

FOOD SECURITY FOR SOUTHERN AFRICA



Edited by
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FOREWORD

This volume includes papers and research proposals prepared by researchers under the aegis of the University of Zimbabwe/Michigan State University (UZ/MSU) Food Security Research Programme in Southern Africa. The objectives of the UZ/MSU research programme are spelled out in Chapter One by Mandivamba Rukuni and Carl K. Eicher.

The papers in this volume (with the exception of Chapters Three and Five) are revised versions of papers that were presented at the University of Zimbabwe's Second Annual Conference on Food Security Research in Southern Africa, Holiday Inn, Harare, November 9-13, 1986.

But before we go further, let's step back and examine the context for food security research in Southern Africa. Currently, 70 million people live in the nine SADCC countries in Southern Africa. Since SADCC states are closely linked to the global food economy through capital transfers, exchange rate movements, food aid and trade, it is important to examine recent trends in the global food economy and the results of research over the past decade on the causes of food insecurity, hunger and malnutrition.

In the decade since the global food crisis of the early 1970s, four important lessons have been learned about the global food equation. First, the projected doomsday scenario of food shortages and higher real food prices in the late 1970s and early 1980s has not materialized. Instead, the global food models developed during and following 1972/73 world food crisis did not accurately foresee a world food economy of the 1980s with world maize prices at a twenty-five year low. In sum, the food pessimism of the early 1970s has been replaced by global food optimism

CHAPTER TWO

A CRITICAL ASSESSMENT OF THE FAO REPORT ON SADCC AGRICULTURE

Carl K. Eicher and Fidelis Mangwiro

"The principal danger in macro-economic exercises lies in their propensity to dazzle"
- W. Arthur Lewis, 1966.

INTRODUCTION

The Director-General of the Food and Agriculture Organization of the United Nations (FAO) proposed to SADCC in September, 1983, that the FAO undertake an analysis of SADCC's long-term food supply and demand prospects to year 2000. SADCC's acceptance of the offer was followed by the appointment of a Rome-based task force to carry out the study; the FAO team completed its report in six months and it was published as SADCC Agriculture: Toward 2000 (FAO, 1984).

The objective of SADCC Agriculture was to provide a framework by which planners can assess available resources and consider two alternative courses of action (strategies) "to promote SADCC's goals of greater food security and self-reliance" (p xiii). The report advanced twenty-three policy recommendations for implementation at both national and regional levels in order to accelerate agricultural development in the region. The focus of the FAO report is on measures to increase the level of food self sufficiency while assuming that people in the SADCC region will have the ability (land, income or jobs) to acquire a calorie-adequate diet.

* This chapter is a revised version of a larger background paper that was prepared for a SADCC Meeting of Permanent Secretaries, Chief Economists, Food and Agriculture Sector Coordinators and Ministers of Agriculture, Harare, July 24-26, 1986 (See Eicher and Mangwiro (1986).

The purpose of this chapter is to present an independent assessment of the FAO report and draws some sobering lessons for external task forces and visiting "experts" preparing reports on SADCC agriculture.

METHODOLOGY

The FAO team preparing the report for SADCC drew heavily on the methodology and data generated in the preparation of Agriculture: Toward 2000 (FAO, 1981). The Rome-based FAO team developed three computer scenarios for SADCC agriculture from 1979-81 to year 2000. The team first examined the agricultural performance of SADCC countries from 1966-81 (adjusted for external shocks such as weather and wars). The team then used these historical data (e.g. average crop yields) in developing a computer scenario to trace the consequences of pursuing present food and agricultural policies during the 1980s and 1990s to year 2000. This is described as the trend (T) scenario. But the projections for the T scenario were gloomy. Under this scenario, population growth rates were projected to be twice as high as food production growth rates in year 2000. For example, the annual increase in demand for food arising from income and population growth was estimated to be 3.5 percent compared with 1.5 percent growth in agricultural production.

The trend (T) scenario was used as a benchmark to compare two alternative food and agricultural strategies: an Improved Performance (IP) and a High Performance (HP) food and agriculture strategy to year 2000. The FAO team used its computers in Rome to develop conditional projections^{1/} of expected outputs of SADCC agriculture for each of the

1/ The FAO team took pains to point out that they did not have the time, data and funds to make "forecasts" of what is likely to happen but instead presented conditional projections of "what could happen given certain policy assumptions" (p. xv).

three strategies for 1990, 1995 and 2000. The improved performance strategy (IP) for year 2000 assumes that the nine governments in the SADCC region would each step up public expenditure on agriculture, assumes agricultural researchers would be more productive^{1/} and assumes that the agricultural production would more than double, from 1.4 to 3.2 percent per year. However, under the improved performance (IP) strategy, the 3.2 percent annual growth in agricultural production would still be less than the 4.0 percent assumed annual increase in the demand for agricultural products over the 1984-2000 period.

The high performance (HP) strategy assumes that SADCC governments would give even higher priority to agriculture than in the IP strategy, and assumes that even higher crop yields would be forthcoming. The results of the computer runs on the HP strategy were favourable and regional food self-sufficiency was projected to be achieved in all food categories by 2000, except for livestock. However, it was assumed that higher agricultural exports would finance livestock imports into the region.

In light of the weak data base in the region, it is a puzzle why the team relied so heavily on developing computer scenarios of SADCC agriculture?

AN ANALYSIS OF RESULTS

While one can take issue with the FAO on dozens of details of SADCC Agriculture, space permits us to mention only

1/ This is a heroic assumption because of the serendipitous nature of research. Moreover, it takes a decade, on average, for plant breeders to develop, farmer test and release a new variety. But there are many "dry holes" in research and in some countries it takes several decades of research to develop new technology. For example, it took 28 years of research (1932 to 1960) to develop the famous SR 52 hybrid maize variety for commercial farmers in Zimbabwe (Eicher, 1984).

nine general reservations about the accuracy and usefulness of the report:

1. Production Estimates

The starting point in a study of the potential of increasing food and agriculture production in the nine countries in the SADCC region is to examine the micro data base with emphasis on crop yields, output and livestock off-take rates on a crop by crop and country by country basis. The FAO team approached this task by examining 27 commodities and constructing commodity balances (demand, production and trade) for each commodity for a base year (the three year average for 1979-81) and two future points: 1990 and 2000. The team then developed production projections on the basis of estimates by unidentified "authorities" on likely feasible yields for each of the 27 crops, cropping intensity, and the allocation of land to crops for six land-water classes in the SADCC region. Similar estimates were made for herd growth, off-take rates and carcass weights for cattle, buffalo, sheep, goats, pigs and poultry. Crop and livestock production estimates were then generated by the computer for the three scenarios and checked with projections of demand for food and other commodities at various years along the way to 2000.

The FAO experts glossed over the stark reality that the data base on crop and livestock production is extremely weak. The FAO task force should have been candid on this issue and attached a bibliography of data sources (with reservations and adjustments), including names of the unidentified "authorities" who provided their views on likely crop yields in 1990, 1995 and 2000^{1/}.

1/ The FAO report does not include a bibliography - a standard feature of a scientific report.

There are two standard data sets on world agriculture - FAO and the U.S. Department of Agriculture (USDA). But production estimates from these two institutions can vary by a factor of 50 to 350 percent in a given country. For example, Uma Lele and Wilfred Candler of the World Bank report that for 1973-74, the USDA estimate of sorghum and millet production in Tanzania was 3.5 times higher than that of the Ministry of Agriculture while the FAO estimate was 88 percent of the Ministry's (Lele and Candler, 1984, p.211). Moreover, Lele and Candler contend that:

data on domestic agriculture in most African countries are too unreliable to ascertain the level of production in any given year. Further, year-to-year production fluctuations in reported statistics are often too large to estimate a trend with any degree of confidence. Judgements about deviations from a trend by amounts as small as five or ten percentage points would be nearly impossible (Lele and Candler, 1984, p 211).

If there are uncertainties about data quality in Tanzania two decades after independence, what about the quality of data on agriculture in Angola, Mozambique and Zimbabwe? In Zimbabwe, there are around 4,200 commercial farmers and 800,000 communal (smallholder) farmers. The data base on commercial farmers is probably the best in Africa but the data base on communal farmers is extremely weak. For example, the Commission of Inquiry into the Agricultural Industry of Zimbabwe reported after a year of fact-finding that:

It is salutary to observe that Zimbabwe, in spite of its proud record of agricultural research, has an almost total absence of detailed data on conditions in the communal lands. This country urgently requires a comprehensive data base on socio-economic conditions in the communal lands both to guide agricultural policy and to ensure that resources devoted to agriculture are put to their best use. Without such data the improvement of productivity in communal areas will remain at best a "hit or miss affair" (Chavanduka, 1982. p.9).

In summary, the data base on crop and livestock production in the SADCC region is so unreliable that it raises serious questions about shoveling "official" data into computers and generating conditional projections for 1990, 1995 and 2000. The failure to alert readers to the unreliable data base of the computer scenarios is disturbing - especially given the fact that the FAO is the official UN organization charged with collecting and maintaining historical data on world agriculture.

2. Demand Estimates

With population growing at 2.5 to 4.0 percent per year and per capita income growth projections of 0 to 2 percent per year, the annual increase in the demand for food will range from 2.5 to 5 or 6 percent per year in SADCC countries. However, the estimation of the demand for food five, ten and 15 years down the road is a complex and risky exercise. For example, there are almost no recent estimates of income elasticities for staple foods in the SADCC region. Although food consumption surveys were popular in Africa in the 1960's (Eicher and Baker, 1982), this area of research has been dormant in Africa for more than a decade^{1/}.

Several staple foods require special attention in demand studies, for example, since roughly two-thirds of the wheat consumed in the SADCC region in 1985 was imported, wheat dependency is a complex political economy issue that requires careful analysis. The FAO report states that "Zimbabwe is the only surplus producer of wheat" (FAO, 1984, p.7.13) in the SADCC region when, in fact, Zimbabwe has been importing wheat since 1982. For the FAO to report that Zimbabwe was a "surplus producer of wheat" in 1984 when it imported wheat raises further questions about the reliability and credibility of the FAO report. In 1986,

1/ For example, Paulino (1987) concentrates on supply projections because of the dearth of demand data.

Zimbabwe imported about 15 percent of its domestic wheat requirements and restricted the demand for wheat through an informal rationing system of supplying only 20,000 tons a month to millers.

The importance of reliable demand estimates for the type of study that the FAO carried out for SADCC is stressed in a review of 10 studies of food balance projections that were initiated in the midst of the global food crisis of 1973/74. Fox and Ruttan (1983) concluded that the failure of the authors of the 10 studies to carefully examine the transitory demand - side factors of the global food market in the early 1970's led to an incomplete analysis and pessimistic global food projections for the 1980's.

4. Technology on the Shelf

We believe that the FAO report overestimates the stock of food crop technology on the shelf in the SADCC region. The FAO team asserts that "what is missing at both national and regional levels is an examination of why farmers have not accepted technologies" (p. 3.26). Presently, there is a backlog of maize varieties on the shelf in the maize belt (Zimbabwe, Zambia and Malawi) in the SADCC region and red sorghum for brewing. But technology is not on the shelf in most SADCC countries for the following food crops: white sorghum, millet, summer wheat, rice and groundnut varieties for small farmers. We believe that the FAO should have given more attention to a country-by-country inventory of present food crop technology and devoted more attention to measures to strengthen national research services for the development of improved technological packages.

There are many mysteries about science, technology and African agriculture^{1/}. Why are some crops more robust in

1/ For an elaboration of some of these puzzles see Carl K. Eicher (1982) and "Western Science and African Hunger" (1986a).

terms of international transfer? What explains the vast difference in the ability to move maize and wheat germplasm worldwide? For example, CIMMYT, the Mexican-based international research center on wheat and maize, reports that 45 million hectares of wheat but only 4 million hectares of maize varieties carry CIMMYT germplasm in developing countries (CIMMYT, 1985). This is one of the many puzzles about technology transfer that requires more analysis. In summary, the FAO report devotes superficial attention to science, technology and SADCC agriculture.

4. Human Capital

The shortage of professional agricultural manpower is acute in the SADCC region. For example, in 1985, expatriates represented 26 percent of all professional staff in research, extension services, agricultural training schools and faculties of agriculture in the nine SADCC countries (Devres, 1985, p. 46). Moreover there is growing criticism of expatriates and technical assistance in SADCC policy circles^{1/}. For these reasons, one would expect that human capital improvement in the region would be examined in depth but, unfortunately, SADCC Agriculture devotes only three pages to human capital (pp 6.8 to 6.11) The report notes that "The main finding is that the principal requirement for greater food self-sufficiency is the effective mobilization of human resources rather than the development of physical resources" (p xix). The FAO report then advances the following banality for policy makers in the SADCC region: "manpower training is the most effective long-term approach to increasing absorptive capacity" (p. 6.10).

1/ See Eicher (1986) for a discussion of technical assistance - its cost, uneven quality, and its high turnover.

5. Institutional Puzzles

Most agricultural development specialists, including agricultural economists are specialists in a commodity such as coffee or maize, or a problem area such as maize streak virus, nematodes, credit or marketing. As a result of their specialised training, most agricultural development specialists display a singular lack of interest in the role of institutions - political, legal, social, technical, and cultural - in development. The FAO is no exception in this regard. The ignorance of the FAO team about SADC institutions surfaces throughout the report. If the FAO team had more time, they undoubtedly would have devoted more attention to examining how to strengthen the institutional base - research, training and extension - for smallholder agriculture in the SADC region.

6. Food Losses

The FAO report asserts that "pre and postharvest losses from pests and diseases currently reduce food availability by 30 to 40 percent or more" (FAO, 1984, p3.9). But the FAO does not provide evidence to support this assertion. In a recent review of the literature on postharvest losses in developing countries, a big gap was found between "guestimates" produced by short term missions and actual losses recorded by careful research studies. Greeley reports that:

eleven 'expert' guestimates on post-harvest losses of rice at farm level in Bangladesh were published between 1975 and 1980; their average was 26.8 percent. By contrast, a three year research project which physically measured losses in all post-harvest operations from cutting to cooking showed that total post-harvest rice losses at farm level were below 7 percent (Greeley, 1986, pp 340-41).

We are of the opinion that simple but thorough studies of actual losses from pests, disease and on-farm storage are

needed before donors decide to invest in programmes to reduce post-harvest losses in the region.

7. Agricultural Growth Rate Projections

Central to the FAO projection exercise is the assumption that 21 policy reforms will spur economic growth and increase agricultural growth rates. In fact, the high performance (HP) scenario assumes that the rate of agricultural growth will be 4.8 percent per year over the 1979-81 to 2000 period (page 2.11). But a word of caution is in order. Few countries in the Third World have been able to achieve and sustain annual rates of growth of agricultural output of four percent for one or more decades. Reynolds (1986) recently compared the agricultural performance of forty-one countries for thirty years, 1952-1981. He found that none of the African countries achieved annual growth rates of agricultural output of 4 percent or more - for the entire period. Only one of the five high performance countries in Asia and Latin America, Thailand, achieved a growth rate above 4 percent in all four periods as shown in Table 1.

Table 1: Annual Growth Rates of Agricultural Production in Five Countries: 1952/54-1979/81

Country	1952/54- 1959/61	1959/61- 1969/71	1969/71- 1979/81	1952/54- 1979/81
South Korea	5.4	3.2	4.2	4.4
Thailand	4.5	5.1	5.1	4.8
Malaysia	3.0	5.6	4.8	4.4
Mexico	5.0	4.5	3.5	4.1
Venezuela	4.5	5.3	3.8	4.4

(Source: Reynolds 1986, pp.96-97)

In summary, most Third World countries have found it difficult to achieve and sustain annual food and agricultural production growth rates of 4 percent or more for one or more decades.

8. Nutrition

A decade ago two World Bank economists - Reutlinger and Selowsky (1976) - pointed out the fallacy of estimating a country-wide average of daily per capita calorie intake without taking the distribution of income into account^{1/}. The FAO report on SADCC Agriculture estimates that the per capita calorie supply for the entire SADCC region will be 2,117 in 1990 and 2,188 in 2000 (page 2.10). These heroic estimates make no allowance for distribution of income and the capacity of various classes in society to produce, purchase or acquire food. In sum, the two pages devoted to food consumption and nutrition in the FAO report have little scientific validity.

9. Policy Reform

The report lists 23 specific policy measures needed to achieve the targets set for 2000 by the Improved Performance (IP) scenarios. But instead of identifying specific policy measures, the report identifies general measures applicable to almost any country in Africa, Asia or Latin America. For example, policy measure No.16 on livestock improvement recommends that

Measures in this area are also highly dependent on progress in changing the social role of cattle and on attitudes to communal grazing land; they are further constrained by the lack of extension workers. However, possibilities for action do exist. For example, livestock owners can be brought together with local leaders to form livestock associations, or they may be organized through village committees to bring about agreements on the use of communal grazing and to improve contacts with extension services (p.3.28).

1/ For example, the authors found that in Brazil the average daily level of calorie consumption (2,566) was more than adequate based on estimates of average calories consumed on a national basis (i.e. dividing estimated national food production by estimated population. But an analysis of calorie consumption by income groups revealed that 44 percent of the total population were calorie deficient (Reutlinger and Selowsky, 1976, pp.10 - 11).

OVERALL ASSESSMENT

The FAO study is an exercise in food pessimism and represents another "False Start" for Africa. The FAO's projections are at wide variance with the current maize surplus in SADCC's maize belt (Zimbabwe and Malawi) and the sorghum surplus in Zimbabwe. Whereas the FAO report identifies 23 policy reforms that should be undertaken by member states to increase crop and livestock production, favourable rainfall in 1985 and 1986 was obviously more important than policy reform in changing the short term food and agriculture situation in the region.

There are no quick fixes for African agriculture. This is the painful lesson that the Food and Agriculture Organization of the United Nations should learn from its maiden publication for SADCC. The FAO report on SADCC Agriculture is the product of a team that did the best it could, given the shaky data base and the time allotted - six months - by FAO's top management in Rome to complete the report. The team made a major methodological mistake by churning out computer scenarios when the underlying micro data base was so weak. Although these computer-based macro economic projection models "have a propensity to dazzle" as Nobel Laureate W. Arthur Lewis reminds us, they assume away the tough institutional, technical and political issues that govern hunger, poverty and access to food.

For donors interested in policy dialogue with SADCC states, there is no substitute for investing in strengthening policy research institutions in the SADCC region for the next 10 to 15 years. Since economic policy research is just as location-specific as maize breeding, it follows that visiting teams of "experts" and overseas-based task forces should be replaced by investments to strengthen economic policy research institutions on a country by country basis. Policy dialogue on food and agriculture requires a slow and progressive build-up of African

capacity to address African problems. The biggest lesson that SADCC can learn from this assessment is to apply leverage on donors to help develop African research capacity to deal with the macroeconomics of food and agriculture in the region. What do visiting teams leave behind when they prepare a report for SADCC or a SADCC Member state?

It is interesting to note that SADCC's updated strategy for food, agriculture and natural resources that was approved by the nine SADCC Ministers of Agriculture in Mbabane, Swaziland on October 9, 1986 did not cite the 1984 FAO report (SADCC, 1987). A summary of SADCC's updated strategy is presented in the next chapter of this book.

Is it not understandable why the FAO report is gathering dust in government offices throughout the SADCC region?

BIBLIOGRAPHY

- Byerlee, Derek and Jim Longmire (1986). "Wheat in the Tropics: Whether and When?" Ceres Vol. 19(6) May-June, pp. 34-39.
- CIMMYT, (1985). CIMMYT Newsletter, No.1. CIMMYT, Mexico
- Chavanduka, G.L. (1982). Report of the Commission of Inquiry into the Agricultural Industry. Harare, Government Printer.
- Devres (1985). Agricultural Research Resource Assessment in the SADCC countries: Regional Analysis and Strategy, Vol. 1. Washington, May.
- Eicher, Carl K. (1984). "International Technology Transfer and the African Farmer : Theory and Practice", Harare, University of Zimbabwe, Department of Land Management, Working Paper 3/84.
- Eicher, Carl K. (1986). Transforming African Agriculture. San Francisco, The Hunger Project, January.
- Eicher, Carl K. (1986a). "Western Science and African Hunger", Foreign Francqui Lecture, February 5th, Catholic University of Leuven, Leuven, Belgium.
- Eicher, Carl K. and Doyle Baker (1982). Research on Agricultural Development in Sub-Saharan Africa : A Critical Survey. MSU International Development Papers, No. 1. East Lansing, Department of Agricultural Economics, Michigan State University.
- Eicher, Carl K. and John M. Staatz, eds. (1984). Agricultural Development in the Third World. Baltimore, The Johns Hopkins University Press.
- Eicher, Carl K. and Fidelis Mangwiro (1986). "A Critical Assessment of the FAO Report on SADCC Agriculture and Agriculture Sector Studies", Background paper prepared for a meeting of SADCC Permanent Secretaries, Chief Economists, Food and Agriculture Sector Coordinators and SADCC Ministers of Agriculture, Harare, July 24-26.
- FAO, (1981). Agriculture: Toward 2000. Rome.
- FAO, (1984). SADCC Agriculture: Toward 2000. Rome.
- Fox, Glenn and Vernon Ruttan (1983). "A Guide to LDC Food Balance Projections", European Review of Agricultural Economics. Vol. 10, pp. 325-356.

- Greeley, Martin (1986). "Food, Technology and Employment: The Farm-Level Post-Harvest System in Developing Countries", Journal of Agricultural Economics. Vol 37(3): 333-347.
- Lele, U., and W. Candler (1984). "Food Security in Developing Countries: National Issues", in Eicher and Staatz, pp. 207-221.
- Lewis, W. Arthur (1966). Development Planning. New York, Harper and Row.
- Paulino, Leonardo (1987). "The Evolving Food Situation", IN: Accelerating Food Production in Sub-Saharan Africa", Edited by John Mellor, Christopher Delgado and Malcolm Blackie, Baltimore, The Johns Hopkins University Press, pp. 23-38.
- Reutlinger, Shlomo and Marcelo Selowsky (1976). Malnutrition and Poverty: Magnitude and Policy Options, Baltimore: The Johns Hopkins University Press.
- Reynolds, Lloyd (1986). Economic Growth in the Third World. New Haven, Yale University Press.
- SADCC (1987). Food, Agriculture and Natural Resources, Gaborone, SADCC Secretariat, February.
- Timmer, C. Peter (1986). Private Decisions and Public Policy: The Price Dilemma in Food Systems of Developing Countries. MSU International Development Papers, No. 7, East Lansing, Department of Agricultural Economics, Michigan State University.



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