

vegetables and fruits rich in Vitamin A. Fruits are available in most all rural areas; however, only 58.9 percent of children living in rural areas are consuming these. There are significant regional differences where only 42.3 percent of children in Southern Province are consuming fruits and vegetables compared to 71.2 percent in Northern Province. Mothers are also the target of Vitamin A capsule distribution programs; however, only 28 percent of mothers received Vitamin A within the first two months after delivery.

The 1999 National Baseline Survey on Anemia (*National Food and Nutrition Commission*) found that 39 percent of women, 23 percent of men and 65 percent of children were anemic. The DHS found that only 20 percent of mothers receive iron supplementation for 90 days or more.

SECTION 2. DETERMINANTS OF FOOD INSECURITY AND MALNUTRITION

Important determinants of food insecurity, malnutrition and micronutrient deficiencies in Zambia are:

- Poverty
- Shocks
- Dietary habits and improper child feeding practices
- Disease
- Agricultural Policy and Production Factors

2.1 Poverty

Zambia is one of the poorest countries in the world, facing numerous macro-economic and social development problems. In the most recently released (2002) Human Poverty Index, the United Nations Development Programme (UNDP) ranked the country 153rd out of a total 173 countries.

The ability of households in both rural and urban areas to access adequate food has significantly decreased during the last decade. According to the Central Statistics Office's Assessment of Poverty, more people were living in poverty at the end of the 1990s than at the beginning of the decade. Throughout the 1990s, prices of foods have risen, unemployment has increased and wages in the informal sector have remained stagnant. This has meant that urban consumers cannot purchase the quantity or quality of food required for an adequate diet. Small farm households that make up 70 percent of rural households have not been able to grow enough food. Given the high costs of agricultural inputs, small land size, low land productivity, these same households are not able to consume all their nutritional requirements from their own farm produce nor can sell enough to access an adequate diet. There is a hungry season in Zambia, which particularly affects small farming households. They find themselves with limited stocks of farm produce in the months between November and March and few off-farm income generating options. These realities, coupled with three periods of drought over the last 12 years, have deepened and extended the hungry season and levels of poverty for many households.

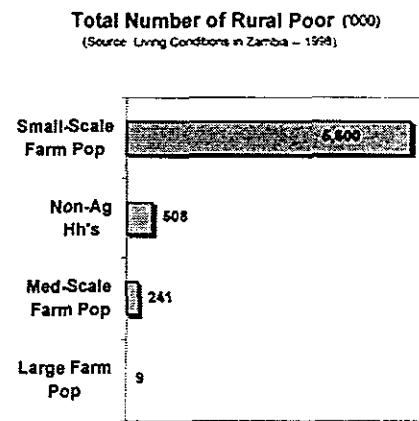
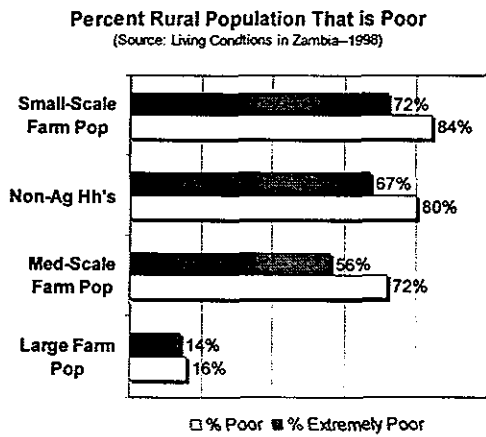
2.11 Urban Poverty

According to the World Bank Country Assessment, nearly 40 percent of Zambia's total population live in urban areas and 80 percent of this urban population live in poverty. This represents more than 3 million poor urban inhabitants. Given the continuing rural to urban migration and the limited industrial development, this number of poor is expected to rise for

the foreseeable future. The national Poverty Reduction Strategy Paper (PRSP) notes that of the many factors that have contributed to poverty in urban areas, lack of sufficient employment opportunities, both formal and informal, is a predominant cause of poverty. Urban dwellers are closely tied to the market economy and have tended to bear the brunt of the recent structural changes, such as growing unemployment and rising prices. With most urban poor living in unplanned squatter settlements on the periphery of urban centers, there is limited access to clean water and sanitation with a resulting vulnerability to disease. Petty trading is the predominant occupation of the informal sector. Women are in the majority and children have tended to be kept out of school to assist with increasing family incomes. This is more evident by the increased number of child traders and the phenomenon of street kids in most urban areas.

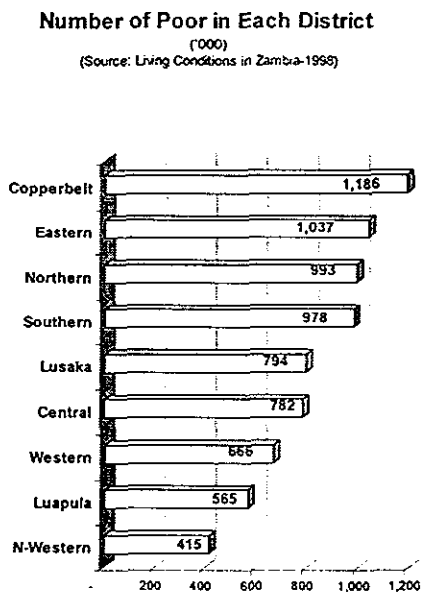
2.12 Rural Poverty

The persistence and severity of poverty is high throughout the country but is much more widespread in the rural areas (83 percent). In this sector, poverty levels range among different groups but are severe for most groups. In small farm households, for example, 84 percent are considered poor and 72 percent extremely poor. Overall, approximately 5.6

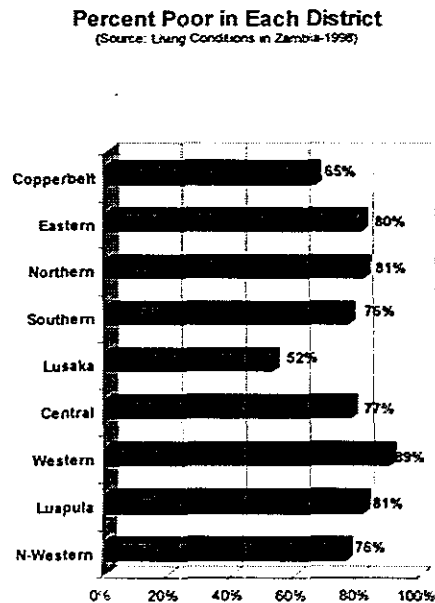


million persons in the rural population are considered poor and at the lower end of the economic scale.

We do not have information from the latest 2000 Living Conditions in Zambia survey report



Nutrition in



which would give us more current information, but according to the *Living Conditions in Zambia* (1998) survey, all districts in the country show extremely high rates and numbers of people living in poverty. The Copperbelt, Eastern, Northern and Southern Provinces have the largest absolute numbers of poor in the population. However, in all districts, more than 50 percent of each district's populations are considered poor. Hence, no area of the country is free of major poverty or the resulting food insecurity that inevitably affects all of those living in poverty.

2.2 Shocks

It is important to understand the influence of shocks, such as HIV/AIDS and the recurrent droughts on the food security and nutritional status of Zambians. Given the already severe poverty situation, many households no longer have sufficient assets to absorb shocks and thereby recover to previous levels of subsistence. These shocks cause already vulnerable households to become even more impoverished, more food insecure and less able to access a nutritious diet. There will continue to be a demand for assistance programs to mitigate the effects of these shocks so that vulnerable households do not continue their downward slide towards economic insolvency by selling valued livestock and other assets, taking children out of school, providing sexual favors in exchange for food, etc.

2.21 Drought

As articulated in the World Bank Emergency Drought Recovery Project of October 2002, Zambia is currently experiencing its second consecutive year of poor harvests, which has led to severe food shortages. During the 2000/2001 cropping season production of maize, the staple crop, fell by an estimated 24 percent from the year earlier. During the most recent 2001/02 cropping season, erratic rains and long dry spells during the growing season lowered agricultural output and exacerbated an already precarious food situation. About 38 of the 72 districts are estimated to be directly affected by drought, but the negative impacts are being felt in several other districts and urban centers. The result has been that 1-2 million Zambians have required some form of food aid during 2002-2003.

Drought has been a recurrent problem in Zambia over the past decade, especially in Southern Province. Since 1991 there have been three major droughts that have significantly reduced food production (primarily maize) to the point that the country had to declare disasters and seek international assistance. The 1991/92 drought, which affected the whole of southern Africa was especially severe. Marketed production from many of the country's best maize-producing areas was the lowest in recorded memory. The surplus normally carried from one season to the next did not exist, nor was it possible to import significant quantities of maize from other neighboring countries, as they were all suffering from the same drought. A partial drought in 1995 and the el niño weather phenomenon in 1998, led to significant shortfalls in production. Widespread regional food shortages occurred again during 2001/2002. The effects of these droughts have progressively eroded the assets of the more vulnerable groups in both rural and urban areas, thus adding to chronic malnutrition and further depleting household abilities to recover livelihoods. **Annex D** provides additional information on the impacts of weather on the Zambian economy and **Annex F** discusses the differences of the 2001-02 drought vis-à-vis previous drought experiences.

2.22 HIV/AIDS

HIV/AIDS has significantly affected food security and purchasing power of households throughout Zambia. The disease strikes men and women in their most productive years.

Over the past ten years, approximately 600,000 people have died from AIDS and approximately 1.0-1.2 million people are currently living with the disease. The DHS indicated an 11 percent prevalence rate in the rural areas and a 23 percent rate in urban areas. This strongly contributed to the shocking statistics on orphaned children. Today, over one million children are orphans (children who have lost one or both parents) (DHS). Thus, a substantial number of households have been adversely affected either by the death of one or more of its members, by caring for a chronically ill person, or by taking in additional children.. This has meant a significant loss of income, increased financial burdens and social trauma for many households.

There are few quantitative studies in Zambia on the impact of HIV/AIDS on agriculture and food security of rural households, but the literature identifies some generic impacts across countries. These include: 1) impacts on the availability of labor for farming; 2) increased expenses associated with caring for a chronically ill person; 3) increased expenses in caring for an orphan; 4) time used for care giving that takes away from income generating activities; 5) asset grabbing after the death of a male; 6) lost knowledge of farming practices from generation to generation, and 7) decreased access to agricultural inputs by widows. One Zambian study determined that the number of labor days available to an average small-scale farmer had fallen from 900 to 500 per year. (*Zambian HIV/AIDS Multi-sectoral Response, Shelly*). A recent study in Kenya by Michigan State University (*Yamano and Jayne*) found that the death of a male household head between 16 and 59 years of age was associated with a 68 percent reduction in the net value of the household's annual crop production. There are reports that family members who get sick in urban areas go back to their villages as do orphans, which places a heavy financial burden on their rural extended families. The Farming Systems Association of Zambia has compiled the *Bibliography of Study Reports and Past Activities on the Impact of HIV/AIDS on Poverty, Agricultural Production and Food Security in Zambia*, which provides a good review of studies in this area. Of most recent importance is the FAO-supported Ministry of Agriculture research on the impact of HIV/AIDS on 800 rural households in Zambia, which should provide very important data and information for agriculture and health professionals in March 2003. (See section 7.2).

Urban areas have a higher percentage of PLWHA and thus households may have a higher risk of losing both parents. The loss of the father will mean a significant income loss to the family. The loss of the mother will compromise child-caring. Because the extended family is not as stable in urban areas as in rural areas, there may be less of a traditional safety net for most urban dwellers. HIV/AIDS puts a household at greater risk of poverty and thrusts an already poor household into a downward trajectory of income loss and food insecurity. The large number of orphans and persons who are chronically ill make up about 15 percent of the total population. (*Republic of Zambia, Living Conditions in Zambia*). This places an extraordinary burden on families and the Zambian society as a whole to care for and support this growing dependent population with their own special needs.

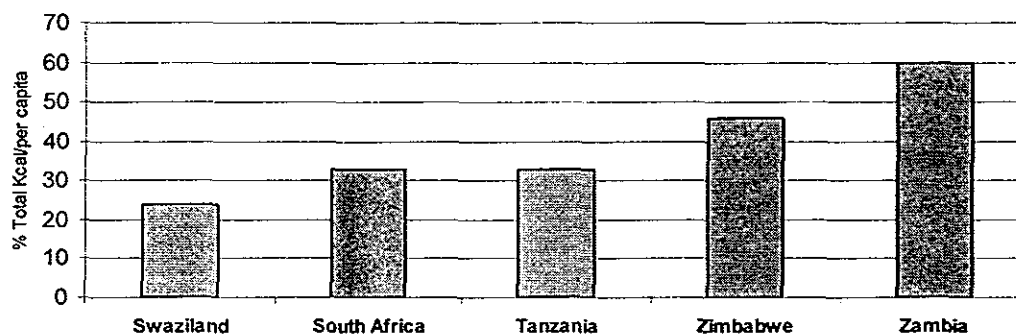
2.3 Dietary Habits and Feeding Practices

2.3.1 Adult Preferences

Adult dietary habits and feeding practices for young children play a particularly important role in food security and nutritional well being in Zambia. Maize is the predominant staple and for most people eating a meal means consuming *nshima* (typically made from mealie meal). Over the past twenty-thirty years, diets in Zambia have become less diversified and traditional foods have been increasingly replaced by maize. Maize now contributes approximately 60 percent of total kcal/per capita per day as seen in the following table.

The Contribution of Maize to the Diet in Southern African Countries

(Source: FAO National Food Balance Sheets, 2000)



This table reveals the extent to which the average Zambian diet over-depends on one food. This imbalance in nutrition and food diversity is even more significant when compared to the maize diets in other African countries. Zambia has a significant dietary problem. Nshima is desired because it creates a feeling of fullness after eating. However, it lacks the range of proteins, vitamins and minerals required for a balanced diet. Because of thirty years of government policies subsidizing maize production, many areas of the country have turned from traditional crops such as tubers, sorghum, and cassava and concentrated on maize production. The Northern Province is an exception, where cassava continues as the main staple. This has meant that small farm families have less variety of food from their own production and may not have enough income from the sale of maize or cassava to buy adequate varieties of other foods. Subsistence maize and cassava farmers were found to be the most food insecure, according to a 1999 household food security and child nutrition study (*Kanyangwa*). Given the recurrent droughts in the Southern Province and more recent attention to food security, government, donors and NGOs are now promoting more diversified cropping, particularly for the small farmers, which may help diversify household diets over time.

Urban dwellers for the most part eat nshima and would prefer this for each meal with a relish of vegetables and for the wealthier, some meat or chicken. A recent survey in Matero and Chelston communities in Lusaka showed that 33 percent of households could not afford to eat three meals a day, while 9 percent ate only one meal a day. As mealie meal has become more expensive, poorer households are reporting that they eat only one meal a day with nshima and may only have tea and a bun for breakfast. This emphasis on a one-staple diet has negatively impacted the nutritional and food insecurity problems in Zambia and will need a national effort to educate the population about the benefits of a broader-based diet.

2.32 Child Feeding Practices

Breastfeeding: The DHS indicates that almost all babies are being breastfed; however, only 15.2 percent are exclusively breastfed up to 6 months. 44.8 percent are breastfed exclusively to four months. These rates show an increase from the 1992 and 1996 DHS surveys. Exclusive breastfeeding is a critical intervention to provide complete nutrition to children under six months of age, as well as reduce exposure to diarrhea diseases. Exclusive breastfeeding also reduces the risk of maternal to child transmission of HIV/AIDS when compared to mixed feeding. There are still traditional beliefs to address in order to increase the rate of exclusive breastfeeding throughout Zambia. The Ndola Project (*Population Council*) revealed that mothers introduced porridge early to supplement breastfeeding "because breastmilk alone is

not enough for the baby.” The project did increase the rate of exclusively breastfeeding from 50 percent to 80 percent.

Complementary Feeding: The DHS indicates that by 6 months of age, about 84 percent of children are receiving complementary foods. Children most often are fed foods made from grain with some fruits and vegetables. Feeding practices surveys and field work reveal that quantity and frequency of feeding are critical problems. Young children may only be fed once or twice a day and therefore the quantity of food is terribly inadequate. The Ndola Project (*Population Council*) showed that quantities of porridge prepared were almost 30 percent less than what the child needed and could consume. Several nutritionists interviewed say that even poor households have adequate food to prepare a quality weaning food, but infrequent feeding and too watery preparations mean that young children do not receive an adequate quantity of nutritious food. Ongoing USAID-supported growth promotion and infant feeding programs have carried out extensive formative research on child feeding practices and provide excellent opportunities to change feeding practices.

2.4 Diseases

Diseases lead to poorer nutritional status which in turn increase susceptibility to illness. The disease burden for young children is high. The DHS reported that 20 percent of children under five had diarrhea in the last two weeks. Over 50 percent were reported to have had a fever and/or a cough in the last two weeks. 15 percent reported acute respiratory illness (ARI) symptoms while 43 percent had a fever. Although care-seeking behavior is improving, many children do not get prompt or effective treatment for illness, leading to greater weight loss per illness episode.

The 1999 Anemia study (*National Food and Nutrition Commission*) showed that very young children have high rates of malaria parasitaemia -- 35.7 percent under 6 months of age and 31.8 percent of children 6-18 months. This level of malaria parasitaemia suggests that malaria could play a major role in the deterioration of nutritional status of young children and that infant growth is affected by interuterine parasitaemia--leading to anemia and stunting early in life.

2.5 Agricultural Factors

Zambia has abundant land and water resources that can be used for agricultural production. Out of about 750,000 square kilometers of land surface, 42 million hectares are classified as arable. However, currently only about 14 percent of the arable land is cultivated. There is also an abundance of underground and surface water, including rivers, lakes and dams that can be used to irrigate about 500,000 hectares. However, the bulk of these water resources remain largely untapped. Out of the total potential irrigable land, only 65,000 hectares are actually irrigated, according to interviews with the Ministry of Agriculture and Cooperatives.

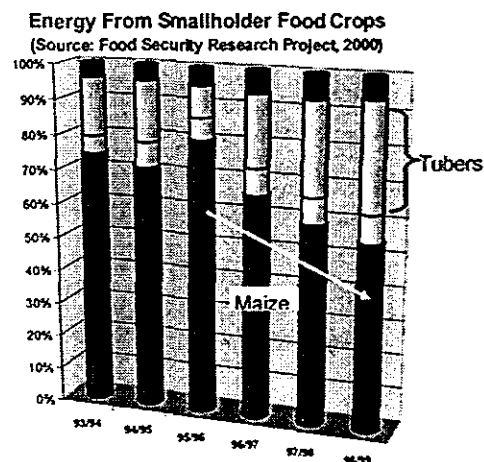
With the further projected decline in demand for minerals (especially copper), agriculture is seen by many as a potential cornerstone of the economy. The cotton industry alone employs 180,000 smallholders. The prospects for increased agricultural exports (cotton, tobacco and horticulture) are generally good. There are also substantive opportunities for internal expansion of such industries as livestock and milk products, and for the improved management of natural resources related to tourism.

Nevertheless, maize has continued to dominate Zambian agriculture, both as a staple food crop and commercial crop. Maize production was promoted beginning in the 1970s by

Government policy in all the three ecological zones without regard to comparative suitability.¹ The declining yields of maize in the main production areas due to drought, floods and declining soil fertility have led to serious food shortages and a drop in rural incomes. To mitigate these adverse effects the Government has started promoting crop diversification. Emphasis has been placed on growing crops, which can give reasonable yields to ensure household food security, in spite of adverse weather conditions. Some of these alternatives to traditional maize include sorghum, cassava, sweet potatoes, cowpeas and varieties of drought-tolerant or early maturing varieties of maize. After the severe drought of the 1990/91 season, diversification away from maize accelerated, although much slower in traditional maize areas. The need to diversify crop production in response to the changing weather patterns and new economic environment (market liberalization) has led to some growth in alternative crops. Over the last decade, four crops have shown serious production increases: groundnuts (76 percent), cassava (65 percent), sweet potatoes (54 percent) and cotton (65 percent). (*Is the Glass Half Full or Half Empty?*, Zulu B, Nijhoff J. J., Jayne T. S., 2000).

Thus, at a national aggregate level, according to this same recent study of an analysis of agricultural production trends (*Food Security Research Project*), rural per capita energy from food crops produced by small farmers appears to be stable, and may even exhibit a moderately increasing trend. This would suggest that overall smallholder food production has increasingly contributed towards household food security among rural households. In addition to food, cash crop production has added to many rural households' purchasing power. The chart to the right illustrates the gradual process of crop diversification that is taking place, showing a changing mix over time with increased importance of tubers (mainly cassava) as a source of energy. However, the reliance on maize as the primary food source still dominates production decisions, maintaining a risky food security situation. The country still has a long way to go to ensure an adequate, nutritious diet for everyone.

Zambia has a long history of policy vacillation in respect of agriculture. The overwhelming influences on agriculture are through macro-economic policy, which has not prioritized the sector in the past. Agriculture is also unfavorably impacted by a lack of public sector budgetary discipline. Annual budgets typically total around double the revenue that can be assured from known sources, and actual disbursements are usually well below budget.



¹ Zambia has the potential to significantly increase its agriculture production. The country is divided into three agro-ecological zones, based mainly on rainfall. Zone I is a low rainfall area -- a 350-800mm/annum area that covers Southern Province, parts of Western, Lusaka and Central Provinces. Zone II is a medium rainfall area with annual rainfall varying between 800mm and 1000mm. This Zone covers Central and Eastern Provinces and part of Western province. Zone III is the high rainfall area with annual rainfall of more than 1000mm. It covers Copperbelt, Northern, Luapula and North-Western Provinces. The differences in rainfall, mean temperatures, vegetation, soils and duration of the rainy season in the three zones make it possible for Zambia to grow a wide range of crops. This also broadens the comparative advantages for various crops.

Policy implementation is widely seen as the prerogative of the highest political authorities. All aspects of the maize economy (input availability and pricing, the price of *mealie* meal to urban consumers, the need for any import, etc.) are clearly seen by government authorities as one of their main responsibilities. Unfortunately, government policy in the maize sub-sector has been subject to frequent vacillation and sometimes contravenes previous commitments. The result has been frequent market disruption and untrusting relations with the private sector. Much remains to be done in reforming public policy towards agriculture before some measure of sustainable food security is attained. Some of the more important policy areas hindering progress towards national food security include:

- *Input supply policies.* Due to budgetary constraints the government has had increasing difficulty in delivering fertilizers to farmers. At times, inputs are distributed to farmers either late or not at all. The private sector has not filled the gap due to inconsistent input supply policies, which have discouraged private sector investment in this area. The reliance on government for the provision of fertilizer has created a legacy of dependence, which has proved difficult to remove.
- *Strategic food reserve.* Chronic underfunding and inappropriate specification of the scope of activities of the Food Reserve Agency has prevented the agency from maintaining an adequate strategic food reserve. The grain reserve stock in warehouses of the Food Reserve Agency is depleted and needs to be augmented immediately.²
- *Excessive dependence on maize.* State support for maize has led to excessive smallholder dependence on maize as a staple food. This has increased their vulnerability to crop failure. Mentalities and practices are gradually changing, but more needs to be done to reduce this national dependency on one food crop.

Livestock that form an integral part of the farming system in the small-scale sub-sector are cattle, goats, pigs and chickens. Cattle are very important in household food security. Firstly, they are a "reserve bank" from which cash can be obtained in times of dire need for food. Secondly, they are a source of important draft power used to improve labor productivity. Households owning oxen are able to cultivate larger areas than hand hoe cultivators. Thirdly, they are a source of manure, which can be used in place of chemical fertilizers. Unfortunately, the majority of farm households have lost a substantial number of their cattle through diseases (CRI Consult, Inc. *Assessment of Zambia's Private Sector, Agriculture & Natural Resources Sectors, 2002*). In 1993, before diseases in Southern, Central and Eastern Provinces decimated the cattle population, slightly over 50 percent of the land under crops was cultivated using oxen. In 2000, the area cultivated with a hoe had increased by 90 percent. The loss of livestock has led to a regression in agricultural productivity and represents yet another factor to be considered in the overall food security equation.³

The fishing industry is another area of the food sector that has the potential for growth. The industry has two sub-sectors: capture fisheries and aquaculture (fish farming). However, the sectors are not well-developed and their impacts on the economy and food security are still very limited.

² The Food Reserve Agency was established in 1996 by an act of parliament to maintain a national strategic food reserve. It has subsequently become a major instrument for public intervention in input and output markets.

³ The dairy industry is small but growing as demand for fluid milk and yogurt increases. There are both large and small-scale producers. The large producers dominate the formal market, while small producers operate in the informal market. Large milk producers sell their milk to Parmalat Zambia Limited in Lusaka and Copperbelt, and Finta Danish Dairies in Livingstone. There are a number of small on-farm processors, which provide outlets to small producers.