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**FAMINE MITIGATION**  
**ANNOTATED BIBLIOGRAPHY ON SOUTHERN AFRICA**

April 1994

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## Table of Contents

Introduction . . . . .	ii
Section I: Specific Working Documents Generated by the Famine Mitigation Activity . . . . .	1
Section II: Household Food Security in Southern Africa: A Selected Annotated Bibliography . . . . .	7
Section III: Additional References on Southern Africa . . . . .	51
Section IV: Subject and Country Index . . . . .	86

## Introduction

In April 1991, the Office of U.S. Foreign Disaster Assistance (OFDA), through the U.S. Department of Agriculture's Office of International Cooperation and Development, initiated a cooperative agreement with the University of Arizona's Office of Arid Lands Studies (OALS) to provide assistance in expanding its famine mitigation capabilities. As the U.S. Government's arm for coordinating activities related to disaster relief abroad, OFDA has focused its efforts in the past on providing food aid to the most needy people in affected areas. In addition, OFDA has sought ways to reduce adverse conditions before a state of disaster is reached.

To this end, OFDA started the Famine Mitigation Activity to research the applicability of short-term interventions with long-term positive impact in areas of chronic famine vulnerability. The objective of this Activity is to develop interventions and mechanisms to alleviate stress conditions before people have lost all of their assets, migrated elsewhere, and become totally dependent on relief. Initially, OFDA identified Sudan, Ethiopia, Angola, Somalia, and Mozambique as primary target countries for testing potential interventions. However, special emphasis eventually was placed on the first three, and comprehensive country profiles were subsequently prepared on these countries for the Activity. Following these efforts was the publication of the first bibliography titled, *Famine Mitigation Bibliography: with special emphasis on Ethiopia, Sudan, and Angola* (Tucson, Arizona: Office of Arid Lands Studies, April 1992). The region of Southern Africa became a second area of focus after it experienced severe drought conditions during 1992.

To initiate the Famine Mitigation Activity, OFDA conducted two workshops at which issues papers were presented on possible areas of intervention. Those selected were: 1) early warning; 2) rapid rural assessment; 3) cereal crops/cropping systems; 4) gardens; 5) seedbanks; 6) livestock; 7) water resources; 8) food-for-work/cash-for-work, and 9) conflict modification. These papers represented a synthesis of current knowledge in each area and are published in the proceedings, *Famine Mitigation: Proceedings of Workshops Held in Tucson, Arizona, May 20-May 23, 1991; Berkeley Springs, West Virginia, July 31-August 2, 1991* (Tucson, Arizona: Office of Arid Lands Studies, November 1991). They were used by workshop participants as the basis for developing guidelines for follow-on strategy papers and for planning pilot projects. To provide background support for these activities and to create a permanent information resource, OFDA's Famine Mitigation Activity also requested OALS to develop a specialized document collection and database on famine mitigation.

Collection efforts included searching online databases that focus on agriculture and development, such as CAB ABSTRACTS, AGRIS, AGRICOLA, and NTIS. Additional materials were identified and acquired from visits to libraries at the Food and Agriculture Organization of the United Nations (FAO) and the United Nations International Fund for Agricultural Development (IFAD) in Rome, the Institute of Development Studies (University of Sussex, Brighton, U.K.), and various libraries in the Washington, D.C. area, including the United States Agency for International Development (USAID), OFDA, the International Food Policy Research Institute (IFPRI), Peace Corps, World Bank, and the U.S. National Agricultural Library. Activity personnel also have access to special document collections maintained by such organizations as the Overseas Development Institute (U.K.) and the Center for Indigenous Knowledge for Agriculture and Rural Development (CIKARD, Iowa State University, Ames, Iowa). In addition, this second edition includes entries obtained through the resources of the Land Tenure Center at the University of Wisconsin, Northwestern University Library's Joint Acquisitions List of Africana, and from the Natural Resources Institute in the United Kingdom.

A large number of the more than 3,000 documents currently in the collection are non-traditional in format, including technical and field reports, project papers, and reports from private voluntary organizations (PVOs, such as Save the Children and CARE) involved in various food relief programs. Although the strength of the collection is in its coverage of Africa and the nine component areas listed above, there are additional references on famine, market interventions, coping strategies, gender issues, and drought, as well as a few on other

regions around the world that have experienced famine-related problems.

This bibliography is organized in three sections. The first is an annotated list of all the working documents that have been produced by the Famine Mitigation Activity. The second is a selected annotated bibliography of documents related to food security issues in Southern Africa. The final section is a general bibliography of famine mitigation materials. A number of the documents in this bibliography were also listed in the first edition; those relating to food security were transferred from the original bibliography to begin the work on this new edition. All three sections are arranged alphabetically by first author in ascending order by date. Single authors are followed by multiple author references. Preference was given to listing a work under an individual author's name over a corporate or institutional name. Only when no individual was indicated on a work as the responsible party was the name of an organization or institution used as an author. Abbreviations for these institutions as authors are not used; therefore, entries such as *U.S.* do not occur, but are found under *United States*. We followed traditional bibliographic rules for listing names containing articles and/or prepositions. Proper form depends on country, and apologies are extended for any incorrect assessments made. No assumptions were made with regard to acronyms and initialisms. Each record has complete information spelled out for any acronym used. A general subject index relating to OFDA's broad interest areas and country names provides additional access. Most of the documents listed are available from the Famine Mitigation Office in Washington, D.C. However, documents from other libraries were included with appropriate identification and call number given in a note field (see list below). The document collection is accessible through both a card catalog file and a Pro-Cite database, from which this bibliography was printed.

**Other Collection Locations:**

ALIC	Arid Lands Information Center
CABI	CAB International
IDS	Institute of Development Studies
IFAD	International Fund for Agricultural Development
ILL	Interlibrary loan networks
FAO	Food and Agriculture Organization of the United Nations
UA	University of Arizona Main Library
UA Gov Docs	University of Arizona Government Documents
UA Med	University of Arizona Medical Library
UA Sci	University of Arizona Science-Engineering Library

For further information, contact:

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## SECTION I

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### SPECIFIC WORKING DOCUMENTS *Generated by the Famine Mitigation Activity*

1. Adelski, E. 1992. *The People's Republic of Angola: A country profile*. Tucson, Arizona: University of Arizona, Office of Arid Land Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

This country profile is specifically addressed to those involved with famine mitigation activities in Africa. Based entirely on secondary sources, this report presents general information on the physical environment, population, and political economy of Angola before proceeding to describe farming systems characteristic of four agroecological zones within the country. Unlike circum-Saharan regions of Africa, Angola's food security crisis has not been related to drought and desertification, but rather has been caused by years of civil warfare linked to the geopolitical maneuvers of the Cold War era. For this reason, famine vulnerability assessments are here presented within the context of a brief disaster history of the country. This information leads to a summary of international responses to recent Angolan food emergencies, and an analysis of the role of international donors in increasing national governmental capacity to respond to the current food emergency within that country. Several recommendations are offered for immediate interventions by the U.S. Office of Foreign Disaster Assistance. These recommendations include the implementation of cash/food-for-work programs to rebuild transportation networks, water systems, clinics and veterinary support stations. It is also suggested that these programs begin a reforestation project, particularly in the coastal region of the country. In addition to these longer range programs, the author points to United Nations studies that document an estimated two million Angolans currently at risk of famine. For this reason it is argued that direct food aid should be supplied to this country through the end of 1993.

2. Blackburn, H. D., H. Glimp, D. Phillipi, D. Child, and A. Pope. 1993. *Utilization and preservation of livestock resources*. Washington, D.C.: U.S. Agency for International Development (USAID), Bureau for Food and Humanitarian Assistance, Office of U.S. Foreign Disaster Assistance (OFDA).

When livestock are impacted by drought, the resulting depression in productivity in rural areas dependent on animals for traction, nutrition, and revenue lasts well beyond the term of the drought itself. With this in mind, the authors propose a three-tiered approach to drought intervention: information assessment, simulation, and field application. Under this approach, information gathered by ministries of agriculture is assessed, the information then is used to create a group of simulation models, and the results serve as the basis for field recommendations, which are executed by government agencies or NGOs. In this way current information from the field can be used to project how future conditions might impact livestock producers.

3. Bryson, J. C., and S. Hansch. 1993. *Food/cash for work interventions in famine mitigation*. Washington, D.C.: U.S. Agency for International Development (USAID), Bureau for Food and Humanitarian Assistance, Office of U.S. Foreign Disaster Assistance (OFDA).

This paper proposes strategies for using various combinations of food and cash—cash/food-for-work, cash/food incentives, and cash/food transfers—in the service of famine mitigation. Both food and cash have value to target groups in famine-prone areas, the authors observe, but the relative values of the two differ in different local (village and household) situations. The authors recommend

that famine mitigation strategies give priority to cash interventions combined with measures to increase local food supply, so as to foster local food production and to strengthen local markets.

4. Caldwell, R. M. 1992. *Agpaks as a famine mitigation intervention*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

Agpaks are consolidated sets of agricultural and livestock assistance designed to improve the productive capacity of populations impacted by famine, war, and other events that upset the normal functioning of lives and livelihoods in order to bolster the productivity of cropping and livestock systems. Seeds, tools and implements, fertilizer and pesticides, livestock, veterinary medicines, and credit and services are common components in an agpak intervention. Three strategies for designing and implementing agpak intervention to facilitate mitigation efforts are discussed: maintenance, rehabilitation, and diversification/risk reduction. Each strategy represents a different temporal phase of the famine process and a varying degree of vulnerability within the target group. Designing agpak interventions requires that adequate information is available and that local participants are fully engaged in the process. Issues on design strategy and key information needs for agpak interventions are discussed in this work. (Modified from executive summary.)

5. ———. 1992. *Ethiopia: A country profile for famine mitigation planning and implementation*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

This country profile is specifically addressed to those involved with famine mitigation activities in Africa. Based entirely on secondary sources, this report presents general information on the physical environment, land tenure changes, environmental degradation, population, the political history of the country, health and nutrition problems, and the economy. This general information is followed by a discussion of agroecological zones and associated farming systems in the country. In Ethiopia, environmental degradation, particularly soil erosion and deforestation, have combined with drought and a prolonged civil war to create extremely high levels of food security vulnerability. This situation is detailed through a vulnerability assessment and analysis of the disaster history of the country. These sections are followed by an analysis of the current response capabilities of early warning systems and institutions charged with delivering food aid in Ethiopia. The report concludes by discussing potential famine mitigation interventions. These include improvement of early warning and monitoring systems, the implementation of food-for-work/cash-for-work programs aimed at improving roads, conservation of pasture through improved offtake strategies and the refinement of the one-ox plow, and increased access to seeds and other agricultural inputs to create sustainable development in traditional rainfed agriculture.

6. Coyle, P. E., M. D. Mack, D. M. Goldstein, T. R. Frankenberger, and R. S. Breckenridge. 1992. *Republic of the Sudan*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

This country profile is specifically addressed to those involved with famine mitigation activities in Africa. Based entirely on secondary sources, this report presents general information on the physical environment, population, and political economy of Sudan before giving an overview of types of agricultural systems found in Sudan and a general summary of the farming systems characteristic of the four regions within the country that are particularly vulnerable to famine. In Sudan, the destruction of subsistence economies, civil war, periodic droughts, and a long-term trend toward desertification have all combined to kill hundreds of thousands of people during the 1980s and to leave nearly the entire rural population of the country vulnerable to a similar fate. An assessment of

current food security vulnerability is provided, along with a brief history of the disasters which have recently engulfed this country. An analysis of current response capability is provided, followed by suggestions for potential interventions. Specifically, it is recommended that contingency plans for response to food emergencies be merged with regional development programs.

7. Frankenberger, T. R. 1992. *Rapid food security assessment*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

Rapid food security assessments (RFSAs) are a time-effective survey technique used to determine the causes, dimensions, and characteristics of a food insecurity situation in a given area. The targeting and timing of RFSAs will be triggered by early warning systems that identify specific geographical regions that are susceptible to food shortages and by vulnerability maps that identify areas and specific sections of the population that are most vulnerable to food insecurity. Once this food insecure area has been designated, purposive sampling procedures are used to select villages to be surveyed. The general procedure to be followed involves reviewing secondary data, carrying out open-ended interviews to attain minimal data sets, making use of group, household, and individual interviews, and using interactive data gathering tools such as diagrams and ranking exercises to elicit perspectives on resources, constraints, social relations, wealth distribution, seasonal trends, and selection criteria. These surveys should be carried out in a time-effective manner using a triangulation of methods while maintaining a multidisciplinary perspective and providing immediate feedback to decision-makers after completion of the survey. Upon completion of a survey, contingency plans should be drawn up to link information to response. These contingency plans will consist of a decentralized household food security monitoring system based on a set of annually updated indicators, and a set of predetermined responses to be implemented when food security conditions change. (Modified from author's executive summary.)

8. Frankenberger, T. R., and P. E. Coyle. 1992. *Integrating household food security into farming systems research-extension*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. A paper presented at the Nutrition and Household Food Security in Farming Systems Research Southern and Eastern African Workshop, Mansa, Zambia, August 10-14, 1992.

That nearly 18 million people in Southern Africa are food insecure and at risk of severe malnutrition justifies the priority households give to securing sufficient food supplies as a major production goal, while at the same time recurrent risks associated with fluctuating rainfall and unstable markets has led many farmers to diversify their food procurement strategies to secure a wide food base. These facts have significant implications for the types of interventions promoted through farming systems research-extension (FSRE). After surveying a number of conceptual issues and discussing the client group to which most FSRE activities are directed, this paper offers suggestions for ways in which household food security considerations can be incorporated into the FSRE process.

9. Hutchinson, B., K. Johnson, M. Haseltine, and C. Casler, comps. 1992. *Famine mitigation bibliography: With special emphasis on Ethiopia, Sudan, and Angola*. 1st ed. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

The strength of this indexed, 250-page bibliography is, as its authors note, in its coverage of the three countries named in its title and in documents related to nine topics selected for examination in two OFDA workshops: early warning, rapid rural assessment, cereal crops/cropping systems, gardens, seedbanks, livestock, water resources, food-for-work/cash-for-work, and conflict

modification. Also included are some general references on famine, market interventions, and other countries and regions that have experienced similar famine-related problems. An anticipated second edition will include further references to market and pricing interventions and the results of another round of database searches.

10. ———, comps. 1992. *Famine mitigation bibliography: With special emphasis on Ethiopia, Sudan, and Angola: Supplement to the first edition*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

The supplement contains 9 pages of additional entries.

11. Hutchinson, C. F. 1992. *Early warning and vulnerability assessment for famine mitigation*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

This strategy paper first draws a distinction between conventional famine relief, which seeks to save lives through the provision of food aid, and famine mitigation, which seeks to preserve productive capacity, and then outlines a four-step process for conducting famine mitigation, with particular emphasis on the first step in that process: early warning and vulnerability assessment.

12. Hutchinson, C. F., and R. E. Hall. 1993. *Baseline vulnerability assessment for Haiti*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

In November of 1992, a prefeasibility assessment was conducted in Haiti to develop preliminary recommendations for food security monitoring based on the current situation in the country, the information needs and resources of USAID and cooperating sponsors, and opportunities for improving the quality and flow of information. The prefeasibility assessment resulted in a recommendation for a baseline food security, or vulnerability, assessment as the next step in developing an enhanced food security monitoring system. This report describes that process and its findings.

13. Longhurst, R. 1992. *Country experiences in famine mitigation*. Washington, D.C.: U.S. Agency for International Development (USAID), Bureau for Food and Humanitarian Assistance, Office of U.S. Foreign Disaster Assistance (OFDA).

The famine mitigation strategies employed in eight countries are reviewed in this paper, with India being most prominent among them, owing to the fact that "famine codes" have been in place there for more than 100 years. The codes constitute a program of action for local governments, organization of relief works, wages, and rations, and measures relating to cattle and forests, among which public works are the most important element. Experiences related to the interventions associated with the codes in Bangladesh, Botswana, Kenya, Cape Verde, Zimbabwe, Ethiopia, and Sudan, as well as India, are reviewed and assessed here.

14. University of Arizona. Office of Arid Lands Studies (OALS). 1991. *Famine mitigation: Proceedings of workshops held in Tucson, Arizona, May 20-May 23, 1991, Berkeley Springs, West Virginia, July 31-August 2, 1991*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for the USAID/OFDA through the USDA/OICD, Washington, D.C.

"Famine and Mitigation" by C.F. Hutchinson and "The Importance of Household Coping Strategies to Famine Mitigation" by T.R. Frankenberger provide a conceptual overview to the papers that

follow in this collection. They argue that timely interventions based on an understanding of household decision-making sequences during times of famine can help to re-establish local food security. "ShortFEWS: Action-Oriented Early Warning" by Charles Hutchinson, "Rapid Food Security Assessment" by Timothy Frankenberger, "Sustainable Resource Management Based on a Decentralized Food Security Monitoring System" by Timothy Frankenberger and Charles Hutchinson, "A Methodology for Conducting Reconnaissance Surveys in Africa" by Timothy Frankenberger and J. Lichte, and "Developing Guidelines for Early Warning and Response Farming Based on Agriculturally Relevant Analyses of Historical Daily Rainfall Data" by J. Ian Stewart all offer techniques for monitoring specific indicators that point to the vulnerabilities of local populations, a critical component of timely intervention. "Seeds of Change: The Role of Crop and Cropping System Interventions in Famine Mitigation" by Richard Caldwell, "Household Gardens as a Famine Mitigation Strategy" by Daniela Soleri and David Cleveland, "Seedbanking as a Famine Mitigation Strategy" by Daniela Soleri, David Cleveland, and Stephen Smith, "Cash, Cows, and Camels: The Fate of Livestock in African Disasters" by Peter Warshall, and "Water Resource Interventions and Famine Mitigation" by Joseph Tabor all discuss a range of specific external interventions in local systems of agricultural production aimed at defending or reviving sustainable livelihoods in the wake of famine. "Cash-for-Work/Food-for-Work Programs for Improving Household Food Security During Food Deficits" by Daniel Goldstein and Timothy Frankenberger, and "Using Food/Cash for Work in the Famine Mitigation Activity" by Judy Bryson discuss an alternative to the simple provisioning of food aid during critical famine periods. They argue that payments for labor can decrease dependency of food aid recipients on external donors, while the work that these aid recipients provide in building infrastructural improvements can decrease the severity of rural food deficits. "Taking Conflict into Consideration: Implications for Famine Mitigation Activities" by Robert Hall, "Conflict, Conflict Resolution, and Humanitarian Assistance" by Jeffrey Clark, and "Food Security in Mozambique: War, Markets, and Policy Reform" by Mark Langworthy and Timothy Finan all discuss the difficult dilemma of providing food aid and working toward the establishment of sustainable livelihoods within the context of war. In Africa, at least, it has become clear that famine is not a simple outcome of population increase or drought. Here, for example, country status reports are provided for Angola (by Mark Henderson), Ethiopia (by Simon Maxwell), Mozambique (by Mark Langworthy and Tim Finan), and Sudan (by Greg Gottlieb). In each case, national governments or armed militias use famine as a form of genocide to align political support and undermine political opposition. This collection is rounded out by a number of appendices that summarize the working group reports of the Tucson, Arizona, and Berkeley Springs, West Virginia, meetings at which these papers were first presented.

15. Uttal, L. 1992. *Water resources management strategies for famine mitigation activities*. Washington, D.C.: U.S. Agency for International Development (USAID), Bureau for Food and Humanitarian Assistance, Office of U.S. Foreign Disaster Assistance (OFDA).

Although drought can result from a number of different causes, one of the most common drought scenarios occurs when new demands are placed on normal, but limited, water supplies, as often is the case when marginal lands in arid and semiarid zones are settled. Regardless of the cause, the first goal of water resources management in response to drought and famine is life support; the second is to rehabilitate and improve the water management infrastructure. This paper is intended to be a practical guide and reference for those involved in the planning and approval of water resources management projects related to drought- and famine-mitigation activities in Africa.

16. Worstell, J., and B. Colley. 1993. *Enabling resilience and enhancing assets: Famine mitigation from a seeds and tools perspective*. Washington, D.C.: U.S. Agency for International Development (USAID), Bureau for Food and Humanitarian Assistance, Office of U.S. Foreign Disaster Assistance (OFDA).

The authors argue that to design sustainable interventions for a given famine-prone area, a local and participatory agroecosystems appraisal is necessary. Further, the most effective interventions will prove to be those that enhance a household's coping strategies; even so, relief, in the form of cash- and food-for-work programs, will be a necessary part of most famine mitigation interventions in order for the poorest to benefit. The authors argue that the determining criterion for judging such relief programs (beyond nutritional improvement) is whether the programs will enhance such assets as local storage capacity, local transport, soils, water catchment, local tool manufacture, and local social organization. The authors also propose a procedure for rapid assessment of specific characteristics of famine-prone agricultural systems.

## SECTION II

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### HOUSEHOLD FOOD SECURITY IN SOUTHERN AFRICA *A Selected Annotated Bibliography*

1. Ali, R., and B. Pitkin. 1991. "Searching for household food security in Africa." *Finance and Development* 28(4):3-6.

While many countries in Southern Africa enjoyed overall national food surpluses during the 1980s, each of these countries also recorded high levels of childhood malnutrition, an indicator of inadequate food intake. Because rural households in Southern Africa do not grow enough food to meet their own needs, the authors argue that the most effective way to reduce household food insecurity is to raise the real income of households through sustained economic growth and the liberalization of markets in order to make food available for household purchases. They argue that these goals need to be supported by improvement of infrastructure and the reform of pricing and marketing policies. In areas suffering transitory shortfalls in available food, these long-term improvements should be supported by immediate interventions including consumer subsidies, coupon systems, food rations, income transfers, food- and fertilizer-for-work programs, and special nutrition programs. Direct food aid should augment market flows thereby preventing price rises that would otherwise imperil the food security of market-dependent rural households.

2. Amani, H. K. R., and W. E. Maro. 1991. Household food security in Tanzania: Preliminary findings from four regions. In *Market reforms, research policies, and SADCC food security*, eds. M. Rukuni, and J. B. Wyckoff. 77-89. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

The focus of the Tanzanian government's food security policy has centered on extracting food from rural areas for urban consumers. This study shows, however, that a large proportion of rural households do not produce enough food for their own consumption, let alone surplus food for the urban market. It is argued that to improve food security in deficit areas, the production of drought resistant food grains such as sorghum/millet needs to be encouraged. This strategy should be combined with a strategy to increase household income through expansion of off-farm employment and/or the production of high cash value crops. The legalization of private trading might also reduce food supply fluctuations and possibly reduce price fluctuations, particularly during the hungry season. Targeted food aid and nutrition programs should be continued in the short run, and these programs should be supported by the establishment of food storage sheds in rural food deficit areas, along with the preparation of financially viable targeting mechanisms to distribute this food during the hungry season. (Modified from summary provided by authors.)

3. Andren, U., A. Nkomesha, L. P. Singogo, and A. Sutherland. 1991. *National seed availability study: Seed problems, practices, and requirements among small-scale farmers in Zambia*. Lusaka, Zambia: Zambia, Ministry of Agriculture.

A questionnaire was administered to 282 households and 50 extension and depot staff covering 14 districts and 6 provinces in order to investigate small-scale farmers' seed uses, problems, and requirements and to look at seed information issues in the three main agroecological zones. There is currently a high level of self-sufficiency in seed production at the village level. To some extent this

high level of self-sufficiency is forced on the farmers by lack of choice: hybrid maize seed is not available, is too expensive, or is delivered late. Still, commercial seed is used in cultivation of maize, cotton, sunflower, soybeans, and exotic vegetables. Availability of low-cost seeds for food legumes is a major problem. Generally speaking, demand for seed far exceeds supply at the local level. In the semi-arid region, the demand is for food crops. In contrast, in wetter areas the demand is for cash crop seed. There is a high demand for relish crop seed in all zones. Very little information on seed reaches the small-scale farmer, and the main bottlenecks in this information flow are the low ratio of extension worker to farmer, the limited supply of information to local staff on new varieties, and the absence of useful information on most seed packages. Changes and developments in the research and seed sectors should include increasing attention on plant breeding for food and grain crops, particularly open-pollinated varieties; linking this plant breeding with local seed production projects; liberalizing the seed market in order to increase availability at the local level; and giving farmers direct access to seed information by including this on seed packets. (Modified from executive summary.)

4. Banda, G. C. 1990. *Adjusting to adjustment in Zambia: Women's and young people's responses to a changing economy*. Oxfam Research Paper, no. 4. Oxford: Oxfam.

Serious economic problems during the 1980s led to loan defaults by Zambia's single-party national government, and then to structural adjustments imposed by international lending agencies. These economic problems included an over-reliance on minerals, the peripheral position of Zambia within the global economy, rises in oil prices, a low agricultural base, high population growth rate, excessive subsidies, a convoluted bureaucracy with high government spending, inadequate policy analysis and governmental management, regional tensions in Southern Africa based on racial politics, the political monopoly of the single-party state, difficulties inherited from the colonial era, and the loan and aid conditions of international agencies. The conditions imposed by the International Monetary Fund in order to continue flows of foreign exchange into Zambia included reduction of governmental subsidies, decontrol of prices in Zambia, imposition of credit ceilings to reduce money supply, imposition of ceilings on wage rises, decontrol of interest rates, rescheduling payment of external debt, devaluation of the Zambian kwacha and auction of foreign exchange, and investment and privatization.

The basic effect of these measures has been to increase the impoverishment of the Zambian population. The well-being of those employed in the formal sector has been reduced, and many others have become "unemployed" as the informal sector grows. Food, transportation, taxes, and schools are all more expensive because of the devaluation and reduction in governmental subsidies. While food production has been increasing, food access in both urban and rural areas has been made more difficult. Housing has become more expensive and health care services have been reduced. Economic survival has meant that many have turned to petty trading, gambling, professional sports, security guarding, work as nannies or maids, cross-border trading, industrial crafts and piecemeal, begging, street music and art, and other informal activities. Informal finance operations at high and fluctuating rates of interest, as well as rotating credit schemes, have also increased. The informal sector involves increased costs and risks with reduced security and benefits to work. The Zambian government dealt with this messy informal sector by establishing a repatriation exercise aimed at moving unemployed urban youths to the countryside under the sponsorship of the Zambian military. The communal farms that these young men were to start have mostly failed both because of the inadequate training in farm techniques by regimental commanders, and because of the unwillingness of rural chiefs to provide land and leadership to this enterprise. Riots erupted in response to these austerity measures in 1990, and a new constitution was drafted to be based on a pluralist political system. By 1991, eight parties were in operation and repatriation exercises had been shelved. Both government and opposition parties pledged themselves to continued debt-service payments.

5. ———. 1992. *Adjustment and food: Issues of food security in Zambia*. Lusaka, Zambia: Institute for Policy Studies.

Food security involves the processes of production, distribution, availability, and accessibility. These processes are greatly affected by Zambia's structural adjustment program. Problems for farming that have been heightened by the present economic situation in Zambia include lack of access to credit, farming inputs, and adequate infrastructure along with the existence of environmental problems, some of which are exacerbated by the current farming methods themselves. These problems are increased by institutionalized biases against those with disabilities, the elderly, women, single household heads, and those that are already poor. Despite adequate national food stocks, child malnutrition rates are climbing, and many people are starving. Recently, governmental commitments toward alleviating poverty, such as the Social Welfare Programme, the Program to Prevent Malnutrition, and food-for-work programs, have not been effective because of limits in coverage, content, and sustainability. Structural adjustment policies have resulted directly in increased food prices that have decreased access to food for many Zambians. Additionally, rises in the prices for water, housing, and education have meant that less cash is available for food purchases. In order to move toward sustainable household food security in Zambia, it is necessary that policies encompass production, storage, distribution, and accessibility; targeting should be aimed at those rural and urban households that have suffered the most under current structural adjustments.

6. Bangwe, L. M. 1990. Approaching it from another angle: Influencing small farmer productivity in rural economies: The case of Northwestern Province. In *Report on Planning Division/ARPT Seminar on Adaptive Research Data, Planning, and Policy, 14-16 November 1990, Kariba Inn, Siavonga [Zambia]*. 78-82. Lusaka, Zambia: Zambia, Ministry of Agriculture, Planning Division.

While it is true that farmers can increase productivity by use of modern technologies, it is also true that farmers can respond to an increase in demand created by diversified and expanded marketing opportunities of crops by expanding the area under cultivation and even seeking better technologies. The Northwestern Province Area Development Project identified a number of problems that were thought to limit farmer productivity in Kasempa, Mwinilunga, and Solwezi Districts. These problems included low soil fertility and high acidity, dependence on hand tools and limited labor, lack of capital and cash, lack of a steady market for most crops and poor transport system, limited use methods, and presence of tsetse fly in some areas. There is a possibility of helping these farmers by the expansion of demand for crops through faster processing methods into diversified products that will be acceptable to the majority of urban consumers. For example, demand for soybean currently exceeds supply, sweet potato sales in Solwezi have expanded due to a good road and transport system and a ready market in urban centers, pineapples have been a success because of the availability of a cannery, and cassava chips are now reaching urban areas because of demands caused by maize shortages. These successes suggest that the role of adapted traditional crops in rural economies should be respected, that consideration should be given to post-harvest activities in the design and implementation of productive projects, that rural infrastructure should be improved, that policies which favor particular crops should be discouraged, that traditional crops like cassava and sweet potatoes should be included in market research and crop forecasting, that urban consumers should be encouraged to continue consumption of traditional crops, and that agrocompanies should be established to promote the production, processing, and marketing of traditional perishables like cassava and sweet potatoes.

7. Bell, M., and P. Hotchkiss. 1991. "Garden cultivation, conservation, and household strategies in Zimbabwe." *Africa* 61(2):202-203.

Even in regions of widespread famine, geographically specific studies such as this one demonstrate the resilience, flexibility and adaptability of households in conditions of resource scarcity. Despite colonial policies that discouraged wetland—dambo—cultivation in the segregated communal lands of Rhodesia (now the nation of Zimbabwe), garden cultivation of these lands has continued with modifications for more than 100 years. It is argued that significant regional variations in access to garden plots and in patterns of garden use could be related to differences in resource endowment, to variations in the interpretation and implementation of government legislation and to contrasting histories of involvement in commodity production. Domestic strategies, however, were not rigidly fixed. The major advantage of having a dambo garden was that it gave the household an element of choice in responding to changes in household composition and resource availability.

8. Biseko, D. 1989. Tanzania: Food security issues and challenges for the 1990s. In *Food security policies in the SADCC region*, eds. M. Rukuni, G. Mudimu, and T. S. Jayne. 47-55. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

This paper reviews causes of food insecurity and the impact of Tanzania's recent governmental agricultural policy, then suggests potential SADCC interventions in the country. Drought, crop pests and diseases, urban growth, and inadequate transportation and storage facilities are argued to be the reasons for food insecurity in Tanzania. These factors continue to cause food insecurity despite an agricultural policy that is argued to have increased access to food through price mechanisms, through reorganization and rationalization of the marketing and distribution system, through nutrition programs, and through food relief. Potential SADCC initiatives include the development of skills in water management and the design of irrigation systems, improvement in decision-making through more reliable Early Warning Systems, introduction of improved seed varieties, and support of the Food and Agricultural Policy Analysis program through training workshops in the region.

9. Borton, J., and J. Shoham. 1985. *Risk mapping and early warning indicators: The Zambia case study*. Unpublished.

Static indicators, such as the Crop Index, which measures satisfaction of a crop's moisture requirements, provide useful and quick reference guides to some of the key characteristics that need to be known by those who must quickly approve food aid requests. In addition to these aggregate crop forecasts, however, detection of localized crop failures needs to be a part of a functioning early warning system. Also, while static indicators such as crop production and consumption records, subsistence farming data, status of female-headed households, condition of livestock, infrastructure and access to services, and nutrition and health indicators can give a rough feeling of the vulnerability to drought of rural populations, the precise nature and range of options open to households and the manner in which they will respond during a crisis cannot be fully understood in advance of the drought situation. Furthermore, intermediate indicators, those capable of providing early warning information between the early crop forecasting and late nutrition indicators, are not as useful as in other arid regions of Africa because drought in Zambia is comparatively infrequent and localized. Instead, price data and applications for work at a major employer such as the Nakambala Sugar Estate are intermediate indicators of food stress that could easily be incorporated into the early warning system. Official data sources concerning agricultural prices are limited, so local-level small-scale surveys should be used to gain accurate price data. These indicators should feed into local administrative structures in order to avoid the distinct danger of creating a national system that bypasses the most appropriate—local—level for response to food emergencies.

10. Buchanan-Smith, M., S. Davies, and R. Lambert. 1991. *A guide to famine early warning and food information systems in the Sahel and Horn of Africa, volume 2*. IDS Research Report, no. 21. Brighton, U.K.: University of Sussex, Institute of Development Studies.

There are four levels of early warning systems operating in Africa: global, regional, national, and subnational. This report details EWS characteristics and offers typologies. Through a careful review of the scope of these early warning systems at each level, the authors are able to question inefficiencies and overlaps as they demonstrate the common lack of direct connection of these systems with mechanisms aimed at responding to impending famines. They also point out the limitations of many centralized systems that rely on only a few indicators, such as those provided by remote sensing data.

11. Caldwell, R. M. 1993. *A district-level food security and nutrition-based vulnerability assessment for Zambia*. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies. Prepared for The World Food Program and The International Fund for Agricultural Development.

AtlasPro mapping software was employed in preparation of this assessment. Available, district-level data were combined to characterize relative degrees of chronic and current (1992) vulnerability among administrative districts in Zambia. The resulting maps depict vulnerability as defined by food security (characterized here by cereals production) and nutrition.

12. Campbell, D. J., L. M. Zinyama, and T. Matiza. 1991. "Coping with food deficits in rural Zimbabwe: The sequential adoption of indigenous strategies." *Research in Rural Sociology and Development* 5:73-85.

Chronic hunger is widespread in sub-Saharan Africa and the per capita production of food is declining; uneven availability of food leaves women and children particularly vulnerable. Both long-term increases in crop production, and short-term actions to relieve immediate hunger, such as food-for-work and nutritional support programs, commonly have been proposed to reduce shortfalls, but policymakers have given little attention to the various indigenous strategies to reduce food shortages found in rural communities. In Zimbabwe, as in other regions of rural Africa, a variety of strategies exists based on resources in the physical environment as well as on institutionalized, community-level social, political, and economic structures. The available options vary depending on entitlements, but tend to begin with those that are least disruptive, then move toward those that threaten the long-term viability of production. (Modified from introduction.)

13. The Carter Center of Emory University. *Project Africa: Strategies for food security: Food security in Zambia*. Atlanta, Georgia: Carter Presidential Center.

The basic premise of Project Africa is that the barriers to enhanced food security in Africa are less technical than financial and political. Building on this assumption, the authors aim to disseminate information concerning successful food policy initiatives from Tanzania, Uganda, Botswana, Zambia, Malawi, Mali, Ghana, and Senegal. This information is presented in concise country reports that review environment, nutritional status, distribution of income, and access to food, before moving on to assess past government food security policies, current policy and institutional capacity issues, potential food security interventions, and, finally, policies, programs and projects with proven results in alleviating food insecurity in these countries. Their hope is that this information may be used to mobilize political support for projects aimed at increasing food security through the adoption of low-cost crop production techniques managed at the village level within the region.

14. Chabala, C. 1990. Implications of a liberalized agricultural marketing policy on crop utilization and storage: Household, community, and district levels. In *Report on Planning Division/ARPT Seminar on Adaptive Research Data, Planning, and Policy, 14-16 November 1990, Kariba Inn, Siavonga [Zambia]*. 57-77. Lusaka, Zambia: Zambia, Ministry of Agriculture, Planning Division.

Zambia's access to external financing pledged at the Paris Conference depends on its continued adherence to the IMF/World Bank-sponsored economic restructuring program. This program includes reduction of governmental involvement in the economy, reduction of undesirable monopolies, and liberalization of the agricultural sector. In the past, agricultural marketing policy was motivated by equity and sociopolitical, rather than purely commercial, consideration. The government subsidized supplies of corn meal to urban consumers and guaranteed a market for grain produced by Zambian farmers. This policy resulted in the conversion of agriculture to monocropping of maize, and the reduction of on-farm storage because of the immediate purchase of all agricultural product. The cost of this subsidy rose during the 1980s because of kwacha devaluations and rises in oil prices, making transportation of maize to urban consumers more expensive. The agricultural policy of this period led to a need to supply fertilizer, grain bags and seeds to all farmers at one fixed price, and a fixed handling margin and producer price for all regions of the country throughout the year. Problems resulted from the need for huge cash flows out to purchase grain during the post-harvest period. There tended to be inadequate budgetary allocations, delays in subsidy payments, insufficient and poorly located storage facilities, bad management of surplus stocks, and untimely decisions and directives. Market liberalization was welcomed by cooperatives, which were the monopoly buyers of maize until this change in policy. Still, a free market will mean dramatic price and supply fluctuations if the government does not step in as a buyer of last resort. The lack of a guaranteed market is likely to discourage farmers from growing maize except for their own consumption and encourage crop diversification; price fluctuations might create incentives for improving on-farm storage; regions distant from urban markets will reduce maize production and investigate areas of economic advantage such as fishing, craft-making, and so on; and, finally, provinces will not produce over their needs, so urban areas are likely to suffer corn meal shortage.

15. Chigudu, H. B. 1992. *Incorporating gender issues in drought relief programmes*. Paper presented at the Women and Drought workshop held on 2 December 1992, at ZESA Training Centre, Harare, Zimbabwe.

This paper briefly discusses the magnitude of the 1991-92 drought in Zimbabwe. It then examines the importance of, and provides guidelines for, incorporating gender issues within the drought relief programs. It concludes by entreating development agencies to take gender issues seriously; otherwise, the drought relief programs are bound to fail. This drought, the worst in the century, coincided with the implementation of the structural adjustment program which itself caused many hardships. It is estimated that women and children contribute 80 percent of the labor required for all basic rural tasks; nevertheless, women have less access to land, capital credit, technology, and training. These constraints which women face significantly reduce the productivity of both the rural sector and the entire national economy yet women are marginalized in recovery planning. Support for women as producers does not simply involve their inclusion in the drought relief programs and projects. It means identifying the actual needs and opportunities of women and obstacles they face which impede development. Preoccupation with "food-for-work" projects is likely to reinforce gender inequality by over-reliance on women's labor input in keeping with the traditional expectations that women should be responsible for meeting the household food needs while men are more likely to go for "money-for-work." Furthermore, "food-for-work" programs are conducive to perpetual dependency. Projects should take into account possible impacts on women (particularly regarding equity of benefits) be tailored to the needs of women, have appropriate incentives, and have equitable evaluation through gender desegregated information. The success of drought relief

programs is dependent upon gender awareness in design and implementation. The greatest challenge is to overcome the resistance of status quo assistance organizations. (Paraphrased from text.)

16. Cleveland, D. A. 1989. Development alternatives and the African food crisis. In *African food systems in crisis, part two: Contending with change*, eds. R. Huss-Ashmore, and S. H. Katz. 181-206. Food and Nutrition in History and Anthropology, no. 7. New York: Gordon and Breach.

"Development" is here defined as "the process of improving the subjective and objective well-being of the poor majority through economically, environmentally, and socially sustainable means which are equitable, and in which the poor farmers themselves have freedom of participation and power of decision-making." It is argued that industrial agriculture has increased production per acre in the United States, but even there it has not promoted this type of development. In Africa, then, industrial agriculture has even less to offer poor farmers. Instead, the author points out that varieties of alternative agriculture that start with, but are not restricted to, indigenous farming practices can lead to sustainable development in the region. Anthropologists are seen to have a role in this process as they orient discussion toward underlying values and political, economic structures of the world food and agriculture system within which a solution to Africa's food crisis must be found.

17. Cogill, B. 1990. *Household food security nutrition and income generation*. Lusaka, Zambia: United Nations Children's Fund (UNICEF).

Rural household food security in Zambia, as indexed through measures of poverty or malnutrition, is low. Access or entitlements to food—a necessary but not sufficient factor in achieving adequate nutrition—can be enhanced through policies that increase the level of rural income and reduce income fluctuation because many rural households purchase a large percentage of their food. There are several reasons, however, that market liberalization may not result in positive changes in household food security: the poorest rural households produce little surplus production for cash sale; they do not have adequate inputs such as land, credit, draft power, or an ability to use information; increased income does not directly translate to improved nutrition; and a trend toward urbanization has depleted rural areas of important seasonal labor forces. Rather than simply increasing domestic production of staple crops like maize, the author suggests the following policy directives: improve access to land, provide low-cost technology, offer non-discriminatory technical assistance, make agricultural inputs accessible to poor farmers, reduce bottlenecks to credit, ensure access to markets, and make improvements in infrastructure.

18. Eicher, C. K. 1991. Agricultural research priority-setting in Southern Africa: Nutrition and household food security issues. In *Market reforms, research policies, and SADC food security*, eds. M. Rukuni, and J. B. Wyckoff. 215-241. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension; University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Based on a review of food policy and agricultural dynamics in Southern Africa, it is argued that an agriculture-led industrial growth strategy is essential for the success of structural adjustment programs, sustained economic growth, and the alleviation of poverty in Southern Africa. While agricultural research should still be aimed at increasing production for local consumption, the alleviation of food insecurity through plant breeding, as demonstrated through a review of research on "Quality Protein Maize," is now thought to be extremely improbable. Instead, rate of return studies and recently developed quantitative techniques for agricultural priority setting (weighted criteria models, benefit-cost expected economic surplus analysis, mathematical programming, and simulation) are argued to be useful approaches to streamline and focus national agricultural research

priorities. In any case, rural diversification programs should not wait for the completion of household food security studies but should proceed with appropriate agricultural research supported by public and private investment aimed at diversifying and selectively expanding export commodities and the development of nontraditional exports.

19. Ernhagen, T., and H. Tropp. 1992. *Diversification of agricultural food crop production in Zambia: Constraints and possibilities*. Lund, Sweden: University of Lund, Department of Economics.

The promotion of maize production in Zambia, a result of the country's development strategy, has led to increased vulnerability to climatic changes in the food crop production sector. Maize has crowded out traditional crops, such as sorghum and millet, in areas where these crops are much better adapted to the prevailing agroecological conditions, generally characterized by poor soils and low rainfall or too high rainfall resulting in acidic soils. In order to achieve food security, the cropping pattern must take the different agroecological conditions into account. However, there are a number of constraints embedded in the structure of the economy that strongly limit the diversification of such a cropping pattern. The Zambian market has hampered the development of local markets as well as the exploitation of existing and potential markets for sorghum and millet. Maize is emphasized through financing and legal requirements. Another constraint is the lack of an effective system of grading and standards for sorghum and millet. Subsidies and regulated prices have resulted in a relatively secure market for maize; however, they have also hampered the development of a network of local markets that would enhance the diversification of food crop production. The research on sorghum and millet seed is vastly lagging behind that of maize. Improved varieties do exist but the degree of adoption is very low. This is the result of the poor linkage between research and extension services concerning these crops, which results in limited availability of improved seed. Smallholders who want to grow sorghum and millet are mostly excluded from the credit market. Credit that allows the individual farmer to choose what crop to grow is not available due to the smallholder credit system and the land tenure system. The processing of sorghum and millet is still on a very primitive level, which hampers the exploitation of existing and potential markets for these grains. The main reasons for this are the poorly developed small-scale milling industry and the fact that milling technology is mainly designed for maize. (Paraphrased from the summary of results.)

20. Food and Agriculture Organization of the United Nations (FAO). 1986. *Strengthening food security through assistance to the Marketing Unit in the Ministry of Agriculture and Water Development*. Rome: FAO.

At the request of the government of Zambia, a food security policy formulation and project identification mission visited the country between 1982 and 1984 in order to examine the food grain marketing system and all other matters relating to the country's food security. A computerized system was devised to track grain, grain bags, and fertilizer. Balance sheets for maize, the staple crop of the country with a yearly demand of 8 million 90-kg bags, were created in order to show opening stocks, imports, total purchases during the year's harvest, total availability, total requirements, and shortfall/surplus. This information was also linked to FAO's Early Warning System. Recommendations include increasing the number of full-time officers with the Ministry of Cooperatives, a state-run monopoly overseeing food grain movements; the creation of a single central authority charged with framing and implementing all marketing policies to avoid overlap of functions; strengthening the organization and delimiting the scope of local and regional cooperative unions; training worker, supervisors, and qualified accounting staff for local and regional cooperative unions in order to improve the ability of these unions to capture financing and manage the huge quantities of gazetted commodities that they control; and, finally, the immediate improvement of storage facilities.

21. ———. 1989. *Training assistance for the implementation of the Zambian National Preparedness Plan to cope with food emergencies: Zambia project findings and recommendations*. Rome: FAO.

In response to an official request from the Government of Zambia to FAO to provide assistance for the development of a National Preparedness Plan (NPP) for coping with food emergencies, an FAO mission visited Zambia in 1986. Working with a task force of Zambian officials, the mission produced the National Preparedness Plan in the form of a manual (included here) which details the actions required at national, provincial and district levels in order to cope with food emergencies. Training assistance to government staff in the form of a number of training seminars at national, provincial and district levels was provided to familiarize staff with their responsibilities. However, dissemination of NPP manuals has been slow to reach the local level, hampering the effectiveness of the project.

22. ———. 1990. *Crop Forecasting and Early Warning System Project, Zambia: Project findings and recommendations*. Rome: FAO.

The Crop Forecasting and Early Warning System Project was designed to ameliorate food management problems due to environmental fluctuations through the development of a system whereby all concerned were aware, from the time of sowing on, of the crop outlook and the probable food supply situation. The long-term objective of the project was to establish a sound planning base for the implementation of the national food security policy. This was to be achieved through building up the capacity to provide advance information on food crop production and food supply in Zambia so that suitable and timely remedial action could be taken in case of an impending food shortage. Systems were developed to collect and report information regarding rainfall, crops planted, and plant pests and diseases. These systems proved to be very accurate and of valuable assistance in national food security planning. However, it was subject to three primary constraints which require alleviation: inadequate numbers of qualified and trained staff; shortage of vehicles and equipment; and lack of operating funds. These difficulties may be overcome through: consolidating the early warning unit "under one roof;" improving communication and coordination between the Early Warning Coordination Committee and the National Committee on Early Warning; improving the flow of structural project information between all involved; providing training in the information flow system; creating fellowships for personnel to be added to the Department of Agrometeorology staff and providing transportation; providing a more scientific basis for the Early Warning System; and promoting cooperation within the framework of the SADCC Regional Early Warning System for Food Security. (Paraphrased from text.)

23. ———. 1991. *Early warning system for food security, Zimbabwe: Project findings and recommendations*. Rome: FAO.

Although Zimbabwe normally produces an overall surplus of grain, there are a large number of deficit areas in the country and periodic droughts threaten harvests as most production occurs on non-irrigated lands. Thus, there is a need for advance information on the expected production of cereal grains in various parts of the country so that the authorities can make appropriate arrangement for the transportation, distribution, and pricing of these crops. To this end the government of Zimbabwe invited the FAO to help establish an early warning system to monitor crop stage, crop condition and likely production, and food supply situation, including variables such as stock levels, sales, availability, access to food by different population groups, and levels of consumption. A National Early Warning Unit was established within the Department of Agricultural, Technical and Extension Services and a Zimbabwean staff was trained in agrometeorological crop monitoring, forecasting of cereal grains and cash crops, food security analysis, the preparation of monthly/quarterly food security bulletins and fortnightly crop and

livestock reports, a pilot crop production forecast survey, a grain use survey, a crop sample survey (using aerial photography), and training and supervision of the other workers within the unit. Much of this staffing, as well as the availability of relevant data, was inadequate to the needs of the unit, and this lack remains the most pronounced future need for strengthening National Early Warning System.

24. ———. 1991. *Zambia: Comprehensive agricultural development and food security programme*. 2nd ed. Rome: FAO.

By the request of the Government of the Republic of Zambia (GRZ), FAO agreed to work on developing a comprehensive agricultural development and food security program for Zambia. The project was to be executed in three phases: assessment of the food security situation in the country and identification of issues to be addressed; evaluation of alternative comprehensive agricultural development and food security programs and elaboration of a recommended program for consideration by GRZ (current phase); and identification of specific projects for donor consideration and corresponding technical assistance requirements for consideration mainly by FAO and UNDP. Part I of this report discusses the present situation and highlights the major food security issues which need to be resolved. Part II develops a recommended food security strategy for Zambia and elaborates a comprehensive program comprising 20 action packages to implement the strategy. In Part III the elaborated program is priced and evaluated. (Modified from the preface, executive summary, and recommendations.)

25. Frankenberger, T. R. 1993. *Household food security in Zimbabwe: An issues paper*. Rome: International Fund for Agricultural Development, African Division, Project Management Department

This paper delineates the critical factors that affect household food security and the steps that can be taken to improve the situation. General background information, highlighting the geographical and socioeconomic structure of rural poverty, household food security, and malnutrition are presented first. This section is followed by a discussion of food system changes that have occurred in Zimbabwe that have an influence on the food procurement strategies of households living in drought-prone, semi-arid Communal Areas. Recurrent droughts over the past 10 years have had a dramatic affect on these food systems. Next, the food security situation in the proposed target area of the Smallholder Dry Areas Resource Management Project is considered, focusing on household procurement strategies, the food base, and factors that have contributed to worsening conditions. Finally, the paper outlines a number of issues to consider in future design activities to address household food security more effectively. (Abridged from author's introduction.)

26. ———. 1993. *Promoting livelihood security in areas prone to recurrent droughts and desertification: Proactive response planning for enhancing household drought resilience*. Rome: International Fund for Agricultural Development.

Livelihood systems in the drought-prone areas of Sub-Saharan Africa are becoming more structurally vulnerable with each cycle of drought and the failure to recover from it. This increased vulnerability is due to the interplay of a number of factors, including poor land use practices, high population growth rates, recurrent droughts, civil wars, inappropriate and extractive government policies, inappropriate development policies pursued by foreign governments and non-governmental organizations, and declining terms of trade for African exports. A number of communities are experiencing a progressive erosion of their basis of subsistence, resulting in the further degradation of their natural resource base to compensate for these shortfalls. Buffers against periodic stress are beginning to disappear, which accounts for the fact that each successive drought develops into a

crisis. This process of impoverishment has drastically affected the allocation of government resources, diverting development capital into emergency relief. The costs of such food transfers are becoming more and more difficult for governments to absorb.

Steps can be taken to enhance livelihood security in the face of recurrent droughts. First, interventions can be aimed at increasing the resilience of the household economy and macro-level development to strengthen and diversify household entitlements (entitlement promotion). Second, the impact of drought can be reduced through timely detection and contingency planning (entitlement protection). These interventions should be targeted to those areas where livelihood systems are structurally vulnerable. Vulnerability maps can be used in the first stages of targeting to improve the cost effectiveness of resource allocation. Once an area has been designated, decentralized community based vulnerability monitoring systems using location-specific indicators and contingency plans can be developed to ensure timely and appropriate mitigation responses.

27. Gay, J., D. Hall, and G. Dedorath. 1990. *Poverty in Lesotho: A mapping exercise*. Unpublished.

Absolute poverty means insufficient food and shelter to stay alive. Relative poverty means a lack of food and shelter in relation to others in the same or a neighboring community, even though there is enough for survival. There is almost no absolute poverty in Lesotho, but there is a great deal of relative poverty caused by a gross maldistribution of resources, both in Lesotho and in the entire Southern African region. Lesotho is a victim of South African apartheid policies. Maps of sixty sub-areas within Lesotho, using central Maseru as reference point, are presented to include criteria of poverty determined to be significant to Basotho peoples. Data were collected and mapped concerning dissatisfaction with food supply, poor water, poor roads and transport, lack of money, lack of jobs, sickness and poor medical facilities, lack of latrines, lack of household or personal furnishings, poor school facilities, and lack of livestock and fields. Poverty is directly related to distance from the seats of political power, to geographical isolation, and to rural location. A detailed description of poverty in each sub-area is included. Poverty in Lesotho is caused by its disadvantageous position in relation to South Africa and by national policies since independence that have concentrated energies on lowland and urban areas and have included pricing strategies that have been disadvantageous to farmers. Still, poverty is not as bad as that found in South Africa, particularly in South Africa's rural dumping grounds and squatter camps. Few people in Lesotho have the means to escape poverty at the present time, and can only be helped by a redistribution of resources or state subsidies. However, many people are too poor even to take advantage of state subsidies, particularly in the area of health and education. Recommendations, then, include a reversal of government and foreign aid trends in order to concentrate on the remote mountain areas. Roads, water supplies, decentralized industry, medical facilities, and schools all need to be targeted to these isolated rural regions. Another possibility is to continue a more precisely targeted food aid program. This should be used in remote schools, and should be incorporated into food-for-work programs to build roads and subsidize development of alternative sources of income including extension of high-value crops on fenced village household sites. (Modified from executive summary.)

28. Gittinger, J. P. 1990. *Household food security and the role of women*. World Bank Discussion Papers, no. 96. Washington, D.C.: World Bank.

This pamphlet reports on the Symposium on Household Food Security and the Role of Women in Kadoma, Zimbabwe, January 1990, at which participants from seven countries in East and Southern Africa discussed practical experiences, policies, and programs regarding women and household food security; participants focused on the constraints that women face and practical measures to reduce them, including nutrition programs, women's access to credit, extension advice, and technology.

Although women produce three-quarters of all food grown in Africa and play pivotal roles in cash cropping, livestock production, and various nonagricultural activities, their participation is not reflected in government and development agency policies and programs, which may actually increase the social and economic gap between women and men. Among the poor majority in Africa, women own the least property and goods, have the worst nutrition, and are the most overworked; furthermore, households are increasingly headed by women, who are trapped by the lack of direct access to resources, technology, and markets. Women's economic activities must be brought on a par with other (men's) economic activities; efforts should focus on removing the obstacles faced by women rather than on setting up special programs for women.

Women face different constraints on their economic activities than do men; the burden of reproduction, asymmetric rights and obligations within the household, different role models, and women's limited access to resources and information largely account for the different allocation of labor between women and men. Women are underrepresented in the public sector, private formal employment, and formal export agriculture, and they are confined to activities that produce lower returns and which cannot be easily shifted in response to changes in incentives. Since efforts to increase household food security and reduce inequitable burdens on women take place in the context of macroeconomic policies, there are policy measures that governments can adopt to improve the situation. Studies have shown that increased household income (e.g., through cash cropping) does not produce commensurate expenditure on food or increased nutritional status in male-headed households; thus policies do not have a positive effect on women and household nutrition unless women are specifically incorporated into the planning and implementation of schemes to generate income. Also, traditional strategies such as stabilization of crop prices and price controls have often had an adverse effect on the poor, particularly women. Such policy problems may be corrected through an improved framework for analysis in which households are not treated as undifferentiated groups, but rather the different roles of individuals and their daily activities are considered. Governments must reassess their programs with attention to increasing women's access to the resources and information they need to increase their incomes and the food security of their households, including credit and finance, orienting agricultural extension toward women's needs, improving women's access to appropriate technology, and creating nutrition programs for low-income households. In seeking to improve household food security in Africa, all groups benefit from the consideration of the benefits that women receive, increasing their economic opportunities, and improving their decision-making authority. (Paraphrased from text.)

29. Govere, J., and G. D. Mudimu. 1991. Prospects for increasing household food security and income through increased crop productivity and diversification in low rainfall areas of Zimbabwe. In *Market reforms, research policies, and SADC food security*, eds. M. Rukuni, and J. B. Wyckoff. 160-182. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Communal area farmers in Zimbabwe have increased production and marketed output of food and cash crops in the 1980s, contributing 68 percent of the maize marketed, 62 percent of cotton deliveries, and 96-98 percent of sunflower deliveries; nevertheless, these farmers are still vulnerable to food insecurity, crop output per farm household remains very low and highly variable, and the incidences of malnutrition and health problems are high. The purpose of this paper is to explore the potential for increasing crop productivity and diversification through adoption of improved technology, based on data from surveys in Mutoko/Mudzi and Buhera communal areas from 1987-89. The objective is to analyze the agronomic and socioeconomic practices of farmers that achieved higher output levels in order to assess the potential for others to achieve such performance and increase household output and income. The profitability of current technologies and alternative crops are also assessed. Resource problems include the inadequacy of family labor for seasonal demands,

the shortage of fertile land, and the unavailability of draft power for ploughing and transportation. Productivity was found to depend on: rainfall; management factors such as top and basal dressing; the frequency of ploughing, seeding, and weeding; socioeconomic factors such as knowledge of recommended maize production techniques; access to and appropriate use of modern inputs; crop income; land and livestock holdings; and earnings from livestock sales. This paper provides evidence that farmers in marginal areas have low incomes, do not qualify for credit, have inadequate information on recommendations, and find most technologies unprofitable due to high input prices and uncertain weather conditions. Because most farmers were resource-poor, they sought to maximize returns on their inputs, not necessarily to maximize output. Adopting all recommendations for a particular crop may maximize their output, but adopting the whole package did not necessarily maximize their total profits. The inadequacy of such packages of recommended practices provided by technology-generating institutions demonstrates their bias toward favorable areas at the expense of marginal areas; to date, they are inappropriate for very dry areas which are based more on livestock than crops. New technologies must be directed toward the existing potential of these areas to generate techniques that extension workers can successfully extend to farmers. (Paraphrased from text.)

30. Hedden-Dunkhorst, B. 1991. *Sorghum and millet in the smallholder economy of Zimbabwe: Preliminary findings*. Southern Africa Grains Economy Working Paper, no. 2. Unpublished.

In Zimbabwe, 75 percent of communal areas and 60 percent of small farmers live in semi-arid regions, classified as Natural Regions IV and V, which receive less than 650 mm (25.6") annual rainfall and have severe dry spells during the rainy season and frequent seasonal droughts. Although the drier regions are recommended for livestock production, crop production plays an important role in semi-arid communal areas. Households commonly produce maize, which increasingly substitutes for more drought-tolerant small grains such as sorghum and millet. In 1988, a study of the evolving contribution of small grains to food security in the semi-arid, smallholder farming systems in Zimbabwe was initiated in order to investigate farm/household decision-making strategies farmers employ to achieve food security and enhance understanding of the changing role of small grains. The study ultimately is aimed at identifying the relative impact of alternative policies affecting coarse grain production on the food security and welfare of small farmers in semi-arid regions of the country. The preliminary findings of the study relate to the major parameters of the semi-arid smallholder farming system, including resource endowment, household characteristics, production patterns, and income expenditures; the interaction between crop and livestock production; and the importance of off-farm activities. The findings highlight the fact that these areas tend to be food deficient and depend heavily on grain inflows. The production of sorghum and millet still plays an important role; they are planted to meet consumption preferences for food and beer and as security crops for the driest years when maize fails. They are secondarily grown as feed grains. Maize is widely produced because the hybrid varieties offer higher yields than unimproved sorghum and millet. Many consumers like the taste of maize and it is generally easier to process due to the availability of grinding mills. Furthermore, maize is the only cereal grain widely available in shops (as meal) and the only grain commonly provided for drought relief. Small grains production should increase if technologies are readily available offering higher yields. For sorghum, better storage and taste qualities are also important. The production and consumption levels of both sets of grains may also increase if processing facilities are available which provide a product of equal or higher quality than maize meal. Small grains, particularly pearl millet, are well accepted as staple foods. Technology gains improving the returns to labor, however, are badly needed. (Paraphrased from introduction and summary.)

31. Hiemstra, Y. G. 1993. *The National Early Warning System for food security (NEWS)*. Lusaka, Zambia: Zambia, Ministry of Agriculture, Food, and Fisheries, Planning Division.

During the past decade, many countries in Africa have recognized the need for projecting crop production, demand, and losses with a view to quantifying possible shortfalls which are to be met by imports, either commercial or in the form of food aid. Early warning systems provide lead time which greatly facilitates planning regarding procuring, transporting, and storing grain in the country; arranging foreign exchange or mobilizing donor support for imports; and exporting in case of surpluses. This paper outlines the establishment and purpose of the National Early Warning System (NEWS) in Zambia. Assessment of food security is made by use of information derived from meteorological data, crop forecasting surveys, monthly reports by agricultural extension officers, monthly district reports on the availability of farm inputs and on maize marketing by province and mealie prices, monthly assessments of demand and supply of cereals, and monthly reports on the impact of the drought on targeted communities and households. The seven major components of the NEWS are agrometeorology, crop forecasting data, crop conditions, agricultural inputs and services, marketing and pricing, demand and supply of food at a national level, and household food security and nutrition monitoring. Finally, issues regarding the international network of NEWS, training, and sustainability are summarized. Efforts to establish an effective NEWS in Zambia are continuing and indications are that its impact is slowly being felt. However, much work remains, such as in the field of rationalizing crop data collection, strengthening the network of collaborating institutions, addressing household food security and nutrition issues, enlarging the Early Warning Unit itself, increasing the frequency and quality of analysis of the information, and achieving a closer link with government decision makers. (Paraphrased from text.)

32. Holmboe-Ottesen, G. 1991. *Food security and economic strategies in relation to consumption: The cases of Tanzania and Botswana*. Paper presented at SUM's (Centre of Development and Environment, University of Oslo) International Workshop on "Health and Environment", Løvlia, December 9-11, 1991.

In the 1980s, food security became an increasingly important issue in food policies and studies on agricultural development, particularly due to a growing recognition that increased production does not necessarily lead to improved food availability or to better nutrition for the rural poor. Since the World Food Conference, international agencies and research communities have stressed the importance of including nutritional considerations in agricultural development policies and programs and have undertaken a number of studies regarding the factors and processes that govern people's access to food. The linkages between production and nutrition have led to a focus on the household considered as a unit of production and consumption and on intra-household factors and relationships with particular attention to gender issues. This work is intended as a review of two types of literature: that regarding the nutritional impact of cash cropping or market integration, produced primarily by agricultural economists and focusing on the household as an integrated unit; and the literature on household food strategies and food-related behavior in relation to seasonal stress, which considers the household as an integrated unit, as well as intra-household factors. The author also draws on findings from an earlier study in Sri Lanka and on-going research in Botswana. The purpose is to provide a basis for understanding how different environmental, socioeconomic, and cultural contexts may influence the linkages between agricultural production and nutrition in order to provide direction for further planning and fieldwork. The focus is on the specific contexts in which a population is making its living and on the household as a unit, emphasizing household behavior rather than intra-household factors and processes, which have been studied in the author's previous research.

According to this review, increased agricultural production, even for food crops, does not necessarily lead to more food available for consumption in the household or improved nutritional

status, particularly for children. There are three possible outcomes of the increased production of food: it improves access to food benefiting all household members; the increase is taken up by debt, expenses, or production for sale, so that there is no increase in access to food; household access to food improves through increased production, but this does not lead to consumption of more or nutritionally better food. Furthermore, it is important to remember that increased access to food does not necessarily benefit all members of a household. Each of these possibilities was observed in Tanzania, Botswana, and Sri Lanka. Also, increased production through increased participation of women may leave them less time for food preparation, which may damage the nutritional status of the household. (Paraphrased from the author's introduction and conclusion.)

33. House, L. R., and D. D. Rohrbach. 1991. The experiences of SADCC/ICRISAT in setting priorities for sorghum and millet research for household food security. In *Market reforms, research policies, and SADCC food security*, eds. M. Rukuni, and J. B. Wyckoff. 256-267. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

The persistence of food insecurity in the SADCC region, despite regional and some national food surpluses, results from an historical failure to develop improved technologies for smallholder production systems based in semi-arid areas. The SADCC/ICRISTAT Sorghum and Millet Improvement Programme (SMIP) was established in 1983 to help fill this gap and the lack of research on crops other than maize. Although sorghum and millet are more drought-resistant, improved maize production technologies offer higher returns, so advice to grow unimproved sorghum and millet has threatened the credibility of extension workers. The SMIP helps construct the technological base upon which to rebuild the regional sorghum and millet economy, focusing on collaborative research, education, training, and support for the development and management of experimental facilities. This paper reviews the development of the SMIP and the establishment and evolution of priorities relating to crop productivity and use that ultimately contribute to household food security. Within this context, the paper examines the role of the regional research institute and its response to the varying needs of 10 SADCC countries. In order to establish a sustainable foundation of economic growth and household food security, each SADCC country must develop institutions for the development and use of agricultural technology; improved technologies for sorghum and millet are essential to long-term solutions. The SMIP is guided by the belief that food security is not simply the improvement of access to food in a dry year, or the generation of technologies or knowledge relevant to food insecure households, but rather requires the development of a sustainable system of agriculture and agricultural institutions for semi-arid farming regions. (Paraphrased from the author's introduction and conclusion.)

34. Hutchinson, C. F. 1991. "Uses of satellite data for famine early warning in sub-Saharan Africa." *International Journal of Remote Sensing* 12(6):1405-1421.

Since 1984, national and international agencies have sought to improve their ability to forecast famine in sub-Saharan Africa. A number of early warning systems have been implemented for this purpose that monitor physical and social variables that may indicate the likelihood and magnitude of famine. Several famine early warning systems use satellite remote sensing data to supplement ground-based observation. These systems have demonstrated the advantages in timeliness and consistency of remote sensing data. Although user needs have not been clearly defined, experience gained in the operation of early warning systems and the results of related research suggest that: (a) at the continental scale, AVHRR GAC data offer many advantages over traditional, ground data sources; (b) quantitative crop yield estimates might be improved through considering both

photosynthetic activity of the vegetation and length of growing season; (c) qualitative comparisons of crop years have provided useful input to current early warning needs; and (d) stratification of the region into coherent geographical areas would improve all estimates. (Author's abstract.)

35. Hutchinson, C. F., P. T. Gilruth, R. A. Hay, S. E. Marsh, and C. T. Lee. 1992. *Geographic information systems applications in crop assessment and famine early warning*. Tucson, Arizona: University of Arizona, College of Agriculture, Arizona Remote Sensing Center and Advanced Resources Technology Program.

This report addresses a number of ways in which GIS can be used in crop condition assessment and famine early warning. In doing so, the report considers the structure and capabilities of GIS, the types of problems encountered in different aspects of crop forecasting and early warning, application of GIS to crop condition assessment and early warning (using Kenya as a case study), and some opportunities and constraints revealed by the case study. The intended reader of the study is an analyst or decision maker concerned not with generating agricultural data but with interpreting it.

36. International Fund for Agricultural Development (IFAD). 1991. *Smallholder Services Rehabilitation Project - Zambia: Mid-term evaluation - 1991: Food and nutrition*. Working Paper, no. 10. Rome: IFAD.

A nutritional review was included in the Mid-Term Evaluation of the Smallholder Services Rehabilitation Project (SSRP) for two purposes. First, the progress toward improving the food security situation and living standards of its target population needed assessment. Second, IFAD is currently developing a framework and modalities to strengthen the "nutritional thrust" in investment projects supported by the Fund. This review is the second stage of the efforts to form a consolidated plan for this purpose in Zambia (the first being the appraisal of the North Western Province ADP Nutrition Programme). The presentation in this working paper outlines the aspects of the nutrition thrust specific to the SSRP. The review is based on the information obtained during the Mission's tour in Lusaka and Luapula and Eastern Provinces, from meetings with the project and field staff, interviews with farmers in the project areas, talks with representatives of different organizations involved in activities with similar concerns, and documents from the project and other sources.

37. ———. 1992. *Zambia general identification report: Food Security*. Working Paper, no. 1. Rome: IFAD.

Poverty in Zambia is particularly severe in rural areas. Small-scale farmers and smallholders who represent the poorest households among Zambia's agricultural sector are concentrated in infertile and low rainfall areas of the country with little infrastructure or access to markets. These agriculturally marginal rural areas, along with peri-urban localities and shanty areas, suffer the highest levels of food insecurity, malnutrition, and outright hunger. This situation has been dramatically worsened by past governmental policies that subsidized hybrid maize production over drought-tolerant traditional crops like sorghum and millet. The drought of 1991-1992 would have worsened this effect had governmental and international donors not responded promptly through the Drought Relief Task Force to handle food aid mobilization, logistics, internal distribution, hunger relief, animal health and disease control, water development, and credit management. A targeted area of this assistance was the Southern Province, a region in which three major smallholder farming systems (plateau oxen systems, valley oxen systems, and hand hoe systems) exist. The bulk of food supply in all of these farming systems comes from household production, and hand hoe systems face the most serious food insecurity. Despite the diverse supply of food secured by households through their various procurement strategies, chronic and transitory food insecurity are a common feature in Southern Province, and this food security situation is likely to deteriorate in the

near term. In order to promote the resilience of rural households in the Southern Province it is proposed that IFAD focus on programs aimed at promotion of crop diversification, protection of livestock assets, improvement of water supplies and rural roads, and support of off-farm enterprises. These programs should be supported through the establishment and operation of an Adaptive Research Planning Team. These programs should include seed multiplication, control of Corridor Disease in livestock through the funding of tick dipping stations, extension of rural credit, improvement of water resources through the digging of boreholes, improvement of rural roads through food-for-work projects, funding of micro-projects aimed at supporting off-farm employment, improvement of on-farm storage facilities, safety nets for those most affected by structural adjustment policies, and the strengthening of early warning systems and decentralized assessment and monitoring systems in order to detect changes in food security at an early stage and respond appropriately.

38. International Fund for Agricultural Development (IFAD). Africa Division. Project Management Department. 1992. *Zimbabwe Emergency Drought Recovery and Mitigation Project: Pre-appraisal mission main report and annexes*. Rome: IFAD.

This report sets out the main features of the agriculture sector and recent economic trends in Zimbabwe; the country is coping with both structural adjustment and adverse external conditions related to the worldwide recession. The physical characteristics and effects of the drought are described with respect to the rural areas and, in particular, smallholder production. The anticipated economic impact of the drought is summarized. The main emphases are on government's plans to respond to the drought and the domestic and donor resources mobilized for the purpose. It appears that the immediate food requirements have been secured despite potential logistical problems for a landlocked country, and the priorities are now recovery measures (water supplies, crop inputs and livestock replacement) and drought mitigation measures to reduce the negative impact of future rain failures. The report examines possible IFAD contributions to these relief, recovery and mitigation efforts in the context of the various funded and proposed interventions by the agency since Independence. The principal vehicle proposed for IFAD assistance for Zimbabwe is a Smallholder Drought-Preparedness Programme, and more specifically, the Smallholder Dry Areas Resource Management Project, in the context of the emerging Southern African Drought Mitigation Programme. (Modified from introduction.)

39. International Fund for Agricultural Development (IFAD), and World Food Programme (WFP). 1993. *IFAD/WFP identification mission on improving food security: Aide memoire*. Rome: IFAD; WFP.

The International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP) visited Zambia to identify programs/projects for future support which would focus on food security enhancement in vulnerable areas. The initial orientation was provided by the paper "Zambia: Issues and Options for Improving Household Food Security" (December 1992). IFAD is involved in two ongoing projects in Zambia. The Northwestern Province Areas Development Project, Phase II includes support for self-help activities, research, extension, inputs, credit, small-scale enterprises, and feeder roads. The Smallholder Services Rehabilitation Project has both national (input supply and credit) and area-based (Eastern and Luapula Provinces) activities. It also includes a development fund which has been used in a flexible way to address immediate priorities related to the drought. WFP has taken the lead in mobilizing and coordinating the food aid for drought relief and in supporting the Programme to Prevent Malnutrition. Through its regular program, WFP supports government health and nutrition activities (supplementary feeding) and low-income peri-urban vulnerable groups (self-help activities). There is some complementarity between

the two agencies which might be further exploited to promote food security on a broader basis. This paper discusses policy and the institutional framework, household food security, responses to the 1992-93 drought, the proposed strategy for promoting household food security, enhancing resilience of households (crop diversification, livestock, credit, and water resources), stabilizing household food access (improved storage and safety net), strengthening food security and nutrition monitoring (early warning), micro-projects, and next steps (seed multiplication, storage, livestock, and water). (Paraphrased from introduction and section headings.)

40. Jackson, J. C., and P. Collier. 1991. Incomes, poverty, and food security in the communal lands of Zimbabwe. In *Rural development and planning in Zimbabwe*, eds. N. D. Mutizwa-Mangiza, and A. H. J. Helmsing. 21-69. Aldershot, U.K.: Avebury.

This paper explores the determinants of rural income and food security, with attention to historically structured contexts and changing political and environmental conditions, in order to understand the causes of poverty and hunger in Zimbabwe's Communal Lands. Perceptions of this issue have been deficient in tending to view transitory droughts of the 1980s as the dominant cause of hunger and misinterpreting claims of increased peasant control over nationally marketed food. Such data have to be reconciled with evidence of chronic misdistribution; twenty percent of children under five years have second and third degree malnutrition. In conceptualizing a differentiated peasantry, it is important to consider two points: first, the capacity to accumulate and the existence of rural social differentiation are primarily functions of non-farm (urban) cash and/or remittances of household economic activities and that the rural poor are defined by a lack of direct access to wage income and a narrow agricultural base to their rural income; second, the idealization of the relative integrity of the rural household must be debunked. In this study, 16 clusters of economic activities that characterize the dominant economic stances of Zimbabwean rural households have been isolated, drawing on Sen's (1981) concept of "entitlement relations." In addition, different patterns of entitlement relations are identified to provide a policy analysis for a more fundamental restructuring of people's life chances. In the face of increased exports of food "surpluses" to the SADCC region and a significant domestic hunger, policies for intervention must be based on a better understanding of the factors which may intervene between food production and consumption as well as on an assessment of whether these factors vary in any systematic way for particular groups and classes. This survey focuses on the Communal Lands and provides data on factors affecting the quantitative availability of food, employment, income, and purchasing power, and on how storage and distribution issues affect household situations, in order to help identify specific policy measures which will affect food entitlements through both production and distribution measures. Disaggregating the image of the Communal Lands into regions and at the household level into different income strata and clusters of economic activities shows that Zimbabwe's rural food problem is centrally related to the existence of a substantially differentiated peasantry. Through this analysis, the conflicting governmental policies to control excess national cereal production while supporting food aid programs make sense. Approximately 40 percent of Communal Land producers do not market any cereals even in an above average season; conversely, the top 10 percent of the peasantry control 40-60 percent of the marketed foods. Even during droughts, this core of surplus producers market significant, but depressed, volumes of food surpluses, creating the illusion of a self-sufficient district. This pattern is broadly replicated across the agroecological regions. (Paraphrased from the authors' introduction and conclusion.)

41. Jensen, H. H., and B. Lockett. 1992. *A profile of poverty in Zambia: Based on the 1991 Household Expenditure and Incomes Survey*. Ames, Iowa: Iowa State University, Center for Agricultural and Rural Development.

This paper identifies the extent of poverty in Zambia, reports a profile of low-income households,

and might be used in targeting assistance to the poor. Data come from the *Zambian Household Expenditure and Incomes Survey* in June, 1991. The distribution of total expenditures, with total expenditures used as a measure of income, is relatively skewed in Zambia; half the households have one-quarter of total expenditures. A poverty line of mean per capita total household expenditure shows almost 70 percent of households to be in poverty, and more than 30 percent of households fall below one-half the mean per capita expenditure line. Data show the rural population to be mostly poor, with a greater level of poverty and greater proportion of poor than in urban areas. Within the rural population, larger households and female-headed households have relatively higher levels of poverty. Poverty is also high among those with education above the elementary level, suggesting that returns to education are small for those who remain in rural areas.

Targeted assistance programs designed to improve living conditions for the poor in Zambia can achieve greatest impact in rural areas, where most of the poor are located. However, because the rural poor generate a relatively large share of their total expenditure through home-produced food, the ability to directly and immediately affect well-being through income or food assistance is limited. For rural areas, strategies aimed at increasing education above the primary level, enhancing off-farm employment opportunities, and improving agricultural development may have significant impact over the long run. While food budget shares are relatively similar among income deciles in rural and urban deciles, the smaller reliance on home-produced food in urban areas, in contrast to rural areas, suggests that food assistance programs are likely to be more effective in improving the well-being of the urban poor. The survey data demonstrate that the urban poor live primarily in the Eastern, Western, and Copperbelt provinces, in large households, and in households having older and widowed heads. These groups would benefit from targeted assistance. (Modified from executive summary.)

42. Kaluwa, B. M., et al. 1989. Improving household food security: Interactions between technology, marketing, and trade: The Malawi case. In *Food security policies in the SADCC region*, eds. M. Rukuni, G. Mudimu, and T. S. Jayne. 157-168. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

While it has been demonstrated that pricing policies change cropping patterns in Malawi, it is here argued that technology generation, in conjunction with these policies, can also improve household food security and increase aggregate agricultural production. The paper begins with a review of agricultural research on national pricing policy. Agricultural research in Malawi has shifted away from interest in developing widely preferred traditional varieties of maize toward research on little-accepted, but genetically malleable, green revolution varieties. At the same time, state-run grain marketing boards which aimed at promoting national food self-sufficiency in the 1960s and 1970s have eliminated many of their subsidies and markets for fertilizers and basic agricultural commodities in the 1980s because of rapidly imposed structural adjustments. The paper proceeds to argue that two issues, the development of high-yielding maize varieties that are acceptable to consumers and the improvement of soil fertility, are the most important technological tasks facing Malawi today. Additionally, however, improvement of rural storage facilities to encourage private traders to market food grains in food-deficit areas are needed in order to avoid cycles of external sales followed by seasonal distress-selling on the part of resource-poor peasants. Finally, it is argued that there is a need for improved pest control technologies, particularly since they are used to screen food inputs from neighboring countries that may be infested by devastating pests such as the large grain borer or cassava mealybug.

43. Kandoole, B. 1991. Household food security and market liberalization in Blantyre Agricultural Development Districts. In *Market reforms, research policies, and SADCC food security*, eds. M. Rukuni, and J. B. Wyckoff. 90-103. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

This study reports food security data from a sample of 300 households in each Rural Development Program (RDP). It does this by comparing food-deficit and food-surplus RDPs within a single, generally food-deficit, Agricultural Development Division located adjacent to the city of Lilongwe. Household characteristics are similar in each of the RDPs, but land shortages in the deficit area generate unemployment, short fallows, reliance on inorganic fertilizers, single cropping, and a heavy reliance on salaries and saving as sources of capital rather than crop sales. Both areas rely on hoe cultivation using local labor power, but in the food-deficit area many households sell their crops at harvest time. They also seek to provision household consumption needs through on-farm production, but in food-deficit areas short-falls are made up through loans, food purchases, and work for food. While few of the households in any area report a need to sell grain to the state-run marketing board, peasants in food-deficit areas are dependent on these subsidized markets to purchase grain because private traders rarely sell grain in the rural areas. For this reason it is argued that the marketing board should continue to operate in these rural areas alongside private traders.

44. Kiregyera, B., and C. Siisii. 1990. Food security information system for Zambia. In *Report on Planning Division/ARPT Seminar on Adaptive Research Data, Planning, and Policy, 14-16 November 1990, Kariba Inn, Siavonga [Zambia]*. 83-100. Lusaka, Zambia: Zambia, Ministry of Agriculture, Planning Division.

The essence of a national food security system is interlinking the determinants of food production, distribution, and consumption by examining the chain of events that begins with the determinants of food production and eventually leads to the access people have to food of good quality and sufficient quantity. In Zambia, information about this chain of events is provided by the Food Security Information System (FSIS). Food production information is gathered through a general agricultural census and agricultural sample surveys that include crop forecast surveys, post-harvest surveys, commercial farms surveys, current agricultural surveys, agricultural surveys at the Ministry of Agriculture, and ad hoc surveys. Food distribution is determined through surveys of parastatal marketing boards, regional cooperatives, and private companies. Food consumption statistics are derived from a nationwide food consumption survey and a household budget survey. This information is also linked to the national Early Warning System. Limitations on the effectiveness of FSIS include lack of data availability, lack of consistency between sources over time, lack of timeliness of data, low data accuracy, and an inability to disaggregate data. This situation can be improved by coordinating a unified framework for collecting agricultural statistics (perhaps through a national statistical work program), strengthening data gathering institutions, linking these institutions to relevant ministries, establishing a data bank, increasing the level of training and supervision for enumerators, establishing joint surveys between FSIS and other relevant ministries, refining questionnaire and sample design, collecting data in such a way that it can be disaggregated at a variety of levels, continuously evaluating and refining data quality, and beginning entry-level training programs in statistics in order to adequately staff these initiatives.

45. Kumar, S. K. 1990. Seasonal aspects of food insecurity in Zambia, Niger, and Ethiopia. In *Structural change in African agriculture*. International Food Policy Research Institute (IFPRI). 39-40. IFPRI Policy Briefs, no. 5. Washington, D.C.: IFPRI.

In Zambia, Niger, and Ethiopia, weight loss is closely linked to seasonal food shortages. In these

countries, small-scale farmers depend on rainfed agriculture and household labor for the bulk of their yearly food supply. During the planting season both adults and children face high work loads and inadequate food reserves, leading to 3-4 percent fluctuations in body weight. Generally, the smaller the farm size controlled by these peasant households, the greater is the fluctuation in body weight of their members. This relatively large fluctuation of body weight may also indicate the reduced ability of these poor farm households to buffer seasonal food insecurity. Additionally, while older children and adults tend to gain weight during the early postharvest period, younger children, particularly those in poor households, do not fully catch up on their weight curve and so suffer a higher probability of acute malnutrition and death. For these reasons, it is argued that programs that generate rural employment, far from drawing laborers away from agricultural production, can instead provide food that can then reduce nutritional stress during the hungry season of heavy work during planting.

46. Lesotho. Rural Services Support Project. 1993. *Household food security and the target group*. Working Paper, no. 3. Lesotho.

In Lesotho there has been a steady reduction in cultivation and crop yields, an increase in rural landlessness and pauperization, and a widening gap between domestic food production and demand, which suggest that food security will become a problem in the near future. This working paper provides the general background situation; an analysis of factors contributing to poverty; a summary of nutrition and household food security situations focusing on the food system, household food procurement strategies, food handling, and households at greatest risk of food insecurity; and an outline of some project activities that can be undertaken to improve the income and food security options of the target group in Lesotho. Although there is little absolute poverty, there is extensive relative poverty due to inequality in the distribution of resources. Two maps illustrate how poverty tends to correlate with higher altitudes and where there is less infrastructure. Poverty is also closely tied to the Lesotho government's focus on subsidizing farms and businesses in the Republic of South Africa (RSA) and their dependence on the RSA for food and employment through the outmigration of men. The fragility of Lesotho's food security is relatively recent. As the Basotho became less reliant on subsistence farming and herding and more dependent on wage labor, their food security and dietary patterns have become more tied to market forces. Furthermore, differential access to wage labor and agricultural resources has meant that households depend to varying degrees on their own food production. Currently 25 percent of rural households are landless and many are headed by women. There is also a trend toward leasing land to larger farmers for cash crops, which promotes the rapid increase of landlessness and wealth polarization in rural areas. Erosion and marginalization of existing arable land through continuous cultivation, the destruction of trees, and poorly managed livestock have also reduced access to land for food crop production and cash availability. Poorer households have fewer options and are increasingly dependent upon the market for purchased food. In general, an overall better diet is achieved through the diversification of economic strategies. Those with limited access to land, alternative employment and remittances will be the most vulnerable. Poor, female-headed households are the most food insecure. These are usually de jure female-headed households that do not have access to remittances and are vulnerable to malnutrition due in part to conflicting time demands on the mother. In Lesotho, many of the livelihood systems have become less viable, and more households are turning to food aid. IFAD's primary objective is to wean the poor households from this ever-increasing dependency through community mobilization, income generation and self-employment, and the development of a national policy framework for gender responsiveness. (Paraphrased from text.)

47. Lieshout, I. O. van. 1990. *Holding depots in Zambia: Manual on establishment, operation, and management*. Rome: Food and Agriculture Organization of the United Nations.

This report deals with establishment, operations, and management of holding depots in Zambia. It is meant primarily for marketing staff of Cooperative Unions, holding depot supervisors, and primary cooperative society staff. In Chapter 1, the current marketing problems of collecting large numbers of bags from small, scattered, and often distant seasonal buying depots is described. An alternative solution is introduced, along with five definitions related to holding depot concepts. Then some incentives to attract farmers and local transporters to deliver directly to the holding depots are proposed. Chapter 2 deals with location, site selection, and technical information on building and maintenance. In Chapter 3, procedures related to intake, checking, dispatching, and payment are discussed. Chapter 4 addresses holding depot staff requirements and job descriptions for the supervisor. A list of equipment is provided. Chapter 5 gives an outline of future developments at holding depots: the replacement of wooden platforms with concrete and the use of holding depots as leading to the establishment of centrally located rural markets and subsequently the development of other services. In short, holding depots are a first step toward a structural development of the rural areas, turning them into an attractive place to work and live. (Paraphrased from the summary.)

48. Longhurst, R. 1986. "Household food strategies in response to seasonality and famine." *IDS Bulletin* 17:27-35.

Poor rural families deploy a variety of "household food strategies" to plan for seasonal and unexpected inter-seasonal food shortages. Based on his research in the Hausa village of Dayi in Northern Nigeria, the author describes a number of coping strategies for such food shortages. In terms of seasonal coping strategies, three categories have been used by researchers seeking to understand the types of food security decision-making by rural households. These are agricultural production strategies, social adjustment strategies, and biological or bodily adaptation "strategies" to seasonal food stress. In Dayi, on the other hand, the author points to choices of cropping patterns, drawing on stores and assets, developing and exploiting social relationships, and diversifying off-farm income opportunities as the most common coping strategies against seasonal food shortages. These contrast with famine coping strategies that are conceived by villagers as distinct emergency measures to be taken after the breakdown of "normal" response mechanisms to food shortage. Response to famine begins with a number of diversifications and intensifications of existing activities. These include a variety of salvage operations aimed at increasing domestic mutual support and increasing effective availability of products, minimization of commitments through suspension of resource allocation including grain loans and tax relief, disposal of household inventories, sale or mortgage of assets, migration, use of famine relief, and finally the eventual recovery of reserves. This sequence of famine coping strategies points out the need of governments and donor agencies to carry out programs aimed at building on the seasonal coping strategies of poor farm households as the first step toward increasing their resilience, and so their ability to avoid famine.

49. Malawi. Ministry of Agriculture. 1991. *Household food security situation in the ADDS (Agricultural Development Divisions): Proceedings of a National Meeting, Lilongwe, October, 1990*. Food Security and Nutrition Monitoring Report, no. 2. Lilongwe, Malawi: Ministry of Agriculture.

The purpose of this report is to provide information useful for the installation of an improved system for monitoring food security and nutritional intake at the household level in rural Malawi. Data were collected from each of the eight Agricultural Development Divisions in the nation at three times during 1989: post-harvest, post-planting, and mid-growing season. The main focus of the report is on the supply of food stocks at the household level. In addition, the analysis examines the relationship between household food supplies and holding size, and the relationship of food supply to credit recipients and users of agricultural inputs. Finally, since the overwhelming majority

of households will run out of maize before next harvest, the report reviews the different strategies adopted by households to obtain food. (Modified from introduction.)

50. Maribe, T. O. 1992. Food and nutrition security in East, Central, and Southern Africa: A study of two regional initiatives. In *Frontiers of nutrition and food security in Asia, Africa, and Latin America*, ed. N. G. Kotler. 37-49. Washington, D.C.: Smithsonian Institution Press.

The East, Central, and Southern Africa Food and Nutrition Cooperation and the Southern Africa Development Coordination Conference are regional organizations aimed at coordinating attention to household food security and nutrition issues in Sub-Saharan Africa. Specifically, current nutrition interventions include programs aimed at alleviating micronutrient deficiencies, providing supplementary feeding, linking food and nutrition surveillance to governmental planning, forming response-mechanisms to prevent or manage famine, and creating strong intersectoral connections between nutrition and primary health care programs. The early successes of these regional organizations also point to a number of future directions for work. These include the strengthening of cooperation between regional organizations and national health ministries, extension of interagency cooperation, development of a training master plan, and strengthening the national capability within the cooperative structure of the regional organization.

51. Maxwell, S. 1991. *To cure all hunger: Food policy and food security in Sudan*. London: Intermediate Technology Publishing.

The rural people of Sudan have suffered several of the most devastating famines in recent memory. Ironically, these famines have occurred in a country that once was advertised as the breadbasket of the Middle East. The authors here show that drought and desertification, tied to agricultural policies oriented toward expansion of mechanized rainfed agricultural schemes at the expense of smallholders and pastoralists, have led directly to food insecurity and famine in Northern Sudan. Primarily focusing their attention on the impact of macroeconomic policies on the people and agriculture of the arid northern region of the country, contributors provide balanced discussion of structural adjustments, income distribution, grain marketing interventions, and recent governmental responses to famine.

52. Maxwell, S., and T. R. Frankenberger. 1992. *Household food security: Concepts, policy, and programs. A technical review*. New York: United Nations Children's Fund (UNICEF); Rome: International Fund for Agricultural Development.

"Household food security: A conceptual review" by Simon Maxwell and Marisol Smith, the first chapter of this collection, addresses the shift in thinking from concern with national and global food supplies to more recent interest in "secure access to enough food all the time" at the household level. Core concepts in understanding local food security are sufficiency of food, access to food, and security of these over time. Allied concepts point out variations in patterns of food consumption within households, the need for health care as well as food security to attain adequate nutrition, the contextualization of food security within wider livelihood security issues, and so the sensitivity, resilience, and sustainability of these livelihood systems. The authors also point out that local perceptions of risk predominate in food security strategies and that cultural values are important in determining the quality of food entitlements. Lastly, these local perceptions are seen as legitimate objectives that should be respected by states as they fulfill and promote the basic human right to food.

"Indicators and data collection methods for assessing household food security" by Timothy Frankenberger, the second chapter in this collection, discusses process indicators that reflect both

food supply and food access, and direct or indirect outcome indicators that serve as proxies for food consumption. Indicators that reflect food supply include measures of agricultural production, access to natural resources, institutional development and market infrastructure, and exposure to regional conflict and its consequences. Indicators that reflect food access are the location specific strategies that households use to meet their food security means. Direct indicators of food consumption include household consumption surveys. Indirect indicators include storage estimates and nutritional status assessments. In the creation of contingency plans based on vulnerability maps, it is argued that both process and outcome indicators should be used in order to detect changes in entitlements and food availability.

"Household food security: Concepts and definitions—an annotated bibliography" by Marisol Smith, Judy Pointing and Simon Maxwell, and "A selected annotated bibliography on indicators with application to household food security" by Barbara Hutchinson and Timothy Frankenberger comprise the final chapters of this collection.

53. Mosha, A. C. 1988. SADCC's Food Security Programme: Food processing and preservation. In *Southern Africa: Food security options. Proceedings of the Third Annual Conference on Food Security Research in Southern Africa, 1-5 November 1987*, eds. M. Rukuni, and R. H. Bersten. 31-36. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

The Post-Production Food Industry Advisory Unit (PFIAU) was set up in 1984 to spearhead the implementation of projects under the SADCC Food Security Programme on food storage, processing, and preservation. To date, the unit has been involved in focusing national attention on post-production and on strengthening existing formal training, national post-production activities, and national and regional approaches to food processing and preservation. These actions have been achieved through the dissemination of information through a newsletter and occasional publications, as well as through workshops and meetings within member countries. Several recommendations have emerged from this sharing of information. Specifically, participants at one workshop identified a need for (1) the wider use of small grains, especially in semi-arid areas, through the promotion of mechanical dehulling technologies, (2) investigations of constraints to the commercial adoption of composite flours, (3) testing of the acceptability of weaning foods made from germinated and fermented grains, (4) assistance in training at national institutions in food science, (5) an institutionalized role for the PFIAU in coordinating exchange of information concerning food processing and preservation within member countries, and (6) oversight of consultancies, with preference given to qualified regional personnel.

54. Mudimu, G., C. Chopak, S. Chigume, J. Govere, and R. Bernsten. 1988. Household food insecurity in low-rainfall areas of Zimbabwe: Initial findings in Mudzi, Mutoko, and Buhera communal areas. In *Southern Africa: Food security policy options. Proceedings of the Third Annual Conference on Food Security Research in Southern Africa, 1-5 November, 1987*, eds. M. Rukuni, and R. H. Bernsten. 217-233. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

The drought periods of the 1980s have highlighted the problem of food insecurity for households in the low-rainfall areas of Zimbabwe, classified as Natural Regions III, IV, and V, which encompass 91 percent of communal lands and provide an economic base for approximately 55 percent of Zimbabwe's population. As a long-term solution, the government has advocated two strategies to improve the food security and incomes of households in the low-rainfall areas: first, increasing production of high value crops such as oilseed crops and cotton which are adapted to low rainfall

areas in order to improve cash incomes; second, in more drought-prone areas, increasing production of drought-tolerant food grains such as sorghum, pearl millet, and finger millet, in order to reduce dependence on maize productions. This paper describes research in progress designed to analyze the nature of household food insecurity in low-rainfall areas and the potential role of small grains and oilseeds in reducing household food insecurity. The proposed studies are intended to provide information that will help policy makers, district and local administration organs, extension and research services, and households to reduce the threat of food insecurity. (Paraphrased from the author's introduction.)

55. Mudimu, G., C. Mbwanda, S. Chigume, and J. Govereh. 1989. Household income, food production, and marketing in low-rainfall areas of Zimbabwe: Status, constraints, and opportunities. In *Food security policies in the SADCC region*, eds. M. Rukuni, G. Mudimu, and T. S. Jayne. 170-190. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Since independence in 1980, the government of Zimbabwe has given priority to improving national and household food security as well as improving the standard of living and income in rural areas. Initiatives have included: strengthening institutions serving farmers, including credit, extension, agricultural marketing (crop collection) and agricultural research; improving the physical infrastructure, particularly the road network; guaranteeing incentive prices for food and cash crops; encouraging crop diversification toward cotton and oilseeds to increase household cash income; and encouraging crop diversification in low-rainfall areas through incentive prices for drought-tolerant crops such as sorghum, finger millet, and bulrush millet. While these incentives have generated an increase in marketed surplus of all major crops, there is growing evidence that the response has not been evenly distributed across communal areas in different agroecological zones or among households within these zones. The results reported in this paper are based on preliminary analysis of data collected through a series of surveys conducted from December 1987-August 1989 in the lower potential areas of Mudzi/Mutoko and Buhera Districts. The results raise doubts about initiatives in three areas: first, the merits of using price policy as a major tool to stimulate rural incomes are questioned because many households that are net buyers of grain are adversely affected; also, since only a small proportion of the households sell most of the grain marketed, the benefits of higher prices will accrue to a small proportion of the households, leading to further rural income inequality. Second, pan-seasonal pricing concentrates grain sales in the months just after harvest, overtaxing the transportation system and concentrating annual cash inflow in communal areas to these few months. The incentive to home storage is decreased, leaving little grain surplus in the area for later in the year, which in turn exacerbates informal market purchase price swings and requires transporting grain back to the communal areas. Third, high-yielding food crop technology is used only for maize; such technology for bulrush millet, sorghum, and oilseeds does not exist, is not available, or is too risky. Viable technology must become available, then the extension service must provide training and credit for cash inputs. (Paraphrased from the authors' introduction and conclusion.)

56. Mughogho, M. J. K. 1989. Malawi: Food security issues and challenges for the 1990s. In *Food security policies in the SADCC region*, eds. M. Rukuni, G. Mudimu, and T. S. Jayne. 31-36. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Malawi's economy depends primarily on agriculture and the rural economy; maize is the most

important food crop and there are two broad groups of producers: smallholders who cultivate on customary land and estates which cultivate leasehold and freehold land. Currently, food security is threatened by poor weather conditions and crop disease, putting production below domestic needs. Chronic food insecurity and malnutrition also result from increasing land pressure, rising agricultural input prices, and limited access to food within food-deficit households. Malawi's food security objective is self-sufficiency in maize, which may readily be achieved on a national level through price incentives and a strategic grain reserve; however, the challenge is to ensure that food-deficit households do not suffer as a result of the commercialization of staple food production. In analyzing food insecurity, rural and urban components must be separated. Due to small farm size, shortages and constraints on labor, and low cash incomes which limit access to technology and other food, overall productivity is inadequate to meet the basic needs of many rural families; many adults suffer from seasonal undernutrition and almost 50 percent of Malawi's rural children are chronically malnourished. Less information is available regarding food insecurity among the urban poor, but conditions are getting worse as the market prices of maize increase; families on a fixed income have experienced a gradual erosion of their purchasing power. The government is addressing national food insecurity by encouraging increased productivity in the smallholder and estate sectors. The government began a strategic grain reserve and founded the National Rural Development Programme in the late 1970s to increase smallholder productivity through the provision of agricultural inputs and farm services and to improve extension, marketing, and credit services. Thus the government hopes to improve on-farm consumption, raise rural incomes, increase the marketable surplus of maize, and ensure access to food for the urban poor. The Food Security and Nutrition Unit and SADCC/FAO/DANIDA maintain research and early warning activities regarding food security. Food- or fertilizer-for-work programs, small credit packages, cheap or subsidized maize substitutes, and intervention or assistance at clinics reflect the government's policies supporting direct assistance to the poor as more effective and less costly than blanket subsidization of all sectors of the population. A critical factor in increasing productivity is providing reliable sources of and prices for fertilizer amid rising international market prices. (Paraphrased from text.)

57. Nyoni, J.M. & Associates. 1993. *Major environmental issues in Zimbabwe: Draft*. Revised ed. Harare, Zimbabwe: J.M. Nyoni & Associates. Background paper prepared for the World Bank Mission on Environmental Issues.

This paper discusses environmental issues in terms of land use, water development, deforestation, water and air pollution, and national and household level food security. A summary of national institutions relevant to environmental planning is also provided. Uneven distribution of lands, a remnant of the colonial system, has led to serious overcrowding in the Communal Areas and serious underuse in the Large Scale Commercial Farming Areas. This has resulted in overgrazing, cultivation of marginal lands, erosion, and land degradation. Following independence, Intensive Conservation Area committees, aimed at extending non-destructive farming practices, expanded into the Communal Areas, and the Resettlement Program and other infrastructural rural development projects were created at least partly to reduce stress on the natural resource base. These programs, however, have been constrained due to lack of available funds and lands. Water development in Zimbabwe has focused on construction of dams for urban water supply and energy generation, but European donors have overseen the drilling of bore holes and shallow wells. Still, these have been aimed at human and livestock use, rather than for agricultural production through microirrigation projects. A number of medium and large dams have been constructed in rural areas (displacing peasants in some cases), but these are silting rapidly. Deforestation is currently occurring at the rate of 1.5 percent per year, with more than a 50 percent decline in vegetative cover in the Communal Areas between 1963 and 1978. Fuelwood is scarce in many areas, and deforestation has caused land degradation through sheet and wind erosion. Quick growing eucalyptus species have been imported as part of afforestation schemes, but these are of limited use as fuelwood. Low-fuel stoves have

important food crop and there are two broad groups of producers: smallholders who cultivate on customary land and estates which cultivate leasehold and freehold land. Currently, food security is threatened by poor weather conditions and crop disease, putting production below domestic needs. Chronic food insecurity and malnutrition also result from increasing land pressure, rising agricultural input prices, and limited access to food within food-deficit households. Malawi's food security objective is self-sufficiency in maize, which may readily be achieved on a national level through price incentives and a strategic grain reserve; however, the challenge is to ensure that food-deficit households do not suffer as a result of the commercialization of staple food production. In analyzing food insecurity, rural and urban components must be separated. Due to small farm size, shortages and constraints on labor, and low cash incomes which limit access to technology and other food, overall productivity is inadequate to meet the basic needs of many rural families; many adults suffer from seasonal undernutrition and almost 50 percent of Malawi's rural children are chronically malnourished. Less information is available regarding food insecurity among the urban poor, but conditions are getting worse as the market prices of maize increase; families on a fixed income have experienced a gradual erosion of their purchasing power. The government is addressing national food insecurity by encouraging increased productivity in the smallholder and estate sectors. The government began a strategic grain reserve and founded the National Rural Development Programme in the late 1970s to increase smallholder productivity through the provision of agricultural inputs and farm services and to improve extension, marketing, and credit services. Thus the government hopes to improve on-farm consumption, raise rural incomes, increase the marketable surplus of maize, and ensure access to food for the urban poor. The Food Security and Nutrition Unit and SADCC/FAO/DANIDA maintain research and early warning activities regarding food security. Food- or fertilizer-for-work programs, small credit packages, cheap or subsidized maize substitutes, and intervention or assistance at clinics reflect the government's policies supporting direct assistance to the poor as more effective and less costly than blanket subsidization of all sectors of the population. A critical factor in increasing productivity is providing reliable sources of and prices for fertilizer amid rising international market prices. (Paraphrased from text.)

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recently been introduced. Water pollution in urban areas is becoming serious; it is caused by the use of agrochemicals, disposal of toxic industrial wastes and poorly planned sewage disposal systems. Air pollution from coal-fired power plants has also become a problem. Food security at the national and household level has not received much attention in official circles apart from some preliminary studies on the topic.

58. Programme Against Malnutrition (PAM). 1993. *Programme to prevent malnutrition: Progress report, May 1992-February 1993*. Lusaka, Zambia: PAM.

The drought of 1992 devastated crops all over Southern Africa. At the Zambian president's request, the donor community contributed almost one million tons of imported grain, approximately 10 percent of which was designated for humanitarian purposes and distributed through NGOs. Area PPM (Programme to Prevent Malnutrition) Committees, comprised of volunteers from the community and including NGOs and local government officials, were established in all 26 areas in the southern portion of the country. With more than three million bags of maize (50 kgs each) so far distributed to more than two million people, the PPM structure has been largely successful at its goal of providing drought relief. It has brought together the public and private sectors of Zambia in a joint effort to feed people who otherwise might have starved. Furthermore, the food was carefully and effectively targeted to those who truly needed it and delivered through a system that resolutely avoided creating any future dependency. After six months of operation, the PPM system has developed an extremely valuable and far-reaching network that will continue to provide drought relief until June of 1993 and thereafter will move into a post-drought recovery period. (Modified from the executive summary.)

59. Raikes, P. 1988. Food aid and food security. In *Modernising hunger: Famine, food surplus, and farm policy in the EEC and Africa*. 170-202. London: Catholic Institute for International Relations in collaboration with James Curry.

This chapter takes a critical look at the long-term impacts of imported food aid in Africa, whether it tends to create food dependency and vulnerability in the face of unpredictable variations in disbursements and whether it should be improved, modified, or replaced. Food aid is mostly surplus stock, given increasingly in the form of grants rather than loans. The author discusses the pros and cons of the three main forms of food aid: program food aid, or direct transfers, whereby food is usually given to a Third World government to sell through normal networks but at a lower price, are the most common; project food aid, which includes food-for-work and supplementary feeding of target populations; and emergency disaster and refugee feeding. Food aid was started by the US in the 1950s in order to establish markets for surplus agricultural produce as well as support Cold War strategies. In the 1960s, the US pressed successfully for multilateral food aid, so that more agricultural produce was removed from the world market and new markets were created, decreasing competition. Thus the World Food Programme and the Food Aid Conventions began. In the 1960s, the Johnson Administration introduced stricter conditionality on the uses of food aid, and Nixon significantly decreased US contributions during the general Third World food crisis of 1973-75. Since then US food aid shipments have picked up but have never approached earlier levels. The comparative contributions of the EEC and Canada over time parallel those of the US, although the recipients have not always coincided. Each country contributes its surplus commodity—primarily dairy produce from the EEC and cereals from the US—which generally ends up among the elite. There are four basic policy aims for which food aid can be used: export promotion, foreign policy, development goals, and nutritional goals; food aid histories of various countries and continents are summarized. It is difficult to make generalizations regarding the impact of food aid, which is highly dependent on each context; however, some basic characteristics stand out: food aid substitutes

directly for domestically produced food, as transfers of money do not; the impact of developing a taste for imported food has rather different effects from developing a taste for hard currency; and food aid allows donors to artificially boost the apparent value of their aid transfers by valuing it at subsidized domestic prices. Direct transfer is the most common and most popular form of food aid among recipient governments who then have control over the distribution of attractive products; thus food aid keeps or helps to keep a number of African governments in power. It is also clear that food aid plays a part in developing tastes for wheat, milk, and other necessarily imported products. Food-for-work programs usually represent an improvement over many alternatives and bypass the elite, although wealthier peasants tend to get more than their share of this well-paid work; 'triangular trade' is even better. Major problems with EEC food aid include the high proportion of dairy products which either go to the elites or cause serious health problems when used as infant formula among the poor; cereal food aid is often delivered too late and is worse than useless in that it can lower domestic harvest prices. A positive aspect of EEC food aid is that it is less liable to arbitrary or politically determined cessation than is the case with US food aid. Although longer-term commitments and contracts are generally seen as important to improving food aid, to the extent that food aid induces dependence on imported food, the more regular and long-term the deliveries, the more effectively they achieve this purpose. This is perhaps the basic contradiction of food aid. There do seem to be cases where food aid does as much good as harm; however, there also seems to be a tendency to attribute specifically to food aid those problems which are likely to arise with any sort of aid. (Paraphrased from text.)

60. Roche, C. 1991. "An NGO perspective on food security and the environment: ACORD in the Sahel and Horn of Africa." *IDS Bulletin* 22(3):31-34.

The Agency for Cooperation and Research in Development (ACORD) is a broad-based international consortium of non-governmental agencies working together for long-term development in Africa, focusing on ecologically and economically marginal zones subject to chronic or acute food insecurity. Experiences in the Gao and Timbuktu regions of Mali, the Qala-en Nahal Refugee Settlement in Sudan, and the Integrated Rural Development Programme in Materi District, Benin, have shown that supporting food security does not necessarily conflict with environmental sustainability; on the contrary, it is usually a prerequisite for tackling some of the environmental problems confronting people in the areas targeted by ACORD. Also, many of the factors contributing to land degradation remain outside the control of local populations and ACORD. More information is required regarding ACORD project preconditions in terms of poverty mechanisms and the differential access to and control over resources both between and within households, existing coping strategies and reciprocal relations within and between communities, who undertakes measures to improve the environment and why, and who is involved in activities that are detrimental to the environment and why. Within the macroenvironment, ACORD needs to analyze what factors are precluding the development of micro-level changes and how they might be addressed and what mechanisms exist for NGOs to influence the political decision-making that impinges on these factors. This requires a greater collaboration between academics and NGOs and a focus on specific context rather than abstract solutions, and it requires a grassroots orientation. (Paraphrased from text.)

61. Rohrbach, D. D., and C. Mwila. 1989. Industrial utilization of sorghum and millet in Zambia: An approach to food security. In *Food security policies in the SADCC region*, eds. M. Rukuni, G. Mudimu, and T. S. Jayne. 191-203. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Sorghum and millet are known as food security crops in the SADCC region because of their relative

drought tolerance; nevertheless, farmers persist in growing maize even on land historically dedicated to sorghum and millet. The failure to exploit the genetic potential of the latter two has worsened food security and reduced agricultural productivity in the region. Maize preference is the result of government support through research, extension, credit, markets, infrastructure, and processing for this crop on a national level in response to urban and industrial demands for maize. Thus initiatives to promote sorghum and millet cannot be based solely on food security objectives but must arise out of recognition of these crops as industrially important. Although almost one-third of Zambia is agroecologically suited to the production of sorghum and millet, maize has dominated, meeting urban needs since the opening of copper mines in the early 1950s. Maize continues to receive massive governmental support through technological research and production and market subsidies, accounting for more than one-third of the total government budget deficit by 1986, which in turn has contributed to an estimated inflation rate of over 80 percent. Meanwhile, sorghum and millet are ignored, so that farmers are forced to choose between adopting improved maize technologies accompanied by institutional support or unimproved small grain technologies lacking extension or marketing assistance. While sorghum and millet have a genetic advantage over maize, they no longer have an economic advantage. The stimulus by urban consumer demand is similarly reflected in national promotion strategies for the production of wheat, cotton, soybeans, sunflower, groundnuts, cashew nuts, and coffee production and use. The failure to take advantage of the biological advantages of alternative cereal grains reduces food security and national income, increases disparities in the distribution of national income, and raises the nation's need for cereal grain imports. In the context of extreme government austerity, the most likely means of support for small grains can be derived through recognition of the industrial value of these crops through the expansion of demand in the baking, brewing, and stock feed industries. For example, sorghum-wheat composites and the replacement of barley with sorghum would reduce import dependency and strengthen national crops, but precise research is required. An examination of the urban and industrial market potential for sorghum and millet holds promise for Zambia and most countries in the SADCC region. (Paraphrased from text.)

62. Ronco Consulting Corporation. 1992. *Business profile for a company to produce concrete stave silos for grain storage for the Zambia Agribusiness Management Support Project*. Washington, D.C.: Ronco Consulting Corporation.

Presented in this profile is the investment potential of a company that would build and sell concrete block or stave silos for grain storage. As maize prices become increasingly market driven, resultant price fluctuations will make it profitable to store maize and other grains after harvest for later sale when the price increases. When price rises are substantial enough to cover the cost of storage, it will pay to invest in storage facilities. Potential buyers for these silos would be farmers, hammermill operators, private traders, and cooperatives. The cost of storing includes investment or the cost of tying up funds in the storage units and grain; the potential for deterioration of the grain, through spoilage or insect damage, and subsequent reduction in price; and the expense of handling grain, including the possible need to remove grain from storage and recondition it through drying or fumigation, and the cost of putting into and taking out of storage. Two types of silos are presented in this profile: the Lutanda/Parry type and the stave silo, a design based on experience in other African countries. These units appear to be the most suitable for small- to medium-sized emerging farmers, hammermill owners, small livestock operations, and small grain merchants. The unit is 2-3 meters in diameter and 2-3 meters in height. It holds 50-70 bags (90-kg) of grain and costs approximately K 100,000 (\$500) to build, including a 10 percent profit margin for the builder. The company building the silos will have an estimated capital investment of K 8.9 million (\$44,500.00). When the assets are depreciated this comes to just over K 500,000 (\$2,500) per year. Annual operating costs to produce and sell 60 units per year would be in the neighborhood of K 700,000

(\$3,500). To be successful, the investor must fund and implement an effective sales strategy based on convincing the buyers of the profitability of grain storage. This profitability is based on the price spread that develops between the time the grain goes into storage and some future time when demand causes price increases, and the volume that can be stored in the silo. The overall plan for this investment begins with a research and development phase to prepare the engineering drawings, build the first silo, and test the construction methodology. This is followed by a sales preparation and test program that culminates in a demonstration of a few units in target locations. As soon as the maize price begins to move and potential buyers can see the profits to be made from storing grain securely, major expenditures and activities begin, as the company begins to realize sales. Furthermore, the liberation of maize prices will affect the movement of the prices of other grains, expanding the potential market for silos that can store grain cleanly and safely. (Paraphrased from executive summary.)

63. Rukuni, M., T. S. Jayne, J. Tagwireyi, and L. Rugube. 1990. *Alleviating hunger in Zimbabwe: Toward a food security strategy*. Background Paper: Zimbabwe Agriculture Sector Memorandum. Washington, D.C.: World Bank.

Both chronic and transitory malnutrition continues to occur in Zimbabwe despite more than a decade of agricultural expansion and national grain surpluses. The groups most affected by malnutrition are families working on commercial farms, families in resettlement areas, low-income urban dwellers, and, most profoundly, households in semi-arid communal areas. The causes of this malnutrition vary according to the groups in question. Yet, all of the vulnerable groups identified above share an important problem: artificially high staple grain acquisition prices that reduce real income among poor grain-deficit households by as much as 35 percent. Low and undiversified sources of income also contribute prominently to household food insecurity. Additionally, available crop production technologies are poorly suited for the low rainfall regions. Diversification into higher-valued cash crops suitable for semi-arid areas will be facilitated by the development of a viable package of crop technology, extension, and institutional support appropriate for the constraints of the low-rainfall environments, and by a more reliable grain marketing system that reduces the consumer price of staple grains. Other factors that correlated with malnutrition include poor sanitary conditions and a low level of education of the mother. Malnutrition among families working on commercial farms is also exacerbated by very high grain costs. Moreover, many wage laborers are employed under seasonal contract and lack a steady income.

The report argues that selected changes in grain marketing policy, rural lending arrangements, and the ease of importing vehicles and spare parts may significantly improve food security among the three million people living in Zimbabwe's drier communal lands and concomitantly reduce government's costs associated with grain distribution and the maintenance of massive grain stocks and drought relief programs. Household food security would also be promoted by government action to develop and enact an operational National Food and Nutrition Policy, overhaul the present drought relief program, formulate an aggressive and operational rural industrialization and employment policy to increase off-farm jobs and generate economic multiplier effects in rural areas. (Modified from executive summary.)

64. Saenz de Tejada, S. 1989. *Food consumption and its relation to production: A survey in Lesotho*. Unpublished.

A food consumption survey was conducted during the post-harvest season in four areas in Lesotho in order to assess the impact of the Lesotho Agricultural Production and Institutional Support irrigated horticultural project on the diet of the targeted farmers and on the community in general. The food consumption indicators used included quantity of cereal staples consumed in 24 hours, number of meals per day, sources of food by food group, degree of self-sufficiency in cereal

staples, and variety of the diet; children under six in 140 households were also weighed and measured. The Basotho diet of thick maize porridge with some kind of relish and thin sorghum and maize porridges is considered adequate in calories, but protein and vitamin levels are largely inadequate. Regional variations in food consumption were attributable not only to environmental differences but to differential use of resources, expressed in varying food acquisition strategies. Household composition was found to have an important effect both on the variety of the diet and on the nutritional status of children. Joint-headed households have a more varied diet and lesser reliance on staple cereals. When controlling for wealth, however, the most vulnerable groups were not the female-headed but the migrant households. Socioeconomic differentiation was found to be highly correlated to dietary diversity and nutritional status. However, higher incomes did not always lead to better diet since non-food purchases and expenditures on non-nutritious food were also higher. A differential nutritional impact on project participants was observed: while all individual farmers had higher frequencies of consumption than the control group, the Maluti Food Association members did not. Their dietary diversity was the lowest, suggesting a case of "transitional malnutrition" which can be attributed to the increased availability and consumption of leafy vegetables as well as the fact that cash increases are too small to offset necessary non-food purchases or to have a visible impact on the quality of the diet. Problems of transition from semi-subsistence to cash cropping, unless remedied, may have serious long-term consequences. Attempts to maximize the nutritional benefits of agricultural change will largely fail unless they are targeted to the most vulnerable groups: resource-poor farmers and the landless and near-landless laborers. It is in these groups that undernutrition is most endemic. (Paraphrased from the summary.)

65. Sahn, D. E. 1989. Policy recommendations for improving food security. In *Seasonal variability in third world agriculture: The consequences for food security*, ed. D. E. Sahn. 301-317. Baltimore, Md.: Johns Hopkins University Press.

Agricultural growth and market development represent the logical long-term means of reducing seasonal food insecurity. Seasonal undulations in food security are most pronounced in the lowest-income countries with limited infrastructure and agricultural progress and where markets are poorly integrated, inefficient, and have selective beneficiaries. Environmental factors and economic stagnation create the greatest food insecurity in the poorest countries of Africa and Asia. Furthermore, the dissolution of traditional practices of coping with seasonal stress in favor of increasing reliance on the market may represent a transitional risk factor of seasonal food insecurity. Policies to improve food security in periods of heightened risk reflect the complex etiology of levels of food consumption and living standards. In considering these policies, it is useful to distinguish between (1) untargeted projects and policies that address the problems of transitory food insecurity through, for example, programs to improve the efficiency of markets and productivity of resources through price stabilization, infrastructure development, and technological change and agricultural research; and (2) targeted food security interventions that are generally designed to directly mitigate the consequences of the seasonal variations observed in the household's pattern of income, expenditures, consumption, and nutrition. Seasonally targeted interventions to ensure access to food may be divided into three types: those that generate income through productive work, those that transfer income directly to the household, and those that affect the prices faced by consumers. Inattention to food insecurity may lead to further impoverishment as a consequence of assets. In order to ensure that households have the ability and desire to acquire adequate food throughout the year, there is a need to build upon existing and indigenous strategies to cope with seasonality, smooth out the transition to reliance on the market and new technologies through supporting improved storage and marketing infrastructure, savings and credit schemes, more efficient labor markets, and greater labor mobility. The government should create an economic and social climate that will encourage private sector initiatives to improve seasonal food security through gathering and

disseminating information to assist farmers and improve competition and the efficiency of intertemporal arbitrage among traders. Also, food aid represents a resource with a low opportunity cost that reduces the risk of price increases that accompany nonfood transfers. However, past problems regarding food aid, such as poor targeting and timing as well as a bias toward urban needs must be avoided. Finally, seasonal problems do not necessarily demand seasonal solutions. Although the problem is worst in Africa, policy strategies must be decentralized and flexible in dealing with variations between countries, regions, villages, and households. (Paraphrased from text.)

66. Sithole, G., and E. A. Attwood. 1991. Farm management characteristics of communal farms in Zimbabwe: Implications for household food security. In *Market reforms, research policies, and SADCC food security*, eds. M. Rukuni, and J. B. Wyckoff. 141-146. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Nearly three of every five people in Zimbabwe live on and derive their livelihood from communal farming areas, which have become increasingly sales-oriented. Recently the Farm Section of the Ministry of Lands, Agriculture, and Rural Resettlement made a study of the current social and economic conditions of these farmers and their resident families in order to inform policy decisions aimed at improving their living standards. This survey provides precise quantitative data on the major financial and demographic parameters of communal farming families and contributes to a clearer understanding of their economic situation. Farm size, crops grown, cultivation practices, and access to draft animals and carts are discussed. While 85 percent of households were "headed by men," nearly 24 percent of those heads of household were nonresidents. Two fundamental factors are found to influence the variation in household income. Most important is the basic soil and climatic characteristics of the area. The second major factor affecting net household income is the level of non-farm income received through activities such as selling vegetables, brewing beer, and remittances. In general, the better areas for crop production are also the better areas for off-farm income, further accentuating the variation in farm household income between the better and poorer areas. There is no significant relationship between the hours of labor spent on crop operations and the resultant net crop income. For example, families in Chirau spent the least time on crop operations and had the highest net crop income while four areas with the lowest crop income devoted much more time to crop production. The number of livestock and the income per livestock unit are also highly variable. Although most farms grow a wide variety of crops, farms invested the most land, labor, and input costs to maize. Other important crops include groundnuts and millet, which received much less investment. The survey demonstrates vividly the need to improve crop yields, especially for mhunga, sorghum, and sunflower, as well as increase access to information regarding resource management. However, improving living standards for the majority of communal farm families—most people in Zimbabwe—requires improving off-farm employment as well. (Paraphrased from text.)

67. Southern African Development Coordination Conference (SADCC). [1989]. Food security. In *Food, agriculture, and natural resources: [Proceedings of a conference held in] Luanda, People's Republic of Angola, 1st-3rd February, 1989*. 1-29. Luanda, Angola: SADCC.

The overall objective of the SADCC Food Security Programme is to increase agricultural production so that the region can become self-sufficient. This involves satisfying the basic food needs of all and promoting equitable access to food, promoting regional and national self-sufficiency, and eliminating periodic food crises. The strategy also recognizes that increasing food production and efforts toward national self-sufficiency will not automatically end hunger and malnutrition. Thus the emphasis is on encouraging activities that will enhance the ability of all people to acquire an adequate diet. Furthermore, the food security sector recognizes the fact that women constitute the majority of the

rural labor force because men have left to seek employment in the urban areas or in South Africa.

SADCC projects focus on assisting member states to increase food availability through increased domestic production, reduction of post-harvest losses, and expanded grain storage. There is also an emphasis on marketing infrastructure and feasibility studies. This report includes descriptions of 12 projects and information regarding the status of each. The Technical Assistance Programme for Coordination and Cooperation provides financial and technical support for the processes of cooperation within SADCC on agrarian issues, and assists Zimbabwe in the planning, coordination, and implementation of the Food Security Programme. The Regional Early Warning System for Food Security provides advance information on food crop production and food supplies in the region so that member states can take action in the event of impending food shortages or surpluses. The Regional Information System for Food Security is concerned with the establishment of a regional information system for food security planning. The Regional Inventory of Agriculture Resource Base involves the establishment of a standardized inventory of the region's agricultural resource base, at both national and regional levels, that can be used for land use and other planning purposes. The Regional Food Reserve Project is intended to provide mechanisms to enhance intra-regional food trade. Regional Post Production Food Loss Reduction and Food Processing focuses on encouraging more efficient post production operations and the establishment of rural facilities for the storage, preservation, processing, distribution, and marketing of food products. The study of Regional Food Marketing Infrastructure will provide a basis for proposals to improve the capacity of the food marketing and distribution infrastructure and identify and improve the movement of commodities between member States. The study of Regional Seed Production and Supply will analyze demand for, availability of, and production of improved seeds of major crops. It is also intended to propose actions to alleviate constraints in the seed sector and make recommendations on future regional cooperation in the sector. The study of improved irrigation in the SADCC Region is concerned with identifying and planning appropriate ways by which SADCC countries can more effectively exploit the region's extensive irrigation potential. Strengthening and coordinating migrant pest control is aimed at improving the capability of member states' Ministries of Agriculture to protect crops, particularly cereals, from migratory pests as well as develop a coordinated regional approach to their control. Completion of the soil map of Zambia is necessary for planning at both national and regional levels. And Bunker Grain Storage: Phase I will evaluate and demonstrate the applicability of bunker grain storage technology in the SADCC region. (Paraphrased from text.)

68. Spring, A. 1989. Profiles of men and women smallholder farmers in Malawi. In *African food systems in crisis, part two: Contending with change*, eds. R. Huss-Ashmore, and S. H. Katz. 107-138. Food and Nutrition in History and Anthropology, no. 7. New York: Gordon and Breach.

In disentangling the factors that contribute to the African food crisis or to food self-sufficiency, a focus on the household is beginning to come to the fore. The realistic conditions and autonomous elements of the level of production necessary for food self-sufficiency are essential to any comprehensive examination of African agriculture. Capitalist and socialist models do not have much predictive value because they leave out the "invisible economy" or "economy of affection" of smallholder agricultural households. Furthermore, the traditional use of the farm system approach is inadequate in that the household is treated in terms of a bounded, aggregate unit instead of a group of distinct constituent parts. New approaches recognize the independent activities of household members and see farming households in Africa as overlapping but semi-autonomous production and consumption units and women as semi-autonomous people who often have a great deal of independence regarding food production and distribution. It is essential to keep in mind that farming, food preparation, and food distribution are essential elements in women's roles in Africa; considerable male outmigration has increased women's farming responsibilities. Thus, including women in research and extension activities improves the ability of African countries to produce food

for family consumption and for sale in rural and urban areas.

An analysis of the invisibility of African women farmers, their contributions, the gender division of labor, and case studies of male and female household heads in Malawi has led to a number of insights. While both male- and female-headed households demonstrate a continuum from more impoverished to more affluent, male-headed households tend to have higher productivity because men have more access to inputs and technologies. Not only have comparative studies often ignored this question of access, but some have overlooked even the fertility of the environment when comparing female- and male-headed farming households. In this case study, an analysis by gender demonstrated that most women tended to fall into a poor environmental situation because they were low-resource farmers with land shortages, lack of extension information, and lack of family labor. New strategies—including credit mini-technical packages, leadership training, and extension contacts—of targeting low-resource women who had been bypassed by extension services were needed for increasing the food self-sufficiency in an area in which 35 percent of the households are headed by women. New methods to give credit and more appropriate input packages were devised, and an entire group of people was moved up the scale in terms of the "entitlement bundle" of food. For the most part, however, the failure to recognize the importance of women in the link from farming system to food supply and household food self-sufficiency continues to undermine efforts at long-term food security in Africa. (Paraphrased from text.)

69. Stampley, G. L., H. H. Jensen, and S. R. Johnson. 1992. *Food consumption with special attention to maize meal: June 1991, Zambian household expenditure and incomes survey*. Ames, Iowa: Iowa State University, State Center for Agricultural and Rural Development.

For governments to better understand the impact of their food policy, it is extremely useful to identify the food consumption patterns based on household profiles. Identifiable household features associated with food consumption patterns include location (rural/urban), size and composition, and income. Food consumption patterns can be "measured" through participation rates, expenditure, prices, quantity, and nutrient availability. These characteristic patterns make it possible for governments to develop more effective food policies. The tabular analyses in this report provide descriptive information on the food consumption patterns for several types of households in Zambia. Overall, urban households spend more in nominal terms than rural households on the 27 basic food commodities; however, the share of the average food budget was comparable. The proportion of the household food budget allocated for total maize was much larger for rural than for urban households. Also, the consumption "mix" of the individual maize items differed greatly between rural and urban households as well as between households with lower and higher per capita total expenditure. Consequently, maize policy would more likely directly affect rural households if it were targeted toward maize meal, while it would more likely effect urban households if it were targeted toward breakfast and roller meal. Availability of maize within markets, household income, and relative prices are the most important economic factors influencing maize use by household. In general, the relatively poorer, rural agricultural households consume less expensive, home-produced maize meal while wealthier, urban households primarily consume more expensive, but also more available, breakfast and roller meal. Targeted food assistance would appear to be the more warranted policy for poorer, rural households. Since most of the food of rural households is home produced, it would be necessary to obtain more developed nutritional profiles of relevant sub-populations. This is not to say that the urban poor should be ignored but rather that strong policies of rural development coupled with visible, effective, short-term food and health assistance programs would most likely make rural life more desirable for many current urban dwellers. Improving opportunities in rural areas would perhaps reverse a pattern of urban migration that has been fostered and supported for decades by the market-distorting consumer food policies involving price subsidies to urban consumers of the basic food staple, maize.

70. Swaminathan, M.S. 1992. Agricultural production in Africa. In *The challenges of agricultural production and food security in Africa*, eds. O. Obasanjo, and H. d'Orville. 11-34. Washington, D.C.: Taylor & Francis.

Agricultural progress is the key not only to food security but to rural and national prosperity in Africa. Food security, which depends on ecological security and employment guarantees, must be broadened to include nutritional security, physical and economic access to balanced diets, and safe drinking water for all children, women, and men at all times. Although current problems are caused in part by the stagnation or decline of food production, food security also depends upon "food entitlements" such as land, credit, income, and family support systems. Recent literature reflects a new awareness of the importance of women's economic contributions to households, particularly low-income households. Yet hunger has increased five times faster in the 1980s than in previous decades. In the face of population growth, ecological deterioration, and an uncertain world economy, a "more-of-the-same" approach will not reverse current trends; new policies must be considered. This paper investigates alternatives to structural adjustment programs and discusses the challenges of social factors, economic factors, energy, employment, ecology, and social engineering. It is useful to divide each African nation by agroclimatic conditions, each of which requires specialized technological development: green revolution areas, "green-but-no-green-revolution" areas, dry-land farming, arid ecosystems, coastal areas, wetlands, and wastelands. Water is a key determinant of the agricultural future, and the competition for water for irrigation, industry, and domestic use will continue to increase. The conservation and scientific use of water must be prioritized in national agendas for sustainable development. Food security is dependent upon ecological security, which may be enhanced through the application of developments in biotechnology. And sustainable development must be tailored not only to environments but to specific target groups such as small farmers. The particular context of activities, status, responsibilities, problems, and needs of women must be prioritized. Measurements of stability are needed for soil, water, and biological diversity while research regarding yield improvement, energy management, and other areas must translate into appropriate technologies. However, the single most important requirement for achieving sustainable nutrition security is political commitment and action. (Paraphrased from text.)

71. Thompson, C. B. 1991. The regional response to food security. In *Harvests under fire: Regional co-operation for food security in Southern Africa*. 74-101. London: Zed Books.

SADCC members have chosen a decentralized consensus model for cooperation, demanding neither subscription fees nor the enactment of sweeping protocols. Member states are given sectoral responsibilities in order to stimulate accountability and balanced economic development among members. Rather than emphasizing a program of free trade—a policy that has repeatedly been shown to benefit transnational corporations and stronger economies at the expense of underdeveloped areas—SADCC has focused on coordinating industrial production in order to avoid deleterious competition or redundant expenditures. From the beginning of its mandate, food security has been seen as second only to transportation and communication as a priority of regional planning. Earlier mistakes in technology, finance, and distribution have been addressed in recent initiatives. These initiatives are focused on supporting through pricing policies and credit schemes the production of food crops grown by "small producers"—as defined by particular member states. Instead of increasing complementarity of production in the agricultural sector, as is the policy of the industrial sectors among the member states, members are encouraged to achieve food self-sufficiency. This goal is worked on through the Food Security Technical and Administrative Unit which coordinates and implements projects through a board of agricultural economists from member states. Additionally, the Southern African Centre for Co-operation in Agricultural Research offers grants and workshops in support of national agricultural goals and also a seed bank of regional

germplasm. Further, the Post Production Food Industry Advisory Unit studies and disseminates ideas concerning useful traditional and modern methods of storage, the feasibility of rural food depots, and possibilities for agroprocessing in rural areas. As in its focus on national food security, SADCC is attempting to stimulate equitable development within the agroindustrial sectors of national economies by focusing on small-scale producers. SADCC planning is not hostile to capitalism per se, but recognizes that capitalist developments are often supported by powerful international financial agencies (IMF, banks, government loans) that may clash with the national and regional planning of member states.

72. Todorov, A., and T. Ngara. 1988. SADCC's early warning system for food security. In *Southern Africa: Food security policy options. Proceedings of the Third Annual Conference on Food Security Research in Southern Africa, 1-5 November, 1987*, eds. M. Rukuni, and R. H. Bernsten. 13-17. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

Most member states of SADCC have now established national early warning systems, completing the SADCC's Regional Early Warning System Project (REWSP). This early warning system is meant to improve national food security by establishing a system that will provide advance information on crop production and food supply well in advance of an impending food shortage or surplus so that suitable action can be taken. REWSP collects meteorological, land, production, consumption, and price, credit, and distribution data, and so serves as a trigger mechanism for the Food Grain Reserve Project and the Regional Information System. To improve regional food analysis methods, a remote-sensing project will be established in the coming years. This data is transmitted through the monthly Food Security Bulletin published through SADCC.

73. United Nations (UN). Administrative Committee on Coordination (ACC). Subcommittee on Nutrition (SCN). 1992. *Nutrition-relevant actions in Zimbabwe 1980-1992*. Rome: UN/ACC/SCN.

There has been some improvement in the nutritional status of young children in Zimbabwe during the 1980s despite economic setbacks and drought, although levels are still high for a country that in a normal year is a net exporter of food. This improvement can be attributed to government commitment to improving health and education of the population, the maintenance of household food security for the majority of the population through extensive distribution of drought-relief food, child supplementary feeding programs, subsidies on basic food items, a community spirit that remained after the war and facilitated community participation and action in development projects, an agricultural policy that has placed emphasis on surplus grain production, and sustained donor and NGO support that has allowed community-based projects to evolve. Still, while Zimbabwe has made commendable effort in supporting child health and nutrition in the past decade, progress has been slow.

There is little doubt that nearly all forms of malnutrition in Zimbabwe are related to poverty and inequity. Among the major underlying causes of malnutrition, the health sector related causes in Zimbabwe are clearly less important than household food insecurity and inadequate maternal and child care. Access to food is inadequate several months each year for a substantial proportion of families in Zimbabwe, despite successes in increasing overall agricultural production. Drought, inequity of land ownership and consequent crowding in many communal areas, dislocation, lack of infrastructure and poor support given to resettled families, and an inefficient inherited grain marketing system are all partly to blame for this food insecurity. Early problems with infant feeding make these children more susceptible to harm caused by household food insecurity, and early linear growth retardation suggests that 6-18 months of age is the period when active damage to nutritional status is occurring. However, even if premature supplementation of breast feeding may be a major

cause of growth retardation, it is not known whether this is due to traditional beliefs, lack of information, misleading messages from the health professions and/or the infant food industry, or constraints on mothers' time forcing them to begin supplementation earlier than they would like.

Under the circumstances of tighter governmental budgets caused by the Economic Structural Adjustment Programme (SAP), the prioritization and probable reallocation of resources will become critical to successfully promote child nutrition. These actions should include: focusing nutrition education messages on exclusive breast feeding for the first 4-6 months, as well as on frequency of feeding and energy density once complementation begins; implementing widespread community-based growth monitoring, linking it to the Community Food and Nutrition Programme; placing greater emphasis on household food security for communities in marginal rainfall areas and low income groups; improving grain marketing and distribution, which is only just beginning to be liberalized; placing greater emphasis on drought-resistant crops; putting more emphasis on infrastructure and support of families who are resettled on government-purchased land; and reducing the work burden of women and their time constraints regarding child care and feeding. Nutrition surveillance will also require strengthening in order to be able to adequately monitor and provide feedback on the nutritional situation and related impacts of structural adjustment and of nutrition projects and policies. (Modified from author's text.)

74. United Nations (UN). Economic Commission for Africa. 1992. Food security in Africa. In *The challenges of agricultural production and food security in Africa*, eds. O. Obasanjo, and H. d'Orville. 35-56. Washington, D.C.: Taylor & Francis.

It is important that food security not be so narrowly defined as to be synonymous with food self-sufficiency. Food security should instead be viewed as a combination of food availability through domestic production, storage, and trade along with access to food through home production, market purchase, and food transfers. A distinction should be made between temporary and permanent food insecurity, recognizing that famine, hunger, and malnutrition are often as much a problem of poverty as of shortages of food supplies. For African countries to get out of the food and debt trap they have now fallen into, domestic food production must increase so as to feed the growing population, and export production must rise to generate foreign exchange to pay off debts and meet essential import needs. These developments will require agricultural research to generate new technologies through a two-way process that involves the farmers as well as agricultural researchers. Increases in food production, however, must come from a sustainable food production base that conserves fragile soils and minimizes the vagaries of the weather. Increasing access to food also entails improving the efficiency of storage, preservation, transportation, marketing, and food processing. Existing rules and regulations affecting the efficiency of this food distribution system should ensure that government intervention in food marketing does not discourage private participants. A number of organizations charged with overseeing food security planning in Africa are enumerated in an appendix to this paper. (Modified from author's conclusion.)

75. United Nations (UN). Office of the UN Resident Coordinator, United Nations (UN). UNDP Resident Representative, and United Nations (UN). UN Drought Relief Task Force for Zimbabwe. 1992. *Drought impact in Zimbabwe: Assessment and additional requirements*. Harare, Zimbabwe: UN.

Zimbabwe is facing the consequences of the worst drought to sweep the country in this century. Food aid to prevent starvation and maintain production systems is coming from many different sources, and because Zimbabwe is normally the largest exporter of maize in the region this has been distributed without major logistical problems on the extensive rail and road network of the country. Because of the rational, organized and controlled government-run relief operations there is hardship,

but no famine, in Zimbabwe today. Foreign donors and personnel play a subsidiary role in food distribution programs; local drought committees have been established to determine those qualified to receive food relief. Because many small-scale farmers within the low-rainfall communal areas of the country have already been receiving governmental food subsidies over the past several years, this relief operation is an extension of previous programs using existing infrastructure. Regeneration of productive farming systems in the wake of this famine requires a number of interventions including livestock protection in drought affected areas and restocking of reservoirs in communal farming areas, maintenance of tsetse fly barrier in the North East of Zimbabwe, and improved supply of groundnut seed and fertilizer. Additionally, numbers of boreholes and water improvements, and childhood supplementary feeding programs, are being constructed.

76. United States. Agency for International Development (USAID). 1990. *Food Security in Africa Cooperative Agreement between Africa Bureau, Office of Technical Resources, AID; Africa Bureau, Office of Sahel West Africa, AID; Bureau of Science and Technology, Office of Rural and Institutional Development, AID; Bureau of Science and Technology, Office of Nutrition, AID; Department of Agricultural Economics, Michigan State University*. Washington, D.C.: USAID.

This report summarizes in bibliographical form the output of workshops, reports, papers, theses, and dissertations produced by those involved in the Food Security in Africa Cooperative Agreement. Bibliographical references are provided for work concerning food security issues in Senegal, Mali, Malawi, Mozambique, Rwanda, Somalia, Tanzania, and Zimbabwe/Southern Africa.

77. United States. Agency for International Development (USAID). Bureau for Africa. Famine Early Warning System (FEWS), and Zimbabwe. Department of Social Welfare. Ministry of Public Service, Labour, and Social Welfare. 1992. *Towards the development of a methodology for food aid targeting in Zimbabwe*. Washington, D.C.: USAID/FEWS.

This report describes the initial results of an exercise in vulnerability assessment/mapping of sub-district-level populations in Zimbabwe. The initial product was a series of maps describing relative levels of vulnerability (included). These maps are used to establish targeted allocation of food aid within Zimbabwe and the place of such maps and other monitoring tools in a broader methodology of food aid targeting. The methodology briefly discussed here is greatly summarized and has not been based on an exhaustive and final set of criteria. Rather, the purpose has been to define a skeletal methodological structure upon which more refined indicators and targeting products may be built. However, the need for such a method is so desperate that the results to date are already used as a basis for actual allocations of food. Findings provide information on relative levels of risk of communal farmers and communal farmer/livestock owners, by communal land in Zimbabwe, as expressed on 36 maps. Data provide information regarding the current as well as chronic vulnerability of both socioeconomic groups. An analysis of this vulnerability mapping leads to a number of conclusions: vulnerability mapping may be able to play, and may have already played, a useful role as an initial targeting tool for relief food delivery; there is a need for a mechanism to verify and then deepen the information gained from an initial "vulnerability mapping" targeting effort; vulnerability maps can be used to plan and program post-drought assessment and mitigation activities; and the maps may provide an initial basis for allocation of non-DSW resources. (Paraphrased from text.)

78. Van Gils, H. 1988. *Environmental profile: Western Province, Zambia*. Enschede, Netherlands: International Institute for Aerospace Survey and Earth Sciences; Mongu, Zambia: Provincial Planning Unit.

The environment in the Western Province is resilient to the current method and rate of exploitation

of natural resources except for the current timber exploitation, which is not sustainable, the ongoing decline in some of the larger wildlife species, and the traditional drainage technology that leads to irreversible loss of good soils. Because the various methods of land resources exploitation are interrelated in Western Province, ongoing resource inventories should be coordinated by the Provincial Planning Unit and be expanded to include Forest and Water Resources, especially the Zambezi floodwaters. A considerable development potential for maize, rice, cashew, cassava, timber, fish and (irrigation) water has been identified. Possible negative impacts on the environment associated with the development of the identified resource potentials include local soil erosion hazard in maize expansion in Eastern Kaoma, and bilharzia establishment, off-site overgrazing and off-site overfishing for large-scale rice development in the Buluzi meanderbelt. Customary law has many positive conservation aspects, although it may hamper some resource development. Statutory law and customary law together provide a good framework to prevent environmental degradation. The potential of the existing laws are not always used optimally, and suggestions for improvements are given. (Modified from general conclusion.)

79. Velarde, N. 1991. *The Zambian farming systems approach to studying household food security*. Working seminar on Dependency on Forest Foods for Food Security, International Rural Development Centre, Swedish University of Agricultural Sciences, Uppsala, Sweden, March 13-15, 1991.

Despite a growing trend toward cash crop production, food is still of major importance in ensuring household food security among subsistence and small-scale commercial farmers in developing countries. The recognition of food as a major production and consumption issue among these farmers has resulted in the institutionalization of household food security perspectives within the Zambian government's Adaptive Research Planning Team (ARPT). The household food security framework used by this team assumes that three conditions must be present for household food security to exist: availability, accessibility, and stability or sustainability. Most efforts to use this framework within Zambian agricultural development have concentrated on the program's diagnostic activities (zoning exercises using informal interviews of extensionists and formal interviews of farmers) for assessing household food security. Additionally, however, the inclusion of a nutrition component within the framework of household food security has influenced ARPT research work from exclusive interest in cash crops, specific improved varieties, and monocropping toward work on household food crops, local varieties, and diversity in production.

80. Wilson, K. 1992. *The impact of drought and structural adjustment on household livelihood and welfare in the Mazvihwa Communal Area of Zvishavane District of Southern Zimbabwe*. Oxford: University of Oxford, Queen Elizabeth House, Refugee Study Program; Harare, Zimbabwe: Oxfam-UK.

The response to the drought by the Zimbabwean government and "indigenous" NGOs in Zvishavane District includes limited investment in water supplies and some resettlement schemes, but difficulties continue. The contrasting images of successful coping strategies and hungry and sick populations are both inaccurate; people are working in extreme drudgery and domestic life is difficult with great tension between parents and grown-up children. Areas most agroecologically threatened by the drought may not necessarily be the ones where child health and nutrition are most threatened. Low-lying areas along rivers, for example, allow continued vegetable cultivation and gold panning in alluvial soils. Rather than increasing rural socioeconomic differentiation, as have previous droughts in the region, all rural households have extremely reduced agricultural production, meaning that targeting of food aid must be more dispersed. Still, child nutrition has not reached low levels, and although many adults have lost weight, few appear to have dangerously low body mass indexes.

Food-for-work programs have been successful when local management exists prior to the drought, but the expectations of physical labor should be reduced in these programs since they are eroding people's ability to manage their domestic needs and to prepare their lands. Supplementary feeding programs, aimed to support livelihood systems, are effective and should be extended to pre-school feeding points.

81. Wood, A., and J. Shumaker. 1990. *Household food security annotated bibliography*. Nutrition in Agriculture Cooperative Agreement, vol. 3. Tucson, Arizona: University of Arizona, Office of Arid Lands Studies.

This is an annotated bibliography of literature relevant to household food security issues. Much of the literature on food security is based on research conducted in Africa; however, references also cover food security research conducted in Asia and Latin America. In addition to articles and books, this volume also includes annotations summarizing dissertations, reports, and unpublished papers. The citations have been restricted primarily to those English works written or published since 1984. (Modified from author's introduction.)

82. World Bank. Food security. Chapter 8 in *Agricultural sector assessment: Zimbabwe*. 134-148. Washington, D.C.: World Bank.

This chapter's examination of food security, based on an earlier discussion in Rukuni et al. (1990), concentrates on the problem at the household level. The assumption underlying the analysis is that in order to ensure an adequate supply of food, households must either grow enough food to meet their subsistence needs or purchase the food they need with income earned through cash crop production or off-farm employment. Increasing the amount of food available to households, therefore, requires a combination of increasing subsistence production, the production of cash crops, and/or off-farm employment opportunities. The latter two options require access to food markets. This chapter seeks to identify the pattern and extent of malnutrition, the causes of malnutrition, and the role that food markets and agricultural policy play in explaining observed patterns of malnutrition and food availability. (Abridged from introduction.)

83. Zambia. 1992. *The 1992 Zambian drought: Impacts, responses, and costs*. Zambia.

The rainy season in Zambia runs from November until March or April, and by March of 1992 it was clear that Zambia was in the midst of its worst drought on record. The production of maize, the staple food of Zambia, has dropped from an early estimate of 9.4 million bags to only 5.8 million. Electricity generation from Zambian hydroelectric projects, as well as nontraditional exports, are expected to fall. This, along with the fact that farmers will not be able to repay recent agricultural loans, will cut into the government's foreign and domestic cash reserves, making recently revised structural adjustment policies instituted in conjunction with the International Monetary Fund and the World Bank difficult to follow in the short run. Cash crops and livestock production will also be severely curtailed, reducing the ability of rural people to buy grain in order to make up for this shortfall in domestic production. Given the difficulties of importing grain into this landlocked country, early response is required to avoid famine. The government of Zambia has responded to this situation by declaring a regional disaster and spreading information concerning the drought and has established the Import Logistics Control Center to deal with the logistical exigencies of providing widespread food relief to national ministries and the international community. A Drought Emergency Team has also been established in order to keep the process of hunger relief fair and professional; it will make recommendations concerning the types of food distribution needed to address this crisis. Response from donor agencies and foreign governments, however, is needed not only in the form of grain, but also as grants of foreign exchange in order to secure future

agricultural production, and so the stability of the Zambian economy. Appendices include rainfall graphs and current maize import costs and contracts.

84. Zambia. Central Statistical Office. 1993. *Drought impact monitoring system monthly report: January 1993*. Lusaka, Zambia: Zambia, Central Statistical Office.

The objective of the Drought Impact Monitoring System (DIMS) is to rapidly collect and disseminate accurate and action-related data on a monthly basis, in a cost-effective manner, from drought-stricken districts. In conjunction with other information systems, this will support the drought relief program. The DIMS has been established in all the 27 drought affected districts of Southern, Central, Lusaka, Eastern and Western Provinces. It covers socioeconomic and health indicators, and collects monthly data from five villages, clinics, and schools in each district.

85. Zambia. Ministry of Agriculture. 1993. *Outline of the Food Security Act of 1993*. Lusaka, Zambia: Zambia, Ministry of Agriculture.

The Food Security Act of 1993 is intended to help ensure an adequate supply of food for the Zambia. This paper gives an overview of the various parts of the Act:

- Repeal the National Agricultural Marketing Act, 1989: control of certain storage facilities by the new Crop Marketing Agency and the preservation of rights, obligations, and liabilities under 1989 Act.
- Establish a national food reserve: formation of the Crop Marketing Agency and its composition; the term of office and compensation of members, chairman, and vice chairman; resignation of members, vacancies in office, conflict of interest provisions, staff of agency, functions of agency, and use of committees; the designation of commodities, purchases for importation, purchases in the domestic market, sale of commodities in the national food preserve, and special authority to handle donor food.
- Establish a market information system for agricultural food commodities: its operation and advice from producers and other people.
- Establish weighing and grading standards for agricultural food commodities: advice from producers and other people and penalties for misrepresenting grades and weights.
- Lease government-owned storage facilities: maintenance, repair, or rehabilitation of facilities; construction, and sale of facilities.
- Registration of certain traders and processors of agricultural food commodities: fees, duties, and responsibilities; exemption from registration; payment of fees to district governments; compliance with ethical standards of conduct; reports by traders and processors, or penalties for failing to register or complying with standards of conduct, or for failing to furnish accurate information; requirement to search records for liens; and penalties for disregarding duly-recorded liens.
- Financial and other provisions: funds of Crop Marketing Agency, expenses of the agency, accounts of the agency, annual budget, financial year, annual audits and annual report, annual public meeting, and agency exemption from certain acts.
- Orderly implementation and administration of legislation: interim implementation and

continued orderly administration.

— Operation of legislation in the event of a presidentially-declared national food emergency: declaration of national food emergency and operation of legislation under national food emergency. (Modified from the introduction and headings.)

86. Zambia. Ministry of Agriculture, Food, and Fisheries. Zambia Early Warning Unit. Planning Division. 1992. *Food Security Bulletin: 1992(10), 20 November*. Lusaka, Zambia: Zambia, Ministry of Agriculture, Food, and Fisheries, Zambia Early Warning Unit, Planning Division.

This report includes information on meteorological conditions, food security, inputs supplies, and drought relief operations. Specifically, it is shown that rainfall is normal, that food aid and commercial imports are continuing to arrive in the country, allowing it to begin building strategic reserves; that total maize stocks equaled 4 million 90-kg bags and that cumulative local maize purchases by grain dealers stood at 2,833,489 90-kg bags (96 percent of the estimated 2.9 million marketed bags of maize); that 2,000 metric tons of hybrid maize have been imported from Zimbabwe to offset local shortfalls; that the government has set up a plan to make K8.5 billion credit available through Lima Bank, Credit Union and Savings Association, and Zambia Cooperative Federation-Finance Services to small-scale farmers for the coming growing season; that all regions of the country affected by drought are now receiving food aid and are included within nutrition monitoring systems, and that an IFAD-sponsored Drought Recovery Assessment found limited stocks of seed and some loss of draft animals, especially in the Southern Province. It is recommended that seeds be distributed either for sale or through food-for-work programs to farmers in drought-prone areas and that revolving funds be set up from the proceeds of the sale of these basic seed packages to support the seed supply projects beyond the current season.

87. ———. 1992. *Food Security Bulletin: 1992(3)15 July*. Lusaka, Zambia: Zambia, Ministry of Agriculture, Food, and Fisheries, Zambia Early Warning Unit, Planning Division.

This report includes information on meteorological conditions, crop production, food security, mealie meal prices, food inputs, cereal balance tables, marketing arrangements, government response to drought, drought monitoring, household food security, and input availability and distribution. Specifically, it is shown that drought has reduced agricultural production by 60 percent during the 1991-92 growing season, that 19 donor countries and international organizations have made food aid pledges to the amount of 484,260 metric tons while the Zambian government is importing 243,467 metric tons leaving an input gap of 235,000 tons of grain, that the government has approved new marketing arrangements and released funds to grain dealers to commence purchasing domestically produced crops, that several provinces have maize stocks sufficient to last no more than a few weeks, that mealie meal prices have stabilized following government intervention in the market, that many households have run out of food stocks, that a drought monitoring system has been initiated, and that some agricultural inputs such as credit and principal seed varieties will be in short supply for the subsequent growing season.

88. ———. 1992. *Food Security Bulletin: 1992(9), 20 October*. Lusaka, Zambia: Zambia, Ministry of Agriculture, Food, and Fisheries, Zambia Early Warning Unit, Planning Division.

This report includes information on meteorological conditions, food security, local maize marketing, price information, government maize marketing policies, relief operations, and a special feature on World Food Day 1992. Specifically, it is shown that meteorological predictions of the subsequent rainy season are favorable, that food imports along with local maize marketing have improved the food security situation in the country, that the infrastructure for the distribution of these grain

imports continues to be problematic, that food aid amounted to 796,000 tons and surpassed import requirements, that government funding for maize purchases has ceased at the level of 2.6 million 90-kg bags, that the depot price of a 90-kg bag of locally produced maize has increased from K2,200 to K3,000 with mealie meal generally available in Lusaka urban markets, that a crop diversification program has been initiated in which small-scale farmers in drought-prone areas are informed to plant drought-resistant crops, that the government has fully liberalized the fertilizer market, and that seed distribution has commenced with 40,000 50-kg bags of maize seed sold.

89. ———. 1993. *Food Security Bulletin: 1993(1), January*. Lusaka, Zambia: Zambia, Ministry of Agriculture, Food, and Fisheries, Zambia Early Warning Unit, Planning Division.

This report includes information on meteorological conditions, an army worm attack, food security, inputs supplies, and household food security. Specifically, it is shown that to date rainfall met all the crop water requirement, that army worms have continued to surface in the country despite some aerial and ground spraying, that the food security situation is stable despite some logistical problems with the delivery of food from the port of Beira, that current maize stocks stand at 3.08 million 90-kg bags (about 1.02 million bags less than stocks of the previous month), that grain dealers purchased 100 percent of the marketable surplus of 2,901,750 90-kg bags of maize, that mealie meal prices have been continuing to rise, posing a risk to food security in poor urban households, that many traders have entered the newly liberalized fertilizer market (it is available everywhere but Mongo depot in Western Province), that 127,950 50-kg bags of seed have been sold, that to date K12.2 billion had been advanced to three credit associations for loans to small-scale farmers but many farmers have still been unable to obtain fertilizer on credit because of restrictive lending policies and the difficulty of distribution beyond the district level, that a Drought Impact Monitoring System was established in the Central Statistical Office to rapidly collect and disseminate household information from drought stricken areas, that despite relief operations malnutrition in children appears to be increasing, and that many rural households appear to have exhausted their cash reserves even as rural prices for maize are on the rise.

90. ———. 1993. *Food Security Bulletin: 1993(2), February*. Lusaka, Zambia: Zambia, Ministry of Agriculture, Food, and Fisheries, Zambia Early Warning Unit, Planning Division.

As of February 1993: Rainfall over the last month has been normal, with predictions for normal rainfall until April. Crop growth is good, and there are prospects for an above average harvest: 780,000 hectares of maize were planted with an expected production of about 18.5 million bags. Excessive rains will depress yields in some areas. In fact, procurement, transport, and storage facilities for cereals will be under pressure; appropriate action needs to be taken in time to ensure smooth marketing operations. During January 1993, a total of 636,166 90-kg bags of maize were distributed by the Programme Against Nutrition. The monthly household food security survey carried out in January 1993, indicated that the rising trend in malnutrition appears to have reached a peak, although many households have insufficient cash to purchase adequate food stocks, and high energy protein supplements are in short supply in some clinics.

91. Zambia, Food and Agriculture Organization of the United Nations (FAO), and International Fund for Agricultural Development (IFAD). 1992. *Joint GRZ/FAO/IFAD workshop on under-utilized foods in the promotion of household food security in Zambia: Planning and project formulation in Luapula Province, Mansa, Luapula [Zambia], 4-8 August 1992. Final draft report, January 6, 1992*. Zambia.

In order to consolidate and further the activities initiated in the various provinces of Zambia, the

Food and Agriculture Organization of the United Nations, the International Fund for Agricultural Development, and the government of Zambia held a workshop on underexploited foods and their contribution to household food security of vulnerable groups. This report presents the objectives, methodology, and issues discussed at this workshop. The discussions following group presentations focused on two main themes: the issue of intersectoral coordination and the related aspect of individual initiative versus government directives; and other issues concerned with the problem of how proposed actions should be implemented and by whom. (Paraphrased from text.)

92. Zinyama, L. M., D. J. Campbell, and T. Matiza. 1988. Traditional household strategies to cope with food insecurity in the SADCC region. In *Southern Africa: Food security policy options. Proceedings of the Third Annual Conference on Food Security Research in Southern Africa, 1-5 November, 1987*, eds. M. Rukuni, and R. H. Bernstein. 183-205. Harare, Zimbabwe: University of Zimbabwe, Department of Agricultural Economics and Extension, University of Zimbabwe/Michigan State University Food Security Research in Southern Africa Project.

In SADCC countries, as in the rest of Africa, studies of strategies to cope with food shortages show that these strategies are adopted in identifiable sequences. In the initial phases of difficulty, available resources such as savings, labor, and wild foods are used by households. As the situation intensifies, recourse is sought in broader social and economic interactions such as loans and gifts from the extended family, sale of small stock, and male labor migration. Finally, sale of productive assets such as land and implements may occur and, since this reduces the capacity of the family to re-establish itself after the shortage is over, emigration, representing abandonment of agriculture, occurs. The trajectory of this sequence of coping strategies can change based on variables such as economic status, gender, and age. Additionally, as villages have become tied to colonial and postcolonial administrations, coping strategies include recourse to the wider economy. Still, traditional household coping strategies continue to be of importance even as governments have increasingly taken on the role of providing food during national food emergencies, and migration in search of wages has increased. These traditional strategies have environmental, economic and social components. Environmentally based strategies include ecological diversification (vlei and streambank cultivation), gathering of wild fruits, hunting and fishing, strict control of access to water and pasture, and, in the case of herders, mobility. Economic strategies to cope with food shortages include increased trade, production of crafts, brewing beer for sale, sale of livestock and household effects, growing drought-resistant crops, storage of foods, and, finally, migration. Social strategies include the increased borrowing of food through extended family links, prayer to rainmakers, raiding, sharing, reducing meals, splitting herds, arranging marriages, begging, and, finally, stealing. In order to reduce the need for expensive governmental feeding programs and to stop food shortages at the village-level, development efforts should include the objective of strengthening the existing, viable coping strategies and a search for new, local ones.

93. Zinyama, L. M., T. Matiza, and D. J. Campbell. 1990. "The use of wild foods during periods of food shortage in rural Zimbabwe." *Ecology of Food and Nutrition* 24(4):251-265.

Studies in various parts of Africa have shown marked increases in the use of wild foods as a source of food in times of severe food shortage. This paper examines the use of wild foods by rural people in seven villages located in the low rainfall regions of Zimbabwe which have experienced repeated droughts and food shortages during the 1980s. It is shown that, unlike other parts of the continent, there was no marked increase in the use of wild foods as a strategy to mitigate the shortages. Instead, wild foods are used mainly as a supplement to the diet even during periods of severe stress. This is attributed to a number of factors, particularly the availability of alternative sources of cash which can then be used to purchase food as well as recourse to government food transfer programs. (Author's abstract.)

### SECTION III

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## SECTION IV

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### SUBJECT AND COUNTRY INDEX

This index contains the numbers of citations from each section which are indexed with the given descriptor.

#### ANGOLA

##### Section I

1, 9, 10

##### Section III

15, 16, 17, 43, 54, 75, 90, 104, 106, 119,  
121, 151, 162, 168, 208, 218, 237, 239,  
249, 258, 259, 260, 262, 291, 293, 322,  
337, 354, 356, 362, 368, 369, 370, 377,  
384, 388, 389, 392, 398, 399, 400, 410,  
411, 412, 417, 419, 429, 445

#### BANGLADESH

##### Section I

13

#### BOTSWANA

##### Section I

13

##### Section II

32

##### Section III

22, 37, 38, 50, 52, 53, 84, 91, 104, 145,  
146, 147, 148, 154, 155, 158, 232, 236,  
255, 256, 272, 291, 306, 309, 350, 351,  
359, 371, 379, 402, 414

#### CAPE VERDE

##### Section I

13

#### CONFLICT MITIGATION

##### Section III

280

#### COPING STRATEGIES

##### Section II

48

#### CROPPING SYSTEMS

##### Section II

3, 79

##### Section III

197

#### EARLY WARNING

##### Section I

11

##### Section II

9, 10, 22, 23, 31, 34, 35, 72

##### Section III

33, 123, 199, 232, 256, 405, 406, 407, 408,  
409, 424

#### EASTERN AFRICA

##### Section II

50

#### ETHIOPIA

- Section I  
5, 9, 10, 13
- Section II  
45
- FOOD AID**
- Section II  
58, 59, 77
- Section III  
3, 52, 67, 69, 70, 79, 85, 103, 139, 142, 153, 159, 210, 243, 312, 313, 314, 346, 356, 368, 369, 370, 418
- FOOD OR CASH FOR WORK AND CASH TRANSFERS**
- Section I  
3
- Section III  
275
- GENERAL**
- Section I  
9, 10, 13, 14
- Section III  
5, 12, 23, 33, 45, 46, 57, 66, 71, 73, 74, 77, 85, 87, 102, 105, 113, 133, 137, 153, 166, 167, 176, 177, 179, 215, 216, 219, 220, 227, 231, 300, 302, 316, 317, 318, 331, 338, 340, 357, 367, 375, 379, 413, 425, 427, 431, 432, 438, 451, 454
- HAITI**
- Section I  
12
- INDIA**
- Section I  
13
- INTERVENTION MODIFICATION FOR CONFLICT AREAS**
- Section III  
33, 389, 417
- KENYA**
- Section I  
13
- LESOTHO**
- Section II  
27, 46, 64
- Section III  
104, 291
- LIVESTOCK PRESERVATION**
- Section I  
2
- Section III  
30, 84, 156, 171, 220, 233, 296, 306, 319, 342, 343, 450
- MADAGASCAR**
- Section III  
311
- MALAWI**
- Section II  
1, 42, 43, 49, 56, 68, 76
- Section III  
48, 61, 64, 160, 175, 183, 185, 202, 211,

- 213, 214, 243, 245, 252, 253, 257, 287,  
290, 291, 305, 307, 311, 333, 334, 335,  
347, 359, 378, 394, 397, 422, 424, 425,  
442, 449
- MALI**
- Section II
- 76
- MARKET INTERVENTIONS**
- Section II
- 43, 51, 65
- Section III
- 9, 11, 20, 24, 31, 39, 44, 78, 94, 95, 97,  
98, 99, 101, 116, 124, 126, 127, 128, 129,  
130, 131, 139, 144, 150, 174, 182, 183,  
185, 186, 204, 205, 224, 226, 241, 245,  
247, 250, 251, 254, 273, 285, 287, 288,  
321, 324, 335, 336, 344, 349, 355, 361,  
374, 383, 385, 386, 423
- MOZAMBIQUE**
- Section II
- 76
- Section III
- 6, 7, 8, 10, 21, 35, 45, 54, 81, 92, 104,  
108, 115, 121, 122, 135, 139, 143, 152,  
200, 206, 207, 211, 226, 234, 262, 264,  
265, 266, 267, 268, 269, 270, 271, 282,  
319, 323, 339, 341, 385, 393, 404, 405,  
406, 407, 408, 409, 415, 416, 417, 437,  
440, 443, 444, 448
- NAMIBIA**
- Section III
- 14, 104, 119, 149, 209, 353, 391, 395, 396
- NIGER**
- Section II
- 45
- RAPID ASSESSMENT**
- Section I
- 7
- Section II
- 35
- Section III
- 51, 55, 56, 60, 310
- RWANDA**
- Section II
- 76
- SEEDS AND TOOLS**
- Section I
- 4, 16
- Section II
- 16, 68, 70
- Section III
- 2, 3, 4, 13, 18, 22, 29, 31, 34, 36, 38, 40,  
47, 63, 65, 72, 76, 80, 81, 83, 86, 88, 89,  
91, 93, 100, 118, 120, 124, 125, 132, 134,  
146, 157, 172, 187, 188, 189, 190, 191,  
192, 193, 194, 195, 198, 202, 212, 213,  
214, 221, 223, 225, 230, 231, 244, 246,  
248, 261, 277, 278, 281, 283, 286, 289,  
292, 293, 299, 307, 308, 320, 330, 334,  
344, 347, 358, 360, 364, 371, 376, 378,  
380, 387, 403, 433, 436, 439, 441, 446
- SENEGAL**
- Section II
- 76
- SOMALIA**
- Section II
- 76

**SOUTH AFRICA****Section II**

18, 26, 33, 50, 67, 71, 92

**Section III**

104, 140, 141, 142, 363, 421

**SOUTHERN AFRICA****Section I**

2, 8

**Section III**1, 32, 47, 109, 110, 114, 138, 140, 141,  
142, 170, 229, 242, 254, 263, 326, 327,  
328, 329, 345, 360, 361, 363, 381, 382,  
434**SUDAN****Section I**

6, 9, 10, 13

**Section II**

51

**SWAZILAND****Section III**

104, 184

**TANZANIA****Section II**

1, 2, 8, 32, 76

**Section III**11, 31, 42, 49, 58, 83, 94, 120, 125, 134,  
173, 191, 194, 195, 196, 211, 213, 214,  
221, 222, 223, 228, 235, 243, 244, 248,  
273, 274, 279, 280, 284, 289, 294, 301,  
344, 371, 373, 442**WATER RESOURCES****Section I**

15

**Section III**6, 7, 8, 50, 63, 88, 89, 151, 201, 298, 337,  
358, 376, 402, 421**ZAIRE****Section III**

284

**ZAMBIA****Section II**1, 3, 4, 5, 6, 9, 11, 13, 14, 17, 19, 20, 21,  
22, 24, 31, 36, 37, 39, 41, 44, 45, 47, 58,  
61, 62, 69, 78, 79, 83, 84, 85, 86, 87, 88,  
89, 90, 91**Section III**25, 26, 27, 59, 60, 104, 107, 124, 136,  
157, 187, 193, 197, 201, 204, 205, 211,  
241, 276, 277, 287, 303, 304, 371, 401,  
426, 439, 442, 452, 453**ZIMBABWE****Section I**

13

**Section II**1, 7, 12, 15, 23, 25, 28, 29, 30, 38, 40, 54,  
55, 57, 63, 66, 73, 75, 76, 77, 80, 82, 93**Section III**18, 62, 78, 104, 112, 113, 167, 178, 192,  
238, 275, 278, 283, 284, 286, 287, 290,  
295, 297, 299, 315, 321, 332, 342, 343,  
348, 349, 359, 366, 372, 380, 383, 420,  
435, 436, 446, 447