶	93 ⁷ (1972-74)	N.A.	N.A.	N.A.
SWAZILAND	522	2.8	84	2320	94	32	30	15-20% of maize requirements
ZAMBIA	5,415	3.1	60	2320	95	320	297	50+% of marketed maize (1979) unreliable exporter
ZIMBABWE/ RHODESIA	6,900 ²	3.22	80	2315(?) ⁶	107 ⁷	N.A.	N.A.	black areas must import 70% of food
REPUBLIC OF SOUTH AFRICA	26,124 ⁷ (1977)	2.7 (70-77)	52 (1975)	2315(?) ⁶	123 ⁷ (1972-74)	-----	-----	black areas must import food

1) From "Country Profiles"

2) From Southern African Development Analysis Project papers

3) From Arusha Conference country papers

4) From Paul Russell et al., Food For Development in Sub-Sahara Africa (dr.) 1979.

5) Using 100 grams whole kernel white corn = 357 cal. and 100 grams hard wheat = 331 cal.

6) Regional average

7) Using data from FAO, 1977 Production Yearbook

/ /

ANGOLA

Angola is recovering from its civil war and its food security is presently poor. The country is dependent upon large amounts of food imports, but unlike its southern neighbors, it relies little upon the Republic of South Africa (RSA). Lack of trained personnel in the government, a crippled market system, and poor infrastructure conspire to depress food production. Scarcity of information hampers planning for the country, and makes an assessment of Angola's food security tenuous.

The country's present demography is the result of Portugal's colonial policies. Most of the population is poor, uneducated and reside in rural areas with the Portugese exodus, almost all those with education or managerial skills left the country. Unlike other countries in the region, Angola has few migrant workers in the RSA, although because of continued political uncertainty, there are many displaced persons in and around the nation. Rural to urban migration has apparently slowed if not ceased since 1975. As can be seen in Table I, Angolans are the most malnourished people in the region. Equitably raising the standard of living is a major goal of the present government.

Even with drastically reduced output, agriculture is a significant part of the economy. Recent estimates are that food products comprise 40 percent of commodity exports. The government hopes that agricultural commodities, in addition to oil, will be a major source of foreign exchange. Less than 7 percent of the country's land is arable, and of this amount, less than one-quarter is cultivated. Most soils are of limited agricultural use. The

sector is chiefly comprised of crops since the tsetse fly limits livestock raising. During the civil war, most livestock were destroyed and the large fishing industry lost the majority of its sea-going vessels. According to the FAO, the 1975 per capita food production level fell to 87 percent of the 1969-71 base level, and then rose to 88 percent in 1977. (2, p.77) However, USDA figures show that the 1975 per capita food production index fell to about 72 percent of the 1969-71 level and then continued to drop to about 60 percent in 1977, and to 50 percent in 1978. (6, p.9)

The country supports a varied agriculture. Crops are grown on two types of farming operations, traditional and commercial. The traditional, mainly subsistence operations vastly outnumber the frequently larger commercial units, but due to continued political uncertainty, some farmers do not cultivate their traditional plots. The state now operates about one-quarter of the formerly foreign-owned units with most of the remainder in a state of abandonment. Major subsistence crops grown are maize, cassava, and beans, while the chief commercial crops are coffee (a major source of foreign exchange), sugar, sisal, and cotton. Before independence, few Angolans were purely subsistence farmers as many raised a surplus for cash, but with the collapse of the colonial marketing system and continued political turmoil, many farmers have removed themselves from the market.

The inadequate agricultural output has made the country dependent on food imports. Before independence, the colony was almost food self-sufficient, importing approximately 10 percent of its needs, but by 1978, Angola imported about half of its marketed staples. (5 p.39) According to the FAO estimates, the 1977 maize

imports were about 24,000 MT. (3, p.120) A wide variety of food aid and other assistance has been received from international organizations, Western nations, Cuba and Soviet-bloc countries. Because of Angola's rich mineral endowment, the outlook for increased foreign exchange earnings appears promising. However much of these earnings, which could be used for food imports, are spent on military supplies. (1, p.18)

While the government's development plan may not be completed until 1980, support and emphasis on agricultural sector has been shown. In fact, "first priority (has been) given to increased agricultural production and primary and literacy education." (5, p.3) With its large rural population, the basis of development is agriculture. (5, p.31) As an indicator of the sector's importance, 1978 was declared the Year of Agriculture, and even the armed forces were used to help boost production. The government plans to restore the abandoned commercial operations whose products may provide foreign exchange. (4, p. IV-5) However, lack of qualified personnel has hampered this program. Cooperative farming is to be promoted, but peasant resistance to the idea has been encountered. An official policy is to promote small farmers, and the government "has no plan or desire to disrupt traditional farming." (5, p.45) Involvement of subsistence farmers in the market economy is of critical importance, but information on government plans to accomplish this is unavailable. Some specific measures planned to increase agricultural production are to provide inputs on a timely basis, encourage use of fertilizers and improved seeds, and to improve livestock hards. (5, p.40) Poultry and hog raising are to be emphasized, and small-and large-scale fishing will be encouraged.

No information is available concerning the government's marketing system, if indeed any system has been established since independence. The government recognizes agriculture's importance and plans to promote it.

Inadequate transportation is a major constraint to developing a good marketing system and the country's food security. The colonial road system was among the best on the continent outside the RSA, with almost all district capitals and exploited natural resource areas linked by asphalt roads. (4, p.II-13) Unfortunately, due to the civil war and guerilla activity, many bridges and roads have been damaged or destroyed, as have almost two-thirds of the country's vehicles. The major ports now are the more northerly towns of Cabinda and Luanda, but the "port facilities have in recent years been the major bottlenecks in Angola's sea-rail connections to the world economy." (4, p.IV-34) From Luanda, Benguela, and Mocamedes, the railroads, when operational, allow an exchange of goods with the more fertile interior, but do not link the country. Attempts are being made to open the Benguela railroad which hauls freight from Zaire and Zambia. The railroads appear to have sufficient capacity to carry greater output from all sectors. (4, p.II-14) Air transport is also possible through the many airstrips though aircraft numbers are small. Repairing the transportation network will give rural farmers access to larger markets, creating an incentive for greater production, and also allow needed inputs or food and health supplies to reach the needy.

No information is available concerning the government's food reserve policy if one even exists. It is doubtful that the government, which is trying to consolidate its political and military position as well as feed its people now, is creating a food reserve. Storage facilities in general are lacking, but to what extent is unknown. Much food is lost to spoilage (1. p.35)

While confronted with many problems now, the outlook for Angola is promising. The UN projects the 1985 population will be 8,188,000 or a 22 percent increase over that of 1975. Lack of data prevents a projection of food production. It is not expected that production of several cash crops will attain pre-independence levels before 1980. (5, p.39) Pre-independence-sized cattle herds are four to seven years away and full-scale coffee production will require five to ten years to achieve. (5, p.41 and p.38) "The country appears potentially self-sufficient in basic starches and protein when short-range problems of transport and technical assistance are overcome." (4, p.IV-18) A well developed Angola may help other countries in the region reduce their dependence on, and vulnerability to South Africa.

Angola Bibliography

1. Family Health Care, Inc., and Africare. Health and Development in Southern Africa. Vol V. A Review of Health Care in Angola: Issues, Analyses, Recommendations. Prepared for A.I.D., Washington, D.C., 1978.
2. Food and Agriculture Organization of the United Nations. FAO Production Yearbook, 1977, Vol. 31. Rome, 1978.
3. Food and Agriculture Organization of the United Nations. FAO Trade Yearbook, 1977, Vol. 31. Rome, 1978.
4. Miller, Joseph. Transition in Southern Africa - Angola. Washington, D.C., 1977.
5. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Angola. Washington, D.C., 1979.
6. U.S. Department of Agriculture. Indices of Agricultural Production in Africa and the Near East, 1969-78. Statistical Bulletin No. 623., Washington, D.C., 1979.

BOTSWANA

Botswana faces many problems in developing its agricultural production and improving its food security. Livestock overgrazing, use of poor agricultural techniques and a lack of water result in poor productivity. Much output is exported to the Republic of South Africa (RSA) because of its proximity and better market. Poor transportation limits marketing and distribution of food supplies. Botswana suffers from a pervasive lack of both trained and untrained manpower. These constraints hinder the country's agricultural and overall development.

Botswana's population suffers from inequitable income distribution, malnourishment and a loss of much male labor. One of the world's most highly skewed income distributions exists in Botswana. Chronic undernourishment plagues the rapidly growing population, among the most calorie-deficient people in Africa. With about 30 percent of the country's manpower working mainly in the RSA, women must operate many rural households, and for physical and cultural reasons, their operations are frequently less productive than male-headed households.

Agriculture has played an important role in national development. The sector accounted for about 30 percent of the 1977 GDP, but this share is expected to decrease to 20 percent by 1982. (1, p.II-1) Cattle comprise about 80 percent of the marketed agricultural output and slightly more than half of total agricultural production. (2, p.18) Crops account for 20 percent of agricultural output with the remainder accounted for by hunting, fishing, and forestry. (2, p.18) Livestock products account for more than one-third of

total exports, and have been a valuable source of foreign exchange earnings. The 1976-77 net agricultural exports were nearly three times their 1971-75 level. (8) Estimates indicate that 5 percent of Botswana is arable and about one percent is under cultivation. The 1977 per capita food production increased 15 percent above the 1961-65 base period, while per capita crop production increased erratically to 53 percent above the base period. (8) Recently, however, drought has destroyed 85 to 90 percent of the cereal crop. (4)

Agriculture in Botswana is dominated by livestock production. About 80 percent of the population is engaged in agriculture, mostly livestock. A serious overgrazing problem now threatens the viability of grazing lands. Freeholders, mainly expatriates, raised 14 percent of the national herd on 3 percent of the land and provided half the cattle slaughtered by the Botswana Meat Commission (BMC) in 1975. (10, p.32) Since cattle are a traditional status symbol, the annual slaughter rate is low, usually less than 10 percent. In addition to livestock, most of the rural population raises maize, sorghum, and millet. However production in 1977 only accounted for about 70% of consumption (production plus net imports). (8) Crop failure is common, with inadequate rains about every third year. Most farm units are operated traditionally; subsistence agriculture being widespread. Almost half the rural population exists below the poverty level, and so are "primarily outside the market system." (7, p.18) Even the most basic Western agricultural techniques are rarely used in a country whose yields are among the world's lowest. Freeholders produce a disproportionately large amount of crops, and many such operators market their harvests in the RSA due to a lack of milling facilities and adequate transportation in Botswana,

and higher prices given in the RSA. (1, p.IV-24) Some feel that Botswana may be self-sufficient in cereals in good years, but that much production is marketed in neighboring countries. (10, p.61)

Botswana has long relied on imports and foreign aid to supplement its food resources. "As much as 50 percent of the food-grains consumed in Botswana are being imported." (2, p. 18) As a member of the South African Customs Union, the nation has little trouble importing food from the RSA, and this easy availability is a disincentive to domestic grain production. However, the RSA has recently reduced its maize subsidy, and increasing producer prices probably will cause the Botswana to increase production to increase income. Due to a past lack of storage facilities, some surplus grains at harvest time were exported to the RSA only to be later imported chiefly in the milled, more expensive form. Fortunately, creation of additional government storage facilities has reduced this. Since 1965, Botswana has received food aid from the World Food Programme (WFP) which "has become a "permanent" feature of the food supply situation. Although WFP aid has fallen from a peak of 14,000 MT in 1967, it continues to operate (in 1975) around the level of 4,000 tons per year and is destined to continue for some time." (3, p.2) The U.S. Canada, and several European nations have recently provided assistance, including aid to develop Botswana's agricultural extension and livestock sector. Food aid and imports play a major role in the nation's food supply.

The government has expressed commitment to increased agricultural production and food self-sufficiency. It is hoped that the Tribal Grazing Land Program, a new land tenure system, will increase livestock production and improve range management. The Arable

Lands Program will be a major effort to raise food production and employment. However, only about 10 percent of the 1976-81 ccre development budget has been reserved for agriculture, ranking fourth behind transportation and communication, urban development, and education. (10, p.153)

To facilitate agricultural marketing, the government has established such parastatal institutions as the Botswana Agricultural Marketing Board (BAMB) and the Botswana Meat Commission (BMC). "The market system . . . might be described as a "controlled free enterprise" system . . . (where) the forces of supply and demand are permitted to operate within government controlled limits on prices of inputs and outputs." (7, p. 18) BAMB has provided a market for farmers who wish to sell surplus, and has helped stabilize prices and reduce the export and re-importation of grain to and from the RSA. (7, p.43) Following the 1974 bumper harvest, about half of the 6,000 MT of sorghum purchased were from very small sellers, perhaps traditional farmers. (1, p.IV-21) BAMB may also compete with the RSA for freeholders' grains. Floor prices have been established, but because of competition from the RSA, must be tied to RSA prices. Responsibility for the abattoir rests with the BMC, which processed 80 percent of the cattle marketed in 1977. The remainder was equally divided between small village abattoirs and auctions to large farmers or traders. Because of a quota system used to gain economies of scale, the BMC discriminates against small operators, but small-herder cooperatives has helped relieve this. (1, p.IV-9) By facilitating marketing, the government expects to stimulate production.

Lack of adequate transportation hinders domestic marketing and limits delivery of food aid to the needy. The few paved roads

and only railway traverse the more populous eastern part of the country, giving residents there relatively good access to trade routes compared to inhabitants of the west and northwest. However, road transportation in many areas is impossible in the wet season, and road condition is so poor that in 1977, only 30 percent of the Roads Department's vehicles were operable. (6, p.61) Some farmers near the Zimbabwe/Rhodesian border can more easily market crops across the border than in Botswana, and the Ghanzi agricultural zone in the west has closer economic ties to Namibia than Botswana because of poor access to internal markets. (6, p.65) The government is interested in building or improving roads to redirect domestic trade.

Both commercial and government storage exist. The Lobatse Mills Limited, a South African enterprise, is the only commercial milling operation and provides the only commercial storage exclusively for grains. The mill, which produced about half the maize-mill consumed in 1975, should now have a storage capacity of 20,000 MT of maize, almost double the quantity of 1977 maize imports. (3, Annex II, p. iii) "BAMB has an adequate storage capacity for domestic production and emergency reserves (14,000 MT) but has less than adequate access to many food producing areas due to Botswana's incomplete transport network." (10, p.63) Through the World Food Programme (WFP), the U.S. is giving 6,000 MT of grain to create a reserve. (9) In 1975, the FAO recommended an emergency grain reserve be established capable of handling supplies for three to four weeks (6,000 MT). It was suggested that storage facilities be established near the Lobatse mill and the railway. Funds for the construction of six warehouses for strategic reserves were made available by A.I.D., but it is unknown if the money has been used. (5)

The reserves presently being established may be designed for relief in of residents/more remote areas and to aid marketing in such areas rather than reserves for the nation. (5) Clarification is needed concerning the government's policy/plans for this reserve.

Botswana's future is uncertain. The government hopes to achieve non-livestock food self-sufficiency by 1986, by which time total grain consumption will range from 100,000 MT to 150,000 MT. (3, Annex I, p.v) Since a trend in per capita crop production cannot be seen in available data, it is impossible to estimate how well production will be able to meet demand. According to the FAO, the "Customs Agreement should continue to ensure that Botswana is able to meet normal grain import requirements (from the RSA) at reasonable prices." (3, Annex I, p.viii.) "Food consumption patterns are changing towards maize meal and away from sorghum." (3, p.2) This shift must be stopped since sorghum is more drought resistant and more reliably produced than maize. Failure to do so will increase Botswana's dependency on the RSA. On the positive side, using improved seeds and agricultural practices, primary crops' yields may triple, and it is felt that self-sufficiency in cereal, poultry, and milk production is possible. (10, p.61 and 60) The government must play a major role in tipping the balance toward greater domestic production.

In summary, Botswana faces a difficult task to attain food security. Crop production has been erratic and hence unreliable. Only foreign aid and RSA imports have prevented widespread starvation. Care must be taken to assure that future aid does not inhibit domestic production. Reduction and proper management of herd size, and a more effective agricultural extension program may help boost production

while conserving resources. Improved production estimates are imperative to determine future or even current needs. The large numbers of people with little contact with the market, and so the little effective demand obscures the true food need. Improved transportation is necessary to facilitate the transfer of inputs and outputs, and to keep agricultural products in the country. Pressures from a growing population, higher unemployment, more refugees, and a lack of trained manpower continue to challenge the government's ability to provide basic human needs. Since much agricultural production is lost to the RSA, and because of the nation's overall economic vulnerability to its larger neighbor, Botswana's agricultural marketing system and its relationship to that of the RSA deserve examination. Now, the RSA permits food to be sold and/or transported to Botswana, but should this change, disaster would result. Botswana's position is tenuous, but the potential exists for food self-sufficiency and improved food security.

Botswana Bibliography

1. Epstein, Gerald. Transition in Southern Africa - Botswana.
Prepared for A.I.D., Washington, D.C., 1977.
2. Family Health Care, Inc., and Africare. Health and Development
in Southern Africa. Vol. VIII. A Review of Health Care
in Botswana: Issues, Analyses, and Recommendations.
Prepared for A.I.D., Washington, D.C., 1978.
3. Food and Agriculture Organization of the United Nations. A Policy
and Action Plan for Strengthening National Food Security in
Botswana. World Food Security - Country Report ESC/FSAP/BOT,
1975.
4. Gaborone Cable 2064, 1979.
5. Gaborone Cable 2149, June 21, 1979.
6. LeBel, Allen and Philip Moeller. Transportation and Communication
in the Southern African Region. Prepared for A.I.D.,
Washington, D.C., 1979.
7. Motheral, Joseph. Agricultural Sector Assessment Botswana.
Prepared for A.I.D., Washington, D.C., 1978.
8. Russell, Paul et al. Food for Development in Sub-Sahara Africa.
(draft), 1979.
9. State Department cable 180046, July 12, 1979.
10. U.S. Agency for International Development. A Report to Congress
on Development Needs and Opportunities for Cooperation in
Southern Africa, Annex A Botswana. Washington, D.C., 1979.

LESOTHO

The Kingdom of Lesotho is among the world's poorest countries. Several factors contribute to its poverty and lack of food security. Crop yields have been declining while erosion has increased. The lack of economic incentives inhibits greater production as well. Much labor is diverted from agriculture by well-paying jobs in the RSA, and internal transportation is inadequate. Together, these constraints weaken Lesotho's food security.

Several demographic problems challenge the government. Nearly 60 percent of the male labor force work in the RSA, leaving women to operate the farm although men make the farm management decisions. Income and land distribution are unusually equitable, with 85 percent of the rural population having access to arable land. However, the government admits that the "average holdings of land and stock are far too small to support the average farm household under the prevailing ecological conditions and the established (tribal) pattern of land use." (3, p.71) As shown in Table I, the Basotho are among the best fed people among the majority-ruled countries of the region, although one nutritionist feels that as much as three-quarters of the population receives less than the minimum caloric intake. (1, p.5)

Lesotho's agricultural sector does not provide much cause for optimism. About 85 percent of the population is engaged in agriculture, but only 12 percent of the land is cultivated, further expansion being limited by mountainous terrain. Severe erosion, poor soils, low and very erratic crop yields plague the country. Agricultural output is fairly evenly divided between crops and livestock. Agriculture's share of GDP fell from 40 percent in 1967, to 30 percent in 1977, primarily because of crop production; livestock

has been relatively stable. Per capita crop production has fallen, though unsteadily, so that the 1977 level was 13 percent below the 1961-65 base level, and total food production per capita fell by 10 percent. (6) Fertilizer is not widely used, chiefly because native varieties have a low response to it. (5, p.25)

Maize is by far the principal crop, followed by sorghum and wheat. Production is almost entirely from small holders who use most of the output, mainly maize and sorghum, for household consumption. About one-third of total output, especially livestock, is marketed. (3, p.71) Beans, peas, and wheat are grown mainly for the market. Post-harvest losses are approximately 20 percent of the crop. (2, p.4)

Livestock is vital to the nation's economy. Almost 40 percent of the 1977 export receipts were due to livestock and livestock products. Almost three-quarters of the people raise livestock, although it serves as a status symbol as well as a source of income. Communal grazing from an oversized national herd has accelerated erosion.

Lesotho is far from being food self-sufficient. Currently, domestic production accounts for less than half of total food consumption. (5, p.6) Thus, about 50 percent of the maize and wheat consumed are imported. (7, p.18) The trade deficit has been growing for several years and is not expected to decrease. (5, p.6) The cost of cereal and related foodstuff imports alone exceeded the total value of exports in 1976. Principal sources of funds to finance the debt are labor remittances, South African Custom Union revenues, and foreign aid. (5, p.6) Food aid is a permanent aspect of the nation's food supply, and some claim it is a disincentive to greater production. U.S. food aid has been granted since at least 1971. The World Food

Program (WFP) and Catholic Relief Services (CRS) provide about 10 percent of the nation's food imports and distribute it to roughly one-third of the population. (1, p.70)

The government feels that "rural development with an agricultural focus is the most immediate, necessary, and sensible means to increase nationally produced wealth." (3, p.72) Thus, agriculture and rural development are given top priority, receiving almost one-quarter of the total expenditures of the revised Second Development Plan.

(7, p.66) Emphasis is also given to the major area development projects and marketing, with less concentration on herd improvement, and other livestock oriented projects. (7, p.66) The unrevised Plan budgeted about 55 percent of agriculture and rural development expenditures for the crop sector, 20 percent for livestock, with miscellaneous projects receiving remaining funds. (3, p.125)

Through its Basic Agricultural Services Project, the government hopes to facilitate input supply and marketing. Wheat self-sufficiency is promoted, especially since the new 47,000 - 70,000 ton flour mill recently opened. Now, only about 3,000 tons of wheat are marketed, making the mill dependent on imports for full production. (2, p.6)

The government may increase the "average (farm) holding size to a level which would allow an adequate number of interested farmers to make a living from the land." (3, p.82) This would drastically change the present equitable land distribution. Lesotho is seriously trying to promote agricultural production and rural development.

Lesotho's agricultural marketing system is not strong. Some studies show that it is cheaper to buy RSA food than to produce it domestically. (5, p.34) Thus, in one major development area, a trend toward purchasing more food has appeared. Government price incentives

are largely ineffective since the country's economy is practically an extension of that of the RSA. To improve marketing, increase production and producers' incomes, the government has established several public institutions which are expected to force private enterprises, many of them South African, from the market. The Produce Marketing Corporation (PMC), responsible for buying and selling crops, is the sole commercial maize and wheat importer. It hopes to be better able to provide inputs with help from A.I.D. Unfortunately, there are plans to make the semi-independent corporation a part of the Ministry of Agriculture, which would reduce the flexibility of the PMC. Co-op Lesotho faces difficulty purchasing outputs and providing inputs to producers throughout the country, as well as resistance of farmers to the idea of cooperatives. Lesotho's marketing system is dominated by its engulfing neighbor.

A tenuous supply link with countries other than the RSA, and poor transportation to and from the market and remote mountain residents hinders food movement to and in Lesotho. Most of Lesotho's trade with countries beyond the RSA passes through the ports of Durban and East London, where Lesotho must rent expensive commercial storage facilities. (4, p.132) The RSA has dictated that almost all of Lesotho's trade must be carried by South African Railways. Maseru, near the border, is the only city with rail service, which is provided by RSA railroads. However, other railways come close to some major border towns and goods are trucked in by chiefly South African trucking firms. Within Lesotho, poor roads are common although a perimeter road and an interior mountain road should soon be completed. Once food aid should reach Lesotho, distribution would still be difficult.

Few details about Lesotho's food reserve policy are available. The government has recently decided to set aside 5,000 MT of unmilled maize for an experimental Mountain Region reserve, and plans to create a 30,000 MT strategic food reserve. (1, p.70) A 30,000 MT capacity wheat elevator has been recently built in Maseru, which may be for use by the new flour mill though. Of interest also is that the government expects about 7,500 tons of wheat from the WFP or CRS to be used by the mill as a revolving reserve in the event of political problems. (2, p.5) There will probably be great temptation to use these reserves, rather than imports, to keep the mill in operation.

Lesotho's food security is the worst in the region. Land distribution is fairly equitable, but because of population pressures, the average farm family cannot support itself given the land and stock available to it. Crop yields show no trends toward greater production and farmers are slow to adopt improved farming techniques. Much agricultural labor is lost to the RSA, yet workers' remittances provide a valuable source of income for the country. Should the RSA close its borders, little could be done to supply the population with adequate amounts of food. Now, the government is faced with tough choices to develop its food security. It may be difficult to hold grain reserves since the country usually imports grains to avert an emergency. Further support of Lesotho's agricultural marketing system is necessary to provide incentives for greater production, and adequate inputs must be made available to help farmers boost productivity. Construction of the perimeter road is a good step in improving transportation to help supply inputs and food and market output especially from residents of remote areas. Lesotho is not able to support itself now, and will not be able to in the foreseeable future,

but efforts must be made now to cushion the country from erratic agricultural production, and what may soon become a politically unstable climate.

Lesotho Bibliography

1. Family Health Care, Inc., and Africare. Health and Development in Southern Africa. Vol. III. A Review of the Health Care in Lesotho: Issues, Analyses, and Recommendations. Prepared for A.I.D., Washington, D.C., 1978.
2. Howard, James. "Lesotho: Agricultural Situation." Correspondence from Agricultural Attaché, RSA, to USDA. Classification: Not Official USDA Estimate. April 18, 1979.
3. Kingdom of Lesotho. Second Five Year Development Plan, 1975/76 - 1979/80, Vol. I. Maseru: Government Printer. 1975(?).
4. LeBel, Allen and Philip Moeller. Transportation and Communication in the Southern African Region. Prepared for A.I.D., Washington, D.C., 1979.
5. Mathia, Eugene. Agricultural Sector Assessment Lesotho. Prepared for A.I.D., Washington, D.C., 1978(?).
6. Russell, Paul et al. Food for Development in Sub-Sahara Africa. (draft), 1979.
7. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Lesotho. Washington, D.C., 1979.

MALAWI

Malawi's food security is relatively good, but several problems jeopardize the country's future food supply. The large population is growing rapidly. Agricultural production has kept pace by increasing the cultivated acreage, but now most productive farmland is in use and greater production must come from better yields. Principal constraints to agriculture are the lack of trained personnel to implement development projects, poor transportation, and poor productivity of small holders, for cultural and technical reasons. A landlocked country, Malawi is dependent upon Mozambique for access to overseas markets and supplies. Remarkable progress in the past has been achieved, but is not guaranteed in the future.

Several demographic characteristics are worth noting. Present labor migration to the RSA is very small compared to earlier years, and unlike Botswana and Lesotho, lack of male agricultural labor is not limiting. Population pressures are growing in the southern more fertile area of the country. As shown in Table I, the population on the whole is relatively well fed, although because of the large population, large amounts of additional food are needed to meet the FAO daily calorie intake requirement. Income distribution is relatively equitable, and the government is attempting, with apparent success, to minimize urban-rural income disparities.

Agriculture has been the engine of Malawian development, and unlike most other nations in the region, Malawi is generally food self-sufficient. Agriculture accounted for 46 percent of the 1977 GDP, (down 2 percent from 1973) and about 90 percent of exports. (8, p.14 and 19) Approximately 90 percent of the population is involved in agriculture. Crops dominate the sector, and fish is eaten more than beef. Between

56 and 86 percent of Malawi is estimated to be arable, and the best 26 percent is already under cultivation. On the average, soils are moderately fertile and support varied crops. Previously, Malawi has been able to export its declining amounts of surplus maize although it has imported wheat for several years. "Food production increases per capita have declined since the early 1970's but in only a few years has the increase in food production been less than the population increase." (9, p.17) The 1977 per capita food production was 18 percent above the 1961-65 base level. (7) However, USDA estimates concerned with marketed production, indicate that 1977 and 1978 per capita food production levels were 9 and 1 percent below the 1961-65 base periods respectively. (10, p.22)

Malawi's agricultural products are raised on small-holder farms and larger estates. Maize, millet, cassava, and groundnuts are grown for home consumption, while tobacco, tea, and sugar are exported. Traditional farmers comprise the vast majority of the rural population, although pure subsistence agriculture is minimal. (1, p.19) Most small holders try to produce enough to cover bad years and sell any surplus in good seasons which may be exported. Small holders cultivate 78 percent of arable land and produce 86 percent of output, but production growth has been relatively small compared to estate farms which provide two-thirds of total agricultural exports. (9, p.17) Presently, Malawi possesses good productivity.

Malawi needs relatively few agricultural imports. Local food shortages due to poor soils do occur though. The 1976 agricultural imports were only 7 percent of total imports. (5, p.45) Calculations indicate that the cost of these imports was only one-third the earnings gained from small holder exports.

The "twin objectives of self-sufficiency in food staples and the encouragement of agricultural exports are realized in the policy of a rapid rise in agricultural productivity of both food and cash crops" (6, p.34) The government will continue to encourage private investment in the estates, while public expenditure will primarily support small-holder agriculture and infrastructure. (5, p.9) The nation's development plan has designated one-third of the national budget for agricultural development. (5, p.32) In particular, the government has created four integrated rural development projects which together reach about one-quarter of the nation's farmers with credit, extension and marketing services, and basic infrastructure to help small holders. These projects have been successful, but the price has been slow development outside these areas. The National Rural Development Program is a 20 year program to expand these four projects nationally. Malawi is attempting to stimulate both staple and export crop production, but emphasis will be given to the lagging small-holder production.

Malawi's market system is relatively well-developed. Private traders do business in every village and at all levels of trade. Large farmers market produce directly to foreign buyers. In addition, the government has established the Agricultural Development and Marketing Corporation (ADMARC) to promote production and facilitate marketing. It sets a floor price for crops and is a buyer of last resort. (5, p.145) It maintains stable produces prices although they may be too low to be a real production incentive. ADMARC supplies inputs, short-and long-term warehousing, and has established market places and several processing facilities throughout the country. (8, p.30) A total of 250,000 tons of storage capacity is operated by ADMARC in 52 main storage

depots/markets in main rural markets and major cities. (5, p.11 and 26) Malawi's market system is one of the few successful systems in the region.

The country's transportation system is relatively good but many serious problems affect its food security. Now, there are no paved roads to connect the more remote northern part with the south. Feeder roads allow transport of goods during most of the year, but costs are frequently high. Inputs and agricultural products are delivered by ADMARC trucks to and from its 700 markets throughout the country which greatly ease distribution. The government equipment and vehicle availability rate is about 70 percent. (2, p.179) Rail problems are not internal, but originate in Mozambique, through which 90 percent of Malawi's imports and exports are shipped to the ports of Beira and Nacala. Mozambique's railroads transport only half (200,000 tons) of its potential of Malawian goods. (2, p.190) Port problems at Beira and Nacala are another trouble. Recently, 90,000 tons of Malawi-bound goods had piled up at Beira and it was estimated to take about two to three months to substantially reduce the backlog. (3) Several problems contribute to high transportation costs.

Malawi has a food reserve policy, but little information is available concerning it. A maize surplus of seven percent (about 80,000 MT) of total production is considered by the government to be an adequate reserve to supply food at all times. (6, p.38) Thus, it encourages such surplus production, holds it in reserve until it is clearly not needed, and then markets it, perhaps abroad. Even though the seven percent target is seldom reached, the national reserve goal may be increased to 20 percent and stored in silos. (5, p.84) A silo storage project would cost \$8-10 million, but at least one donor is interested in this. (5, p.69 and 26) Malawi is attempting to cushion itself against poor

Continued hard work is necessary for Malawi to maintain its present food security. The nation's primary threat is from its large and growing population. Per capita food production/decline ^{has started to} recently with much of the prime agricultural land already being used. Fertilizers and other inputs will be necessary in a country with few mineral resources. The government feels that Malawian farmers may achieve major yield increases, ultimately perhaps a doubling of yields, but for a population which will double in about 25 years, this does not offer much comfort. Fortunately, the country already has a relatively good market system and a reserve plan. More trained manpower will be necessary as the government provides services to more people. Continued development of the well-planned transportation system will allow good food and input distribution. Better relations with Mozambique may be warranted to assure future access to seaports. However, should the transition to majority rule continue peacefully in Zimbabwe/Rhodesia and a fairly intact country emerge, Malawi may import manufactured goods from its neighbor rather than from overseas. Malawi has the potential to maintain a fair degree of food security, but much help will be necessary to develop it.

Malawi Bibliography

1. Lavrijsen, J. and J.J. Sterkenburg. The Food Supply of Lilongwe, Malawi. Utrecht: Geographical Institute, University of Utrecht. 1976.
2. LeBel, Allen and Philip Moeller. Transportation and Communication in the Southern African Region. Prepared for A.I.D., Washington, D.C., 1979.
3. Lilongwe cable 01718, July 26, 1979.
4. Moeller, Philip. Transition in Southern Africa - Malawi. Prepared for A.I.D., Washington, D.C., 1977.
5. Moore, John. An Agricultural Sector Assessment of Malawi. Prepared for A.I.D., Washington, D.C., 1978.
6. Republic of Malawi, Office of the President and Cabinet. Economic Planning Division. Statement of Development Policies 1971-1980. 1970(?).
7. Russell, Paul et al. Food for Development in Sub-Sahara Africa. (draft), 1979.
8. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Malawi. Washington D.C., 1979.
9. U.S. Department of Agriculture. Agricultural Situation Review of 1978 and Outlook for 1979 Africa and West Asia. Washington, D.C., August, 1979.
10. U.S. Department of Agriculture. Indices of Agricultural Production in Africa and the Near East, 1969-1978. Statistical Bulletin No. 623, Washington, D.C., 1979.

MOZAMBIQUE

Though once self-sufficient in maize, Mozambique's agricultural production and food security have drastically changed. Starvation has threatened hundreds of thousands of people and chronic malnutrition is prevalent. Food shortages are the result of a combination of factors. The Portugese abandoned their more productive, frequently larger farms which supplied food for urban needs and export. With the collapse of the colonial marketing system, many traditional farmers now do not market their crops. Government reorganization of the agricultural sector and natural disasters in the past three growing seasons have further disrupted the sector. Production has increased since the first years of independence but is still below pre-independence levels (6, p.65) Per capita food production in 1977 was about 8 percent below the 1961-65 base level and about 10 percent below the 1966-70 level. (4)

Chief rural staples are manioc and maize, while sugar and cashew nuts are chief export crops. About 90 percent of the farms are subsistence units which have low productivity. It is thought that the rural population has generally maintained its food self-sufficiency. (1, p.16) The government is attempting to organize rural residents into communal villages, or "aldeis comunais," to improve production and to better supply services and inputs. Land is worked communally, but small private lots are permitted. (5, p.16) It is unknown how successful these villages have been. In addition, the government operates the abandoned plantations to supply the urban areas.

Mozambique is heavily dependent upon food aid and imports. Grain imports have tripled since independence. Principal food imports required in 1978 were 132,500 MT of wheat, and 101,000 MT of maize,

and 69,500 MT of rice. (6, p.52) Just over half of the 1978 imports were donations. (1, p.16) Mozambique has received food and other assistance from international organizations and both socialist and non-socialist nations. (6, p.79) The country's balance of payments deficit has greatly increased since independence so that 1978 exports were one-third of imports. Almost half of foreign exchange earnings were used for food imports. (6, p.40) Mozambique is not a member of the International Monetary Fund. Because of a lack of a crop forecasting system, the government becomes aware of import needs too late to obtain donor assistance and must buy grains on the world market at short notice. (1, p.16) Food aid and imports have been essential to prevent widespread starvation.

Stimulation of agricultural production is certainly part of the government's policy, but as yet, there is no comprehensive development plan. Of the 1978/79 total investment program, only about 8 percent was to be spent on agriculture, ranking fourth behind public works, transportation and communication, and industry and energy. (6, p.50) It must be noted that much infrastructure is necessary to support the agricultural sector. Government plans call for a mixed agricultural structure, consisting of state farms, cooperatives, communal villages, and family farms. (6, p.59) Pre-independence levels are hoped to be restored in 1980 through better agricultural planning and production, harvesting, and storage techniques, and by providing infrastructure for cooperatives. (6, p.59) Primary emphasis had been^{given} to rehabilitation of abandoned plantations, but since their production under government control stagnated, more recent emphasis has been given to communal villages and family farms. (6, p.63) The government hopes to restore the grain marketing system to help boost such production.

(1, p.2) However, prices are very low and probably do not provide sufficient incentive to market surplus. The government is painfully aware of its agricultural problems and is taking action to solve them.

Mozambique's market system is complex.* The National Directorate for Pricing and Marketing (DINECA) purchases grains at its temporary rural markets, but does not reach all parts of the country. From these markets, grain is transported to DINECA's district warehouses and then sold to food deficit areas or to flour mills. The Lojas do Povo (People's shops) which are government-operated formerly Portuguese shops, and private traders buy and sell grains from farmers. These shops and traders also sell grain to local mills or to DINECA. Products of state farms are designated for the public sector.

Many flour mills still operate, ranging from the local mills, to several small, modern mills, to four large industrial operations. These latter are located in the major ports of Maputo, Beira, and Nacala and have a total capacity of 145,000 MT of wheat and 40,000 MT of maize. They receive much of their supplies from imports, and are able to mill all imported wheat. From the mills, flour is sold to the public sector, Lojas do Povos, and private sector companies. Since demand exceeds supply, rationing has been instituted.

Mozambique possesses a large grain storage capacity. Modern silos with a combined capacity of 45,500 MT of grain are used principally by the industrial mills. Warehouses for bagged grain are operated by other mills, DINECA, and Lojas do Povo, so that total warehouse grain capacity is more than 200,000 MT. This is considered sufficient given the present food supply system. Unfortunately, management of

*Much of the following material is taken from (1, pp.6-15)

these warehouses is often poor and storage at the farm and village level is inadequate. Losses of grain stored in warehouses are estimated to be about 25 to 30 percent.

Grain distribution is hampered by poor transportation. A major constraint is the lack of a good north-south route. Rail and road routes were oriented to the colonial export economy, rather than linking the country together. Many roads are impassable in the wet season and increasing disrepair endangers links even in good weather. Now, adequate trucking is available for grain transport but may not meet future demand. The rail system suffers from a lack of skilled manpower, but major ports are ^{fairly} adequately served and efficiency is increasing. (2, p.223; and 3) It appears that an adequate number of rail wagons for bagged grain are available now and for the foreseeable future. (1, p.13) The major ports have poor grain handling facilities which increase delays and grain losses.

It is doubtful that Mozambique has a food reserve policy. The FAO recommends a food security stock of 60,000 MT of grain (25,000 MT of wheat, 25,000 MT of maize, and 10,000 MT of rice) be created to provide food for two months in the event of import delays or national disaster. (1, p.21) It is suggested that new, separate storage facilities be built in the major ports since demand for imports originate in urban areas which also have processing facilities and transportation links with the interior of the country.

Mozambican food security is perilous and will remain so in the near future. Lack of trained manpower, the collapse of the marketing system, and poor transportation all contribute to inadequate food supplies. Even with massive imports, malnutrition persists. Rural residents are generally self-sufficient, but natural disasters have altered this for many. Lack of foreign exchange limits the country's

ability to import food and capital goods. Creation of food reserves now is prohibited by the serious, perennial food deficit. Creation of much infrastructure and a new marketing system will be a lengthy process. Lack of information leaves the government barely knowing where to start. In the long-term however, the country does have adequate fertile land to expand production and become self-sufficient, but, much effort by Mozambique and donors will be required to make this a reality.

Mozambique Bibliography

1. Food and Agriculture Organization of the UN. Report of the Food Security Policy Formulation and Project Identification Mission to the People's Republic of Mozambique. Rome, 1979.
2. LeBel, Allen and Philip Moeller. Transportation and Communication in the Southern African Region. Prepared for A.I.D., Washington, D.C., 1979.
3. Lilongwe cable 01718, July 26, 1979.
4. Russell, Paul et al. Food for Development in Sub-Sahara Africa. (draft), 1979.
5. Simmons, Richard. Mozambique: An Economic Base Study with Emphasis on Agriculture. Prepared for A.I.D., Washington, D.C., 1978.
6. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Mozambique. Washington, D.C., 1979.

NAMIBIA

Namibia is a virtual colony of the Republic of South Africa and faces many obstacles to develop its agriculture and assure a stable food supply. Water is scarce throughout most of the country so that cropping is possible on only about 30 percent of the land, mostly in the north and northeast. Commercial agriculture produces export and non-food items. The agricultural system is dualistic and inequity is pervasive. The UN is preparing to help a future independent Namibia, but little can be done until independence has been achieved.

The agricultural system is dualistic with the relatively few, but large white farmers receiving inputs, marketing services, and adequate transportation while Blacks and others operate subsistence farms. Livestock and related products dominate the agricultural sector, although herd size is believed to have reached a maximum. (3, p.IV-5) Additional growth must be achieved by increasing efficiency. Subsistence farming, in which half the total population is engaged, has been stagnant because it has not received government assistance. (2, pp. 27 and 13) Mixed agriculture consisting of maize, sorghum, millet, and some livestock is prevalent among subsistence farmers. No information is available concerning recent production trends.

Namibia is unable to feed itself and depends heavily upon the RSA for food. Principal food imports are maize and wheat. Latest available figures show that the 1972/73 imports of maize and maize flour were more than 30,000 tons, and almost 15,000 tons of wheat flour were imported. (1, p.15) Imports are chiefly needed in the drier southern areas while the northern area, with half the

population, may be self-sufficient in good years. (1, pp.6 and 43)

The marketing system is dominated by the RSA, "Wholesaling, transport, and much of the retailing of food is controlled and carried out by South Africans." (1, p.51) All inputs come from the RSA. Namibia's railway, road system, and deep-water port adequately serves the white minority and facilitates trade with South Africa. Namibia's major population and resource centers are linked by rail and road to each other and to its southern neighbor. Distribution of food and other supplies to Blacks on reserves is limited. Feeder roads are needed to supply the majority of the population and the agricultural sector with access to the national transportation system.

Agricultural policy effective in Namibia is established by South Africa, which promotes agricultural products for export. To aid minority farmers, an unusually well developed system of agricultural institutions, consisting of agricultural colleges, research stations and veterinary services has been created. (1, pp.32-33) Native farming has not been supported, and Blacks have been forced to live in reserves incapable of supporting their populations and must migrate to find work. (2, p.23) The UN has developed several objectives for an independent Namibia. Among them are increased education and training for Blacks, development of native agriculture, redistribution of land, and creation of economic infrastructure. (2, p.7) It is unknown if the UN has developed a food reserve policy for Namibia.

The future food security of Namibia is grim. Few Blacks have the training necessary to maintain the present level of transportation, marketing and other services should skilled white workers leave.

The transportation system is inadequate for distribution of food or inputs, and provides good links to no neighbors other than the RSA. Prime agricultural land is poorly served by roads, and is not served at all by the rail system. In the short-term, Namibia will rely on its rich mineral wealth to earn foreign exchange to purchase food. Dependence on the RSA will continue with disastrous effects should the RSA cease its food exports and other trade. In the long-term, some feel that the northern area may be able to feed Namibia, given adequate inputs, but it should be emphasized that the demand for water is estimated to outstrip supply after 1990. (1, pp.54 and 37) Massive food aid and development assistance will be necessary to help Namibia develop its food security.

Namibia Bibliography

1. Ansel, Kurt and Russell Brannon. The Agricultural Sector of Namibia: A Brief Assessment. Prepared for A.I.D., Washington, D.C., 1978.
2. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Namibia. Washington, D.C., 1979.
3. Wilcox, Stephen. Transition in Southern Africa - Namibia. Prepared for A.I.D., Washington, D.C., 1977.

SWAZILAND

Attempts by the Kingdom of Swaziland to feed its population are hindered by several problems. Lack of trained manpower and poor government coordination of development projects slow progress. The poor rural roads and marketing system inhibit food production. Pressures from a rapidly growing population are being felt. While caloric intake is relatively good, it must be noted that land and income distribution are very sharply skewed. Swaziland faces several challenges to improve its food situation.

Swaziland's varied agriculture is highly dualistic. About 20 percent of the land is arable but only 10 percent is cultivated. (6, p.4) Much land is underutilized on the Individual Tenure Farms (ITF) which are large, modern, mainly non-Swazi-owned operations. These farms produce 60 percent of total agricultural output, mostly for export, on about 40 percent of the land. Meanwhile, 70 percent of the population farm traditionally on less than 60 percent of the land, which is owned by the King. (2, p.IV-3) About half the population is involved in subsistence agriculture, which has been stagnant. (2, P.II-7) One-quarter of Swazi farmers cannot produce enough food for themselves on their small farms. (4, p.85) The livestock off-take rate is less than 10 percent, probably since cattle are a store of wealth. Communal overgrazing has contributed to serious erosion. Per capita food production has generally increased so that the 1977 level was 37 percent above the 1961-65 level. The per capita crop production apparently peaked in the early 70's and the 1977 level was only 5 percent above the base period. (3)

Domestic food production must be supplemented by imports. Although maize self-sufficient in the past, Swaziland now annually

imports about 15 to 20 percent (25,000 tons) of its maize requirements, mainly from the RSA. (5, pp.20 and 61) Urban areas are primarily dependent upon imports. Food may be delivered by road from the RSA or by rail from the Mozambican port of Maputo. The U.S. and other countries have granted food aid since at least 1970.

Economic growth, self-reliance, and social justice and stability are the goals of Swaziland's Third National Development Plan (1978-83). It is thought that the modern sector will be the chief beneficiary of this program since the government has allocated only 14 percent of its capital budget to agriculture and cooperatives, ranking third behind industry (22 percent) and transportation (19 percent). (5, p.36) The main target of the agricultural policy is subsistence agriculture. (4, p.36) Through the Rural Development Area Programs (RDAP), the government will help Swazi farmers "make the transition from subsistence to commercial agriculture." (4, p.37) It will do this by providing extension assistance, a better marketing system, and supply crop and livestock inputs. Self-sufficiency in maize has been a goal of the government. (6, p.6) By increasing maize yields, it is hoped that less maize acreage will be needed to achieve desired production so that cash crop acreage may increase. This has already occurred. Between 1972 and 1976, maize acreage declined slightly while cotton acreage increased. (5, p.20) Unfortunately no trend of increasing maize production has developed. The government will promote efficient range management and increased livestock off-take to improve the national herd and reduce grazing pressures. Cooperatives are to supply agricultural inputs, credit, and purchase agricultural products. The Department of Commerce and Cooperatives, as well as donors, are assisting this effort by working

through the Central Cooperative Union (CCU), an autonomous body closely linked to the government, which oversees cooperative activity. It is estimated that a decade will be required to establish an effective market system. (4, p.83) By 1983, about half of the Swazis should be served through the RDAP.

Swazi farmers are not extensively involved in the market. The ITF operations have a fairly well-developed market structure, but this is primarily for exports. The FAO believes that "the lack of an organized market structure is probably the most important single factor affecting the farmer's decision to increase production." (5, p.49) Only 10 to 25 percent of the maize harvest is marketed by the Swazi farmer. (2, p.IV-11) About 80 percent of this is sold to small shops or hammer mills, but much is returned in milled form. (6, p.6) Only 20 percent is sold to the Swaziland Milling Company (SMC), which is half government-owned, has sole rights to import maize, and operates a commercial mill. The SMC must pay at least the government-set floor price for maize, although the SMC's minimum purchase size is large enough to exclude the Swazi farmers. (4, p.87) It has two marketing depots and several retail outlets. The CCU also purchases maize and delivers it to the SMC. (6, Annex 4, p.2) Inadequate storage is a constraint to the CCU and plagues rural residents; about 20 percent of grain stored commercially is lost. (4, p.19)

An inadequate transportation system is another aspect of Swaziland's poor food security. Access to the poor and agricultural production is limited by a lack of adequate farm-to-market roads. The nation's relatively good rail and road system is geared to exportation of goods. Currently, donors are constructing rural

roads, but care must be taken to ensure that the ITF's do not benefit disproportionately from them. Like Botswana and Lesotho, most of Swaziland's imports pass through the RSA, although Swaziland has access to the Mozambican port of Maputo. While Mozambique may wish to assist delivery of food aid to Swaziland, the Maputo port facilities may be unable to provide adequate service.

It appears that Swaziland lacks a food reserve policy and storage program. A shortage of central storage facilities is known to exist. (5, p.49) Swaziland's poor ability to store and distribute food was evident when the World Food Programme asked the government to construct four 1,500 MT storage units (6,000 MT total) and purchase several trucks to improve distribution of food (1) It is curious to note that the FAO recommended a 6,000 MT grain reserve be established in Botswana, which has a larger grain deficit and population.

Swaziland depends on much aid to develop its food security. Some feel that traditional agricultural production growth has not kept pace with the population growth rate. The trend away from staple crops probably contributes to this. As the urban growth rate continues at twice that of the rural population, increasing dependence on imports and the RSA will result. It is felt that should traditional maize yields of 0.8 to 1.5 tons per hectare rise to two tons per hectare, which may be possible, the present import need may be eliminated. (6, Annex 1, p.5) The ITF farmers have the capability but not the incentive to increase staple production. Encouraging farmers to fully utilize their land, preferably for staples, will be a major challenge for the government. Reducing herd size and erosion while improving the market system for traditional farmers will lead to better overall rural welfare. Inadequate

internal, and uncertain external transportation systems impede delivery and distribution of food and inputs. Unless the government seriously embarks now on a program to boost staple production, the country may not be able to assure^a/stable food supply for its rapidly growing population.

Swaziland Bibliography

1. Mbabane cable 2405, August 20, 1979.
2. Rose, Tim. Transition in Southern Africa - Swaziland. Prepared for A.I.D., Washington, D.C., 1977.
3. Russell, Paul et al. Food for Development in Sub-Sahara Africa. (draft) 1979.
4. Stallings, James. Agricultural Sector Assessment Swaziland. Prepared for A.I.D., Washington, D.C., 1978 (?).
5. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Swaziland. Washington, D.C., 1979.
6. World Bank. Swaziland Rural Development Project Appraisal Report. Report No. 1306-SW., Washington, D.C. (?), 1977.

ZAMBIA

The food security of Zambia suffers from several constraints. The overspecialized economy based on mining and consequent government neglect of the agricultural sector have wrought disaster for the country as a whole, and for agriculture in particular. The large urban population depends upon an agricultural marketing system which is poorly operated by poorly trained and understaffed government bureaus. Fighting related to the Zimbabwean/Rhodesian conflict interrupted some production and combined with the growing problems of refugees have drained resources from development projects. Lack of adequate access to the country and especially rural regions seriously delays delivery of food and other supplies. The principal focus of stabilizing the nation's food security lies on improving government policy to further support the agricultural sector.

Zambia's demography is slightly different from others in the region. Urban areas hold 40 percent of the population, and are growing rapidly. On the average, Zambians are among the best fed people of the majority-ruled countries in the region, ^{meeting} 95 percent of the minimum daily required caloric intake. (7) The income distribution is highly skewed and appears to be worsening; presently about 65 percent of the rural population subsist below the poverty line. (10, p.30) Population pressures on land resources are not yet widespread.

The agricultural sector plays a relatively minor role in the economy. Only 14 percent of the GDP and 6 percent of exports are derived from agriculture, reflecting the country's mineral-led economy. (11, p.34) Soils are of generally poor quality, but less

than 5 percent of arable land is annually harvested. (9, p.12) Per capita food and crop production in 1977 were 12 and 31 percent above their respective 1961-65 base levels, down from the 1976 peak. (7)

Agricultural production occurs on commercial, "emergent", and ^{traditional} farms, with maize being the principal crop. About 700 large commercial farms produce half of the marketed maize, mostly for urban consumption. The "emergent" farmers form a small but growing class which uses improved seeds, some mechanization, and is primarily oriented to the market. These two groups though are dwarfed in numbers by the 95 percent of the farmers who cultivate three-quarters of the land in the traditional fashion. Although supplying only about 40 percent of the marketed crops, they produce most of the total production (e.g. 80 percent of maize). (10, p.57) About half of these farmers produce no surplus beyond their requirements. Zambia's agricultural future is heavily dependent upon this last group.

Zambian food production is unreliable, creating at times the need for food imports, which are obtained and delivered with difficulty. Roughly one year in two the country must import maize. (8, p.IV-11) In 1977/78, about 90,000 MT of maize were exported. (11, p.34) But by September 12, 1979, the National Marketing Board (NAMBoard) projected its domestic maize purchases to reach only 315,000 MT, not even half of its annual maize requirement of 650,000 MT. (6) In the past, 25 to 40 percent of the value of marketed food was sometimes supplied by imports. In 1979, the country purchased maize from the RSA, and received maize from donors such as the U.S., Malawi, the EEC, individual European countries, and the WFP. (6) Rail and road links to the ocean are either closed or operate inefficiently to hamper delivery of food imports. Foreign exchange reserves are

minimal and the losses from agricultural trade are sometimes severe. In 1975, food imports of \$57 million dwarfed income of \$2.6 million earned from food exports. (8, p.IV-16) Rising copper prices should improve the balance of payments picture, but may entice the government to continue to emphasize the mining industry. Both poor access to the country and its poor financial posture restrict the amount and timeliness of food imports.

Zambia's changing agricultural policy has created uncertainty for farmers and contributed to the country's poor agricultural performance. Lack of trained personnel plays a large role in this. Government neglect of agriculture relative to other sectors will supposedly change under the Third National Development Plan (TNDP), which through/the government will give highest priority to rural development and specifically, to greater agricultural production. (10, p.40) The government's agricultural expenditure is planned to double from 8 percent under the Second NDP to 16/^{percent} in the TNDP. (10, p.60) Diversification of the economy and self-sufficiency in staples are prime goals. Small- and medium-scale farmers will be the direct recipients of government assistance, while the large-scale farmers will be given price incentives to increase production. Plans call for improvement of government agricultural institutions, credit and extension services, and the domestic production of agricultural inputs.

The government's pricing policy has been partially responsible for the recent maize shortage. Government-set price floors and ceilings exist for most crops, but producer prices have been kept low and consumer prices have been subsidized. However, Zambian farmers are very price responsive, and recently the government has

been reducing subsidies and increasing producer prices. Food prices for low-income people rose 22 percent in 1978. (11, p.34) In the summer of 1979, the government announced a 13 percent increase in producer prices for the 1979/80 crop season; inflation though runs at about 20 percent per year. Poor management of NAMBoard caused payment delays to farmers who needed the funds to purchase inputs. Supplementing the resultant loss of planted acreage was the loss of government credibility. In the short-term before increasing expenditures on new bureaus or programs, the government may be able to more efficiently use its funds in a carefully planned pricing policy to stimulate production.

Marketing of most agricultural commodities is controlled by the government. Of chief interest is NAMBoard, which is responsible for the marketing and storage of grains and distribution of farm inputs. NAMBoard alone may legally buy and sell maize and so has little incentive to make a profit. It provides farmers access to markets which vary from permanent marketplaces to temporary roadside stands. In theory, every farmer should be within 15 kilometers of a depot. Improving the efficiency of NAMBoard is important to stimulating production.

The country has a large storage capacity for maize, but much of it is adequate for only short-term storage.* Storage capacity of maize is 855,000 MT of which concrete silos hold 108,000 MT, sheds hold 126,000 MT, and 621,000 MT are stored on concrete slabs under tarpaulin covering. This is more than adequate storage for the country's entire marketed maize crop plus a sizeable reserve. It should be noted that the Zambian A.I.D. mission estimates that

*Much of the following has been taken from (9, p.14 and 19)

NAMBoard and the National Milling Company (NMC) have a storage capacity of 540,000 MT of grain and have managed to keep storage losses down to an (officially) estimated one percent. (5) Almost three-quarters of the storage is of the concrete slab type, suitable for temporary (6 months) holding. Much of this is in rural areas while long-term silo storage is located near the railroad, far from many rural producers. Thus, a transportation problem occurs which could be alleviated by increasing long-term storage in rural areas.

Zambia's internal transportation system inadequately serves the agricultural sector and links with overseas trading partners are subject to external political and logistical problems. The country has a substantial primary transportation network upon which to build. Macadam roads link all the provinces, but deterioration is a serious concern. Lack of feeder roads is a chief limitation to boosting agricultural production. (Kidder, p.2, in (9)) The rail system was primarily designed to serve the export industries rather than the internal distribution of goods. Poor external links contribute to the poor balance of payments situation by delaying exports, as well as impeding the delivery of imports.

Several routes offer access to the landlocked country. The TAZARA railway to Dar es Salaam carried about half of the January 1978 - February 1979 imports, while Maputo and South African ports handled 17 percent. The TANZAM^{road}/to Dar es Salaam carried 14 percent; other channels included routes through Malawi, Botswana, and the port of Beira. (3) While the Angolan port of Lobito was inaccessible to Zambian trade during this time period, in 1974 it handled

40 percent of Zambian imports. (1, p.44) The TAZARA railroad has not met the expectation of carrying almost all of Zambia's overseas trade, due partly to long turn-around time for wagons, poor maintenance and management, and congestion at the port of Dar es Salaam. The TANZAM road suffers from inadequate servicing of vehicles. In general perhaps more than one-quarter of all road vehicles are out of service. (2, p.27) Regional cooperation is needed to resolve the transportation problem.

Information is unavailable concerning the existence of a national food reserve policy. In the past, the government has intended to establish a maize reserve of half of annual demand to reduce annual supply fluctuations. (13, p.32) However, the government has exported part of its reserve to neighboring countries. Carry-over stocks have fluctuated greatly from the average 180,000 MT over the past 7 years (12, p.127) There is no established system to effectively distribute free food on a scale as needed in the current shortage situation. (4) The WFP and European donors distribute food to refugees but are unable to take on a much larger role. The importance of a food reserve may not be fully realized since the country is sometimes a food exporter.

Although the current situation in Zambia is dire, prospects for the country are perhaps the brightest in the region. Farmers are quite price responsive and given adequate incentives, produce enough maize for internal demand and export as well. Adequate land resources exist to increase production by expanding cultivated acreage for the short-term while domestic input supply industries can be strengthened. Commercial production can support the urban population until subsistence farmers enter the market in large numbers.

The 1995 domestic market demand for maize of 1,260,000MT is more than double that of 1975 demand, but it is thought that the country can meet this requirement and become self-sufficient in other crops as well as maize.(13 pp. 29 and 40) By developing a stable and consistent agricultural policy, much of Zambia's agricultural troubles could be temporarily solved. In the more distant future, the potential of the subsistence farmers must be fully realized by providing adequate and timely supplies of agricultural inputs and extension services. Improvement of internal transportation while cooperating with its neighbors to better regional transportation routes will ease the nation's balance of payments problem, as well as ensure delivery of food and supplies to those who need them. Given careful and substantial attention to agriculture, Zambia has good potential to become a key food exporter in the region.

Zambia Bibliography

1. Burgess, Julian. Interdependence in Southern Africa. (EIU Special Report No. 32). London: The Economist Intelligence Unit Limited, 1976.
2. Family Health Care, Inc., and Africare. Health and Development in Southern Africa. Vol. III. A Review of the Health Care in Zambia: Issues Analyses, and Recommendations. Prepared for A.I.D., Washington, D.C., 1978.
3. Lusaka cable 1125, April 3, 1979.
4. Lusaka cable 1136, April 4, 1979.
5. Lusaka cable 1137, April 5, 1979.
6. Lusaka cable 3143, September 12, 1979.
7. Russell, Paul et al. Food for Development in Sub-Sahara Africa. (draft) 1979.
8. Sedjo, Roger. Transition in Southern Africa - Zambia. Prepared for A.I.D., Washington, D.C. 1977.
9. Tuthill, Dean. Agricultural Sector Assessment Zambia. Prepared for A.I.D., Washington, D.C., 1978.
10. U.S. Agency for International Development. A Report to Congress on Development Needs and Opportunities for Cooperation in Southern Africa, Annex A Zambia. Washington, D.C., 1979.
11. U.S. Department of Agriculture, Economics, Statistics and Cooperatives Service. Africa and West Asia Agricultural Situation: Review of 1978 and Outlook for 1979. Washington, D.C., August 1979.
12. U.S. Department of Agriculture, Foreign Agricultural Service. Foreign Agricultural Circular Grains. (Fg-20-78). Washington, D.C., November, 1978.
13. World Bank. Republic of Zambia Agricultural and Rural Sector Survey. Vol. I. Report No. 841a-ZA. Washington D.C.: World Bank. October 20, 1975.

ZIMBABWE

Zimbabwe's high degree of food security is based upon European agricultural production. Several problems constrain African food production which are the result of the government's discriminatory policies. Overpopulation, overgrazing and overworking of the land are growing problems on the Tribal Trust Lands (TTL's) where most rural Africans live. Poor roads, marketing and agricultural services contribute to low production. Malnutrition among Africans is prevalent, but apparently decreasing. (2, p.41) The manner in which the political problems are resolved will greatly influence Zimbabwe's food security.

Agriculture in Zimbabwe is highly dualistic. Europeans compose less than one percent of the farmers, yet control the best 50 percent of the rural land and are the beneficiaries of government policies and services. Some European farms are inefficiently operated and large amounts of arable land are underutilized. (4, p.64) After UN trade sanctions were imposed in 1966, European food production grew exceptionally to make the country self-sufficient in most crops. On 25 percent of the land planted to maize in 1975/76, the minority farmers supplied 70 percent of the country's maize. (1, p.IV-5) In contrast, about 65 percent of the total African population lives on half the rural lands, and most are engaged in subsistence agriculture. The majority lives on the TTL's where land is owned by the tribe and allocated by the chief, although some Africans buy their own farms on African Purchase Lands. Major crops grown are maize, beans, pulses, and groundnuts. Population pressures are so great in the TTL's that the land is carrying three times the number of farmers it can safely support. (5, p.49) Many farms are too small

to support a family. (5, p.48) The 1977 per capita food production index was 99 percent of the 1969-71 base period, falling from a peak of 114 percent in 1972. (3, p.77)

Although Zimbabwe is a net exporter of food, the African areas experience food shortages. People near the Botswana border obtain maize from across the border which draws food from Botswana marketing channels. The TTL's must "import" 70 percent of their food requirements from European areas. (5, p.49) Food aid is known to be distributed by the International Red Cross and the Rhodesian Freedom from Hunger Campaign, however fighting had disrupted the ability to distribute aid to some of the most needy.

Under the present agricultural policy, European farming is heavily subsidized while Africans must pay a small tax. (4, p.95) Greater agricultural production has been stressed by the government and numerous subsidies, price supports, and irrigation, extension, credit, and marketing services are available to European farmers. Pricing information is widely disseminated by the government's marketing boards which provide a guaranteed outlet for crops at fixed prices. Food prices have been kept low to encourage European immigration but have resulted in lower returns for many crops. (4, p.60) Africans are poorly served by the government, even though policy calls for the TTL's to be self-sufficient. (2, p.42) A 10 percent tax on TTL production is imposed and the marketing boards withhold money supposedly to fund the few TTL development projects. (4, p.30)

A five-year economic development program has been proposed recently, but the government's response to it is unknown. Under it, agriculture would receive one-quarter of the funding with development of commercial agriculture being the key objective. (6, p.2)

Large irrigation systems are planned. Transformation of the subsistence-level TTL's to commercial agriculture with privately owned farms would be promoted by supplying roads, water supplies, and storage facilities. (6, p.2) Some of the best African farmers would be resettled on European land, and in rural development areas which cover one-third of the TTL's, better market and extension services would be provided. (5, p.99) Because of the lack of adequate support, the success of the program is questionable. (5, pp. 99-100)

Marketing in Zimbabwe revolves around Europeans, who produce three-quarters of marketed production. Because marketing boards purchase, sell, distribute, export, and finance maize and other major products, little free marketing exists, except in the TTL's. (4, p.49) Most maize, the staple crop, is consumed on the farm, but Africans can sell a surplus to their neighbors or to a local buying agent of the marketing board. (1, p. IV-10) If these farmers are able to meet the minimum delivery of the market board, they may market their produce directly to it. (4, p.49)

A good road and rail system exists but does not serve African lands. Poor roads in African areas result in distribution and marketing problems. Access to the country would most logically be through Mozambique, but poor port facilities there must be shared with Malawi, Zambia, the RSA, and of course Mozambique. Some goods will probably continue to take the longer route through the RSA. To distribute food and encourage black production, much improvement of the African transportation system is necessary.

Information is unavailable concerning Zimbabwe's food reserve policy. The volume and effectiveness of food grain reserves is unknown, and while commercial storage facilities exist, information

concerning their capacity is unavailable.

Although a net exporter of food, Zimbabwe's food security is questionable because the ineffective demand of the Africans conceals the true food need. The chief problem facing the nation is the growing population pressure on the TTL's resulting in the deterioration of African agricultural production. Land redistribution is essential and the manner in which it is accomplished will greatly influence the country's agricultural production. Should many Europeans leave, severe food shortages will result. Unlike the marketing systems of Angola and Mozambique which disintegrated with the Portugese exodus, trained Africans could replace departed Europeans and continue to operate Zimbabwe's well-established government marketing system. However, the shortage of trained Africans in Zimbabwe is obvious. Much infrastructure and human resource development are needed in the TTL's. African farmers have responded well to agricultural instruction and price incentives so improved marketing and extension services promise improved production. Zimbabwe's food self-sufficiency will rely on European production until African agriculture can be improved.

Zimbabwe Bibliography

1. Dobert, Margarita. Transition in Southern Africa - Zimbabwe.
Prepared for A.I.D., Washington, D.C. , 1977.
2. Family Health Care, Inc. and Africare. Health and Development
in Southern Africa. Vol VII. A Review of Health Care
in Rhodesia: Issues, Analyses, and Recommendations.
Prepared for A.I.D., Washington, D.C., 1978.
3. Food and Agriculture Organization of the United Nations. FAO
Production Yearbook, 1977, Vol. 31. Rome, 1978.
4. Robbins, Richard. The Agricultural Sector of Zimbabwe.
Prepared for A.I.D., Washington, D.C., 1978.
5. U.S. Agency for International Development. A Report to Congress
on Development Needs and Opportunities for Cooperation in
Southern Africa, Annex A Zimbabwe. Washington, D.C., 1979.

THE REPUBLIC OF SOUTH AFRICA

Any discussion of food security in Southern Africa is incomplete without at least briefly considering the Republic of South Africa. One of the most economically developed countries on the continent, the RSA provides food for several nations in the region and is a significant exporter to non-African markets as well. Some countries are almost totally dependent upon the RSA to transport their imports. As is well known, the economy is highly dualistic under the apartheid policy. It is uncertain how the country will continue providing food to its neighbors in an environment with a growing population and rising demands for majority rule.

The great agricultural productivity of the RSA stems from its modern, commercial farms. Only 12 percent of the total area is arable, yet its minority-controlled farms produce a wide variety of products so that the nation is self-sufficient in most foods. Maize and wheat are the chief grains, and the country has exported large quantities in the past. "During the last 3 marketing years, (maize) exports averaged about 2.3 million (metric) tons per year or 26 percent of production. The proportion of maize produced that is exported has been decreasing." (8, p.25) A large proportion of RSA maize is used for non-food uses. The minority farmers are supported by a well developed government system of research, extension, and credit services. Marketing of most crops is controlled by the government; the Maize Board is the sole buyer, seller, and importer of maize. Producer prices are determined at the beginning of the harvest, and may affect those prices in Botswana, Lesotho, and Swaziland which sometimes lose some domestic production to RSA

markets. White farmers are being hurt though as input prices rise faster than producer prices. Fertilizer prices rose 15 percent in early 1979 and gasoline costs are high. Oil is used for 98 percent of agriculture's energy needs. (8, p.27) Consumer subsidies have been reduced, but this has mainly hurt the poor.

Roads, railways, and harbors are well developed to serve the economy. The fine, efficiently operated ports are "planned to bring a ship to a quay provided with good roadways and rail connections to the hinterland." (10, p.398) Lesotho is entirely dependent upon the RSA for access to international trade. Besides the most direct routes through the RSA, Botswana is circuitously accessible from Zimbabwe/Rhodesia, and Swaziland has access to the Mozambican port of Maputo.

Information is unavailable concerning the existence of any government plan to deal with a possible food shortage, and limited information is available concerning the country's storage capacity. In the past, beginning maize stocks have fluctuated greatly around the 1,326,500 MT average for the past 6 years. (9, p.100) Several grain elevators are known to exist in some of the ports. In 1975, the ports of Durban and Table Bay had grain elevators with capacities of 38,100 tons and 27,220 tons respectively; both could ship grain through at a rate of 1,000 tons/hour. (10, p.399) The elevator at East London had a capacity of 75,300 tons and a shipping rate of 1,633 tons/hour. (10 p.400)

Agriculture on the black homelands is quite different from the commercial farms. The homelands suffer from the same constraints as do the neighboring countries - lack of educated manpower, and infrastructure, and production limited by tradition and overpopulation. The government has made efforts to provide credit, seed,

fertilizer, and marketing services. Five agricultural colleges exist in the homelands, and coops operate as well. (2, p.80) In general, about 14 percent of the homelands is arable and in 1978, 55 percent of available dryland areas and 87 percent of available irrigation area were in productive use. (3, p.306)

The homelands can not now provide food for their populations, but given assistance, maize production may be increased about tenfold. (3, p.307) Some areas though can mainly support only livestock. Transkei, with some of the nation's best agricultural resources, must import half of the maize consumed. In 1974/75 more than 188,000 tons of maize and maize meal were imported from the RSA. (7, p.135) Transkei has good potential, but to realize it, it seems that ". . . many of those thousands who currently look upon the land merely as part of their daily existence and heritage will somehow have to be persuaded to vacate it so that it may be judiciously exploited on a large scale." (7, p.145)

Not considering the internal political situation, the future agricultural potential of the RSA is questionable. In a 1978 study by the USDA, given the worst conditions (slow income growth and low world import demand in conjunction with somewhat restrictive trade policies), South Africa (the RSA, Botswana, Lesotho, Swaziland, and Namibia) would export 2,695,000 MT of grain in 1985 compared to 2,645,000 MT in 1970. (5, p.128) A 1973 study, however, found that under the best circumstances, (low population growth and constant income per capita), the RSA would experience a cereal deficit of 1,113,000 MT in 1985. (1, p.175) Of interest is a statement from the South African Journal of African Affairs:

It could be predicted that if present productivity and consumption trends do not change for the better, Southern Africa will, by 1985 to 1990, experience a

major shortage of wheat, meat, and even maize and ground-nuts; a shortage which South Africa will have some difficulty reversing, even under the best productivity hypothesis."

"Considering the already relatively advanced degree of sophistication of white agriculture in South Africa, the fact that there remains little new arable land to exploit and that development of irrigated agriculture will be curbed by limited water resources, it is clear that, in the long run, we are going to have difficulty meeting our future food requirements Here we are referring to a projection of only 20 to 30 years."
(6, p.26)

Subsequent production increases must occur in the homelands, some of which contain some of the best agricultural land in the country. Even if agricultural production should be able to meet demand, the political problems of the area still have the potential to turn the RSA into another Angola or Mozambique. Upon viewing the latter two projections in light of the region's political uncertainty, the prospects become frightening.

Republic of South Africa Bibliography

1. Blakeslee, Leroy, et al. World Food Production, Demand, and Trade. Ames, Iowa: Iowa State University Press, 1973.
2. Bureau for Economic Research re Bantu Development. Black Development in South Africa. Johannesburg: Perskor Printers, 1976.
3. Gordon, Loraine, et al. Survey of Race Relations in South Africa 1978. Johannesburg: South African Institute of Race Relations, 1979.
4. Malan, T. and P.S. Hattingh. Black Homelands in South Africa. Pretoria: Africa Institute of South Africa, 1976.
5. Rojko, Anthony, et al. Alternative Futures for World Food in 1985 Vol. II. USDA Foreign Agricultural Economic Report No. 149. Washington, D.C., May 1978.
6. Thomas, J.A., and J.G. Boyazogla. "Integrated Rural Development with Special Reference to Southern Africa." in South African Journal of African Affairs, 1978.
7. Transkeian Department of Foreign Affairs, Information Division(?) The Republic of Transkei. Johannesburg: Chris van Rensburg Publications, Ltd., 1976.
8. U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service. Africa and West Asia Agricultural Situation: Review of 1978 and Outlook for 1979. Washington, D.C., August 1979.
9. U.S. Department of Agriculture, Foreign Agricultural Service. Foreign Agricultural Circular: Grains. (FG-20-78) Washington, D.C., November, 1978.
10. van der Spuy, ed. South Africa 1975. Johannesburg: Perskor Printers, 1975 (?)