Nutrition–relevant Actions in Zimbabwe

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Nutrition–relevant Actions in Zimbabwe

by

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UNITED NATIONS – ADMINISTRATIVE COMMITTEE ON COORDINATION – SUBCOMMITTEE ON NUTRITION (ACC/SCN)

The ACC/SCN is the focal point for harmonizing the policies and activities in nutrition of the United Nations system. The Administrative Committee on Coordination (ACC), which is comprised of the heads of the UN Agencies, recommended the establishment of the Sub–Committee on Nutrition in 1977, following the World Food Conference (with particular reference to Resolution V on food and nutrition). This was approved by the Economic and Social Council of the UN (ECOSOC). The role of the SCN is to serve as a coordinating mechanism, for exchange of information and technical guidance, and to act dynamically to help the UN respond to nutritional problems.

The UN members of the SCN are FAO, IAEA, IFAD, ILO, UN, UNDP, UNEP, UNESCO. UNFPA, UNHCR, UNICEF, UNRISD, UNU, WFC, WFP, WHO and the World Bank. From the outset, representatives of bilateral donor agencies have participated actively in SCN activities. The SCN is assisted by the Advisory Group on Nutrition (AGN), with six to eight experienced individuals drawn from relevant disciplines and with wide geographical representation. The Secretariat is hosted by WHO in Geneva.

The SCN undertakes a range of activities to meet its mandate. Annual meetings have representation from the concerned UN agencies, from 10 to 20 donor agencies, the AGN, as well as invitees on specific topics; these meetings begin with symposia on subjects of current importance for policy. The SCN brings certain such matters to the attention of the ACC. The SCN sponsors working groups on inter–sectoral and sector–specific topics.

The SCN compiles and disseminates information on nutrition, reflecting the shared views of the agencies concerned. Regular reports on the world nutrition situation are issued, and flows of external resources to address nutrition problems are assessed. State–of–the–Art papers are produced to summarize current knowledge on selected topics. SCN News is normally published twice per year. As decided by the Sub–Committee, initiatives are taken to promote coordinated activities. – inter–agency programmes, meetings, publications – aimed at reducing malnutrition, primarily in developing countries.

ACKNOWLEDGEMENTS

The Zimbabwe review was prepared with contributions from Thomas Jayne (affiliated with the University of Zimbabwe and Michigan State University), Julia Tagwireyi (Director of the Nutrition Unit) and N. Lenneiye, an independent consultant based in Harare. Professor Jayne provided most of the material on household food security problem assessment and relevant actions. Ms Tagwireyi compiled most of the nutrition situation analysis along with the analysis of direct nutrition–relevant actions, and Dr Lenneiye provided the material for

the section on food and nutrition policy development. Some of this work drew on recent review material prepared by Ms Tagwireyi and Dr Ted Greiner (SIDA) – whom we are also very indebted to – as part of a forthcoming report for the World Bank. Dr Stuart Gillespie assembled the report from these contributions and edited it.

FOREWORD

Viewing improved nutrition as an outcome of development processes expands the area of concern for policy–makers and practitioners who seek to combat malnutrition. These processes operate at different levels in society, from the individual through to the whole arena of governmental policy and indeed international relationships. The SCN, in deciding on initiating a series of country–wide reviews of nutrition–relevant actions in 1990, aimed to provide a rich base of documented experience of why and how such actions were undertaken and what was their effect on nutrition.

This country–wide approach built on the progress made at the 1989 workshop on “Managing Successful Nutrition Programmes” held at the 14th IUNS Congress in Seoul. The focus here had been on nutrition programmes, and the essential factors determining their success, and the synthesis of findings and individual case studies were later published as ACC/SCN Nutrition Policy Discussion Paper No. 8.

Two other influential documents were the SCN's “Nutrition–Relevant Actions” that emerged from the 1990 workshop on nutrition policy held in London, and UNICEF's 1991 Nutrition Strategy document. Together these provided both a common analytical framework for organising the reviews and a common language for discussing the various actions that impinge on nutrition. The value of such a framework has been demonstrated by the ease with which it lends itself to analyses of both the nutrition problem and its potential solutions. The food – health – care triad of underlying causes of malnutrition, in particular, proved to be a very useful framework for orienting the inputs and subsequent discussions at the 1992 International Conference on Nutrition, co–sponsored by FAO and WHO. Communication and thus advocacy are facilitated when people share such a conceptual understanding.

UNICEF had originally proposed that a series of country–wide reviews be undertaken and the results presented at the 15th IUNS Congress in September 1993. At the time of writing, preparations for this workshop are well underway – in fact, the richness of documented material has necessitated the organisation of an additional two–day satellite meeting in Adelaide. We are extremely grateful to UNICEF for their financial support throughout this exercise. The series editor for these country reviews was Stuart Gillespie, and the SCN Advisory Group on Nutrition (AGN) also technically examined the drafts as these emerged. In addition, I would like to express gratitude to 'the external technical reviewers, selected for their in–depth knowledge of particular countries, who provided the authors with comments and suggestions on initial drafts.

The essential value of these country case studies lies in their ability to describe the dynamics involved when a national government attempts to combat malnutrition. Questions such as the role of the political economy in determining policy options, obstacles met in implementation, how programmes are modified or expanded, and how they are targeted, are all addressed. The need for actions to be sustainable to achieve results over the long–term, and the importance of both measurable objectives and a system of surveillance to monitor progress, are examples of important conclusions. These reviews thus provide valuable insights into the questions of “how” as well as “what”, in terms of nutrition policy.

The country reviews are intended for a wide audience including those directly concerned with nutrition in developing countries, development economists, and planners and policy makers. Along with the output of the Adelaide meeting, they will be valuable for advocacy in underscoring that effective actions *will* improve nutrition. It is hoped that these reviews and the proceedings of Adelaide will provide guidance for a strengthening and expansion of future actions for reducing nutritional deprivation.

Dr A. Horwitz
Chairman, ACC/SCN

PART I: NUTRITION ASSESSMENT AND ANALYSIS

I. INTRODUCTION

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 which in a normal year is a net exporter of food. The improvement can be attributed to some of the following factors: governmental 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 programmes; subsidies on basic food items; a community spirit which remained after the war and facilitated community participation and action in development projects; agricultural policy which has placed emphasis on surplus grain production; sustained donor and NGO support which allowed community–based projects to evolve.

The Government of Zimbabwe has gone some way towards the recognition of the importance of household food security and nutrition improvement programmes. The transitional (1980–1985) and first five–year Development Plans (1986–1990) have “adequate food production and nutrition for all” as clearly stated goals, although the translation of these into concrete and sustainable action has been rather limited. Just as the causes of household food insecurity and malnutrition are multifaceted, so the necessary actions for tackling them cannot be undertaken by one sector. Coordinated intersectoral planning and action is called for. No mechanism or institutional framework to facilitate the process exists yet, though there are now moves in this direction. The lack of such an institutional framework has limited the degree and extent of progress in reducing nutritional deprivation. Future gains or improvements can only be made when an appropriate policy framework is established. The development of a National Food and Nutrition Policy is high on the agenda for the next five year period. Notwithstanding this limitation, a number of policies and institutions established by government since 1980 have contributed to some improvement in the food and nutrition situation, although the magnitude of the improvement has been limited by the uncoordinated manner in which different sectoral policies are implemented.

This review of the nutrition situation in Zimbabwe over the years since independence in 1980 will consider both nutrition–related problems and actions. It is structured in the following way. The first part starts with a brief introductory picture of the current demographic and macroeconomic conditions in Zimbabwe, as context to the main analysis. Secondly, an assessment of the nutrition problem is undertaken which includes various nutrition and mortality outcome data, disaggregated as far as possible by factors such as age, sex, socio–economic group, season and time (trends). Infant mortality, energy malnutrition and micronutrient deficiency disorders in children is described here. Following this, the analysis of the problem is structured according to the three recognised underlying preconditions for adequate nutrition – food, health and care (see UNICEF 1991). Food security is dealt with first, at the national and household levels. Health services and environmental conditions are then described – the level of resources allocated to health and welfare sectors, and how that money is actually spent. The degree of health care coverage, its relevance and quality, along with the population's access to safe water and sanitation systems are included here. Finally, the subject of maternal and child care is explored. This is taken here to encompass the behavioural intra–household decisions and actions relevant to nutrition. How resources are used and services utilized, how households, particularly women, cope. Breastfeeding, child caring practices, health care utilization, and time allocation are all germane to this area. We push the analysis further in this section, in an attempt to understand the main factors that determine the social and economic status of women in Zimbabwe.

The second part of the review comprises an analysis of nutrition–relevant actions in Zimbabwe. This addresses only the major policies and programmes which had the potential to directly influence the food security and nutrition situation since 1980. Firstly, direct actions such as child supplementary feeding programmes, the Community Food and Nutrition Programme, growth monitoring and promotion activities and breastfeeding support policies and actions are reviewed. Secondly, actions relevant to the household food security agenda will be examined in–depth. The final sections consist of an analysis of the institutional aspects of nutrition programming in Zimbabwe, including the process of formulating a national nutrition policy, its structure and content, followed by a concluding section on the main lessons and recommendations for the future to be distilled from this review.

II. SOCIO–ECONOMIC TRENDS

Demographic Trends

Zimbabwe became an independent country in 1980. The Intercensal Demographic Survey (Central Statistical Office, 1991) estimated that the population in 1987 was 8.7 million, with an annual growth rate of 2.6% since 1982, down from 3.1% for the previous 13–year period. For every 100 persons in the economically active period of life, there are 104 dependents, that is, children under fifteen and elderly people 65 and over. If an urban area is defined as one with 2,500 or more inhabitants, then 73% of the population lived in the rural areas. Urban residents are mainly concentrated in two of the eight provinces, Matabeleland North (Mat North) and Mashonaland East (Mash East) where the two largest cities, Bulawayo and Harare, are located. These provinces and Mash West are the areas of major economic activity and are rapidly increasing in population (while the rest of the country is actually decreasing). About 60% of the employed population work in the agricultural sector.

Macroeconomic Trends

General economic trends affect nutrition both indirectly, by affecting food prices, the overall cost of living and real incomes, and directly, by affecting resource allocation to the health sector. GDP in real per capita terms has declined by 17% since 1989 and by 30% since 1982 (Table 1). Real wage rates have also declined by 21% between 1982 and 1987 (more recent data on wage trends are unavailable, but it is widely believed that they have slid even further in the past several years). Moreover, the number of workers in the formal labor force has shown no increase for the past 10 years (for which data is available) even though the population has increased by 35% over that period. Stagnant employment coupled with falling real wages strongly indicates a growing layer of increasingly impoverished households in Zimbabwe.

Table 1: Macroeconomic trends in Zimbabwe, 1975 – 1991

	Gross Domestic Product *per capita*	Inflation Rate	National Average Wage Rate	Exchange Rate
	(Z$, constant 1991)	(1991=1)	(Z$, constant 1991)	(Z$/US$)
1975	12,047	.131	7676	1.76
1976	11,433	.145	7695	1.60
1977	10,143	.161	7590	1.59
1978	9,705	.76	7609	1.48
1979	9,876	.201	7581	1.47
1980	10,619	.211	8866	1.55
1981	12,195	.239	9319	1.45
1982	12,466	.265	10605	1.32
1983	11,419	.326	9481	.99
1984	10,319	.392	8638	.80
1985	10,428	.425	8681	.62
1986	10,357	.487	8371	.60
1987	10,009	.547		.60
1988	10,633	.586		.56
1989	10,566	.667		.47

1990	9,947	.79		.40
1991**	8,790	1.0		.32

** 1991 figures are estimates. Per capita figures are based on population projections in CSO (1984).
Source: Central Statistics Office (1984, 1991); Republic of Zimbabwe, 1990; Masters, 1990.

Average real incomes in Zimbabwe increased substantially in 1981–82. Minimum wages were set, foods subsidies instituted, land resettlement begun, and health, education, and water development invested in. However, drought and international recession led to a decreasing per capita gross national product in 1982 and 1983. Structural problems in the economy already existed, including high levels of inflation and government deficits during the years before independence. Starting in late 1982, the government, under the stimulus of an IMF stand–by credit, began implementing a series of economic stabilization and adjustment packages. These continue up to the present and include devaluation of the Zimbabwe dollar, restrictions on government spending, and removal of subsidies. Davies and Sanders (1987) argued that these measures have had wide–ranging effects on much of the population, in part by increasing prices and decreasing government services.

After 1982, wages fell back to about the same level as at independence and remained at that level in real terms up until 1988 (Loewenson, 1990). Overall private consumption fell from 1979 to 1986 (Loewenson *et al.* 1989). However, more important than average incomes is the fact that income distribution does not appear to have become less skewed. Zimbabwe was estimated to have the most unequal income distribution in Africa (Moyo *et al.* 1985).

Government subsidies to the maize sector – Grain Marketing Board (GMB) trading losses and maize meal subsidies – are estimated to account for 6% to 7% of total government expenditures and 28% of the national budget deficit for 1992/93. Although difficult to quantify, massive agricultural subsidies and parastatal deficits may keep food prices relatively low but contribute to general price inflation throughout the rest of the economy, thus eroding real wages and purchasing power particularly among the poor. The resultant effects on nutrition in particular, and standards of living in general are very likely to be negative.

Families in all regions of Zimbabwe secure their cash needs from many sources, though subsistence and market agriculture predominate, supplying 65–80% of income in one recent study (Stack and Chopak, 1990). The informal sector is pervasive and difficult to obtain data on. In the formal employment sector, Loewenson *et al.* (1989) estimate that the proportion of wage earners below the poverty datum line has fluctuated but was about 40% in 1982 and again in 1987. Formal estimates of unemployment range from 10–20% but are likely to be an underestimate. Formal sector employment has increased by about 1% annually, but the population increase has been nearly 3%.

The government has embarked on an economic reform programme 1991–1995 aimed at stimulating investment and removing obstacles to economic growth. The key areas of adjustment are recovery and improvement of investment, reduction of the budget deficit, and trade liberalization. The potential negative effects of the structural adjustment programme on the poor and vulnerable groups fall into three categories: i) increased unemployment, ii) inflation and price increases, iii) social services cutbacks and increased cost–recovery posing particular hardships on the low income groups. To cushion vulnerable groups, the government has established a social fund to provide a safety net. Whether this fund will be able to adequately support the anticipated needs is not clear, although a number of donors have expressed interest in supporting it. It is interesting to note that nutrition has been singled out as an indicator to be monitored with respect to the impact of the Structural Adjustment Programme. All indications are that nutrition improvement programmes will be needed even more during the coming five year period as they have the potential to cushion vulnerable groups against any adverse impact of the Structural Adjustment Programme.

III. NUTRITION AND MORTALITY OUTCOMES

Degree

It is estimated that the Shona peoples have suffered drought roughly one year in five since precolonial times (Iliffe, 1990). Both the Shona and Ndebele peoples developed successful survival techniques to ensure that times of food shortage rarely caused death from starvation, and this continued to be true throughout colonial times. The only exceptions were when famine was associated with violence, as was the case in the last "killing famine" which took place in 1896–7 (Iliffe, 1990).

The little community–based information available before independence suggests that malnutrition was rampant For example, the World Bank (1983) cites 1977 data on stunting with figures varying from 32% to 43% of children under five and a 1978 study found 11% with weights of less than 60% of expected weight for their age (i.e. severely underweight). In May through June, 1980, OXFAM conducted a nutrition survey in five areas of the country. Of 607 children measured, 30% were below the third percentile in weight for age, Harvard Standard (Sanders, 1982).

The World Bank (1983) compiled data from several small studies done from 1980 to 1982 and, based on this, estimated that by 1982, 21–23% of under–fives were below 75% of median weight for age, 28% were stunted (<90% of median height for age) and 9% were wasted (<80% of median weight for height).

According to Loewenson (1990), the 1984 national nutrition survey found 1–5 year old underweight prevalences of 14.5% (<80% of median weight for age). The survey was repeated a year later and arrived at figures of 11% underweight, 3% wasting, and 32% stunting (MOH Nutrition Department, 1985).

In 1988 a national Demographic and Health Survey (DHS) estimated that 11.5% of children 3 to 60 months of age were underweight, 28.6% were stunted, and 0.8% were wasted (<–2SD, NCHS standards), and another 0.5% were both stunted and wasted (CSO 1989).

Nutrition surveillance data on under–fives attending health facilities (mainly for obtaining their vaccinations) is reported via the national health information system (NHIS). Those identified as being "below the line" (below the third percentile weight for age) on the growth chart in 1988 were 11.4% of attenders (Central Statistical Office *et al.* 1988), equal to the proportion below the 2.3 percentile in the DHS (11.5%). This suggests that the surveillance data are reliable at national level. Surveillance data for 1990 showed a national level of 9.0% for under–fives. Surveillance data by province are tabulated for 1990 in Table 2.

Table 2: 1990 Nutrition surveillance data by province

Age (*months*)	*0–5*	*6–11*	*12–23*	*24–59*
Manicaland	3.9	7.1	13.1	13.5
Mash Central	6.0	9.4	18.1	18.6
Mash East	4.2	6.5	13.4	12.3
Mash West	3.5	5.6	13.0	13.2
Masvingo	2.8	5.5	12.6	13.6
Mat North	6.8	12.5	24.8	25.2
Mat South	5.4	8.9	19.0	21.3
Midlands	2.7	5.7	12.8	12.0
Bulawayo	4.2	3.9	6.5	6.9
Chitungwiza	0.6	1.7	2.2	2.3
Harare	3.3	2.9	4.0	3.6
National Total	3.8	*6.2*	12.2	12.0
Sample sizes:	872,288	81,440	15785	1225164

Source: National Health Information System, as reported in Greiner and Tagwireyi (*1991*)

Age distribution

The average Z−scores for all three anthropometric parameters from the DHS data are plotted in Figure 1. This shows that, in the age group 3−11 months, the average weight for height was higher than the standard mean, while the average height for age was lower. At older ages, Zimbabwean under−fives followed closely the NCHS mean in weight for height, but stunting increased to a prevalence of over 30% before decreasing again to 22% in the fifth year. It is important to note that most nutritional insult occurs before the age of 12 months. After the age of about 20 months, all three measurements are basically static, i.e., no further deterioration occurs[1] .In theory, this pattern of growth revealed in a cross−sectional study could reflect both aging effects and trends over time. However, Moy *et al.* (1991) found a nearly identical pattern of growth for all three parameters in a prospective study of growth in Shamva District. They measured growth monthly in a sample of 204 infants under one year of age followed for the 22 month period September, 1987 − June, 1989. By chance the DHS cross−sectional survey was done during this same period (late 1988). The major difference in the Shamva data was that weight for height declined gradually to about Z=−0.6 by about age 16 months, from which age all three anthropometric parameters plateaued. Clearly, stunting begins early among Zimbabwean infants, possibly at birth.

[1] This is because the children on average follow the “channel” of growth they have reached during the process of active growth retardation. But a “normal” child growing at the third percentile, for example, continues to “lose ground” compared to one growing at the 50th percentile. In this sense some authors, such as Moy *et al.* (1991) are correct in stating that deterioration in growth velocity continues.

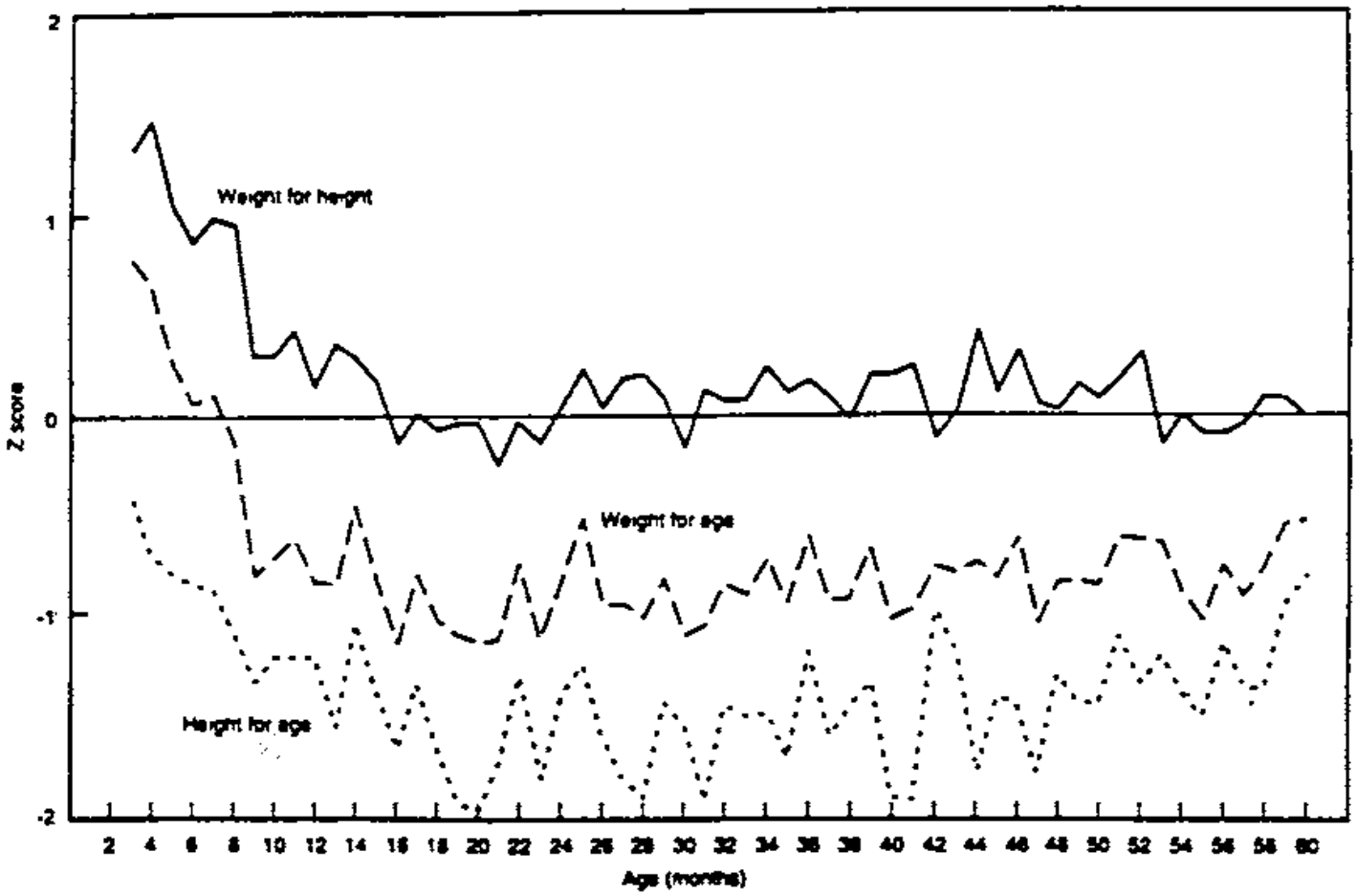


Figure 1: Anthropometric measurements on under−fives, by age, using 1988 DHS data

Source: Greiner and Tagwireyi (*1991*)

Trends

Results of the various national surveys reviewed above are presented in Table 3. This makes it appear that levels of stunting have remained constant in Zimbabwe since independence and that wasting declined rapidly in the first years after independence and has remained at very low levels since then.

Table 3: Nutrition trends in Zimbabwe, based on national surveys from 1982–89

Date	*Reference*	*Age/m*	*Crit.*	*Wt/Age*	*Crit.*	*Wt/Ht*	*Crit.*	*Ht/Age*
1982	World Bank 1983	0–60	75% med.	23%	80%	9%	90%	28%
1982	MOH Nut. 1982	0–36	80% med.	18%	85%	10%	90%	31%
1984	ZNFDC 1985	12–60	80% med.	15%				
1985	MOH Nut. 1987	0–60	–2SD	11%	–2SD	3%	–2SD	32%
1988	CSO 1989	3–60	–2SD	11.5%	–2SD	1.3%	–2SD	29%
1988	CSO et al. 1988	0–60	3rd %tile	11%				
1989	MOH Nut. 1990a	0–60	3% %tile	9.5%				
1990				9.0%				

Source: Greiner and Tagwireyi (*1991*)

Given the dangers of comparing studies reported in such different ways, there is a need to recalculate some of them using identical standards and cut–off points. The only author to do this, as far as we know, is Thomas (1990). As shown in Table 4, he reanalyzed the DHS data to make its cutoff points identical to the ones used in the 1982 national survey. This analysis suggests that there have been substantial improvements, with values for wasting and stunting for both rural and urban children in 1988 less than half those found in 1982. These data seem also to indicate that wasting is worse in urban than in rural areas.

Table 4: Comparison of child nutritional status in 1982 and 1988 by sector and child's age

Height For Age (*% below 90% NCHS*)				
	Rural		*Urban*	
Age (months)	*1988*	*1982*	*1988*	*1982*
3–6	5.9	20.3	6.4	11.8
7–12	8.1	31.0	9.1	16.3
13–24	17.7	37.0	6.1	17.8
25–36	18.5	47.1	9.3	19.1
37–48	19.6	–	3.0	–
49–60	12.0	–	6.1	–
3–36	14.9	35.6	7.7	16.1
3–60	15.3	–	6.5	–
Weight For Height (*% below 85% NCHS*)				

	Rural		*Urban*	
Age (months)	*1988*	*1982*	*1988*	*1982*
3–6	0.7	11.8	0.0	19.5
7–12	1.5	11.8	7.3	11.1
13–24	3.5	9.7	3.0	10.8
25–36	3.8	5.3	3.4	10.3
37–48	4.0	–	3.0	–
49–60	3.9	–	3.1	–
3–36	3.0	9.1	3.4	13.5
3–60	3.3	–	3.3	–

Notes: The 1982 survey is the National Nutrition Survey, which included children aged 0–35 months old and so is not directly comparable with the 1988 Demographic Health Survey, at least for the first age group. Since height for age and weight for height tend to decline with age, the inclusion of 0 to 3 month olds in the ZDHS is likely to reduce the proportions of malnourished children and so increase the reduction in proportions of the children malnourished between 1982 and 1988.

Source: Thomas (*1990*)

Even better estimates of trends can be obtained from repeat surveys on the same population. This has been done at the household level by Kinsey (1992) on one of the most vulnerable groups in Zimbabwe, young children living in resettlement areas. His anthropometric measurements were taken during drought seasons in 1983/84, 1986/87 and 1991/92. Table 5 summarizes his findings on children aged 3–60 months, and shows that only minor, if any, improvement in the nutritional status of children living in these areas has occurred during the past decade.

Table 5: Repeat anthropometric surveys on children 3–60 months (*% below –2 SD*)

	1983/84 (N = 659)	*1986/87 (N = 337)*	*1991/92 (N = 208)*
Ht/age	33.1	25.2	28.4
Wt/age	23.2	26.1	21.2
Wt/ht	7.3	8.9	4.3

Source: Kinsey (*1992*)

Nutrition surveillance data for the age group 2–5 years are available from 1987–90 by province, as shown in Figure 2. This is the age group with the highest levels of malnutrition, where trends are more likely to be visible.[2] There would in general appear to be a slight trend toward improvement, except possibly in the worst off areas, the Matabeleland provinces and Mash Central. (These trends reflect the situation before the 1992 drought began.)

[2] At this age, trends are less affected (or, more accurately, less “buffered”) by breastfeeding or by the mother's knowledge about and time to devote to infant feeding. Thus the relative role of household food security will be greater in this age group than among younger infants.

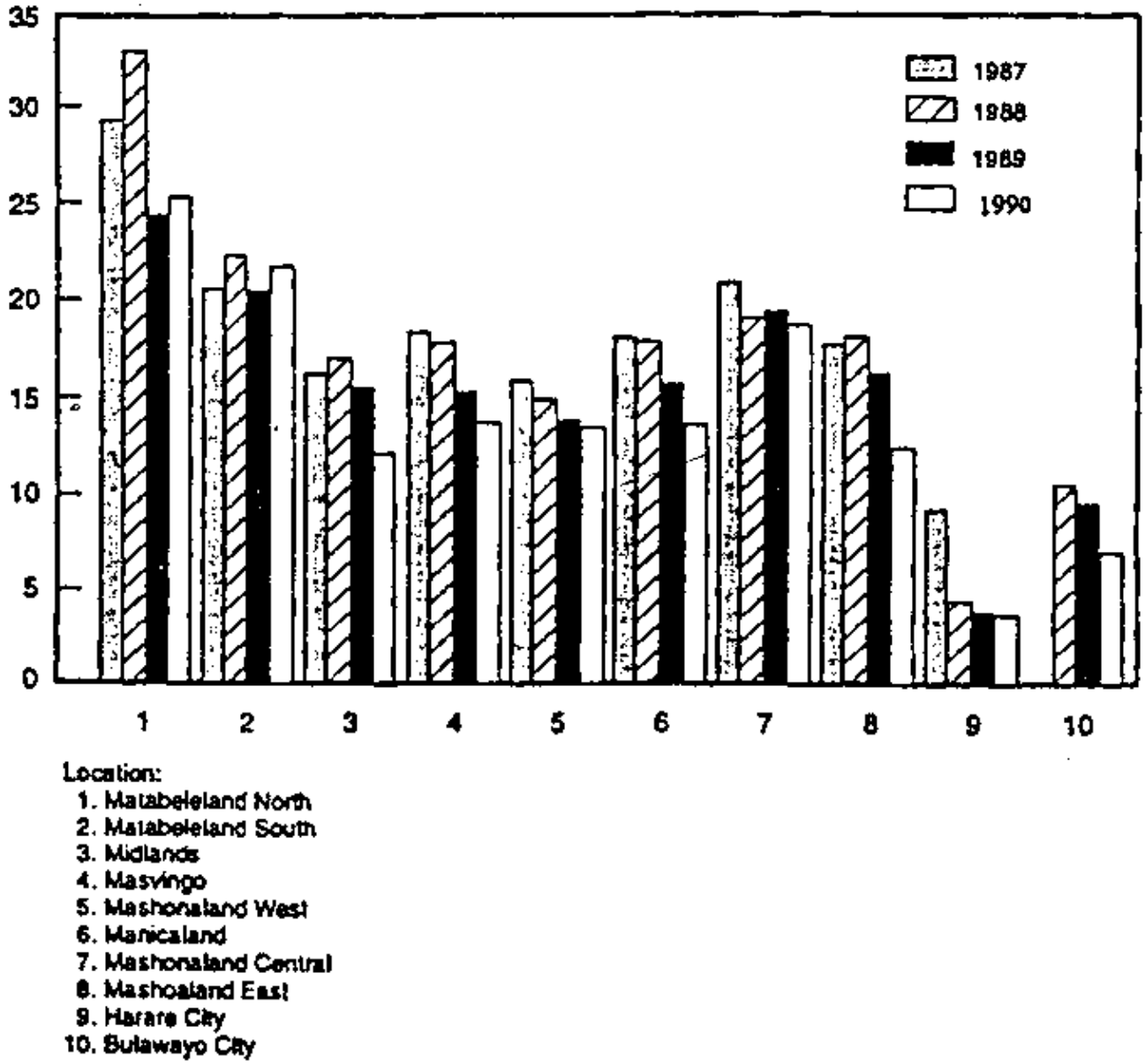


Figure 2: Percentages of 2–5 year olds below the third percentile in weight for age by province, 1987–90

Source: MOH NHIS (*1987–89*)

Ferro–Luzzi *et al.* (1992) measured heights and weights of all residents of 23 villages in Chivi district in late 1990 – early 1991. Their findings for children, divided into age groups, are shown according to Z–scores in Table 6. These are the only data available comparing the different age groups. At least for this population, it is clear that the nutritional status of children 2–5 years old is not worse than that of older children.

Table 6: Anthropometric data for children of different age groups (*Chivi district*)

Age (*yrs*)	*No.*	*Ht/age*	*Wt/age*	*Wt/ht*
0.5*	691	–1.06	–0.88	–0.26
5–10	735	–0.91	–0.95	–0.51
10–18	904	–1.15	–1.20	–0.51

*2–5 years for ht/age and wt/ht

Source: Ferro–Luzzi et al. (1992)

Assuming the data in these studies of rural and urban school age children are valid and reliable, the following conclusions might be hazarded: i) levels of growth retardation are surprisingly high in certain geographic, sex and age categories; ii) growth retardation generally seems to be worse in boys than in girls, and iii) stunting appears to be worse among rural children and wasting surprisingly high among urban children.

Urban–rural differences

Nearly all studies that compare urban and rural preschool child nutritional status find that urban children do better, even in the "high density" areas. The 1988 DHS survey found 14% stunting among urban under–fives compared to 34% in the rural sample (CSO 1989). Figure 3 includes two of the three curves drawn in Figure 1, separated into rural and urban samples. (The shape of the curves is the same, though percent of mean is used rather than Z scores and the curves are smoothed by using six month averages.) This shows that there is substantially more stunting in the rural areas, but not much wasting in either urban or rural areas. The surveillance data in Table 2 suggest that Bulawayo is worse off than the other two large cities.

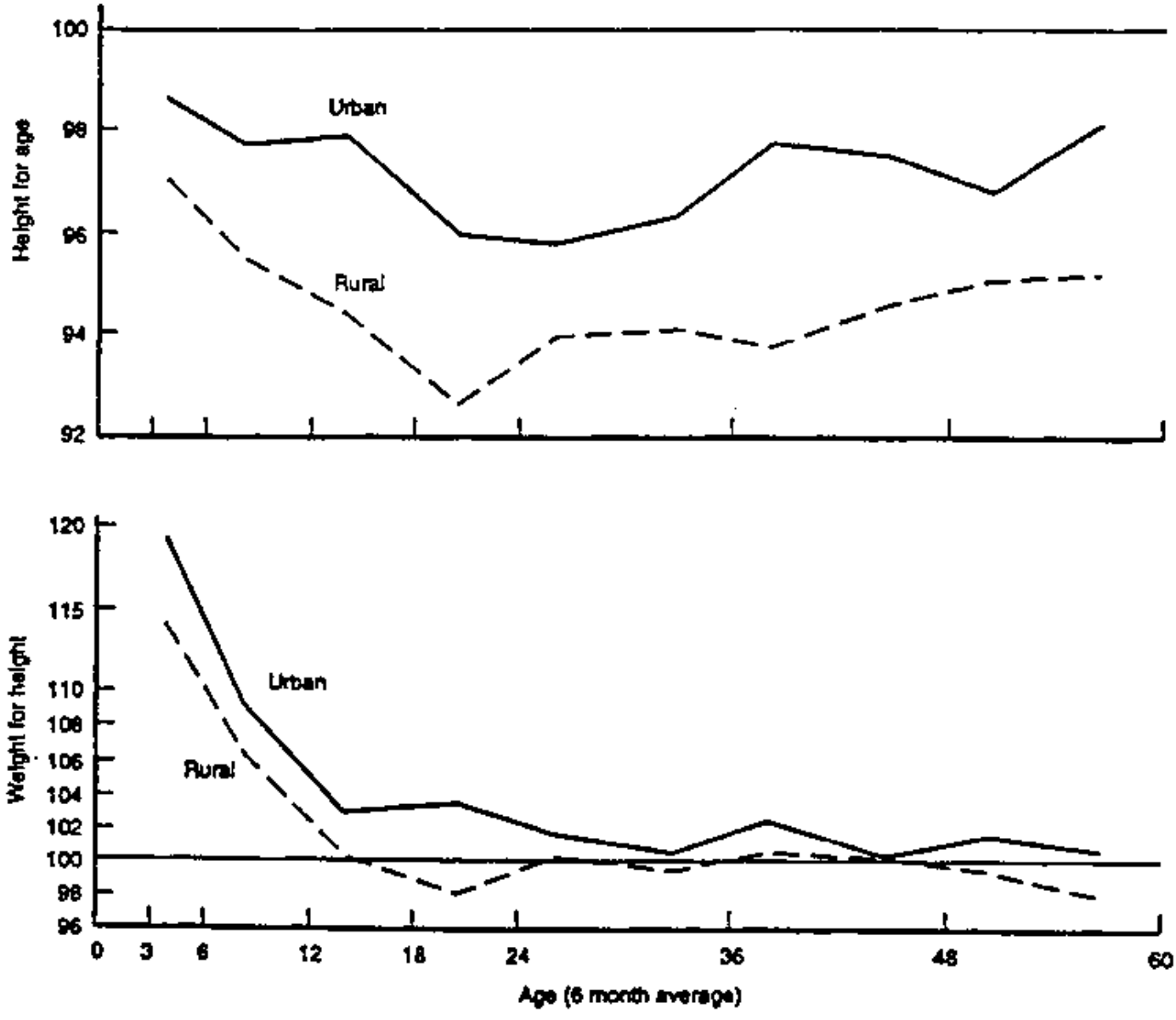


Figure 3: Percentage of mean weight for height and height for age by age of child

Source: Thomas (*1991*)

Socio–economic differences

The importance of poverty–related causes of malnutrition is indicated by the fact that levels of malnutrition are higher in households headed by females, those without remittances from workers in the urban and formal

sectors, those without land, and those without livestock (Loewenson, 1990). A detailed study of the association between socioeconomic status and nutritional status (using anthropometric indicators) of 277 children under five in 179 households was done in the new and rapidly expanding peri–urban Seke section of Chitungwiza Township south of Harare in the 1985 rainy season by Mazur and Sanders (1985). Based on a systematic sample of a small area containing many resettled squatters, it found better growth in children whose father had a higher status occupation. Both Mazur and Sanders (1988) and Thomas (1991) found positive correlations between young child growth and both father's and mothers' levels of education.

Ferro–Luzzi *et al.* (1992) related heights and weights in adults to an index of socioeconomic status and to levels of educational attainment Richer women weighed more than poorer ones and had a higher BMI, but were no taller. For men there were no significant differences. Men with more than five years of schooling were taller and heavier than other men, but there was no difference in BMI. In women there were no significant differences in BMI with higher education.

Based on the World Bank (1983) analysis and the 1985 national survey data, stunting has generally in the past been found to be highest among those families thought to have least access to and control over economic and land resources – workers on the large–scale commercial farm (LSCF) areas. This may have been partly due to poverty and restricted access to food, but access to health care, education and other services, housing and sanitation facilities were also limited. Communal and resettlement areas are also usually located on marginal land with poor productivity and by 1985 their children suffered from stunting at nearly the same rates. Best off were those who have had control over relatively good quality land – owners of small–scale commercial farms (SSCFs).

Thomas (1991) did a similar analysis of stunting and wasting data from the DHS in 1988. Table 7 displays the results, reported as percentage less than 90% height–for–age or 80% weight–for–height based on NCHS median values.

Table 7: Stunting and wasting of young children, by farming area

	No. Obs.	*%<90% ht/age*	*%<80% wt/ht*
All Zimbabwe	2445	13.2	1.0
Urban	584	6.5	1.2
Communal farms	1396	15.2	1.0
LSCF	36	13.6	0.8
SSCF	23	4.4	0.0
Resettlement	75	28.0	2.7

The numbers are small in some cells, but nevertheless suggest two changes in ranking since 1985: the children living in resettlement schemes were now the worst off[3], and communal areas were no longer better off than LSCF areas. SSCF areas continued to have far lower levels of malnutrition than all others, even urban areas. Wasting was actually at slightly higher levels in the urban than in most rural areas.

> [3] Data such as these do not necessarily imply that living in resettlement areas is harmful to children's nutritional status, since this could simply reflect successful targeting of land redistribution to the needy. However, data from the prospective study referred to earlier (Kinsey, 1992) argues that, although resettlement may have successfully targeted the poor, it had failed to improve the situation of their children after a decade.

Agricultural productivity There is some evidence that weight for age is correlated with levels of agricultural productivity. A simple ordinary least squares regression of per capita smallholder grain production per province on percentage of children under the 3rd percentile in weight for age results in a negative coefficient statistically significant at the 0.1 level for 1988 and 1989 (Jayne *et al.* 1990b). This same analysis was extended to district level for 1990 data by Jayne *et al.* (1991). It yielded an R^2 of .21 and the coefficient on per capita production was statistically significant at the .035 level.

Seasonal effects Moy *et al.* (199 la) found no seasonal impact on anthropometric parameters in their longitudinal study of growth in farm worker areas. They hypothesize that this is because (a) families are not engaged in subsistence farming but working for a wage and thus are “immune” to harvest effects, and (b)

there also was no seasonally in diarrhoea incidence (Moy *et al.* 1991b), presumably because boreholes were available that did not get contaminated during the rainy season.

Nutrition surveillance data for 1987–89 disaggregated to provincial level, suggest that the proportion of children below me third percentile line on the growth chart shows quite different degrees of seasonal variation from year to year. Post–harvest declines in proportions below the line vary from 10–30% of pre–harvest levels.

The pre–harvest period is characterized by problems in obtaining adequate access to food, as well as increased diarrheal disease due to the concurrent rainy season. It is commonly stated that heavy work pressures on the mothers' time also occur during the rainy season. Moy *et al.* (1991b) found that the highest levels of rain in Shamva District fell during December–February for both 1987–88 and 1988–89. Women's work loads were heaviest in April–June and in September–November, just before and after the rains were heaviest.

Low Birth Weight

Unfortunately, population–based statistics on low birth weight (LBW) are virtually impossible to obtain. All of the available data are flawed in various ways making it difficult to arrive at unbiased estimates. Data from communities in which referral facilities exist and function as well as they do in Zimbabwe are particularly difficult to interpret. LBW statistics from maternity wards at higher levels in the referral system will overestimate LBW rates and those at nearby centers at lower levels in the referral system will underestimate them.

Data on LBWs began to be collected from health facilities in 1987 via the NHIS. About 72% of Zimbabwean women delivered in hospitals and health centers, according to the October, 1988 PHC/MCH/EPI survey (N=2329), while the MCH Annual Report for 1990 gives figures of 82% for 1988 and 66% for 1989 (MOH 1990b). LBW rates, as recorded at health facilities were 4.9% for 1987, 6.9% for 1988, and 5.6% for 1989 (CSO *et al.* 1989). The provincial LBW distribution for 1989 is shown in Figure 4. The provinces with the highest prevalence are Mash Central and Manicaland. LBW rates are lower in the data reported for Harare, but the central referral hospital is excluded.

Sanders (1989) estimates that the true incidence of LBW in Zimbabwe is 10–15%. The above analysis, along with the data shown in Figure 3, suggest that LBW incidence may indeed be as high as 10% in urban areas and 15% in rural areas. While this would suggest that maternal undernutrition may be a problem, the data from Ferro–Luzzi *et al.* (1991) do not, More direct assessment of the nutritional status of women in the country is greatly needed as is research on the true prevalence of LBW and its determinants.

Anthropometric data from very young infants could also give an indirect indication of whether children are born small. As illustrated in Figure 1, the DHS study showed that stunting was already common by three months of age. The data from Moy *et al.* (1991a) found only small weight deficits at one month of age, whereas height deficits by that age were already substantial (however, height at birth among Zimbabwean newborns does not appear to have been measured by any investigators).

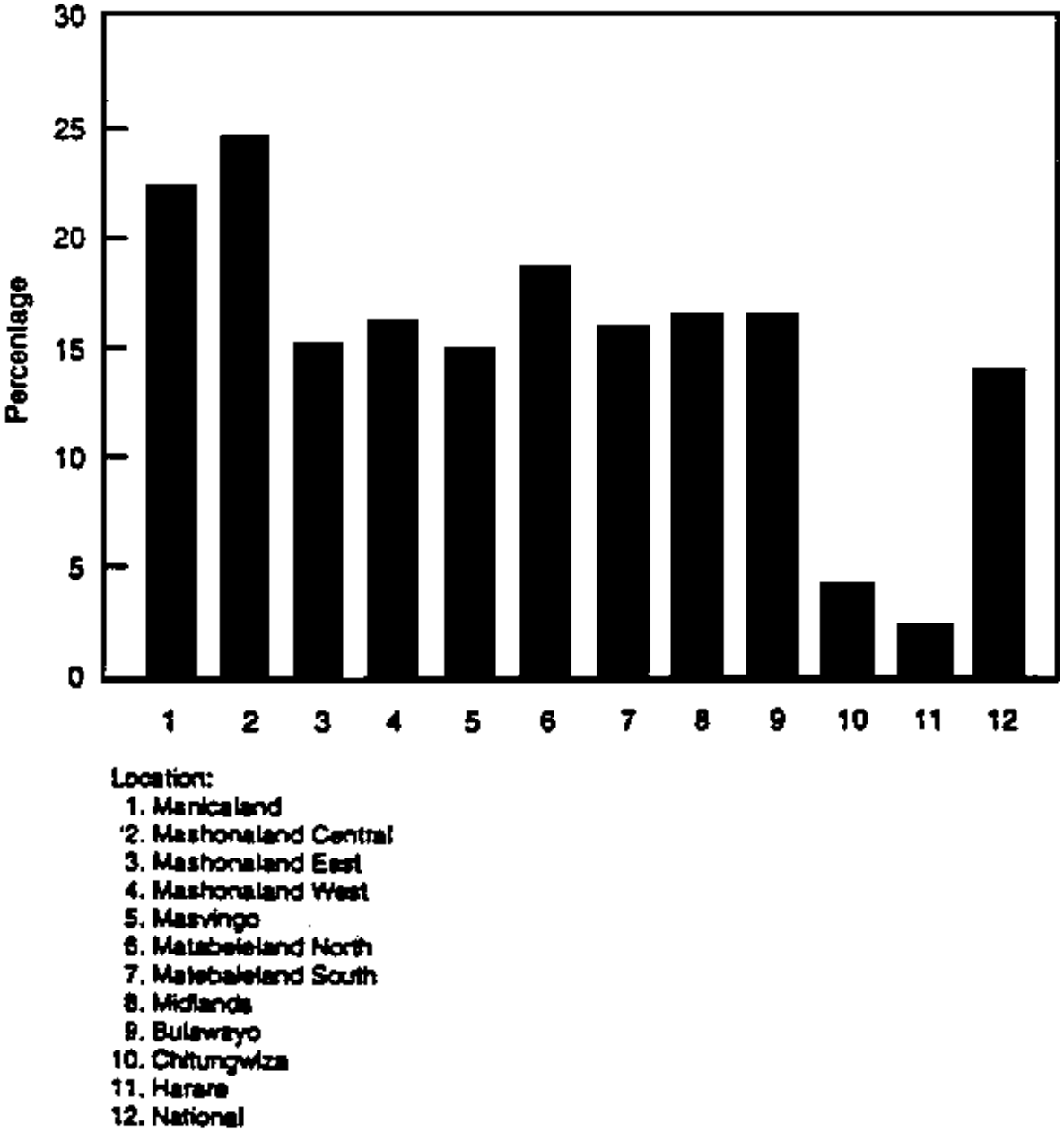


Figure 4: Provincial distribution of low birth weights, 1989

Source: MOH NHIS

Micronutrient Deficiencies

A first overview of the likely extent to which major micronutrient deficiencies were a problem in Zimbabwe as gained from the 1982 World Bank review is presented in Table 8.

Table 8: Frequency of cases of micronutrient deficiencies in health facilities in 1982

Frequency	*Pellagra*	*Goitre*	*Vit. A Def.*	*Iron Def. Anaemia*
Often	50%	47%	5%	42%
Sometimes	33%	33%	44%	40%
Rarely	12%	22%	49%	16%

Never	5%	4%	3%	2%
Total	100%	100%	100%	100%
No. of facilities surveyed	42	55	39	43

Source: World Bank (*1983*)

Iodine deficiency disorders

Goiter surveys conducted for different segments of the population in various parts of Zimbabwe since 1966, showed that at least in certain areas IDD was a problem, with goiter rates from 25–75% (Marangwanda, 1989). In 1988, a national survey was conducted in school children (MOH Nutrition Unit, 1989a). Total goiter rates (TGR) for the provinces varied from 52% in Mash Central to 17% in Mat South and the more severe visible goiter rates (VGR) varied from 7% in Mash East to 0.7% in Mat South. Every province in the country could be classified as suffering from at least a mild level of endemic goiter. The district of Mrewa was most affected, with a TGR of 78% and a VGR of 24%. The overall national rates were 44% TGR and 4% VGR.

Recent studies provide biochemical confirmation that the high levels of goiter seen in Zimbabwe are associated with IDD (Todd and Bourdoux 1991), while Todd and Sanders (1991) have also confirmed that high goiter rates are also associated with altered levels of thyroid hormones.

It appears that Zimbabwean soils and water are deficient in iodine. Cassava is rarely eaten anywhere in Zimbabwe, but other widely consumed, if less goitrogenic, foods have sometimes been suspected of contributing to goiter causation. However, goitrous subjects were not found to consume more rape, onion and brassicas than non–goitrous ones in Chinamora (Chinamora Research Team, 1986). Thiocyanate levels and I/thiocyanate ratios in two endemic goiter areas (Wedza and Chiweshe) indicated that thiocyanate does not have a significant goitrogenic effect in those areas (Todd and Bourdoux, 1991).

Despite all the improvements in the standard of living that have occurred in Zimbabwe, goiter prevalence was identical in 1986 to levels found in the same schools in Wedza in 1968.

Nutritional anaemia

Few studies have been done of the extent and causes of nutritional anaemia in Zimbabwe (apparently none, as far as folic acid and vitamin B_{12} are concerned). Gillespie *et al.* (1991), based on information obtained from a questionnaire sent to the Ministry of Health, state that in Masvingo in 1988, the prevalence of moderate anaemia (<10g Hb/dl) was 3% and severe anaemia (<7 Hb/dl) was 1%. Neither maternal malnutrition nor anaemia are listed by the MOH among the factors that contribute to maternal mortality in those cases that have been investigated.

It is sometimes assumed that many Zimbabweans are protected from iron deficiency due to cooking in iron pots and the consumption of local beer high in iron. However, this protection may be eroding with changes in cooking and brewing practices. Iron deficiency is partly caused by inadequate absorption of iron from meals. Tea drinking is common in many parts of Zimbabwe and tannins in tea will inhibit the absorption of iron present in meals consumed within about an hour of drinking tea (or coffee). Vitamin C enhances iron absorption when consumed with meals, but may be in short supply at least seasonally in the drier parts of the country and consumed between meals in the case of fruits. Occasional consumption of meat and fish may contribute to a better iron status except among the poorest segments of the community.

Another factor causing iron deficiency is iron losses, usually from blood loss. This occurs regularly via menstrual blood loss, as well as during delivery and from injuries. Although hookworm is prevalent in many parts of the country, infection intensities are generally quite low (Chandiwana *et al.* 1989). Bilharzia can contribute to anemia in cases of severe infection. Areas of mild to severe infection occur throughout Zimbabwe. *Schistosoma haematobium,* the type most likely to cause anemia, is at highest levels in the northern and eastern parts of the country (Taylor, and Makura, 1987). The 1990 MOH Department of Environmental Health Services Annual Report states that some districts in Mash Central report an incidence of 90% particularly in school children. The Annual Report states, “it would appear that there is a need to improve the work in Schistosomiasis Control.”

Vitamin A deficiency

MacManus (1968) found high levels of vitamin A deficiency in Matabeleland, particularly in the season (May–December) when cow's milk and green leaves were not available and measles was more prevalent. However, severe xerophthalmia was almost never seen unless connected with measles or protein–energy malnutrition. The World Bank review (1983) cites several sources of evidence (mainly unpublished small–scale studies) suggesting that vitamin A deficiency was probably a problem in various parts of the country. WHO AFRO (1989b) lists Zimbabwe among countries where vitamin A deficiency is not a public health problem, but in which sporadic cases occur.

Fresh vegetables and milk products, the major sources of vitamin A and its precursors, are seasonally in very short supply in dry areas of the country. Only about 8% of calories came from fat by the early 1980s (World Bank, 1983) and cooking fats continue often to be in short supply. The lack of fat in foods for young children may contribute not only to low caloric density but to vitamin A deficiency, since a certain level of dietary fat is necessary for the absorption of carotene from the diet.

Many other nutrition problems result from the same complex of causes of general undernutrition discussed above. For example, lack of adequate food intake in general is a major contributing factor in deficiencies of iron and vitamin A. The extent to which dietary “imbalances” cause additional harm is difficult to estimate because of the difficulty of determining exact dietary intakes and requirements for different ages, physiological states, gender, and levels of activity. Virtually no careful quantitative dietary assessments have been done in Zimbabwe.

Highly refined maize meal is low in niacin and tryptophan and is not fortified in Zimbabwe, thus increasing vulnerability to pellagra at times when adequate amounts of other foods are not consumed. Holton (1979) stated that virtually all adult pellagra cases admitted to hospital were alcoholic.

Child Mortality

At independence, the infant mortality rate (IMR) was 17 per thousand live births (LB) for whites and 120/1000 for the black majority. There was a 1: 3.5:10 ratio in IMR between the whites, urban blacks and rural blacks (Sanders and Davies, 1988b). The 1988 DHS (CSO 1989) estimates that mortality rates among young children in Zimbabwe declined substantially, as follows:

Table 9: Mortality rates, 1978–88

Period	*Infant mortality*	*Child mortality*	*Under–five mortality (0–5/1000 LB)*
1978–82	63.7	42.5	103.6
1983–88	52.7	23.7	75.1

Source: CSO (1989)

The direct estimate for infant mortality from preliminary 1987 demographic survey data is 48/1000 live births (LB), but the Brass method gives a figure of 81/1000, which the CSO considers more likely to be a correct figure (Central Statistical Office, 1991). This suggests that the DHS data cited above are also underestimates. Lower levels of child mortality are found among mothers with higher education and longer birth intervals, and in urban settings.

Nutritional status is correlated with mortality, especially young child mortality (1–4 years). According to MOH data summarized by Loewenson (1990), nutritional causes of infant mortality (deaths under one year of age) decreased from 3% of deaths in 1980 to 2% in 1987. In 1985, “malnutrition” was cited as the third greatest cause of infant mortality, but in 1988 it had moved into first place (MOH, 1990b). This suggests that health sector efforts to control infectious causes of mortality rapidly outstripped the direct efforts so far taken to control malnutrition. Even in hospital settings, case fatality rates for malnutrition continue to be high. The average case fatality rate for malnutrition nationally was 7.6% for infants under one year of age, with Masvingo having by far the worst levels at 16.3% (Mason, 1990).

In the case of 1–4 year–old mortality, nutritional deficiencies caused 27% of deaths in 1983 and 26% in 1987, although the number declined from 862 in 1983 to 571 in 1987. (The decline in measles deaths from 522 in 1980 to 16 in 1989 was the main achievement during this period.) In 1989, "malnutrition" still caused 360 deaths, by far the largest reported cause of death in this age group; in second place was respiratory infection with 135 (MOH, 1990b). Nationally, the average case fatality rate for malnutrition at 1–4 years of age was 10% compared to 3.8% for diarrhoea, 2.1% for measles and 2.0% for acute respiratory infections. Again, Masvingo was by far the worst off at 25.8%

Maternal Nutrition and Mortality

The Ferro–Luzzi *et al.* (1992) study cited above also reported data on nutritional status of non–pregnant women and men. These are presented in the Table 10 according to Body Mass Index (BMI), a measure of chronic energy deficiency (weight/height^2):

Table 10: Nutritional status of non–pregnant women and men

	BMI	*% males*	*% females*
Overweight	>25	5.6	17.4
Normal	18.5–24.9	80.1	70.8
Mild CED	17–18.4	12.6	8.7
Moderate CED	16–16.9	0.8	2.0
Severe CED	<16	0.8	1.1

These data reflect low levels of chronic energy deficiency in this population, both among men and non–pregnant women. There is little evidence of women suffering more than men from energy deficiency. Levels of overweight are much higher than those of CED and women are affected much more than men. While it cannot be stated that Chivi is representative for the country, it was chosen as an area likely to have higher levels of undernutrition than the average. Ferro–Luzzi *et al.* state, "The average BMI of the Zimbabwean adults measured in this study appears to be remarkably higher than that found in some other Third World rural populations such as Ethiopia or India but rather similar to that reported [for Benin]." While caution should be exerted in comparing these data to those Gwebu and Mtero (1983) gathered on pregnant women, it would appear likely that a reduction in the number of underweight women and an increase in the number of overweight women has occurred in the past decade.

Since they may be somewhat related to nutritional status, data on maternal mortality rates are worth citing, but are also scarce. By 1983, maternal mortality rates were estimated to have fallen by 28% from the 1980 level of 144/100 000 (Sanders and Loewenson, 1988). The figures for 1988 and 1989 were 81.5 and 68.8 respectively. The overall number of deaths reported due to pregnancy and childbirth increased however from 206 in 1980 to 264 in 1987 (CSO *et al.* 1989). These data may be underestimates due to under–reporting (MOH, 1990b).

Andrén and Jacobson (1986) found that birth weight among Harare infants was strongly related to maternal weight according to multiple regression analysis. Controlling for other factors, for every 10 kg heavier the mother is, there will be on average a 96g increase in birth weight. If the family income was less than Z$150 per month, the birth weight was 76g lower. If the total years of education for the father and mother was over 14 years, the birth weight was 59g heavier.

Maternal undernutrition could result from the physiological stress caused by short birth spaces and by high energy expenditure among women forced to work long hours at heavy physical tasks even during pregnancy. Gelfand (1971) disagreed with the common belief that intra–household food distribution is biased in favor of men, although no research appears to have been done on this issue. Women themselves are said to attribute their general ill health and exhaustion to overwork and too many children, resulting from pressure from husbands to bear a child every year (Batezat and Mwalo, 1989).

IV. FOOD SECURITY

National Food Security

Zimbabwe's food situation is characterized by a disturbing paradox: grain sales by smallholders have tripled since 1980 and the country normally exports food, yet chronic within–country food insecurity remains widespread. Throughout the 1980s, Zimbabwe received international acclaim for its agricultural policies and the consistent grain surpluses which they generated, while malnutrition, an issue assigned to the health sector, was attributed to failures within the Ministry of Health. This view has obscured the extent to which agricultural policies – irrespective of their success in generating national food surpluses – influence nutritional status through their impact on the redistribution of food surpluses, food prices, the real incomes of the poor, and the nutrient content of food consumed. Inadequate access to food has been claimed to be one of the most important underlying causes of malnutrition in Zimbabwe (Chisvo, 1992; National Steering Committee on Food and Nutrition, 1990; Moyo *et al.* 1985).

Since independence in 1980, the food policy objectives of the Government of Zimbabwe have been, *inter alia:* i) income growth among rural smallholders; ii) food security, with particular attention to the urban and rural poor, iii) stability in prices and supplies of basic foodstuffs; and iv) the minimization of budgetary losses arising from government marketing and pricing operations (GOZ, 1982; 1988).

Grain pricing and marketing policies have been primary instruments to achieve these broad objectives. The expansion of Grain Marketing Board (GMB) buying depots into the communal lands was a pillar of post–independence policy to promote income growth among smallholders. Producer prices were normally kept above export parity. Agricultural credit disbursed to smallholders increased dramatically, and repayment was tied to crop sales to GMB. These policies contributed greatly to the dramatic rise in GMB grain intake from the smallholder sector (Rohrbach, 1989).

However, perceptions have lagged behind reality since the mid–1980s. Since 1985, the growth rates of grain production and supply have been outstripped by growth rates of population and demand. The maintenance of large grain stockpiles carried forward from the mid–1980s has prompted discussion of methods to dispose of maize surpluses, such as the manufacture of ethanol for fuel, and has obscured Zimbabwe's trend since 1985 toward national grain deficits and chronic food shortages in some areas.

Figures 5 and 6 present trends in area planted to maize over the past decade. Commercial maize area has declined at a rate of 18,000 hectares per year since 1981. Smallholder maize area peaked in 1985 and has declined at an average rate of 55,000 hectares since then. Most of the decline in smallholder maize area appears to be in the lower–rainfall areas; Mashonaland maize area has been roughly unchanged over the past five years.

Commercial sector maize yields have been stagnant over the past 15 years, according to Agritex data. Smallholder yields in the Mashonaland provinces have been trending upward over the decade, but all other provinces show little improvement in productivity since 1985.

Both smallholder and commercial maize production fluctuate considerably with the weather (Figure 7). However, production from neither sector has ever exceeded its 1984/85 level. Most of the stagnation in maize, production is due to declining area. Given average yields, the maize production base is shrinking at a rate of 90,000 and 53,000 tonnes from the commercial and communal sector each year. After accounting for population growth, maize production is about 25% lower in 1991 than at independence (Figure 8).

The production stagnation is partially due to a consistent slide in real maize producer prices since 1981 (Figure 9). Real maize prices were, on average, 25% higher during the first half of the 1980s than during the second half. With inflation currently running at 25%–30%, the 1992/93 pre–planting price of Z$325 per tonne is even lower in real terms man the 1991/92 price – the lowest producer price in real terms since 1970. *Yet lower maize producer prices have not resulted in lower consumer prices for maize meal.* An increasing proportion of the value of industrially–processed maize meal is taken up in marketing costs. Higher marketing costs over the past decade, while commonly attributed to GMB, are also due to substantial increases in subsidies and margins to industrial millers (Figure 10).

Smallholder maize deliveries to GMB rose impressively during the first five years of independence, but have shown little upward trend since 1985 (Figure 11). This growth is likely to be slowed further if GMB shuts down

depots in remote smallholder areas as currently planned. Commercial maize supplies, on the other hand, have been declining at a rate of 90,000 metric tonnes a year since 1981.

Meanwhile, the demand for GMB maize has increased at about 5.5% per year since 1985, reflecting rapid urban population growth (Figure 12). Counting the 1992/93 marketing year, maize demand has now exceeded supplies in the past three years. It is also expected to do so in 1993/94 due to poor input and credit supply to farmers in the 1992 planting season, and because of inadequate draft power within the smallholders sector following the drought (when cattle were either sold off or were too weak to plough much land).

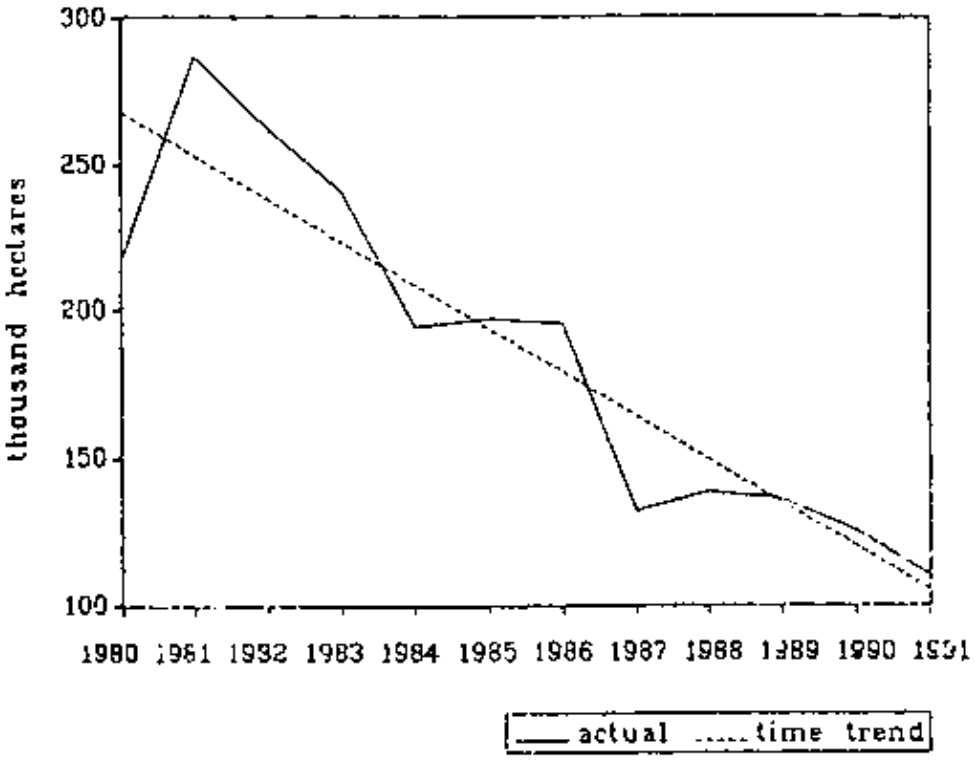


Figure 5: Maize area planted by commercial sector, 1980–91

Note: Specified years are harvest years. Figures for 1991 are estimates.
Source: Central Statistics Office (*various years*)

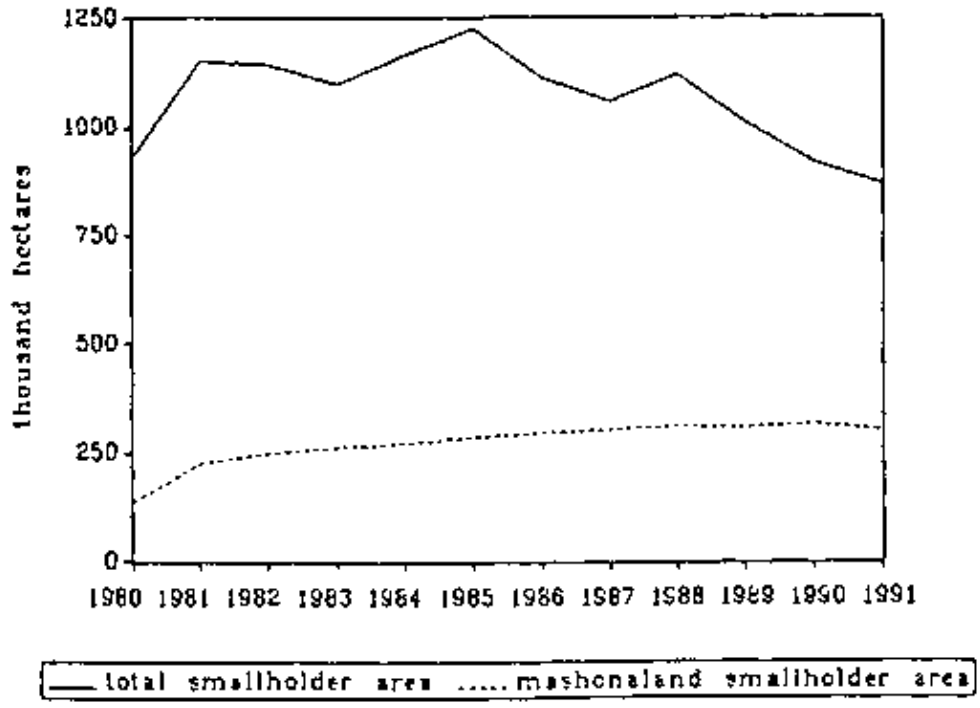


Figure 6: Maize area planted by smallholder sector. 1980–91

Note: Specified years are harvest years. Figures for 1991 are estimates.
Source: Agritex Crop Forecast estimates (*various years*)

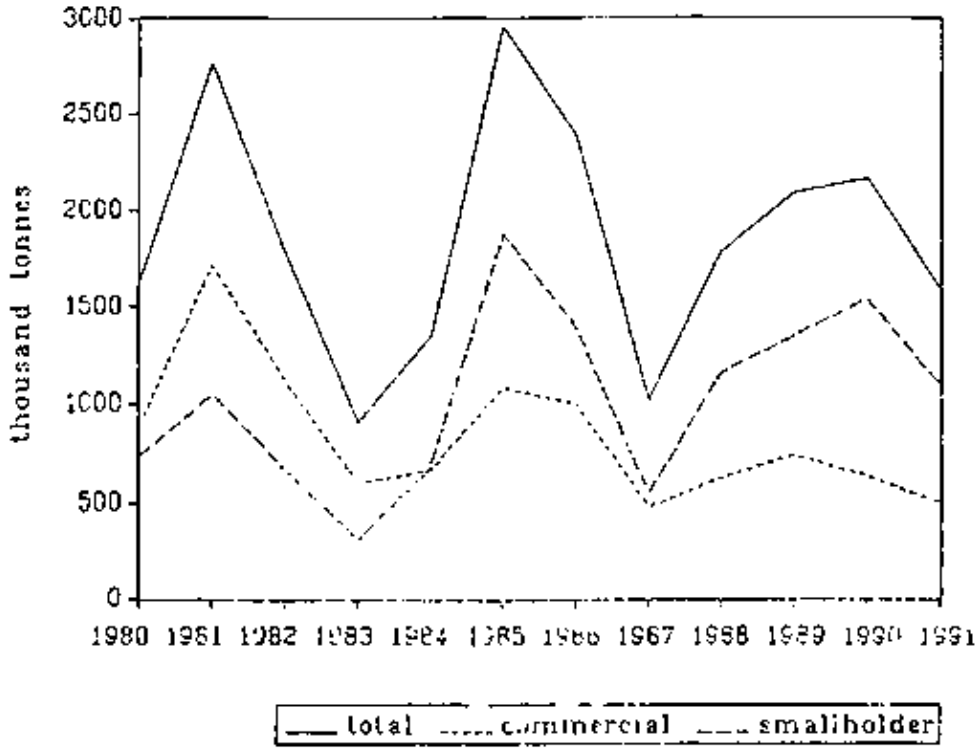


Figure 7: Maize Production in Zimbabwe, 1980–91

Note: Specified years are harvest years. Figures for 1991 are estimates.
Source: Agritex Second Crop Estimates (*various years*)*; Central Statistics Office* (*various years*).

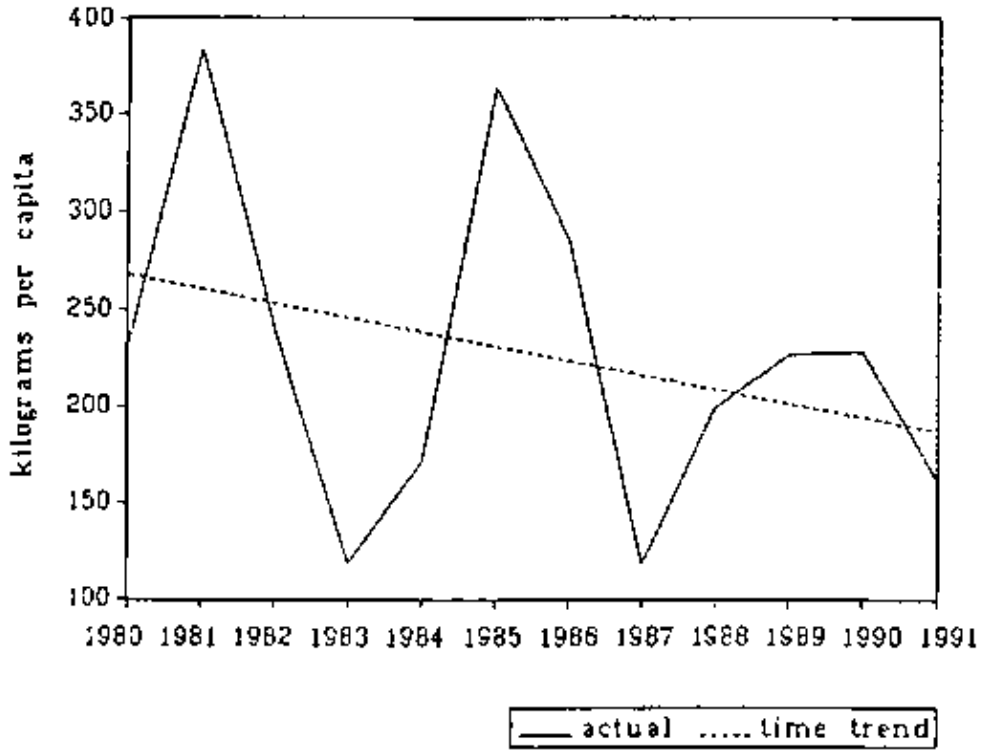


Figure 8: Maize Production per capita in Zimbabwe, 1980–91

Note: Specified years are harvest years. Figures for 1991 are estimates.
Source: Agritex Second Crop Estimates (*various years*) *Central Statistics Office* (*ND*).

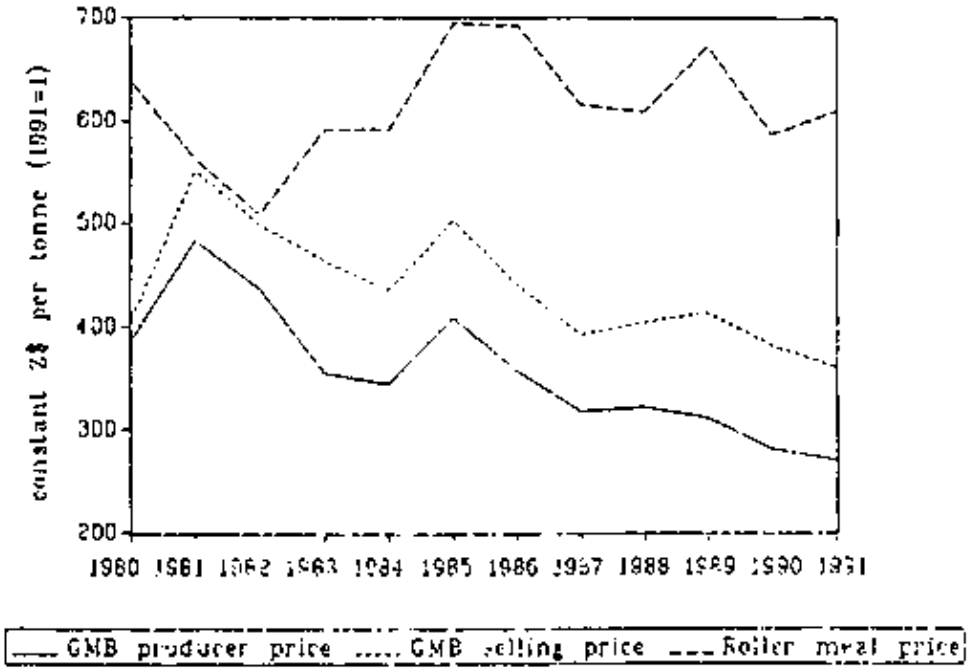


Figure 9: Official Maize and Roller Meal Selling Prices, 1980–91

Note: Production and selling prices apply to marketing years (*e.g.. 1980 = April 1980 to March 1991*).
Source: Agricultural Marketing Authority (*various years*)*; Ministry of Industry and Commerce files.*

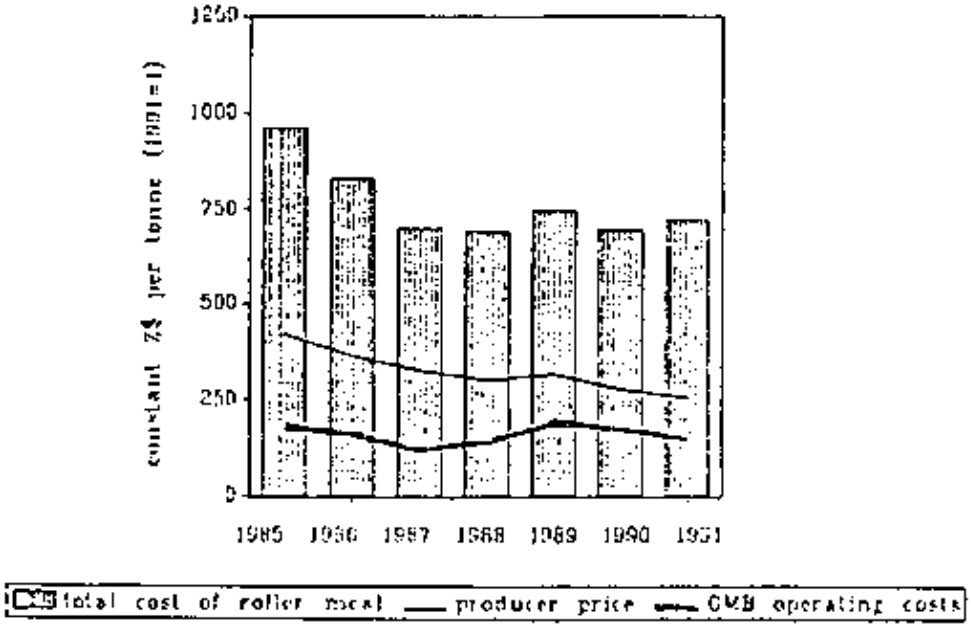


Figure 10: Total Cost of roller meal (*including subsidies*)*, GMB producer prices, and GMB operating costs. 1985–91*

Note: GMB prices and costs apply to marketing years (*e.g., 1980 = April 1980 to March 1981*).
Source: Agricultural Marketing Authority (*various years*)*; Ministry of Industry and Commerce files.*

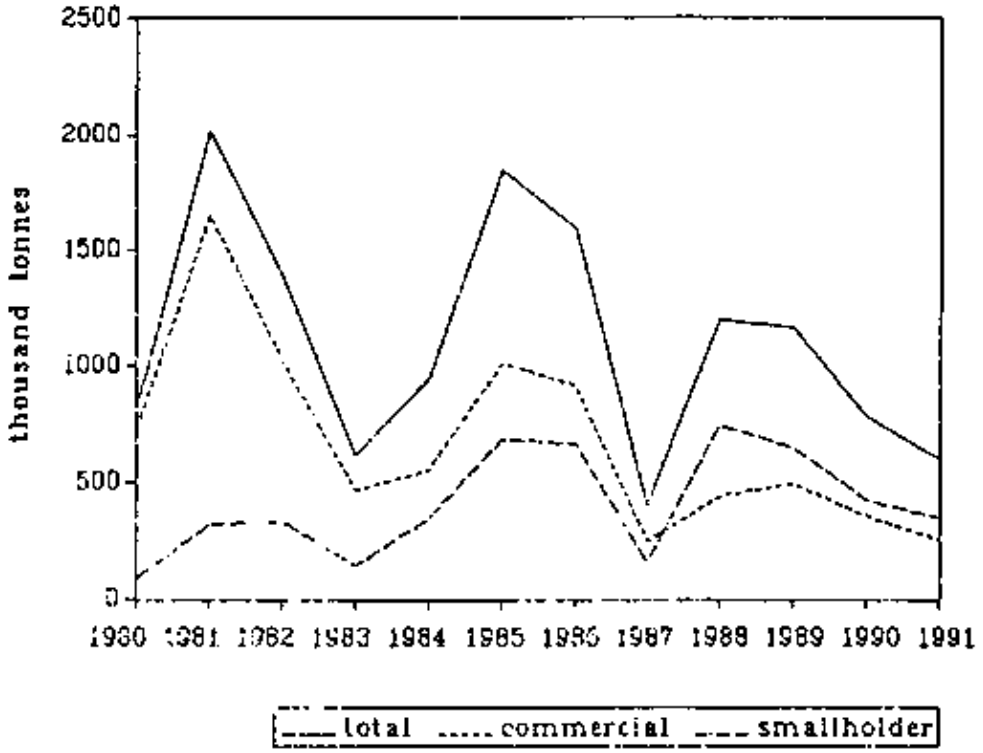
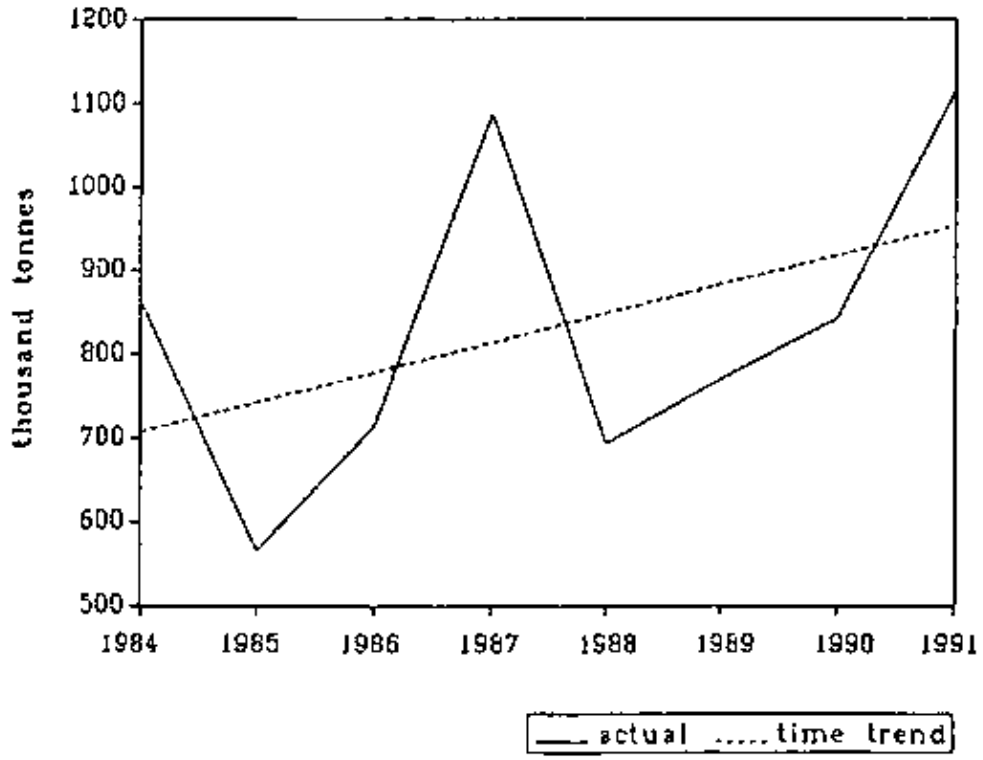


Figure 11: Maize deliveries to the Grain Marketing Board, 1980–91

Note: Specified years are marketing years (*e.g., 1980 = April 1980 to March 1991*)*; Figures for 1991 are estimates.*

Source: Agricultural Marketing Authority (*various years*)*.*



Note: Specified years are marketing years, (*e.g., 1980 = April 1980 to March 1981*)*.*

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Source: Agricultural Marketing Authority (*various years*)*.*

Factors responsible for the decline in maize self–sufficiency:

The gradual decline in per capita maize production and supply, while exacerbated by poor weather, also appears to have several underlying structural causes:

i) The slide in real maize prices since 1985: Producer prices are 25% lower than in 1985, after adjusting for inflation. Since then, there has been little improvement in productivity to offset the effect of declining prices on profitability;

ii) The improved hybrid seed varieties that stimulated smallholder productivity during 1980–85 are now almost universally adopted. A new set of technological improvements or management practices is necessary to stimulate additional gains in productivity;

iii) Agricultural Finance Corporation (AFC) credit to smallholders has been declining since 1987 while input costs have been rising. The amount of ammonium nitrate and Compound D fertilizer that can be purchased with AFC credit disbursed to smallholders is now 111,000 metric tonnes compared with 205,000 tonnes in 1987. Declining input use, along with relatively poor rainfall, may explain why smallholder maize yields, even in the relatively productive Mashonaland provinces, have exceeded their 1985 level only once;

iv) Input delivery systems continue to be largely unresponsive to smallholder needs;

v) Withdrawal of marketing infrastructure: Even though 17 additional grain buying depots have been established since 1985, the number of rural collection points has declined from over 100 in 1985 to 42 in 1989 to 9 in 1991. The major reason for this withdrawal is cost;

vi) National population growth of 3% per year. The population is now 20% larger than it was in 1985.

To evaluate the food security–related implications for nutrition over the next five years, a recent study has projected Zimbabwe's expected maize supply, demand and trade position at current price levels (Jayne and Chisvo, 1991). Outcomes were simulated over a 3–year period (1992/93 marketing year to 1994/95 marketing year). Two different rainfall scenarios were examined: (a) a normal rainfall case; and (b) a drought case (*i.e.,* yields are one standard deviation below the mean).

Table 11 presents the projected maize supply, demand and trade position based on the existing structure of the market and current real producer prices (Z$270 in 1991/92 marketing year = Z$338 in 1992/93, assuming a 25% inflation rate). The estimates are derived by setting yield levels at 10–year trend estimates and all other predetermined variables at their 1990/91 levels.

The increase in projected maize deficits over time is due mainly to population growth and negative trend effects in commercial maize area. These trends could, in the short run, be temporarily reversed by favourable weather or changes in policy. Nevertheless, the data suggest that Zimbabwe's present maize deficit is not simply a transitory phenomenon due to drought. Without significant changes in productivity or policies related to price, land, or market regulation, *Zimbabwe appears destined to be a net grain importer for much of the 1990s.*

Table 11: Projected national maize supply, demand and deficits under status quo policies and current real price levels and average rainfall

	Maize Supply	*Maize Demand*	*Net Deficit*
Year	*000 metric tonnes*		
1992/93	770	833	–63
1993/94	764	875	–111
1994/95	758	919	–161

Food prices

A large number of food prices were controlled and/or subsidized in Zimbabwe at independence. These were felt to benefit mainly the urban consumer, to be less well targeted to the poor than other welfare approaches,

and to be too heavy a burden on the Treasury; consequently a policy of gradually phasing them out has been in place since 1983.

Zimbabwe will encounter a food price dilemma during the 1990s. On the one hand, the reversal of Zimbabwe's slide toward maize imports will require, among other things, substantially higher producer prices. Yet higher food prices will exacerbate poverty and food insecurity among low–income consumers. The need to cushion the poor against rapidly rising staple food prices will be even more pressing in an environment of falling real wages and incomes, which is expected to characterize the next several years in Zimbabwe. At the same time, the government's commitment to reduce GMB deficits under the Structural Adjustment Programme will simultaneously exert downward pressure on producer prices and upward pressure on consumer prices.

In the longer run, technical innovation, improved management practices and resettlement offer possibilities to relieve the food price dilemma. Improved farm productivity can reduce per unit costs of production and thus allow lower prices to be passed onto consumers without jeopardizing production incentives. However, very little new technology is on the shelf, especially in the lower–rainfall areas of Zimbabwe where food insecurity appears to be most severe. Likewise, resettlement offers the potential to substantially increase crop cultivation, without requiring higher producer prices, through more intensive use of underutilized land. However, the World Bank (1991) estimates that the process of resettlement will require at least five to ten years before a significant amount of land can be productively utilized by smallholders.

Food availability

Data on food availability are less accurate than food consumption data. These were compiled by the Ministry of Agriculture and FAO until 1987, were then discontinued because of personnel shortages, but may be resumed in the near future. Data up until 1987 are presented in Table 12. These show that there has been a gradual increase in per capita availability of calories but a slight decline in the availability of protein in Zimbabwe since 1961–63. The proportion of calories coming from fat appears to have declined in 1987, returning to 1961–63 levels. At this aggregate level, protein is adequate for requirements but calorie levels are marginal. During this period the proportion of calories coming from cereals decreased due to the increased availability of sugars and oils. The proportion of protein coming from cereals has increased slightly due to the decline in availability of pulses and, since 1971–73, of animal foods. Availability of vegetables, fruits and tubers has stayed stable at fairly low levels.

Conclusion

Zimbabwe has already begun the process of structural adjustment. While these changes are ultimately expected to raise the country's rate of economic growth and the living standards of its people, certain short–run problems – inflation, currency depreciation and lower real wages – are already being felt. Strategies are clearly needed in the immediate future to guide policy makers attempting to reduce government deficits associated with food marketing without cutting off smallholders from market outlets, introducing instability in food supplies and prices, or exacerbating food access and affordability among vulnerable groups. Furthermore, these short–run strategies would obtain greater donor support if they complement rather than undermine longer–run developmental and budgetary objectives.

Table 12: Average food availability in Zimbabwe

YEAR	1961–63	1971–73	1981–83	1985	1987
CALORIES (kcal/caput/day)	2019.8	2118.6	2153.3	2127.2	2194.4
Percentage from:					
– Cereals	70.7	66.1	64.5	61.4	63.3
– Roots, tubers	1.9	1.5	1.3	1.6	1.5
– Sugars, honey	5.8	8.3	11.1	12.4	12.7
– Pulses, nuts, oilseeds	9.6	8.6	6.1	7.0	6.0
– Fruits, vegetables	1.5	1.3	1.3	1.2	1.2

– Meat/fish/dairy/eggs	5.0	4.9	4.1	3.7	3.8
– Oils, fats	2.5	5.8	7.3	8.0	7.1
– Others	3.0	3.5	4.3	4.7	4.4
PROTEIN (g/caput/day)	57.2	57.1	53.1	51.0	53.5
Percentage from:					
– Cereals	66.8	66.2	70.3	68.7	70.3
– Roots, tubers	0.7	0.6	0.6	0.7	0.7
– Pulses, nuts, oilseeds	16.1	15.0	13.2	15.6	14.3
– Fruits, vegetables	1.7	1.6	1.7	1.6	1.5
– Meat/fish/dairy/eggs	13.3	15.0	13.2	12.1	12.1
– Others	1.4	1.6	1.1	1.3	1.1
PERCENTAGE CALORIES FROM:					
– Protein	11.6	11.0	10.1	9.8	10.0
– Fat	16.3	18.6	17.4	18.0	16.5

Source: FAO

Household Food Security

Household food security cannot be separated from the issue of poverty. At independence, Zimbabwe inherited a poverty problem among the blacks, especially in rural areas. Poor farmers have difficulty in getting out of the vicious cycle of poverty, even if they are healthy and well–nourished enough to work hard all year. They tend to have poorer land, and less access to credit. Even a factor such as lack of draft animals dooms them to lower productivity. Only among the poor is there a need to analyze the many causes of malnutrition that may be related to household food security and access to health care. Those with adequate funds, for example the larger commercial farmers, have access to food and access to adequate health care in virtually all circumstances.

There is no doubt that access to food can be severely constrained at times in many parts of Zimbabwe, In most years, households in at least some parts of the country are short of food around the period November–March. It is estimated that an average of about one–fourth of rural farming families run out of food stocks before each harvest (National Steering Committee on Food and Nutrition. 1990). In an April, 1990 study of households in three communal areas in natural regions[4] III, IV and V, 38% indicated that their grain stocks from production and carryover stocks had been depleted by December, 1989 (Jayne *et al.* 1990b).

[4] Zimbabwe is divided into five agro–ecological natural regions (NRs) ranked I, II, III, IV, and V. Nrs I and II (where 19% of small farmers live) receive over 750 mm average annual rainfall and are suitable for intensive farming. NR III (21% of small farmers) is transitional, receiving 650–800 mm rainfall. NR IV (42% of small farmers) receives under 650 mm average annual rainfall and is drought–prone. NR V (18% of small farmers) is inappropriate for crop production due to limited and inconsistent rainfall (Rohrbach et al, 1990).

Immediately after independence, a massive food relief program was mounted, funded by the United Nations High Commission on Refugees and administered first by NGOs and later the Department of Social Services. In the drought years of 1982–3, 1983–4, 1984–5 and 1986–7, (and again now during the 1992 drought) large proportions of the country lacked access to food through normal channels for several months at a time – one to two million people having been registered as requiring drought relief during those years. In 1983/84, drought relief consumed slightly over 2.3% of the entire government budget (Sanders and Davies, 1988a). The mass media carry sporadic stories of individuals in isolated areas who, it is said, literally starve to death

for lack of access to any food.

Food expenditure

The proportion of household expenditures allocated to food normally correlates negatively with income, if own production can be controlled for. Loewenson (1990) cites data from a 1985 national study (Central Statistical Office, 1988) showing the following:

Table 13: Household food provisioning, by farming region

	LSCF	*SSCF*	*Resettlement*	*Communal*	*Urban*
% Household exp. going for food	35	15	20	22	30
% of Consumption from own production	6	31	28	26	1

Source: CSO (*1988*)

It is difficult to draw many conclusions from these data, since “per cent of consumption from own production” refers to total consumption, not only food consumption. Families working on the large scale commercial farms (LSCF) may be at risk, since they produce such a small amount. Families on small scale commercial farms (SSCF) are less at risk because they spend a low proportion of income on food and produce more of their own. Urban families produce little and therefore must spend more of their income on food.

For the lowest income quartile in one communal area, 40% of total household expenditure went on grain and grain meal purchases alone during a good rainfall year, suggesting that levels of risk are quite high among the lowest income groups (Chisvo *et al.* 1991). In a sample of 179 households in urban Chitungwiza in 1985, Mazur and Sanders (1988) calculated household food expenditure during the pre−harvest season to be about 40% of income.

In a study of the social reasons for admission noted on hospital records, one−third of clinically malnourished children were from families with alcohol problems (World Bank, 1983). Women are generally said to abuse alcohol less often, though World Bank (1983) found heavy beer−drinking in women as well as men.

Food consumption

Food consumption data are rare. As regards food frequency, according to World Bank (1983), a 1981 Bindura study that found that 97% of under−fives ate *sadza* (stiff maize porridge) and vegetable “relish” (sauce) twice a day. Milk, eggs and beans were never eaten by 65%, 87%, and 84% of children on large−scale commercial farms (LSCF's) compared with 12%, 9% and 16% in the urban population and meat was seldom eaten by either group, but less often in the rural one.

From December 28, 1987 to January 5, 1988, a food frequency study (Benhura and Chitsiku 1988) was done on 172 households randomly selected from 11 villages in the rural district of Mutambara based on 24−hour recalls done on seven consecutive days. On average, three meals (including “casual meals”) were consumed per day. The foods consumed (in proportion of all meals in which they were contained) were as follows: cereals (84%), leafy vegetables (42%), dairy products (26%), animal products (21%), legumes (4%), and edible insects (3%). One marked finding was the substantial amount of food which is purchased rather than grown (pumpkin leaves, beans and mangoes being the only foods grown more than purchased). Compared with the earlier reports mainly from the 1950s, there was less consumption of wild animals, but consumption of insects had remained at high levels. This presumably reflects environmental changes in the area which have reduced the levels of wild animals but not of insects. Benhura and Chitsiku state that the heavy use of commercial roller meal may reflect a depleted state of private stocks due to poor rains in the previous years. High consumption levels of roller meal are also undoubtedly due to the subsidized price it has enjoyed. Although increased use of such refined food is a concern (for example, increasing the risk for pellagra), Benhura and Chitsiku believe that the wide variety of foods still consumed in this area helps protect against nutrient deficiencies.

V. HEALTH AND ENVIRONMENT

Resource Allocation

In 1980/81, the average per capita annual expenditure on private sector health care plans was Z$144, compared to Z$31 for urban public health care services and $4 for the rural population (Sanders and Davies, 1988b). Many improvements in health care for the poorer segments of society were introduced in the following years as the Government adopted and began vigorously moving to implement the Primary Health Care strategy for health care delivery. Health care was to be free for those earning less than Z$150 per month – me majority of the population (Davies and Sanders, 1987). Government spending on health care has increased or decreased according to the prevailing economic climate (for example, a 47% increase in 1981/82 was followed by a 9% decrease the next year). While expenditures on health care by the Government have fallen in real terms between 1980 and 1988 (CSO, 1989) – consistent with declines in gross domestic product and government revenue generation – access to modern health facilities has expanded dramatically in Zimbabwe since independence. By early 1987, 274 new rural health centers had been built and 7000 village health workers trained. All urban families and 62% of rural families have access to health care facilities (in less than one hour via public transport; UNICEF, 1990b).

The proportion of the health budget spent on preventive services increased from 6.7% to 14% soon after independence where it has remained. The budget for Parirenyatwa, the central teaching hospital, was as great as all the mission hospitals put together at independence, though the latter provide 64% of all rural beds. This imbalance was gradually reduced through 1987/88, but then the trend reversed. (Loewenson *et al.* 1990).

Health sector programmes for improved management of diarrhoea and acute respiratory infections, both in the home and at primary health care levels have been vigorously pursued, as has an expansion in the availability of essential drugs. Vaccination coverage has greatly increased, from 25% fully immunized in 1983 to 80% in 1988 (MOH, 1990b). The percentage of out–patient attendance due to diarrhoea declined from 33% in 1980 to <10% in 1988 (UNICEF, 1990b). Chisvo and Jayne (1991) demonstrated the strong relationship between diarrhoea and malnutrition in Zimbabwe. They found that the average under–five in Gokwe had suffered diarrhoea for 9 days in the past year if his height for age was >–2SD, but for those with –2SD to –3SD, the average was 15 days and for those with a height for age <–3SD, it was 66 days. Effective promotion of sugar–salt solution may account for much of the reduction in diarrhoea–related fatalities from 1226 in 1979 to 886 in 1987. Much of the population in Zimbabwe is protected from malaria and other “tropical” diseases by living at high altitudes. Others who live in dry areas are protected from some parasitic diseases.

Water and Sanitation

Access to sanitary facilities (such as Blair toilets) has also expanded substantially in rural areas. By 1984, 35% of the population in the communal areas had access to protected water sources in the wet season and 42% in the dry season. Approximately 15% of rural households had access to adequate sanitary facilities. Using a multiple regression model, Chisvo and Jayne (1991) have shown that absence of a latrine was associated with 16 extra days of diarrhea in the past year and “excessive drinking by the parents” (not defined) was associated with 64 extra days. Regarding hygienic practices, soap was found to be present in 82% of communal households and hand–washing is widely practiced before meals at least (Government of Zimbabwe/UNICEF, 1985).

VI. MATERNAL AND CHILD CARE

This constellation of underlying causes of malnutrition refers to the way in which households can and do actually utilize their access to food or to health services, including the intra–household distribution of resources. It is influenced by household knowledge, attitudes and time allocation. The situation of women in society requires particular attention in attempting to analyze the impact of this constellation of factors on nutrition.

Infant Feeding Practices

Breastfeeding

Four national surveys have examined breastfeeding patterns in Zimbabwe, MOH Nutrition Department (1982), Zimbabwe National Family Planning Council and Westinghouse Public Applied Systems (1985), Central Statistical Office (1989) and the 1991 MCH/FP Survey (MOH, 1991). These studies are referred to below by year only.

A thin gruel is commonly given during the first few days of life and colostrum is said not to be given in some areas, though this has not been studied. The proportion of infants who receive no breast milk at all is very low in Zimbabwe, less than 2% in 1989 and 0.6% in 1991 (3.2% in Mash East). The median length of breastfeeding has remained stable, with mean values of 20 months in 1982, 18.5 months in 1989 and 19.2 months in 1991. Though only 10–15% of Zimbabwean babies received breast milk for less than one year, only about 10% in most studies received it for more than two years.

Older women breast fed for up to three months longer than younger ones. Similarly, rural women breast fed for up to three months longer than urban ones in some of the studies. Women who have completed a secondary education breast fed five months less than women with no education in 1984, but in 1989 this difference was less than three months. (In some developing countries, breastfeeding rates are now increasing among well–educated women.) As in most other countries, formal employment had no effect on overall duration of breastfeeding in the 1984 study, but its impact on duration of exclusive breastfeeding has not been measured. Work was given as the reason for sevrage (cessation of breastfeeding) by only 6% of urban women in the 1982 study, 4% of peri–urban women in 1985 (Mazur and Sanders, 1988), and by 3.5% of all women in 1989. Over 70% of breast–fed infants in 1989 were said to have received breast milk “on demand” during the previous day and an even greater percentage slept at the breast on the previous night.

Complementary feeding

Though urban women in 1989 breast fed only three months less than rural women, they experienced four months less lactational amenorrhea (9.6 compared to 13.4 months). The DHS report (CSO 1989) suggests that this is because urban women supplement earlier and more often per day.

Less than 10% of infants under four months of age in 1989 were exclusively breast fed. Another 40% were receiving breast milk plus water and about half were receiving breast milk plus some other supplement All told. 82% of infants under four months of age had received water on the previous day

Among infants under three months of age in the 1982 study, 26% in urban areas and 51% in rural areas received non–milk supplements. For urban infants this was mainly fruits, fruit juices, and porridges, and for rural infants, family foods such as porridge, vegetables and bread. Commercial weaning foods were used by only 6% of urban and 4% of rural families. A MOH study in August, 1983 also found that nearly 40% of rural infants under three months of age were already receiving solid foods (MOH, 1984). The 1991 MCH/FP Survey (MOH 1991) found that the average infant within the age group 0–5 months was fed with semi–solids 2.2 times per day.

The 1982 study reported that 19% of urban infants and 15% of rural infants under three months of age received milk–based supplements. Milk supplements were more often given by bottle in urban areas (84% of infants under 6 months old who got such supplements in urban areas, versus 50% in rural areas). Milk supplements were given increasingly by cup and spoon as the child got older.

Data from the DHS study (CSO 1989) revealed that 8% of infants under six months of age (1.5% in rural areas, but 27.5% in urban areas) had received a bottle during the past 24 hours, though only about 1% were exclusively on the bottle (Boerma, *et al.* 1991). In 1991,14.3% of young children had at some time been given the bottle, varying greatly by province, however, with Masvingo (7.5%) and Mash Central (65.9%) at the extremes. The effects of higher levels of bottle feeding may explain the fact that in Harare City, unlike anywhere else in the country, malnutrition (% “below the line” on the CHC) is higher in the 0–5 month age group than in the 6–12 month old group, according to NHIS data for 1988, 1989 and 1990.

Undue delay in the introduction of complementary foods is not a widespread problem, even in rural areas. The 1982 study found that 72% had received solids by 6 months of age and 98% by 12 months, and a 1983 study

(MOH, 1984) found respective figures of 85% and 94%, both studies in rural areas. The 1984 PHC evaluation found that 63% of infants had begun receiving solid foods by four months of age. In 1989, 72% of infants 4–6 months of age had received porridge on the previous day.

Trends in infant feeding patterns would be difficult to determine from the available studies, since different definitions and methods of analysis have been used, but on most variables one is struck more by the similarity of the findings than the differences. The overall picture which emerges is one of fairly long breastfeeding, continuing for about one and a half years for the majority, but supplemented too early in most cases with water, other fluids and semi–solids. The addition of solid foods is rarely delayed too long. Whether at later ages complementary foods are adequate in energy density and fed often enough in large enough quantities per meal (especially when the child is ill or recently recovered from illness) has riot been studied well enough.

Birth Spacing

Contraceptive use rates in Zimbabwe are among the highest in Africa south of the Sahara; over half of ever–married women having used contraception at some time. These rates have increased rapidly in the late 1980s, and birth rates have declined rapidly (Loewenson, 1990). In a sample of 179 urban households with children under five in 1985, Mazur and Sanders (1988) found an average birth space of 30 months.

Mazur and Sanders (1988) found that children with more siblings or a lower proportion of adults in the household had higher levels of malnutrition. The 277 children in Mazur and Sanders' sample had good vaccination coverage, but those who had contracted measles or whooping cough were more likely to be underweight or stunted. Wasting was also associated with having had diarrhoea in the past two weeks and with crowded housing conditions.

Short birth spacing (a possible sign of inadequate family planning service delivery) is also associated with higher levels of malnutrition. Allaart (1985) believed that “successive pregnancies” was the major cause of malnutrition in rural Zimbabwe. As important causes she also listed parasitic and infectious diseases, lack of care within broken families or by unmarried mothers and teenage mothers who leave their child with the grandmother, sending home powdered milk for feeding the infant. She felt that food taboos play no role. She believed that a major hindrance to increasing the frequency of feeding was the time required for women to collect water and firewood.

Status of Women

A large proportion of rural households are headed by women because of male migration for employment Batezat and Mwalo (1989) point out that this phenomenon emerged as the expropriation of African land by the early white settlers progressed to the point where the African population could no longer subsist on its own agricultural production. This, combined with the imposition of a hut tax for each adult male, forced men to sell their labor in the rapidly expanding “modern sector”. They cite a study stating that at independence 235,000 of the approximately 780,000 peasant farming families utilized this split family survival strategy.

Theisen (1975) cited data showing a 40% drop in crop yields when the male head of household was absent for more than nine months of the year. M. Rukuni (personal communication, 1991) believes that this is no longer true, stating that “net resources now move from urban to rural areas. There is evidence in Shumba and other work in the mid 1980s that these households are doing better than those with a male present because it now pays more to remit fertilizers and other farm inputs than in the mid 1970s.” Of course the situation becomes critical for women if the husband stops sending remittances. GOZ/UNICEF (1985) cited data from a study in Gwanda showing that severe malnutrition was six times higher in such families than in those receiving remittances. While the split family survival strategy may put women and children under some stress, their situation may be better than households in which the father is unemployed or underemployed. Many children in Zimbabwe are cared for much of the time by grandparents, though, again, this is not necessarily harmful to the child unless it is a young infant deprived of breast milk. Adams (1991) points out that it is important to focus not on “female–headed” households *per se.* but on those in which the female is alone because there is no male rather than just a male who is away. Such households were found to be “clearly inferior in terms of productive resources.”

Before colonization, men controlled the means and instruments of production in both Shona and Ndebele societies (Batezat and Mwalo, 1989). During the colonial period, the position of women was further weakened in many ways. For example, due to the systematic failure to recognize the contribution of women to agriculture, only men were provided with training in modern agricultural methods. Despite government efforts, progress since independence in improving the status of women seems limited to a very few areas such as the legal status of women and rural drinking water availability (Chinemana, 1990). Women have less access to land, inputs, extension, credit, and income. Most household decision–making is done by men; many women do not even have control over what they produce (Loewenson, 1990). Women tend to be employed as casual, seasonal laborers, receiving low wages and benefits. During seasons of high work loads for them, attendance at health centers may not be possible, contributing to higher levels of health and nutritional problems during these times of year (Loewenson, 1988). Adams (1991) cites data suggesting that children of mothers who were casual workers in Masvingo and Chipinge districts were more likely to be under the third percentile in weight for age than other children.

Time allocation

Zimbabwean men do only 27% of the farm labor, 38% of the livestock care, 19% of the fuel gathering and chopping and 4% of the domestic tasks including cooking, water collection and child care (Johnson, 1988). Regarding sorghum and millet, factors related to women's time have resulted in a reduction in the variety of crops grown, particularly peanuts (Makombe *et al.* 1987) and other legumes, traditionally “women's crops.” Because maize is less time–consuming, promoted by agricultural extension, and because families need the immediate cash that only maize can guarantee in Zimbabwe (partly for expenses like school uniforms and books), other important contributions to the family diet may not be available much of the year. This may be particularly important with respect to peanuts and other energy–rich foods that have long been promoted to mothers for use in complementary foods for young children. Ironically, in a country with adequate overall food availability and where the nutrition education message has appropriately focused on the importance of energy–dense foods for young children, these foods may simply not be available much of the year for the 30% of under–fives who are stunted.

Chisvo and Jayne (1991) suggest that, where agricultural productivity and employment opportunities are limited, “pressures on family members' time in productive uses may be so severe as to reduce their ability to participate in child nutrition schemes. For example, of 94 children registered for supplemental feeding by a school in Zarova area of Gokwe, households of only 35 of the children actually participated.” In this same area, travel times to the nearest health center were 9–10 hours. Levels of growth retardation were higher than in other areas of Gokwe.

Chisvo and Jayne also found, in multiple regressions analyses, that a distance of greater two km to the nearest water source was associated with a 230 g reduction in birth weight. This could be a combination of effects: longer distance to water requires more of the mother's time, reducing her productivity; it uses more calories, reducing her nutritional status; and it results in less water available for household hygiene (in some studies, found to be associated more with diarrhoea than is poor quality of easily available water).

Research is needed to determine better which messages could be useful and responsive to the realities of women's lives. Women's time allocation in relation to frequency of feeding may require specific attention, perhaps via the promotion of certain appropriate technologies likely to save their time and energy. Increased availability of water for drinking and washing, fuel–saving stoves, and the production of low–cost fuels are possible examples. In some settings, small–scale production of nutritious snacks from low–cost ingredients could be beneficial for producers and consumers.

Female Education

Apart from its intrinsic value, education probably affects health in two ways. First, expenditure on education probably subtracts from expenditures on nutrition and health. Second, education probably contributes in the longer term to better health behavior (Davies and Sanders, 1987).

World Bank (1983) cites several studies finding a positive correlation between mother's level of education and child nutritional status. Stunting is more than twice as common among under–fives of women with no education compared to children of mothers with secondary or higher education (36% vs. 14%, according to CSO, et al, 1989). Mazur and Sanders (1988) also found that secondary education for urban mothers was associated with less malnutrition, even though mother's income did not have a clear effect. However, the

children of women who worked full time had more malnutrition than those who worked part time, suggesting that women's time constraints with full time employment may prevent them from providing enough care to their children to make up for the extra time away from them, in spite of the extra income.

If increased female education directly improves young child nutrition, me future should see improvements in both, as the present school age generation matures, since the number of children attending school more than tripled from 1979 to 1985 (Sanders and Davies, 1988a). At ages 10–14 years, 95% of girls as well as boys attend school, but at ages 15–19, only 62% of girls attended school in 1987 compared to 79% of boys (Central Statistical Office, 1991). Nevertheless, the fact that 14% of children are stunted, even among women with higher education, suggests that specific educational efforts and improvements in the status of women may be required as well.

Zimbabwe has successfully induced a dramatic expansion in school enrollment, from 892,668 in 1979 to 2,727,162 in 1985. The bulk of this expansion has been at the primary school level. There has also been progress in adult education. The impact that this will have on health is likely to materialize only in the long run (Davies and Sanders, 1987). Nutrition has been integrated into the school curriculum. Female primary education enrolment has increased from 49% to 100%, due to primary education being free, although the recent introduction of school fees under the structural adjustment programme may result in a reversal of these gains.

VII. CONCLUSIONS

Considering the UNICEF conceptual framework (UNICEF 1991), there is little doubt that nearly all forms of malnutrition in Zimbabwe are related to poverty and inequity at the “basic” level. Planners are increasingly becoming interested in determining the relative importance of the three underlying causes of malnutrition in a given setting. 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; however, the relative importance of these two is much less obvious. Perhaps the most relevant data are those obtained by Ferro–Luzzi *et at.* (1992) in Chivi, since they measured nutritional status of people of all ages. They state that “the distribution of moderate and severe forms of child malnutrition provides evidence that, while faring better than in many other African countries, they were in poorer condition than their parents. The poorer nutritional condition of these children suggests that, while access to food cannot be a limiting factor, given the satisfactory nutritional conditions of the adults, the latter may have been achieved at other costs such as, for example, the limitation of the time available for child care.”

Health The relatively low infant and young child mortality rates, combined with the fact that wasting seems to have declined to very low levels during a period when, despite relative stagnation in the economy, there was a steady improvement in health services, suggests that progress has been made in eliminating the health–sector related causes of malnutrition in Zimbabwe. The World Bank review felt this was the case already in 1983, and Kinsey's (1992) data on children in resettlement areas strengthens this argument.

Household food security Much evidence suggests, but does not prove, that 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; the dislocation, lack of infrastructure and poor support given to resettled families; and an inefficient inherited grain marketing system only just beginning to be liberalized, are all certainly partly to blame, though there is no way to quantify their effects on nutrition. As described above, the costs to the Government of Zimbabwe associated with its laudable efforts to donate or heavily subsidise basic food stuffs for the entire population are an enormous drain on the country's resources and a hindrance to development, even if they have so far been largely successful in preventing wide–scale hunger and malnutrition.

Maternal and child care Malnutrition is a problem mainly among children between two and five years of age–the age when they tend to be most sensitive to any household limitations in access to food. (Food shortage rarely has much direct impact on infants who are still largely breast–fed, since it must progress nearly to famine levels before it has much direct impact on breast milk production. However, indirectly through the maternal care aspect, food shortages may force women to spend less time with their infants). However, growth retardation is actually occurring mainly at much earlier ages, as revealed in Figure 1. The average height for age declines rapidly during the first nine months of age in rural areas, and reaches its low by 20 months of age. The fact that most of this retardation in linear growth rates is occurring in the early months of life is missed by examining data on malnutrition, since it takes many months before these children's condition

has deteriorated so far that they begin to drop down into the malnourished or severely stunted category. This early linear growth retardation suggests that, while age 2–5 years is the age of high vulnerability to malnutrition, it is the period of 6–18 months when the active damage to nutritional status is occurring.

Early problems with infant feeding, though only one of many contributory factors, would make infants more susceptible to harm caused by household food insecurity some months later when they no longer enjoy the cushion or buffer provided by breastfeeding. Not until the age of about the fifth year does there appear to be a gradual improvement in levels of stunting. However, even if premature supplementation of breastfeeding may a major cause of retardation in the linear growth rate in the early months, we do not know whether it is practiced because of 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.

A study is currently being planned by UNICEF (1991b) to examine the proportion of stunting that is due to each of the three potential underlying causes.

PART II: RELEVANT ACTIONS

I. DIRECT NUTRITION–RELEVANT ACTIONS

Supplementary Feeding Programmes

The national Children's Supplementary Feeding Programme (CSFP) was established soon after independence, initially run mainly by NGOs. The Government took over the implementation of this program through the MOH Nutrition Department with support from the Swedish International Development Authority (SIDA). By 1984, 250,000 of such children were being reached by CSFP (Tagwireyi *et al.* 1989). A 1982 evaluation found that children attending CSFP gained weight at two to three times the rate of better–nourished children and nutrition education efforts were said to be effective (World Bank, 1983).

UNICEF supported an evaluation of the program in 1984. Lessons learned included: i) it was crucial to use local foods to avoid conveying the message that biscuits, etc. brought in by some NGOs were better than local foods; ii) a mixture of appropriate local foods should be used (including beans or peanuts, not just maize) and this should be kept uniform as a way of reinforcing the idea that these foods make children grow well; iii) community participation improved the functioning of the program, and village committees were therefore formed to take care of local administration; iv) above village level (from ward to national), intersectoral committees were necessary, as each sector had something important to contribute, both in technical terms and in assisting with transport or other constraints; v) children should be fed on site daily with food cooked by their mothers – allowing nutrition education to be done at this time; vi) in drought–stricken areas there was no point in having children leave the program as they gained weight, because they quickly lost it again; vii) trucks were crucial for moving food out from district collection points; and viii) a manual was needed (and was later produced) to provide a standard approach to administration and training (Migogo, 1988).

CSFP attempted to avoid some of the dependency–creating aspects of most supplementary feeding programs by utilizing locally–grown food and including nutrition education. In an even larger step in this direction, the phasing out of CSFP and its replacement by a program designed to enhance local growing of the supplementary foods, the Supplementary Food Production Programme (SFPP), had started by 1982. However, during the 1992 drought, CSFP was reinstated on a much larger scale than before.

Community Food and Nutrition Programme (CFNP)

The Supplemental Food Production Programme was renamed the Community Food and Nutrition Programme (CFNP) in 1989. Until that time it had been funded completely by SIDA. Government funding began that year and by 1991 was responsible for all central funding. (Some NGOs contribute funds for CFNP projects in specific areas.)

CFNP has been described in reports to SIDA and the Nutrition Unit by Jonsson (1986) and by Antonsson–Ogle and Greiner (1987), and in Tagwireyi *et al.* (1989). An easily accessible if brief description is provided in Jennings *et al.* (1991) which places CFNP (under the old name, “Supplementary Food Production Programme”) in a management framework in comparison to many other nutrition programs around the world.

1. Activities

CFNP has evolved into a program which mobilizes villagers (usually women) to grow nutritious foods such as ground nuts, and beans in a communal plot, as well as vegetables in a community garden. In areas where lack of water is a problem, some groups are rearing small animals, such as indigenous chickens, rabbits, fish and goats. Better organized groups sell some of their produce to purchase maize meal, oil, and beans for communal feeding of children under five. Material support when the project first starts is provided via the MOH who provide fencing material, seeds and/or fertilizers, while ongoing technical support is supplied by Agritex extension officers. Another area of potential action is in improving village level technologies for food processing, preservation and storage, however progress in this area has been slow.

In many cases, projects are linked to day care, growth monitoring and feeding for participants' children, sometimes including other village children identified as malnourished by the village community workers. Over 3000 CFNP projects have been started, though most of them are concentrated in one province, Mash West, and many have not survived. There are 10–200 participants per project

CFNP has the effect of making more land available to the poorest farmers and puts them in working contact with farmers with better skills. Agritex and other extension workers are attracted to these community plots because it is more efficient for them to work with existing cohesive groups. In some projects, in addition to the communal components, each member of the group has a private plot within the fenced in area to work on. Nevertheless, community decision–making and collective self–reliance is the crucial component of all CFNP projects. It is hoped that this will gradually lead toward the ability to identify the causes of malnutrition in each village and to find local solutions, guided by community–based growth monitoring.

2. *Implementation*

The following are the specific components of the CFNP and their means of implementation:

> *i*) *Assessment of the Food and Nutrition situation and Identification of Nutritional Vulnerable Communities.* Data from clinic based nutrition surveillance (weight–for–age) and other nutrition surveys in addition to reports and information from other sectors on me management committee is used to identify areas with high levels of malnutrition and poor household food security;
>
> *ii*) *Community Mobilization and Project Identification.* The situation is discussed with the leadership of the community by extension workers. The communities are sensitized to the objectives of the programme and how it can be implemented with their active participation to address the problem of malnutrition. The community with the technical advice of the agricultural extension worker decides on the project they wish to embark on. The request for inputs is transmitted through the District to Province;
>
> *iii*) *Communal Food Production.* Families in the village work together to produce food primarily to be fed to under–five year old children. The production package consists of groundnuts and beans for rain fed plots and gardens and small stock. The families appoint a committee which plans the work roster and the management of the group activities;
>
> *iv*) *Group Feeding and Education.* Parents organize the group feeding of under–five year old children in the project, and those referred by the clinic or outreach sites, five times a week. The concepts emphasized in this activity are: a) Food preparation, hygiene and storage; b) The importance of using an energy dense food with each meal; c) That the meal is supplementary and other meals still to be provided at home; d) That the child needs to be fed at least 4 times a day using cereals, beans, groundnuts, oil and vegetables; e) That breast feeding should be continued up to at least 18 months; f) That children should be fed during illness; g) That children with diarrhoea should be given salt and sugar solution (SSS) and continue to feed; h) That children should eat out of a separate plate; i) That children should be weighed regularly to assess their growth.

The nutrition education message is integrated into the training of all extension workers at the village level and they are expected to provide this to protect members within the context of their sectoral activities. Practical demonstration has been encouraged as the best method for education.

v) *Programme Monitoring.* This is an ongoing activity which has been integrated into the programme. Project assessment forms are completed for each project and contain detailed information about each new project, including the number of recipients, types of projects, etc.

Checklists for projects visits by inter−sectoral committee members have been designed and are in use. These checklists provide a rational and standard format to assess programme implementation, progress and constraints.

Quarterly and annual progress reports are made by each province and are the merits for disbursement of funds.

3. Management

CFNP benefited from the lessons learned from SFPP. From the outset, CFNP put major attention on issues of project management (MOH Nutrition Department, 1987). It gradually evolved a successful approach based on an intersectoral National Steering Committee for Food and Nutrition (NSC) chaired by Agritex. At provincial, district and ward levels, similarly composed Food and Nutrition Management Committees are responsible for managing the program. At all but national level, these committees have been institutionalized as development subcommittees, serving as an entry point for nutrition onto the development agenda, at least in the provinces.

These committees have run well because early in the program the roles of each sector were clearly identified and agreed to, then written up in a management handbook. The handbook was then used as the basic tool for intersectoral training of the committees. As it is now viewed as an integral part of each sector's work plans, CFNP does not disrupt other duties. At ward level, contact with villages is maintained through a nutrition coordinator, although they are far too few in number.

At national level there is no development committee, though the State Planning Agency may eventually fulfil this role. In the meantime, the NSC does not have a forum for taking joint action but must depend on the good will of each sector and the personal commitment of the committee members.

4. Evaluation

CFNP has gradually but continuously been improved throughout the decade, partly in response to evaluations, particularly one in 1985 by a joint Zimbabwean/Swedish team (International Rural Development Centre, 1985) and one in 1989, a process evaluation in which representatives from three ministries in each province evaluated the project in another province (MOH Nutrition Unit, 1989b).

The 1989 evaluation found that a great deal of progress had been made since 1985 in development of a management system, in raising awareness of nutrition issues at all levels and in securing community support and participation in projects.

Weaknesses identified included the fact that only 70% of projects had registers on participants and produce and less than half had registers on children or information on their nutritional status. One−third of projects had no nutrition education included at community level and many of the others had only simplistic or somewhat irrelevant messages.

The following recommendations from the 1989 evaluation provide a good indication of the weaknesses of the program, but also the high level of staff ambition for improving it. After each recommendation, comments (from Greiner and Tagwireyi's 1991 review, two years later) are given on the extent to which it has been implemented so far:

i) greater targeting of the programme, including to workers on the large−scale farms, with increased funding and other support to those provinces with higher levels of malnutrition, since they also tend to be those with fewer staff and poorer infrastructure development (*much greater targeting to more needy areas has been achieved*)*;* also focusing feeding during pre−harvest times;

ii) greater government funding to CFNP to ensure sustainability (*completely achieved*)*;*

iii) inclusion of additional relevant ministries in the National Steering Committee (*achieved*)*;* making it a constituted body, for example, a subcommittee of the National Development Agency (*has so far proven impossible*)*,* and broadening its functions to include the development of National Food and Nutrition Policy (*achieved*)*;*

iv) establishment of nutrition posts at district level (*has proven impossible due to ESAP*)*;*

v) improved reporting and monitoring, with provincial level taking major responsibility (*has proven difficult: project monitoring forms were prepared and distributed but perhaps were too detailed, as provinces have not returned them*)*;*

vi) increased applied and operations research at provincial level (*little progress made so far*)*;*

vii) increased involvement of the ministries of education and local government at provincial and district levels (*partially achieved*)*;*

viii) better integration of CFNP with water and sanitation (*much progress made*)*,* functional literacy (*.some progress*)*,* and pre−school *activities* (*some progress*)*;* inclusion of nutrition issues in land use planning (*some progress*)*,*

ix) strengthened training of extension workers, especially Agritex, both pre−service and in−service (*some progress*);

x) production of a training manual (*achieved*)*;*

xi) strengthened nutrition education, including production of a newsletter (*little progress*)*;*

xii) initiation of regular growth monitoring of project children (*some progress*)*;*

xiii) conducting nutritional screening as part of the project proposal for communities seeking to participate in CFNP (*some progress*)*;* and

xiv) analysis of the nutrition situation by the Provincial Food and Nutrition Management Team to determine what other approaches are needed in addition to CFNP (*some progress*)*.*

Beyond these points, more attention is needed in how to encourage the development of a wide range of flexible community responses to their nutrition problems. This, as well as better integration of income−generating aspects into the projects may help address the problem of lack of sustainability of many projects.

5. Re−appraisal

Following the evaluation mentioned above, the new programme objectives were decided on as follows:

Overall goal or objective. To assist communities to identify their food and nutrition problems, seek solutions and take corrective action through the local community.

Specific Objectives

i) Promote household food security by addressing the problem holistically. Review the food system from production to consumption. Identify the factors which prevent household food security, consumption in that community and address them;

ii) Encourage production of adequate food crops with a particular focus on groundnuts and beans, vegetables, etc;

iii) Promote improved methods of food production, storage, processing, preservation, preparation and consumption;

iv) Promote communal food production activities for group feeding and to have an approximate mix of production units to ensure food availability for group feeding throughout the year in a manner which ensures self−sustainability and promotes self−reliance;

v) Promote group feeding and child care of children under 5 in all villages;

vi) Promote good feeding practices for community with a particular focus on vulnerable groups;

vii) Promote community awareness of food and nutrition and health problems in the community and the identifications of ways in which these could be solved;

viii) Establish and strengthen mechanisms to promote inter−sectoral action for improved nutrition.

ix) Promote the development of a mechanism to incorporate nutrition issues into development plans and activities at all levels; x) Establish mechanism and indicators to monitor and evaluate nutrition programmes.

In a review of efforts to address malnutrition in Africa, Levinson (1991) states that, “the central tenet of integrated programs recognizes that the malnutrition affecting extremely poor families, and most specifically young children and mothers within those families, is difficult to address effectively through nutrition or income generation efforts alone... income generation sometimes has been the lever to elicit substantial community organization as well as participation in health and nutrition activities.” He considers Zimbabwe's CFNP to be one of “the two most important African successes in such integrated programs.”

Growth Monitoring and Promotion

In primary health care

Growth monitoring (GM) is an integral part of primary health care (PHC) delivery via maternal and child health services at health centers and hospital out−patient services. In 1985 the GM program was evaluated (MOH Nutrition Department, 1985). Based on this, a workshop developed a plan of action for strengthening GM in the country (MOH Nutrition Department, 1986). A later analysis of some of the data obtained from interviews with 102 mothers, found that three−fourths of rural mothers and an even higher proportion of urban mothers could correctly recognize signs of good growth or weight loss from a growth curve plotted on a growth chart (Dube *et al.* 1988).

In 1983 the growth chart on the child health card (CHC) was redesigned from a “road to health” style to one having only one line at the third percentile. It was redesigned again in 1990 and a line at the 50th percentile was reintroduced along with a number of other changes, based on the results of a consultative meeting (MOH Nutrition Unit, 1990a). A training manual and reference work in how to use the new growth charts was produced (MOH Nutrition Unit, 1990c) along with a “procedure manual” as a guide for the basic level health workers.

Both the 1984 and 1987 PHC evaluations noted that nutrition was the component of PHC which had best succeeded in achieving the Alma Ata goals of mobilizing community participation and working intersectorally. The 1987 PHC evaluation called progress in expansion of growth monitoring since 1984 “dramatic.”

Nutrition studies were undertaken or commissioned to further define the problem of malnutrition in Zimbabwe in 1980, 1982, 1984, 1985 and 1988. A national goiter survey was conducted in 1988. A nutrition surveillance system has been under development since 1987 based on the routine collection of data on the proportion of children at ages 0−5, 6−11,12−23, and 23−59 months who are below the 3rd percentile line on the growth card. Data are recorded on a standard statistics record form filled in at health center and hospital levels as part of the National Health Information System. Data are aggregated at district, provincial and national levels. There is a need to strengthen the analysis and use of these data at all levels.

Community−based growth monitoring

Planning for community–based growth monitoring (CBGM) began as a response to experiences gained from a study tour to the Iringa Joint Nutrition Support Programme in Tanzania. A Task Force was formed to plan for baseline studies and develop training modules for use at district level. A phased pilot study has since been started in two wards each in Tsholotsho and Makoni Districts. Bubi District had begun earlier and now continues to structure and standardize its procedures (MOH Nutrition Unit, 1990b).

It is hoped that CBGM will increase the number of times children are weighed, since in the health–center based system many children are only weighed in connection with vaccination visits. It is also hoped that CBGM will strengthen efforts to use growth monitoring for promotion of better growth by identifying growth faltering early, developing local solutions and obtaining feedback on their effectiveness. A manual to support this activity is being produced. In areas with CFNP and other projects, CBGM will also serve as an evaluation and planning tool. In connection with the spread of CBGM, it is intended to strengthen the capacity of the Food and Nutrition Management Teams in the collection, interpretation and use of nutrition surveillance data and to stimulate its use in provincial and district development committee discussions.

Baseline studies have been conducted in order to give an overview of the current health and nutrition situation in the two pilot districts. This will allow quantifiable targets to be set before the project starts and to facilitate evaluation. It includes a review of the existing statistical records and small anthropometric surveys at school entrance and among parents and children (Madzima *et al.* 1990).

Training at district and ward levels has been completed, using a training manual developed for the purpose (Madzima *et al.* 1991a). Community–level training has also been conducted and quarterly weighing initiated with the help of volunteer mothers in a few pilot wards. At this early stage coverage has not yet gone above 60%, based on census data. The main reason for the slow pace of progress is that community mobilization takes time.

Other provinces are expected to send teams on study tours once a mid–term evaluation of CBGM in the pilot areas has been completed. This is intended to help spread it throughout me country. Educational materials are being produced to support the program.

A recent consultant review of the program recommended that first priority in further development of the project should be to strengthen village level analysis, support and counselling. Ways of focusing more on “nutrition problem” surveillance need to be developed. The more centralized levels might contribute best by spreading awareness of “inspired interventions” that are being tried in other areas rather than funding new interventions and risking creating dependency (Ogle, 1992).

Micronutrient Programmes

Iodine deficiency control

After the 1988 national IDD survey was completed (MOH Nutrition Unit, 1989a), a National Consultative Meeting was held to sensitize all relevant sectors and to discuss what steps should be taken to develop a national program to combat IDD (MOH Nutrition Unit, 1989c). An intersectoral Committee for the Control of IDD was formed. Subcommittees were formed to deal with salt iodation, social mobilization, monitoring and research, and overall coordination. It was agreed at this meeting that iodated salt would be the major approach to be followed, but that iodized oil capsules might be used in areas of very high prevalence if iodized salt did not become available within a year. These would be distributed in high endemic districts to females from 1 to 45 years old and males from 1 to 18 years old. Plans are now far advanced for ordering capsules for several of the worst affected districts. Capsules will be distributed to Mrewa District before the end of 1992. A series of workshops designed to raise awareness among all groups throughout the district has already begun. Careful attention will be paid to community response to the capsules and how to design the distribution approach best geared toward ensuring high community acceptance and thus high population coverage.

Plans are being made for establishing systems for quality control of iodated salt and surveillance of the iodine status of the population. Environmental health officers will report to central level on the availability of iodated salt in local shops. Three schools in each of 12 districts will be used as sentinel sites for IDD surveys at three–year intervals, according to preliminary plans. Urinary iodine and goiter grades will be measured.

The IDD problem has not yet adequately been brought to the attention of the population via the mass media and other channels. A logo is currently being chosen among a number of suggestions, mainly by commercial

firms. This is the first step in the broader communication approach being planned. Informational materials are to be prepared in Mrewa in the coming months. Specific recommendations for how the Zimbabwe program can achieve some of its priority goals was provided by the ICCIDD (Bailey, 1991).

Nutritional anaemia

Based on the information supplied to Gillespie *et al.* (1991), over 90% of pregnant women have at least one prenatal contact with the health services (average, 2–3 contacts). Blood haemoglobin levels are measured in district hospitals and cases of anaemia are monitored monthly and referred if necessary.

A four–week supply of prophylactic iron sulphate and folate tablets is provided to all pregnant women attending prenatal clinics. The amount supplied through the Essential Drugs Programme in 1991 was 50.000 units of 1000 tablets, compared to the 80.000 ideally needed, and the 20,000 actually used in 1989. The cost in 1991 was Z$7.3 per 1000 tablets. Though stocks may be occasionally low, no major constraints have been noted. However, no studies have been conducted on supply and demand of haematins, adherence (compliance) to prescribed doses and schedules, nor of the impact of this supplementation program.

Vitamin A deficiency

Vitamin A capsules (50,000 IU) have been included in the Essential Drugs Programme in Zimbabwe. The manual says they are to be provided to children with measles, chronic diarrhea, and eye signs of vitamin A deficiency. It is not known how often eye signs of vitamin A deficiency are seen, nor how often these capsules are properly prescribed and taken for the indicated diseases. Since measles greatly depletes vitamin A, the high measles vaccination coverage, 83% as of 1989, must have a positive effect on vitamin A status in the country. Once a report from the recent survey done in Mat North is available, a workshop is to be held for provincial staff to discuss the results and determine what kind of program response may be needed (Provincial Medical Officer, Matabeleland North, 1991).

Breastfeeding Policy and Activities

Zimbabwe began to participate in the World Health Assembly just as me International Code of Marketing for Breast–Milk Substitutes was being developed and passed and thus was aware of this issue from the outset. A Zimbabwean Code was developed which was broader than the WHO Code in that it included foods for young children. The City of Harare Health Department Nutrition Unit (1990) issued a circular to all health institutions in its jurisdiction describing its breastfeeding policy. Among other things, it bans breast milk substitute companies from talking with City Health Department health workers unless they produce written permission from the City Medical Officer of Health. A study to monitor the implementation of the Code was funded by the Nutrition Unit and conducted by the Zimbabwe Infant Nutrition Network (ZINN), a local group linked to the International Baby Food Action Network (IBFAN). No report has yet been provided to the Ministry of Health.

Maternity benefits for employed women were instituted after independence and recently a campaign was successful in protecting women's right to three months' maternity leave when there was a threat to reduce it to two months. Women working in the formal sector also have the right to take two half–hour breastfeeding breaks during the work day (recently increased to two hours per day). Creches are rarely provided at the work place, but better transport would be necessary before many women would be willing to take their infants to work (Mutamba, 1991b).

II. HOUSEHOLD FOOD SECURITY ACTIONS

In this section, we investigate several policies and programmes that have been underway in Zimbabwe during the 1980s – land reform, agricultural policies, food subsidies, grain pricing and marketing policies and the drought relief programme – outlining their various salient features and impact on nutritional outcomes, both actual and potential.

Land Reform

At independence, the rural areas of Zimbabwe were almost equally divided between “European” and African land, though African farmers were about 100 times greater in number (Sanders, 1982). Three–quarters of the better land (natural regions I and II) is still in the LSCF areas (owned mainly by white Zimbabweans), of which 3.2 million hectares are not fanned (Stoneman, 1988). Yet three million of Zimbabwe's population live in the drier communal areas. Some 60% of the communal population lives on land located in natural regions (NRs) IV and V. Due to decades of overcrowding many of these communal areas are suffering from advanced environmental degradation, making agricultural progress even more difficult.

When asked, “Is food scarce in most years?” 57% of households in NR V responded yes, compared to 14% in NR II (UNICEF, 1990b). In two communal areas situated in NR III–V, 59% of farm households surveyed did not produce enough food for family requirements in a good harvest year, compared to 79% in the previous drought year (Chopak, 1989). In NRs IV and V, the low productivity also means that there are few opportunities for additional employment. That malnutrition levels are not worse under such conditions is nevertheless partly due to temporary wage labor, migration and remittances, as well as “contributions from relatives.” Drought relief and food distribution programs mounted by the government have continued to be necessary to prevent periodic hunger and starvation.

According to Amin (1990), after independence a two–pronged government policy was established to redress these problems. First, to extend agricultural services to the communal areas in order to “technify” agriculture in the peasant sub–sector, and second to redistribute land. Redistribution of the best agricultural lands to the large number of rural people with no land or small, poor–quality plots has progressed only slowly since independence. Though some 52,000 families had been settled on 2.7 million hectares of land by the end of 1987, this was only 14% of the households needing land in 1980[5]. The pace of resettlement has slowed from 7000 households per year to under 4000 in the second half of the 1980s (Loewenson, 1990).

> [5] Although Zimbabwean progress in land redistribution has been much slower than planned, it has progressed much faster than in other African countries, for example, four times more land has been redistributed than in Kenya (Amin, 1990).

Part of the reason for the slow pace of resettlement was the high cost of purchasing land. Under the Lancaster House Agreement, the Government was forced to buy under a “willing seller–willing buyer basis.” The reluctance of white farmers to sell prime land also meant that resettled land tended to be of poor quality. In addition, the relative success of the other components of the government agricultural policy may have reduced the felt need for land redistribution. M. Rukuni (personal communication, 1991) points out that “land is only one of many resources necessary for surplus production. One could recast the whole issue of access to food in terms of jobs (agricultural or non–agricultural).”

However important land redistribution was, it was no simple solution to the problem of hunger and malnutrition in the country. Resettlement may have led to household food insecurity when farmers were placed on types of land they are not used to, or even worse, when fishermen or other non–farmers were resettled. The dangers of viewing resettlement as simply a matter of providing land are illustrated in the studies such as Kinsey's (1992) summarized above, showing that the nutritional status of young children in these areas has not improved over the past decade, as other groups have. They now suffer from far higher levels of wasting than other groups in the country (although stunting is not worse and may be slightly better). Many factors may share responsibility for this: in the schemes Kinsey studied, individuals from many areas and social backgrounds were resettled together. Many infrastructural necessities took many years to put in place. Others such as clean water supplies clinics and shops are still lacking or at great distances.

Amin (1990) recommended that land redistribution be accompanied by an integrated agrarian reform program including increased access to non–land productive resources, agricultural support service schemes, and the formation of democratically organized peasant associations; female–headed households and those with migrant workers should also not be excluded from resettlement schemes. Such investments would necessitate substantial resource flows. One recommendation here may be for more research on innovative ways of involving the private sector in these investments so that feasible strategies for such actions can be drawn up.

Now that the Lancaster House Agreement is no longer in force, a new Land Acquisition Bill has been developed. Large farmers will be forced to sell idle land at a price determined by the government to be fair. Candidates for resettlement will be chosen not only on need but on demonstrated expertise in farming–those who have degrees (only about 100 a year are currently graduated from Zimbabwe University) or are certified

“master farmers” (an Agritex program which has covered some 70,000 farmers). This may avoid some of the problems previous resettlement efforts had and help ensure high agricultural productivity on the resettled lands. However, there are some who are concerned that this will minimize equity aspects, simply leading to redistribution from one well–off group to another.

The current plan is to settle about 5000 families a year and to provide them with better infrastructure. The communal land vacated by farmers who are resettled will in turn be redistributed among the remaining farmers in the communal lands to help overcome overcrowding and pressure on the land in these areas (Enochs, 1992).

In sum, while it is doubtful that land redistribution will have a marked impact on household food security or nutrition, it should proceed, especially on land currently underutilized by commercial farmers. What is needed though is productive employment/small–scale industry in rural as well as urban areas to alleviate poverty. While little is known about how to stimulate rural job craetion, we know that many features of current agricultural and industrial policy depress incentives for rural investment and shift employment opportunities from rural to urban areas.

Agricultural Policy

From independence, the government's basic development policy was growth with equity and transformation. Agricultural production was to be increased via the following policy incentives: guaranteed producer prices, resettlement, reconciliation, increased credit facilities and extension services, and improved market infrastructure in communal areas, including expansion in irrigation. During drought years, farmers in affected areas are provided with crop packs containing seed, fertilizers and other inputs. Imports from the world market are used to cover national production shortfalls. On average in non–drought years, 80–90,000 tons of wheat are imported, usually by swapping maize with donors. Some 15,000 tons of rice are imported annually.

Efforts toward achieving the goals of rural development have included developing cooperatives, a policy of decentralization, and minimum wage laws. Food subsidization and food transfers have also figured, though these have been decreasing in recent years in favour of food for work schemes which improve rural infrastructure while avoiding a syndrome of food dependence. Families without able–bodied workers are given food, but those with workers in urban areas are expected to manage on their own via remittances. Drought relief has been financed in part by levying a drought tax. An intersectoral Early Warning Unit has been established and hopes to improve the country's ability to predict drought and harvest failure and lead to better readiness than was in existence when the 1992 drought began.

In the future, it is expected that efforts to ensure that production increases as fast as the population will have to focus on improved husbandry, use of appropriate technology and use of hybrid varieties (Takavarasha and Rukovo, 1989). The development of a population policy to deal with problems like unemployment exacerbated by the rapid population growth, can also be seen as a long–term contribution to household food security.

The Ministry of Agriculture has always concentrated on cash crops, especially for export, and on maize. More needs to be done to assist farmers in growing other food crops, particularly sorghum and millet, which are more likely to benefit poorer rural families on marginal land; better food processing, preservation and storage; horticulture; better ways of meeting the needs of rural women; carefully planned pricing policies and producer and consumer subsidies; and other issues related to access to and consumption of food.

Coarse grains can be grown on poorer soils and are more drought resistant. They can also be stored for 2–3 years compared to 6–12 months for maize. Small grains used to be staple foods in Zimbabwe but production has decreased in recent decades at the expense of maize (Mudimu *et al.* 1988). There are several reasons for this. In non–drought years, maize has a much higher yield than small grains, even on poor quality land. It is more palatable eaten alone or with only salt than small grains are. This was necessary for many families when there was a shortage of relishes–which became more and more common by the 1920s due to loss of lands and cattle–raising possibilities to the white settlers (Shopo, 1985). Another factor favoring maize from about that time was the increased availability of mills for grinding maize. Also, until recently, there had been no interest in breeding food quality sorghum or millet or in promoting them in smallholder farming areas. Fortunately this is now changing (Rohrbach et al, 1990), but it will take time to convince farmers via demonstrations in dry years.

Home processing is more time–consuming for coarse grains than for maize. Increased male migration has led to a labor shortage in communal areas. Half of rural households are *de facto* headed by women (Loewenson, 1990). If agricultural extension had concerned itself more with female farmers (only 27% of agricultural extension agents are women), perhaps better small scale processing technology for coarse grains might have been a priority and prevented this overemphasis on maize.

In NRs IV and V, per capita sales of coarse grains to the Grain Marketing Board (GMB) were about 30kg from 1986–88 (Jayne *et al.* 1990b), but even within these NRs production levels are highly skewed, favoring a narrow segment of well–equipped farmers. For this reason, and because there is already inadequate demand for coarse grains, prices alone cannot be used to stimulate increased production.

Since the 1920s, when maize began to overtake millet and sorghum as the staple grain, there has been a dynamic balance in Zimbabwe between production of maize, tobacco and cotton (Shopo. 1985). A complex set of factors has affected their relative levels of production, producer prices being a major one. Poor households which go heavily into non–food crops are undoubtedly risking their food security. When they grow food crops, food security can be enhanced via good management of grain storage and other traditional mechanisms, such as cattle–raising. With non–food crops, good management must focus on the “storage” and careful use of lump sum cash payments. Otherwise even high and stable producer prices will fail to ensure household food security. The major reasons for increasing concern among policy makers in Zimbabwe about this issue are that: i) the increased influence of world market conditions on local prices increases the risk of rapid changes in relative prices and the difficulty for small farmers to react to this, and ii) the increasing numbers of smaller farmers changing over to tobacco and cotton with no chance to fall back on their own stocks of maize when necessary (personal communication from Dr. T. Stamps, Minister of Health, Zimbabwe, November. 1991).[6]

> [6] Jayne, et al (1990b) argue that most farmers do not dare to put themselves in this state of greater insecurity and that the promotion of cash cropping, even where it could bring increased returns to small farmers, actually benefits only those already well enough off to produce reliable surpluses of food crops. However, World Bank (1983) cites evidence of such switching to cash crops from 1978 studies in Gutu and Gwanda

The Ministry of Agriculture is now planning to include a nutrition component in its extension in–service training programme. Cooperation between Agritex and the MOH has greatly improved in the past three years. In addition to cooperating with CFNP (Agritex representatives chair the intersectoral steering committees at every level), parastatals and other government bodies in the agricultural sector have given much attention to food security, increasingly showing concern even at the household level in recent years. The MLARR Policy Department is expected to introduce a Cabinet paper justifying the need for its involvement in food and nutrition policy formulation. This represents a recent increase in awareness of the importance of the agricultural sector in nutrition policy.

Food Subsidies

The objective of the government subsidy on maize roller meal is to keep the price of staple food at tolerable levels, especially for the poor and vulnerable. While this objective, in the short run, appears to have been achieved, the subsidy has probably impeded the development of an efficient food distribution system to cost–effectively meet the needs of rural and urban consumers. The actual effect of this subsidy requires a brief elaboration of the organization of the grain marketing/milling system.

Maize milling in Zimbabwe, like many countries in East and Southern Africa is dualistic, with a large–scale industrial milling sector operating in quasi–competition with a small–scale milling sector. Urban maize milling is dominated by four large private firms. The largest firm handles, 65% of the market, while the largest two handle 85%. These millers produce two types of maize meal: super–refined meal (62% extraction rate) and roller meal (85% extraction rate). Millers currently buy maize from the Grain Marketing Board (GMB) and sell to retailers at government–controlled prices. Maize milling margins are based on cost of production data supplied by millers.

Small–scale millers, by contrast, produce a less–refined whole meal known as *mugayiwa* (98% extraction rate). The milling margins of small–scale mills vary from Z$60–100 per tonne of maize processed, compared with Z$221 and Z$422 per tonne by industrial millers for the manufacture of roller meal and super–refined meal (Table 14).

Survey findings indicate that straight–run meal is widely consumed in urban areas during the few months after harvest (about 15% to 20% of total urban consumption during this period). The main source of throughput for small urban mills is local production in urban areas. When local production is exhausted, throughput through the small mills declines to a trickle, after which urban consumers do not have a choice and must consume the more refined industrial meals. Despite their lower costs, small–scale millers are restricted from procuring grain in urban areas. First, the Grain Marketing Board (GMB) has in practice restricted its grain sales to the large industrial buyers: commercial millers (77% of total GMB maize sales since 1980), livestock and poultry feeders (8%), brewers (6%) and food aid (7%). Thus, massive stocks at GMB depots in town centres throughout the country do not necessarily ensure grain accessibility in rural areas. Out of 15 depot managers surveyed during 1990,13 stated that they do not permit sales to informal buyers suspected of reselling the grain (Chisvo *et al.* 1991). Second, maize grain cannot legally be transported into urban or peri–urban areas privately. These regulations prevent small–scale millers from sourcing grain to produce less expensive maize meal for the benefit of low–income urban consumers. As a result, the government has conferred a *de facto* monopoly to industrial millers, even though their margins are two to three times higher than those of small scale millers.[7]

[7] The monopoly granted to industrial millers is further entrenched in some urban municipalities such as Harare where informal maize mills are banned by law.

Lacking any major threat of competition from informal millers, the industrial millers, whether by choice or circumstance, are able to operate a higher–cost system without losing market share. Available survey data indicate that maize meal from small–scale mills could be available for 10–20% less than the unsubsidized cost of industrial roller meal. Government regulations and pricing policy therefore appear to create incentives that perpetuate the distribution of more expensive meal, with potentially adverse consequences for nutrition and incomes among the urban poor.

Table 14: Description of various maize meals produced in Zimbabwe

Type of Meal	*Description*	*Extraction*	*Produced*	*Selling price per tonne* (*Z$/mt; 1991192*)*	*Nutrional Profile*
Super–refined	Meal ground from the starchy endosperm; the hull and germ are totally removed	60–65%	Industrial millers	Z$862 (Z$893)	Protein (gms): 8.0 Energy (k'cals):334 Iron (mgs): 1.1 Calcium (mgs) 6.0 Thiamin (mgs):.14
Roller meal	The hull and germ are mostly removed, leaving mostly starchy endosperm	82–85%	Industrial millers	Z$626 (Z$666)	Protein (gms): 9.3 Energy (k'cals): 341 Iron (mgs): 2.0 Calcium (mgs): 7.0 Thiamin (mgs):.30
Mudzvurwv	The hull is removed before being milled; the germ is retained.	90%	Small–scale millers	Z$580 (no subsidy	Information not available but similar to roller meal
Mugayiwa (straight run)	Meal processed from the whole maize kernel; the hull and germ are retained	96–99%	Small–scale and industrial millers	Z$580 (Z$616) by industrial millers; custom milled by informal millers at Z$60–80 per tonne	Protein (gms): 10.0 Energy (k'cals): 343 Iron (mgs): 2.5

					Calcium (mgs): 12.0 Thiamin (mgs):.35

**** Numbers in parentheses include subsidies conferred to industrial millers. Informal milling margins were established from household surveys during 1991 together with before−and−after weight measurements of maize processed through a sample of hammer mills in buhera and Mberengwa Communal Lands* (*Chisvo et al., 1991*).**

***** Straight run meal was produced by industrial millers in convenient bag sizes until 1979.***

Grain Pricing and Marketing Policies

Food subsidies cannot adequately address the underlying structural problems in the grain marketing system. While mechanisms to cushion vulnerable groups from the effects of structural adjustment have been conceptualized primarily in terms of short−run subsidies, regulatory aspects of the food marketing system pose such serious impediments to maize access and affordability that their modification must be viewed as pan and parcel of a well−defined cushioning strategy as well as an overall growth and development strategy. The Goose's main policy response to chronic and transitory food insecurity has been massive food and income transfer programs, yet the need for these costly programs has become apparent only after long−run food policies have failed. This conclusion may be clarified by examples of how the structure and regulatory aspects of the grain marketing system exacerbate household food insecurity, in ways that cannot be adequately addressed through the continuation of subsidies and free food handouts.

To ensure a consistent flow of maize meal to urban consumers, the GOZ has sought to influence prices and distribution through a highly controlled and centralized maize marketing system. The official grain marketing system induces a predominantly one−way flow of grain from rural areas to centralised urban milling and storage facilities. Maize may be sold through the official system to one of three procurement arms of the GMB: i) GMB depots, normally located in town centres, ii) GMB collection points located in rural smallholder areas; and ii) licenced private traders that buy on behalf of the GMB. Private maize trading was never banned, but is nevertheless circumscribed by numerous government policy regulations, as follows:

i) Smallholder maize, unless destined for a GMB depot, is prohibited from moving across the boundaries of urban or commercial farming areas. Since these areas contain virtually all of the country's main roads, this regulation effectively blocks private grain trade between noncontiguous smallholder areas or from smallholder areas to urban consumption centers.

ii) Maize may not be moved privately from commercial farming areas to smallholder or urban areas.

iii) Once grain is sold to GMB collection points or approved buyers in smallholder areas, direct resale to consumers is prohibited. Instead, the grain must be forwarded to GMB depots, often a considerable distance from rural deficit areas. This effectively siphons supplies out of rural areas, tightens local supply−demand conditions, and exerts upward pressure on rural market prices.

iv) The margin between the GMB purchase price and selling price to urban millers since 1986/87 has been roughly half of GMB's actual operating costs. The combination of consumer price subsidies and restrictions on direct trade between surplus and deficit rural areas has encouraged the consumption of urban milled meal in rural deficit areas. Pan−territorial prices for commercially−milled meal further extend the dominance of the official distribution system even in the most distant regions. These direct and indirect subsidies in the official marketing channel substantially narrow the scope for intra−rural private trade.

The combination of producer price incentives, expansion of GMB buying points in distant rural areas, subsidies on maize meal marketed through the GMB/urban milling system, and movement and resale controls

is based on several implicit assumptions about how Zimbabwe's grain marketing system works. Firstly, the emphasis on increasing the returns from smallholder grain sales as a means to stimulate rural incomes implicitly assumes that most farmers are surplus grain producers. Even in the marginal areas, GMB infrastructure was built with a view to increasing smallholder incomes through increased crop sales. The fact that the current system provides a statutory monopoly on urban distribution of maize meal to the five large industrial millers, is built on the GOZ's perception that the centralized urban millers provide a more efficient system compared with one that encouraged competition from the small scale milling sector.

The aforementioned assumptions are largely contradicted by recent surveys of household, trader, and millers in Zimbabwe. The data reveal five salient points (Table 15). First, most smallholders in the drier regions sell little or no grain. Income from grain sales is highly concentrated among a narrow segment of well–endowed farmers in the most productive regions. Of the country's 170 smallholder farming areas, 18 have accounted for 75% of GMB grain intake from this sector since 1983. Nationally, the top 10% of smallholders selling grain acount for about 90% of total income accruing to the communal sector from GMB maize sales (Jayne *et al.,* 1991). These smallholders are almost exclusively in the high–rainfall areas.

COMMUNAL AREA	% OF HOUSEHOLDS THAT ARE NET GRAIN PURCHASERS	X OF TOTAL GRAIN SALES BY THE 10% OF FARM HOUSEHOLDS SELLING THE MOST GRAIN	AVERAGE HOUSEHOLD NET GRAIN SALES (KGS)		PERCENTAGE OF TOTAL GRA TO	
			SURPLUS HOUSEHOLDS	DEFICIT HOUSEHOLDS	GMB OR LICENSED AGENTS	NEIGHBOURING HOUSEHOLDS
High Rainfall:						
Gokwe (south)*	12	51	3707	–183	86	8
Buhera (north)*	26	50	1023	–252	69	16
Low Rainfall:						
Gokwe (north)*	59	59	1118	–438	5	95
Buhera (south)*	5.7	72	973	–392	68	31
Runde[a]	61	74	1465	–344	30	70
Mberengwa[a]	85	60	834	–483	43	57
Nata[b]	94	57	21	–301	0	100
Ramakwebana[b]	96	68	340	–383	0	100
Semukwe[b]	98	62	46	–352	0	100

Note: The results of these surveys pertain to the period April 1989 to March 1990 and [b] November 1988 to October 1989. Rainfall was average to moderately below average during the relevant production years in all survey areas. [c] The distinction between purchases from households and private traders was not Bade in this study.

Source: [a]UZ/MSU/ICRISAT Grain Marketing Surveys. 1990: [b] Hedeen–Dunkhorst. Bettina. 'The role of small grains in semi–arid smallholder farming systems in Zimbabwe: preliminary findings', draft mimeo. SADCC/ICRISAT. Matopos.

Second, between 50 and 100 percent of farm households in the dry areas are typically net purchasers of grain. The exact proportion of grain–deficit farm households depends on the particular geographical area and the quality of the harvest. The government's investment in GMB infrastructure and producer price incentives have largely bypassed these households. These farmers appear unable to respond significantly to producer price incentives because of other binding constraints on production: limited land, draft animals, and non–farm income to finance investments in improved technology, poor soil and erratic rainfall (Govereh, 1992).

Third, and consequently, incomes in these grain–purchasing areas are often more affected by the price of commercial maize meal than by GMB producer prices. Urban–milled meal accounted for 79% to 92% of total grain purchases, and 24% to 37% of total grain consumption in a survey of three semi–arid smallholder areas studied by (Hedden–Dunkhorst, 1990).

Fourth, after the GMB's buying campaign in which grain from surplus households is transported to depots in town centers, many semi–arid smallholder areas are grain–deficit in the aggregate. This is evident from the circuitous flow of grain in numerous smallholder areas in which marketed maize surpluses flow out of rural areas through the GMB system to be milled in relatively distant urban centers, and then flow back into the same or other rural areas in the form of expensive commercial maize meal (Jayne and Chisvo, 1991). Seventy–five percent of the grain–deficit households interviewed in selected rural areas stated that they bought urban–milled meal simply because grain was not available locally. Ironically, straight–run meal from a rural hammer mill is more nutritious and less expensive than the more refined commercially–manufactured meal.

The circuitous flow of grain out of rural areas and expensive maize meal into rural areas is a symptom of poorly–functioning intra–rural grain trade linking surplus and deficit households and regions. The state's one–way distribution system, while offering surplus producers a stable and remunerative price, effectively siphons grain supplies out of semi–arid rural areas early in the season. Controls on maize movement, resale and pricing restrict consumers in these same areas from obtaining maize through private trading channels, creating localised shortages later in the season. These controls provide the commercial milling system with a *de facto* monopoly on maize distribution into grain–deficit areas. Therefore, the sale of grain “surpluses” to the GMB, while giving the illusion of rural self–sufficiency, has masked and even contributed to food insecurity in many smallholder areas. Econometric evidence indicates that the national magnitude of this phenomenon – grain moved out of rural areas by the GMB and urban–milled meal moved in – is about 130 000 tonnes during a normal rainfall year and as much as 275 000 tonnes or more during a drought year (Jayne *et al.* 1990a). This represents about 26 and 42 percent of total commercial maize meal sales during a normal and drought year, respectively. This rural consumption is probably concentrated in the low rainfall communal areas and among households working on commercial farms that were allocated plots of land too small to meet their annual grain needs.

Thus, during drought years, the current organization of the market places increases emphasis on expensive urban–milled meal, transferring income from grain purchasers and rural small–scale millers (along with the multiplier and employment effects of increased money circulation in the rural areas) to urban–based commercial millers. The phenomenon of increased demand for urban–milled meal during drought years is largely due to the failure of the marketing system to allow more direct redistribution of grain from surplus to deficit rural areas. The absence of viable intra–rural marketing channels inflates consumer grain prices and has effectively reduced cash incomes among poor rural consumers by as much as 30% (Jayne and Chisvo, 1991).

The current underdevelopment of intra–rural grain markets also reduces rural incomes in terms of the value of farm output sold. Evidence suggests that the production of “higher–valued” cash crops such as groundnuts, sunflower and cotton is constrained by high food marketing costs to rural areas. In the semi–arid areas where most farm households are net purchasers of grain, the opportunity cost of cash crop production is not the net returns to growing and selling food grains, but rather the cost of acquiring the grain foregone by cultivating cash crops, which is related to acquisition costs of grain rather than selling prices. Econometric evidence in Jayne (1991) indicates that cultivation of various oilseed crops in several semi–arid smallholder areas of Zimbabwe is closely associated with the degree of grain self–sufficiency of the household. The results suggest that the direction of causality between cash crop production and household income may run both ways: those households that engage in substantial cash cropping may have higher incomes, yet in an environment of high food marketing costs, the ability to engage in cash cropping appears dependent on adequate household resources over and above those needed for subsistence grain production needs.

Therefore, active government support to reduce food costs in the grain–deficit rural areas through the development of intra–rural trade may simultaneously contribute to the GOZ's food security and agricultural

growth objectives, by both reducing the cost of food purchased and by raising the value of farm output sold. Such policies are apparently neglected because of the conventional perception that farm households are, by and large, food self–sufficient. This misconception underscores the negative effects of uni–directional state marketing systems commonly found in East and Southern Africa, which are primarily geared to extract grain out of rural areas and into urban milling, storage and consumption centers.

Overcoming the serious impediments to maize access and affordability imposed by the past grain marketing system will actually be a way of cushioning vulnerable groups against the effects of other aspects of structural adjustment. To illustrate this, Jayne *et al.* (1991) did three econometric simulations. One of these illustrates the effects of i) GMB subsidy elimination (its selling price is increased to cover all costs of its domestic trading operations combined with ii) policy changes that allow private informal traders to procure grain at GMB depots in unlimited amounts and iii) deregulation of maize movements in the semi–arid areas of the country. Despite the removal of the GMB subsidy, a 6–7% increase in rural maize consumption would occur, primarily in grain deficit areas; and a 12–14% increase in urban consumption would occur, primarily among low income groups. The latter would be due to increased availability of less expensive straight–run meal in peri–urban areas. However, some time will be required for the various policy changes and investments needed to take effect. In the short run, Jayne and Chisvo (1991) suggest GMB subsidy elimination be linked to a short–term subsidy on straight–run maize meal which would self–target to protect the more vulnerable groups.

We conclude by stressing that agricultural policy constitutes relevant actions to combat food insecurity, which directly affects malnutrition. Yet in Zimbabwe, such policies must be reassessed and revised to achieve greater congruence between ends and means.

Drought Relief Programme

There are two major features to Zimbabwe's food insecurity problem and the response it has evoked from the government. First, food insecurity, even in the remote rural areas, exists in a situation of food availability. Commercial maize meal is almost always available in rural shops (Jayne *et al.* 1990a). Therefore, the problem is normally one of food accessibility and cost rather than availability. Second, the number of malnourished tends to fluctuate only moderately between normal and drought years. Many of the rural poor are apparently food insecure on a chronic rather than transitory basis. The term “drought relief is thus somewhat of a misnomer, relief is necessary in good and poor rainfall years alike.

It is important to note that the distribution of drought relief maize has been roughly uniform between the provinces, and does not appear to be allocated to provinces on the basis of available malnutrition indicators or food production shortfalls (Figure 13). Approximately 10 kgs were received by each recipient per year (Ministry of Labor, 1990). This amounts to roughly 4 percent of the required annual per capita grain intake as estimated by the SADCC Food Security Early Warning Unit (1990). Under moderate or severe crop failures, food transfers of this quantity provide only cosmetic benefits.

The total cost of the Program has ranged from Z$13 million to Z$16 million since 1987 (Figure 14). This has amounted to Z$22.40 per bag distributed in 1987, to Z$30.80 per bag in 1989. This was 38 and 58 percent higher than the GMB producer price in those years, respectively.

According to Ministry of Social Welfare Staff in Masvingo Province, drought relief maize is distributed to beneficiaries under the following plan:

> i) Lists of severely affected areas are drawn up by the local district councellors in concert with AGRITEX and Ministry of Social Welfare staff. AGRITEX agents prepare maps showing areas hardest hit by drought.
>
> ii) Selection of recipients is based on whether there is no wage earner in the family in the area identified as drought–affected. Only those families where there is no wage earner are eligible for the drought relief aid. But the counsellors have some latitude in applying these rules.
>
> iii) Once the number of people suffering in a particular ward is identified, this number is multiplied by 10kg per person to arrive at the recommended volume of maize to distribute to the ward.

iv) The estimated population and volume of maize per district is then put into a “Drought Relief Preview” by the District Ministry of Social Welfare, which forwards the Previews to the National Office in Harare.

v) The Harare Office either ratifies or modifies the provincial–level Previews and sends them back to the province.

vi) Drought Relief Requisitions are then prepared, based on the authorized Previews. The Requisitions state the GMB depot where the maize is to be procured, the vehicles authorized to collect the maize from the GMB depot, the number of bags to be put on each truck, and the destination (ward). The GMB is simply the source of maize to be used in the Drought Relief Program; it has no other role in the exercise. The government uses vehicles from the Ministry of Transportation or Christian Care organizations; private transport is not hired for this purpose.

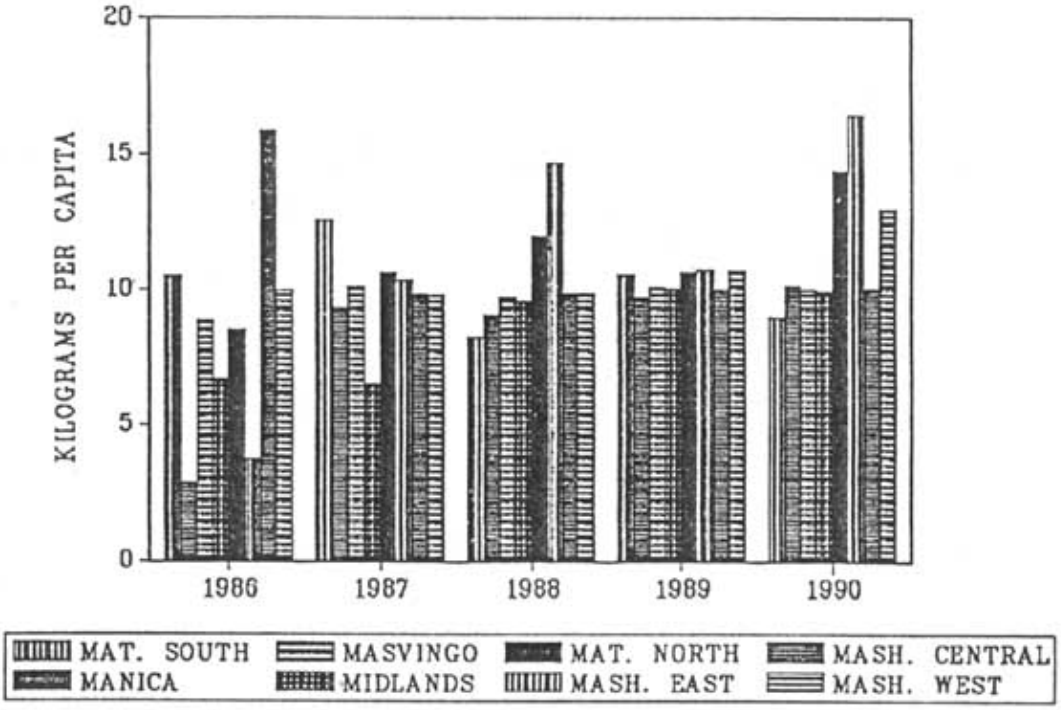

Figure 13: Drought relief maize distribution by province, 1986–1990

Source: Ministry of Labor files

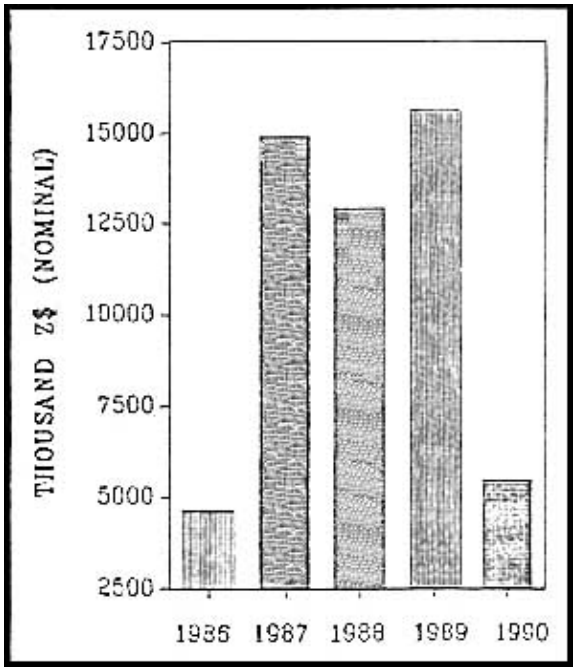

Figure 14: Cost of Government Drought Relic/Program, 1986–1990

Source: Ministry of Labor files

In actuality, only a small proportion of the designated recipients actually receive drought relief because of transport shortages. For example, only 27 percent of the 26,000 tonnes designated for Chivi District between April and July 1990 were actually delivered. In Bikita, only 14 percent of the designated 36,400 tons were delivered. Given the wide gap between what is needed and what is provided, the Ministry of Social Welfare rations the maize first to participants in Food for Work Programmes (10 kgs per person per day).

Ostensibly, the major problem in distributing drought relief maize to recipients is lack of transport. This is clearly a problem. However, it has been frequently reported that local communities organizing their own transport arrangements were denied access to the grain at the depots. The reasons for this are unclear. However, it is certain that if the designated (rather than actual) quantities of drought relief maize were distributed to targeted areas, this would substantially increase government costs, not only for the Ministry of Social Welfare, but for the Grain Marketing Board, since this would require the additional shipment of massive volumes of maize to depots in the deficit regions from the surplus Mashonaland depots. The costs and additional strain on already–scarce transport may be prohibitive.

III. INSTITUTIONS AND POLICY FOR NUTRITION

Institutional Development

Several ministries and institutions work directly or indirectly with nutrition issues, particularly manpower aspects. In health (and to a lesser extent agriculture and education) several cadre have nutrition integrated into their basic training. Some health cadre and a few agriculture cadre have specific tasks directly related to nutrition and many could be said to have tasks which indirectly affect nutrition in some way. The absence of a national food and nutrition policy has made it difficult to make appropriate decisions on how nutrition activities should be organized within the country. So far the only ministry which includes nutritionists in its manpower base is the Ministry of Health (MOH).

The MOH initially proposed the establishment of a Food and Nutrition Council under the Office of the Prime Minister to coordinate food and nutrition activities. This proposal was rejected and a Department of National Nutrition (DNN) was created within the MOH instead. As part of its primary health care policy, the MOH thus expanded the small Dietetics Unit which existed prior to independence into the DNN. This department was given more staff and an expanded mandate as follows:

– to determine the magnitude and extent of malnutrition in Zimbabwe,

– to implement a nutrition surveillance system to monitor nutrition status,

– to develop nutrition programs in line with the Primary Health Care strategy,

– to utilize inter–sectoral cooperation to develop a National Food and Nutrition Policy,

– to establish norms and guidelines for government institutional feeding,

– to train institutional food service managers for government, and

– to provide technical expertise to other government agencies.

The decision to place the DNN within the MOH reinforced the view that malnutrition was a health issue. While the mandate given to DNN was sufficiently broad to tackle the problems of malnutrition holistically, the parent ministry (health) did not always understand or appreciate the intersectoral aspects of this mandate. For example, a wide range of professionals were needed to adequately fulfil the mandate, but the health sector could only allow a staffing complement which fell within “acceptable” health norms.

DNN was demoted to the status of a Unit under the Maternal and Child Health Department as part of MOH internal restructuring in 1988. However, its mandate, much broader than MCH aspects, remained unchanged. This further disadvantaged nutrition activities, reducing the Department's ability to undertake its role as Secretariat of the National Steering Committee for Food and Nutrition. This is partly because the reduction in status increased demands on the Department to focus on health sector and MCH–related activities, but also it became more difficult for the Unit to negotiate from a level lower than departments in other ministries. This increases the need for an institutional framework for high level dialogue and interaction of the various sectors regarding nutrition. However, under the current Economic Structural Adjustment Programme, the Unit, like other government institutions, is having to struggle just to avoid having its staff cut back.

The Conceptualization of Nutrition Planning: Jurisdiction and Compartmentalization

Malnutrition clearly has many causes. Policy directives taken by numerous agencies may have a profound indirect on health and nutrition. The pursuit of policy objectives by the various ministries have often produced adverse side–effects on nutrition. There are both short run and long run dimensions to this problem. In the short run, for example, regulatory controls on movement of grain, while part of the Ministry of Lands, Agriculture and Rural Resettlement's (MLARR) policy to achieve explicit objectives, impair access to and availability of food in grain–deficit rural areas. This may in turn affect malnutrition in these areas. In the long run, subsidies on roller meal, which are a manifestation of the Ministry of Trade and Industry's mandate to keep food prices at tolerable levels, may actually work against long run nutrition objectives by hampering the development of private trading and milling networks that, according to available evidence, are capable of providing staple meal at lower cost than the less nutritious industrially–manufactured meal (Jayne and Chisvo, 1991).

Interviews with policy makers in MLARR have indicated that their perception of their jurisdiction begins with agricultural production and ends with the sale of food by the Grain Marketing Board to various buyers (usually industrial food manufacturers). After that point, the MLARR is no longer involved; pricing decisions, food subsidies, targetting and distribution schemes fall under the jurisdiction of other Ministries. These are, most notably the Ministry of Trade and Industry (MTI) and the Ministry of Labor, Manpower Planning and Social Welfare (MLMPSW).

While Zimbabwe may be justly proud of the performance of its agricultural sector in providing the backbone to the economy, the need to ensure food security for all segments of the populations may not have been sufficiently articulated as a specific objective with clearly defined strategies and plans. There seems to have been a basic assumption that improvements in national production levels of food will automatically benefit the population, ensuring an adequate food supply which meets nutritional needs throughout the year. Zimbabwe's case clearly demonstrates that this is not the case. The objective to feed the nation has to be clearly spelt out and translated into appropriate action and monitored regularly to ensure that progress is being made.

Agricultural policy must begin to include nutrition as an explicit criterion to evaluate the effects of its policies. MLARR can no longer use food production and surplus stocks as a proxy for availability and access to staple food.

The Ministry of Health's interest in a coordinated approach to nutrition planning reflects its recognition that adequate nutrition is beyond the scope of nutrition and health planning to bring about by itself. Viable health and nutrition programmes are necessary but not sufficient conditions to alleviate malnutrition in Zimbabwe.

Limitations of Direct Nutrition Interventions

The lack of a clear government policy on food and nutrition has resulted in uncoordinated programmes being implemented by the different Ministries and decisions which might have a bearing on nutrition being made unilaterally in the various sectors. This has led to some of the following factors which have limited the pace of nutritional improvement in Zimbabwe:

i) The multi–faceted nature of the causes of malnutrition are not often fully appreciated. Policy makers have tended to view nutrition as a health problem. This view has tended to limit the scope of interventions which can be implemented through the health sector. Nutrition should not be the concern of the health sector alone;

ii) Nutrition has mainly been considered as a consequence of development, yet improved nutrition often is a positive factor contributing to development itself. If the nutritional status of communities or certain groups is inadequate, then better nutrition may be a pre–requisite for increasing economic productivity in those communities;

iii) There is a lack of coordination to facilitate an integrated approach to nutrition interventions. Whilst the Health Sector has been given the responsibility to develop nutrition interventions, there is no mechanism for monitoring the activities of other sectors which impact on nutrition;

iv) There is also no forum to propose modification in the activities of other sectors which might have a negative effect on nutrition. For example, the promotion of non–food cash crops (e.g. cotton) in remote areas with limited access to food has reaped economic benefits to the country in terms of increased exports of cotton but the nutritional status of the producers of the cotton has appeared to deteriorate in some cases. The health sector is not in a position to influence the agricultural sector in any fundamental way.

The multi–faceted nature of the problem needs coordinated action by all relevant sectors. There is, therefore, need for a clearly defined National Food and Nutrition Policy.

National Food and Nutrition Policy Development

Requirements

An acceptable definition of a Food and Nutrition Policy is “a coherent set of principles, objectives, priorities and decisions adopted by Government and implemented by its institutions as an integral part of the National Development Plan”. Once formulated, such a policy would provide Government with guidelines that would ensure that food will be available to provide an adequate diet at a reasonable cost to all segments of the population. The policy would provide guidelines to monitor the nutritional status of the population and to ensure adequate food supply, distribution, consumption and utilization of food in order to assure good health and productivity.

To derive maximum benefit from intersectoral action on nutrition, there is a need to establish a mechanism for coordinating this effort the existing Food and Nutrition Management Teams at the various levels could form the basis for such a mechanism.

The policy must allow effective community participation. It is essential that communities are involved in the identification of food and nutrition problems and the formulation of solutions to the problems. This ensures that the plans for intervention are relevant and appropriate. Programme implementation will also become easier

since communities will identify with the activities planned and can, therefore, provide the necessary support, collaboration and active participation. This process can be facilitated by the food and nutrition teams which have been established at all levels.

The policy must also allow for the continuous appraisal of nutritional implications of all development plans.

Process of formulation

The World Bank report (1983) first highlighted the need for a national food and nutrition policy to provide the framework for appropriate action for nutrition improvement Adequate nutrition for the population was a clearly stated goal in the Transitional and the First Five Year Development Plan. The policy framework for achieving this goal was not defined but the Department of National Nutrition was tasked to implement this goal.

The multifaceted dimensions of the nutrition problem and how it demanded intersectoral action was not understood by policy makers. The painfully slow process of creating awareness towards comprehensive action was necessary. But a policy document without the requisite level of understanding would be no more than a document. Policy development is itself a gradual process incorporating lessons learned in struggling with solving the problems of malnutrition in the local context.

The national nutrition programs have created intersectoral management structures which are now spearheading the development of a national food and nutrition policy. Two multisectoral consultative meetings have been held to discuss the food and nutrition situation, review the current programs and policies which are relevant to nutrition, and to recommend mechanisms to develop a National Food and Nutrition Policy. Data provided by the National Steering Committee on the nutrition situation provided the much needed impetus for policy formulation.

There is a general recognition even in the MOH that the Nutrition Unit is not placed strategically to spearhead the development of a national food and nutrition policy. Several proposals have been advanced for an appropriate institutional framework to address this issue such as the establishment of a national action committee placed in one of the key ministries such as Agriculture or Economic Planning. A recent consultative workshop discussed the possibilities of arriving at an integrated national food and nutrition policy strategy (Wyckoff and Rukuni, 1991). The problems and strategies for solving them were presented from the points of view of each of the 11 ministries involved, as well as NCOS, the food industry and farmer organizations.

It was proposed that a Food and Nutrition Coordinating Committee be formed with membership from each of these organizations and groups. The proposed form and functions of this committee are described by Lenneiye (1991) within the overall food and nutrition policy context and outlined here. It was agreed that the Ministry of Lands, Agriculture and Rural Resettlement (MLARR) would be the appropriate coordinating ministry for a National Food and Nutrition Policy. It was further agreed that the initial step would be a paper on the need for a national food and nutrition policy prepared by the MLARR with support from the National Steering Committee. This paper's destination would be cabinet through the existing Subcommittee on Drought Relief. All the key ministries with relevance to food security and nutrition are already represented on this subcommittee and thus it would serve as a logical entry point to Cabinet

The FNCC should be comprised of Ministries already represented on the National Steering Committee for Food and Nutrition (NSC) and the Drought Relief Committee (DRC). These Ministries are Community and Cooperative Development, Public Construction and National Housing, Education, Energy, Water Resources and Development, Finance, Economic Planning and Development, Health, Industry and Technology, Labour, Manpower Planning and Social Welfare, Lands, Agriculture and Rural Resettlement, Local Government, Rural and Urban Development, Transport and National Supplies.

There should be representation from the private sector on this committee (the key factors being farming organizations and food manufacturers). The three farming organizations, together with the Food Manufacturers Association, should be given a representative on the FNCC. NGOs should also be considered for representation.

Day−to−day functions of the FNCC and administrative support should be provided by a secretariat based in MLARR, with four key skills: (a) agricultural economics, (b) macro−economic planning, (c) nutrition, and (d) statistics. It would be necessary to have more than one officer handling some of these issues in the Secretariat. In view of the structural adjustment programme (SAP), it would be important for the Secretariat to have full−time staff undertaking activities implied by (a)−(d) above. Without this kind of capacity, it is difficult to see how food and nutrition indicators for monitoring the SAP can be produced. The FNCC would have the

following responsibilities:

– Coordinate the preparation of food and nutrition policy for Zimbabwe based on the need for the country to address: i) the short–term feeding programmes as well as the long–term issues of improving nutrition through agricultural pricing, marketing and production programmes; and ii) how to promote income growth in low–rainfall areas and among food–deficit farm families.

– Monitor the implementation of the policy by continuously assessing the nature and extent of the problems of hunger, especially by focusing on agricultural production and supplies.

– Prepare inter–sectoral strategies on the implementation of various activities demanded by the national food and nutrition policy.

– Assist various sectors in the management of their component in the food and nutrition policy.

– Coordinate the implementation of all programmes aimed at addressing hunger and malnutrition (such as Food for Work, Drought Relief, Supplementary Feeding and Production).

– Prepare and produce information on food and nutrition issues (hunger, agricultural production, supplies, national and household food security, etc.).

– Commission and oversee execution of research identified as relevant to food and nutrition activities.

– Produce annual reports on progress made by various sectors in the implementation of food and nutrition activities (covering programme targets, budget disbursements, etc.).

Content of policy

The relationship between the agricultural sector and the Ministry of Health (Nutrition) has improved significantly. The need to integrate nutrition into overall agricultural policy has been accepted by Agriculture in principle. A paper is expected to be presented to Cabinet by Agriculture confirming the need for a national Food and Nutrition Policy and indicating Agriculture's pivotal role in this process. Several issues have been identified and suggested as being important in the development of a planning framework for a food and nutrition policy in Zimbabwe (Tagwireyi n.d.) within the overall agricultural policy framework. It is suggested that a national food and nutrition policy should:

i) Clearly state that household food security is a major objective and then develop strategies to deal with seasonal food insecurity.

ii) Clearly state that the availability of safe and nutritious food throughout the year is a goal (based on production, distribution, marketing and consumption requirements of the whole population). Important issues here are:

– Making nutrition issues part of agricultural planning.

– Reviewing the pricing of basic food–stuffs and its impact on households ability to secure the right mix of foods.

– Inclusion of other food (not just cereals) in the definition of food security taking into account regional variations in types of food available.

– Defining the size of vulnerable groups and then targeting strategies and programmes.

– Responding to the needs of women in agriculture and the bringing up of well–nourished children.

iii) Commission and undertake operational research to produce planning information and strategies to tackle the above issues.

iv) Define a suitable institution to develop and monitor the implementation of national food and nutrition work covering items 1–3 above.

Any such policy however must take into consideration the current structural adjustment goal of reducing the civil service by 25% and the government budget deficit from 10% to 5% by 1995. It will be challenging, given the fact that many ministries cite staff and resource constraints as major causes for ineffectiveness in implementing or coordinating food and nutrition related programs. Clearly efforts must be accelerated toward finding solutions linked to liberalized markets and the private sector wherever possible. Financial sustainability will be crucial, and this may come down to the delicate question of whether the government has the political will in the given constraints to reallocate resources from more politically strategic areas to nutrition.

Both the 1992 drought, said to be one of the worst in this century for Zimbabwe, and the Structural Adjustment Programme may ironically facilitate the process of policy formulation, as Government is sensitive to the potential effects of both of these on the vulnerable groups. Nutrition surveillance is expected to be strengthened as one way of monitoring the impact of both drought and economic reform.

Within the Framework for Economic Reform document, nutrition is singled out as an indicator to monitor the impact of the SAP on vulnerable groups. Nutritional status is to be monitored over the five–year period of the SAP. It is hoped that this will increase the understanding of government of the role of nutrition in development and at last place nutrition on the development agenda. Again, it is uncertain whether personnel resources will be adequate to deal with these high expectations.

IV. LESSONS AND RECOMMENDATIONS

Numerous droughts and economic setbacks have prevented the government of Zimbabwe from achieving many of its development goals since independence in 1980. The 1992 drought was the worst in memory and its effects on young child nutrition remain to be seen. Apart from this uncertainty, the trend since independence has been toward substantial improvement in the nutritional status of children of preschool age. Nutritional wasting no longer seems to be a serious problem and levels of stunting may have declined by half. Comparing anthropometric data from 34 African countries for the age group 12 to 24 months (WHO AFRO 1989a), only Togo and Sao Tome and Principe appear to be substantially better off than Zimbabwe while another six countries appear to have similar levels of growth retardation; the rest are worse off.

Improvements in the control of infectious diseases through progress in health care delivery may account for much of this positive trend. Government commitment to drought relief and supplementary feeding have probably also been successful in preventing a decline in nutritional status during the many drought years since independence. Substantial efforts to educate mothers using a few key simple nutrition messages such as the importance of high energy density, as well as the spread of the Community Food and Nutrition Programme may also have contributed to this improvement.

Other important factors include: i) a government committed to improving the, health and education of its poorer citizens, including a willingness to give a certain priority to vulnerable groups such as young children; ii) the spirit of cooperation and community spirit that characterizes Zimbabwean society, but was particularly manifest in the first years after the war of independence was won; iii) active and continued support of nutrition projects at grass roots level from a large number of NGOs, iv) a minimum core of highly trained and motivated staff in ministries such as health and agriculture which gradually came to recognize the importance of nutrition and to make efforts to improve it within their own spheres, both at national and more decentralized levels; and v) donor support which was stable and long–term, flexible enough to allow a model for community–based nutrition projects to evolve.

Although improvement is occurring, nutritional stunting among young children does continue to be a problem of public health proportions. Malnutrition continues to be identified by health professionals as an underlying cause of a substantial proportion of young child mortality.

Regarding micronutrient problems, more needs to be known about the prevalence and severity of vitamin A deficiency disorders and anaemia. Iodine deficiency disorders are wide–spread throughout the country and efforts to ensure that all salt available for human and livestock consumption is iodated at appropriate levels must be redoubled. Due to the delays that have already occurred in the past two years, plans to begin surveillance of the iodine status of the population should be given due priority and once iodated salt is available a system of quality control must be institutionalized. Plans for short–term approaches such as

iodized oil capsule distribution in high–prevalence areas should be given attention in the meantime.

Nutritional research priorities include: i) Maternal nutrition. Height and weight are measured at antenatal visits in many urban health care institutions. The relatively simple task of collating such data should receive priority, as should other research needed to determine the extent of under– and over–nutrition among women, causes of these problems and possible approaches for alleviating them, ii) The prevalence of nutritional anemias and pellagra among the vulnerable groups, iii) Height and weight of Zimbabwean infants at birth as well as infant feeding and infant growth in the first months to determine why faltering in linear growth appears to be starting so early in life, iv) Data from past surveys should be reanalyzed to allow trends to be analyzed. Surveys should be done in appropriate locations to determine how representative clinic–based and community–based nutrition surveillance data are, v) The Nutrition Unit, like others in Zimbabwe, needs to learn more about how to use rapid appraisal methods rather than large national surveys for community assessments. Much more attention should be focused on the use of qualitative data for understanding problems, their causes and possible solutions rather than continuing to rely on quantitative surveys.

Household Food Security

Government commitment to drought relief and supplementary feeding of children has probably been successful in preventing a decline in nutritional status despite the five drought years that have occurred since independence, despite being extremely expensive. This conclusion is supported by Ferro–Luzzi et al (1992) who wrote that the BMI distribution they found “clearly indicates that these adults cannot be considered nutritionally at risk. This finding was unexpected, given the marginal, drought–prone habitat of this community, and implies that the community had developed and implemented successful avoidance strategies.”

The success of food marketing and price policies in generating national food surpluses has masked their detrimental effect on food insecurity among grain–deficit, relatively poor rural and urban households. The system perpetuates rural consumption of industrial–manufactured maize meal, which is less preferred, less nutritious, and considerably more expensive in most rural areas than maize procured and milled through informal private channels. The inflated grain prices resulting from these agricultural policies have effectively reduced cash incomes among poor rural consumers by as much as 30 percent.

The structural impediments to rural income growth and food security underscore the need to reassess the congruence between Zimbabwe's food policy objectives and the food system in place to achieve them. These problems also highlight a number of long run challenges facing Zimbabwe in the 1990s:

i) How to secure grain supplies to satisfy national requirements at least cost and reverse the clear downward trend in per capita grain production and self–sufficiency;

ii) How to reduce costs in the marketing system, which would provide the opportunity to raise real producer prices and restore food self–sufficiency without causing intolerable increases in staple maize meal prices. This issue is especially difficult in light of the GOZ's commitment to eliminate GMB subsidies under the Structural Adjustment Programme.

iii) How to reorganize the grain marketing system away from being an extraction system in which grain is pulled out of rural areas facing severe food shortages;

iv) How to develop informal networks capable of marketing grain directly from surplus to deficit areas at lower cost than the current system;

v) How to design more cost–effective ways of targeting and distributing grain to vulnerable groups that lack effective demand, without destroying private incentives to develop viable informal grain markets;

vi) How to induce changes in crop mix consistent with agricultural and income growth in Zimbabwean agriculture;

vii) How to stabilize maize price and supply at least cost to the government?

In the current environment of dwindling Grain Marketing Board (GMB) maize supplies and declining real wages, Zimbabwe is facing a food price dilemma. The solutions to this dilemma will require both short–run and long–run strategies. In the long run, new farm technology, resettlement, and/or the successful generation of employment and income growth would relieve the dilemma.

In the short run, a Government investment policy that effectively develops small–scale milling capacity would provide the following benefits: i) it would restrain the upward movement in staple maize prices for low–income consumers at no subsidy; ii) should government wish to further reduce the cost of maize meal for low–income consumers, using straight–run meal as the targeted commodity would efficiently transfer government outlays to low–income consumers without the costly drawback of current policy – blanket subsidies for all consumers; and iii) producer prices could be raised back to levels capable of achieving self–sufficiency levels without requiring major increases in maize meal prices to the poor that could exacerbate food insecurity. Furthermore, this strategy requires no subsidy on maize meal to protect low–income consumers.

However, like technology and resettlement, market development takes time and cannot provide immediate benefits. Even with substantial government support, the level of investment necessary to induce the widespread availability of lower–cost maize meal would take several years. Yet the effects of structural adjustment on real wages and food prices are already apparent. One of the most critical issues facing the GOZ regarding structural adjustment is how to cushion the urban and rural poor from increased staple food prices. In the very short run, there appear to be few options that do not involve food subsidies, although the form that such subsidies take may critically affect the prospects for longer–run objectives. An evaluation of two alternative subsidy options – roller meal vs. straight–run meal – indicates that a subsidy on straight–run meal would more cost–effectively self–target low–income groups than the current policy of subsidies on the more refined meals, which leaks benefits to consumers of all income categories and results in substantially larger budget deficits. Moreover, blanket subsidies on industrial meal depress the development of informal grain trading and milling which, if provided with sufficient support and incentives, could potentially provide food to urban and rural consumers at lower cost without any subsidy than the existing system is able with subsidies.

The industrial and informal milling sector should ideally be viewed as complements to one another rather than substitutes. Each sector would fill different niches in the maize meal market. The industrial millers will assuredly retain the majority of meal sold in urban areas, since roller and super–refined meal are the meal of choice by the majority of middle– and high–income groups as well as a significant proportion of the poor. On the other hand, straight–run meal would apparently be demanded by a large portion of nutritionally–vulnerable lower income consumers in urban and rural areas.

Government support for the development of informal grain trading and milling networks could include: i) the allocation of foreign exchange for importation of small–scale mills; ii) promotion of local metal manufacturing industries that produce parts needed by small mills; iii) removal of import restrictions and bureaucratic impediments associated with importing productive equipment and vehicles; iv) assuring that grain is available for purchase by all individuals and/or businesses in any quantity above the current minimum of 1 bag; v) modification of city or district by–laws that prohibit informal grain milling.

Regarding food production, results have shown that the eroded productive base for maize over the past five years can no longer guarantee a national surplus, even during a normal rainfall year, unless real producer prices are increased dramatically. Real producer prices have declined by 35% since 1981, which has corresponded with a decline of 450,000 tonnes from annual commercial sector maize production. The dramatic maize revolution in the communal sector during the early and mid–1980s also appears to have waned during the past five years. A major implication of these trends for structural adjustment is that policy changes that successfully expand access and affordability of maize to urban and rural consumers will lead to a greater need for imports, and, relatedly, GMB operating deficits – unless accompanied by increases in real producer prices.

A scenario of national maize shortages will also affect the GOZ's ability to cushion vulnerable groups through conventional food and income transfers. The costs and desirability of giving free food to millions of people will change radically if Zimbabwe moves from a situation of massive surplus stockpiles to one where it must import the food aid at Z$800/tonne. It may be worthwhile to consider the potential for the development of intra–rural markets to distribute grain to deficit areas, and reserve food aid schemes for specifically targetted groups lacking effective demand.

Drought relief

The Government's main policy response to chronic and transitory food insecurity has been massive food transfer programmes, which currently feed over a million people per month. The need for these costly short−run programmes has become apparent only after long−run food policies − the purview of the Ministry of Agriculture − have failed. The manifestation of this failure is the absence of direct trade between surplus and deficit areas and its replacement with circuitous grain flows featuring redundant transport routes, overcentralized and high−cost milling operations, and artificially inflated consumer prices of staple food (as mentioned above). This appears to be the major cause of food insecurity and loss of real income among the rural and urban poor.

Zimbabwe's drought relief programmes have spent an average of Z$15 million over the past 3 years in order to provide each recipient with an annual average of 10 kilograms of maize. Given the magnitude of the grain deficits faced by many rural households, such a programme can only be seen as somewhat cosmetic. In the short run, the limited effectiveness stems from the scarcity of vehicles to operationalize the programme. Clearly, while a greater supply of government transport would enhance the potential of the programme, the existing supply of transport could also be used more effectively. Instead of sourcing grain from the depots, which are in many cases located far from the distribution areas, the authorities could use grain procured at collection points and by approved buyers in these remote areas. This would avoid the costs and waste in the current system in which grain procured at these points is transported onward to the GMB depots, only to be brought back out to the rural areas through the Drought Relief Programme. During severe droughts though any extra demand would have to be sourced from the depots.

In the long run, an important task for food security policy is to develop financially viable targeting mechanisms to reduce the burden on short−run food transfer programmes through the sustained development of rural food markets and off−farm industries, while concomitantly reducing the number of vulnerable households over the long run through sustained rural development

Health and Environment

Improvements in the control of infectious diseases may account for much of the improvement which has occurred in young child nutritional status since independence. Regarding the health system after independence, the following measures were taken to redress inherited imbalances: health care became free to those earning less than Z$150 per month, the vast majority of the population; immunisation coverage was expanded; a rural health centre building programme was initiated; a diarrhoeal disease control programme was launched; the Department of Nutrition was established in the MOH and managed nutrition and health education, nutrition surveillance and the Children's Supplementary Feeding Programme (CSFP). A similar type of restructuring got underway in the education sector, and this has been reflected in expansion in primary school enrolment.

Environmentally, there were improvements too, with a marked expansion and improvement in water supply. However, there are still some problems. The lack of access to clean water and health care may explain the higher levels of wasting found among children in resettlement areas. Research suggests that proximity of water sources may be more important than type of source. It is generally understood that the quantity of water fetched and the number of uses to which a given quantity of water is put are more important in determining health (especially incidence of diarrhoea) than the water source itself. The quantity of water fetched is a function of distance from source, physical well being of the person fetching it and the opportunity cost of fetching water. In rural areas several activities compete with time spent fetching water, such as working in fields and fetching firewood. Reducing the distance to water sources could therefore, increase the amount of water used and/or free up mothers' time for other activities, including the time devoted to caring for children.

Improved sanitary conditions by constructing at least pit latrines will greatly reduce the incidence of diarrhoea which is strongly associated with a deterioration in nutritional status of children. Currently, investments into rural water and sanitation are underway. Of the sampled households, sixty percent used the bush, 18 percent had a pit latrine whereas the rest had access to a blair or VIP latrine. Of those who did not have any latrine at all, about 40 percent were participating in some sanitation project in which they were constructing their own latrines with government help on essential raw materials such as cement. Almost all of those participating had at least fully dug a pit at their homes in anticipation of receiving their allocation of cement which was not forthcoming. Almost all of them indicated that cement shortage had stopped further progress. Given the results above, such projects should be reinforced rather than terminated during structural adjustment.

Greater attention should be given to the constellation of underlying causes of malnutrition linked to inadequate maternal and child care. Priority should be given to improving the information, education and communication (IEC) skills and capacity of the relevant units in the Ministry of Health and in disseminating relevant messages in ways that will empower the most vulnerable groups, particularly women.

A major issue of which health workers and mothers alike have so far been unaware is that exclusive breastfeeding during the first four to six months of life is as important as it is rare in practice now throughout the country. Its disappearance may even have been partly caused by overzealous promotion of frequent complementary feeding at too early of an age by health workers. The common use of water and gruels for infant feeding from the early months of life may account for the very early decline in velocity of growth of infants in Zimbabwe. However, virtually no research on these issues has been done so far in the country.

Substantial efforts to educate mothers using a few key simple nutrition messages such as the use of energy–dense complementary foods may have contributed to improvement in the nutritional situation in Zimbabwe since independence. The expansion of the Community Food and Nutrition Programme may have contributed as well, especially in Mashonaland West, although an impact evaluation of the programme has not been done.

Research suggests that nutrition and health education should be viewed as an indispensible component of formal education and should be targetted to both parents. Formal education, on its own, is less important than practices related specifically to health education – pre–natal practices of the mother, weaning practices and sanitation. A relevant curriculum for health and nutrition IEC efforts could the following i) the importance of birth weight – the health, diet and workload of pregnant women; ii) the importance of *avoiding* all supplementary food and water in the first 4–6 months (i.e., exclusive breastfeeding). Health worker training must be revised and maternity ward routines reformed where needed. iii) care for the 12–24 month year old child including the control of diarrhoea; iv) the importance of adequate water and sanitation standards; v) the effects of inadequate child nutrition on productivity and future health risks; vi) intra–household control of income and prioritization of expenditure – gender issues associated with child nutrition.

Other recommendations include the need for qualitative research and eventually field trials on the use of traditional fermented as well as germinated foods. This may allow busy mothers to store energy–dense and contamination–resistant complementary foods made in the morning for use throughout the day. To reduce the work burden of rural women, appropriate technologies must be pilot tested and attention must be given to how to increase the quality of care received by children from both men and women.

V. CONCLUSIONS

At the World Summit For Children organised by UNICEF in September 1990, Zimbabwe pledged, along with other countries, to develop a National Plan of Action for Children to achieve particular nutritional goals. Among these goals were the reduction of severe and moderate malnutrition among under–fives by half the 1990 levels in the next decade (UNICEF, 1991). This presents Zimbabwe with at least two major challenges. First, although Zimbabwe has made commendable efforts in supporting child health and nutrition in the past decade, progress has been slow. The 30 to 35 percent levels of stunting still being reported in some parts of the country provide evidence of this (Greiner and Tagwireyi, 1991). Secondly, Zimbabwe's economic climate continues to transform, through the Economic Structural Adjustment Programme (SAP), into one of tighter budgets for all relevant ministries, inevitably restraining essential public sector investment in child health and development.

Under these circumstances, the prioritization and probable reallocation of resources will become critical to successfully promote child nutrition. Due to the important nutritional implications of government policies outside the purview of the Ministry of Health, nutrition planners may more effectively promote nutrition and other broad health–related objectives by taking positions on policy decisions outside the health sector. There are already mechanisms for doing this via multi–sectoral planning committees and even at the highest government echelons such as Cabinet meetings. A more proactive role by health planners, especially on issues related to agricultural and staple food pricing, market regulations affecting food security, subsidy schemes, etc., could at least contribute to the decision–making process on issues affecting nutrition. Toward this end, this review has assessed available information concerning the relative importance of factors influencing child nutrition, and the interactions between them, so as to better enable scarce government

resources to be guided towards activities of greatest benefit.

The current drought as well as the structural adjustment of the economy being undertaken by the Government of Zimbabwe threatens to worsen nutrition problems among the poor. A balanced and intersectoral set of programmes and policies such as those below, guided by an improved system of nutritional surveillance will be required to avoid this, let alone to make further progress in reducing nutrition problems in the country. The development of a strong national food and nutrition policy would be valuable in allocating responsibility for adoption of such nutrition–relevant actions as well as in the allocation of resources to them. It could help key sectors, policy makers, planners, and project managers to understand the broader food and nutrition context within which they are working. Synergistic effects appear to be achieved when several approaches are combined in the same area. A national food and nutrition policy could help to generate the momentum required as well as to coordinate efforts on several fronts at once.

The type of actions that such a policy would help ensure the successful implementation of, include: i) focusing nutrition education messages on exclusive breastfeeding for the first 4–6 months, as well as on frequency of feeding and energy density once complementation begins; ii) implementing widespread community–based growth monitoring, linking it to the Community Food and Nutrition Programme; iii) placing greater emphasis on household food security for communities in marginal rainfall areas and low income groups, iv) improving grain marketing and distribution which is only just beginning to be liberalized; v) placing greater emphasis on drought–resistant crops; vi) putting more emphasis on infrastructure and support of families who are resettled on government–purchased land; and vii) reducing the work burden of women and their time constraints regarding child care and feeding. Nutrition surveillance will require strengthening 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.

Zimbabwe has so far managed its nutrition programmes with the Nutrition Department and staff it created at independence within the MOH. Few new nutritionists have been trained and no new posts have been established in recent years. This lack of staff trained at appropriate levels has inhibited the development of a national food and nutrition policy, and slowed the pace of development and expansion of such crucial national programmes as “Promotion of Adequate Infant and Child Feeding Practices,” Community–based Nutrition Surveillance System.” Trained staff are only just becoming adequate in number to implement the “Elimination of Iodine Deficiency Disorders.” The Community Food and Nutrition Programme has its own intersectoral management structure that ensures it continues to operate and even expand even in the face of this lack of qualified staff. However, the lack of qualified staff has limited the extent to which CFNP could take advantage of the lessons learned from its process evaluation three years ago (e.g the need for improved targeting), has inhibited the development of appropriate teaching materials and has constrained the government from undertaking an impact evaluation.

Plans for most of the above programmes exist and the commitment of donor funding in support of much of it appears to be secure for the near future. The implementation of these plans will depend on the ability of the government to maintain and strengthen its staff of nutritionists at central and provincial levels, as well as to establish local training of nutritionists to work at decentralized levels in cooperation with staff in key ministries.

List of Abbreviations

ACC/SCN	Administrative Committee on Coordination/Subcommittee on Nutrition
approx	approximately
BMI	body mass index (weight/height^2)
CBGM	community–based growth monitoring
CED	chronic energy deficiency (as indicated by low BMI)
CFNP	Community Food and Nutrition Programme
CHC	Child Health Card
crit	criteria
CSFP	Child Supplementary Feeding Programme
CSO	Central Statistical Office

dl	deciliter
DHS	Demographic and Health Survey
DNN	Department of National Nutrition
EPI	Expanded Programme of Immunization
ESAP	Economic Structural Adjustment Programme
FAO	Food and Agriculture Organization
g(or gm)	gram
GM	growth monitoring
GMB	Grain Marketing Board
Hb	hemoglobin
ht	height
I	iodine
IBFAN	International Baby Food Action Network
IDD	iodine deficiency disorders
IMF	International Monetary Fund
IMR	infant mortality rate
IU	International Unit
KAP	knowledge, attitudes, practices
kg	kilograms
LSCF	large scale commercial farm
LB	live birth
LBW	low birth weight
Mash	Mashonaland
Mat	Matabeleland
mcg	microgram
MCH	Maternal and Child Health
ml	milliliter
MLARR	Ministry of Lands, Agriculture and Rural Resettlement
MOE	Ministry of Education
MOH	Ministry of Health
mon	month
MUAC	mid upper arm circumference
N	sample size
NCHS	National Center for Health Statistics (source of growth standard recommended by WHO for international use)
NGO	non–governmental organization

NHIS	National Health Information System
NR	Natural region
NSC	National Steering Committee
obs	observations (sample size)
p	probability
PAMM	Program to Alleviate Micronutrient Malnutrition
PHC	Primary health care
ppm	parts per million
prev	prevalence
SD	standard deviation
SIDA	Swedish International Development Authority
SSCF	small scale commercial farm
TSH	thyroid stimulating hormone
TGR	total goiter rate
UZ	University of Zimbabwe
VGR	visible goiter rate
WHO	World Health Organization
wt	weight
ZINN	Zimbabwe Infant Nutrition Network
z$	Zimbabwe dollars

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