

**ACHIEVING LONG-TERM FOOD SECURITY IN SOUTHERN AFRICA:
INTERNATIONAL PERSPECTIVES, INVESTMENT STRATEGIES AND
LESSONS**

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I. Introduction

Since 2002, southern Africa has been experiencing a severe food shortage due to drought, floods, weak agricultural policies and civil conflict. Though efforts to feed the affected populations and reinstate agricultural production have been underway, new environmental shocks hit the region, impeding recovery and placing an even larger number of people in danger. Presently, about 14 million people in seven countries in the region, Angola, Lesotho, Malawi, Mozambique, Swaziland, Zambia and Zimbabwe, are under the threat of a continuing food shortage. While relief aid is currently insufficient to meet the needs of the population, the combination of hunger and HIV/AIDS is taking a terrible toll on the countries. Furthermore the coping strategies of poor households, already weakened from past shocks and continuing poverty, have eroded further and are unable these families (von Braun, Teklu and Webb, 1999). What has made southern Africa so vulnerable to famine is essentially the widespread poverty in the region, and accompanying poverty has been malnutrition. In fact the seven countries rank among the highest in the world in terms of these two indicators. Malnutrition, it should be added, has meant more than just low calorie consumption: a large percentage of the poor, especially women and children, suffer severe deficiencies in such critical micronutrients as iron and vitamin A. Eliminating the threat to famine in southern Africa's future depends to a large extent on reducing food insecurity and alleviating poverty (von Braun, Teklu and Webb, 1999).

Poverty in the region-- far greater in rural areas-- has continued to exist because policies have not been directed at fostering an agricultural and rural development centered on the small producer. Hence, despite its relatively rich endowment of natural resources, southern Africa produces insufficient food even in years when environmental shocks do not occur. More specifically, productivity has been low because poor farmers have difficulty accessing inputs and cannot get their goods to market (or get low prices for them) due to poor infrastructure. Poor market integration has also prevented the transfer of food from food-surplus to deficit areas at affordable prices. Many of the natural resources have also been mismanaged. For example, soil degradation is acute and threatens future productivity. Water unavailability for small producers also remains

a problem. At a deeper level, investments in agricultural research and development (R&D) in the region have declined. As a result, higher-yielding varieties of crops are unavailable. Finally, other factors formerly regarded as having only little relationship to the agricultural sector have come to play a major role. The AIDS epidemic has taken a devastating toll on the rural population and on farm production.

Recent research shows that if the countries of the region proceed with the policies they have pursued up till now with regard to the agricultural sector and continue to invest only at current levels, the food situation there will deteriorate further. Poverty, food insecurity and child malnutrition would worsen significantly. Resources will become more degraded and land productivity will decline further in many areas. As a result, crises and violent conflicts may arise, disrupting agriculture, escalating the need for and costs of emergency relief, and diverting investment from the long-term solutions the region so desperately needs to end its cycle of despair (Hazell and Johnson, 2002). In the future, the region will only become increasingly vulnerable to famine (von Braun, Teklu and Webb, 1999).

However, even with only a modest increase in investment in smallholder-led and diversified agricultural development, per capita income will rise markedly, thus alleviating poverty, child malnutrition can be reduced and a major advance towards food security can be achieved. Investing in agriculture will also provide an engine of growth with positive spillover effects on the poorest and most vulnerable by creating employment and lowering the cost of food (Abdulai and Delgado, 1995). Yet to move from food crisis to development will require the implementation of an array of integrated policy measures and programs, including those for building capacity and research support systems. This in turn will require serious commitments by senior policymakers to agricultural development, and effective governance and institutional arrangements to implement the required interventions.

The overall objective of this paper is to present an international perspective on achieving long-term food security in southern Africa and identifying potential strategies and lessons for the future. This paper consists of five parts. Part II looks at agricultural recovery from food crises from an international perspective. It examines the important role that certain sectors, programs

and strategies have in recovery and looks at the innovative policy steps that other developing countries once vulnerable to famine took with regard to them to handle food crises or enhance food security. The sectors or programs considered in this part are: agricultural production, food stocks, domestic markets, and international and regional trade. This section is intended to provide general lessons from international experience and specific policy options to generate agricultural recovery in southern Africa. In Part III the question of whether there is a trade-off between relief and development is discussed. It is argued here that certain policies or investments, namely in health and education, can achieve both relief and development and thus create a "win-win" proposition. In fact, without investments in health and education for relief and rebuilding human resources long-term agricultural development will not be possible. This section also discusses the need for innovative safety net programs to avert crises and build human capital. These include public works programs safety net transfer programs, and in some cases, creative use of pension fund schemes that are already in place. In Part IV, a strategic analytical and knowledge framework to help guide policymaking is presented and the areas in which capacity development is required for sound and effective policies is discussed. Part V, the conclusion, discusses further the need for a rights-based approach to food security and its nature.

II. Agricultural Recovery from Food Crises from an International Perspective: Lessons for Southern Africa

To achieve agricultural recovery, generate smallholder-led growth and reduce poverty, certain sectors and strategies will play a particularly critical role. These are: agricultural production, food stocks, domestic markets, international and regional trade. The important role they can play is seen in the experiences of other developing countries in successfully addressing food crises. The approaches taken in these countries might serve as lessons for southern Africa.

Agricultural Production

Poverty and vulnerability to famine in southern Africa has been due to a large extent to low agricultural productivity. For this reason and because the weak integration of markets has made food availability in all parts of the countries uncertain, small farmers will need yield-augmenting technologies to be food secure. But they will need to be able to increase production in both the

near and long-term future. It will therefore be helpful to think in terms of the short-, medium- and long-term when determining what types of assistance and technologies should be provided to smallholders for the agricultural sector to move from recovery to development.

In the short-term, inorganic fertilizers should be made easily available to small farmers so that staple crop yields in the next harvest season will be adequate. Fertilizer use declined as a result of the withdrawal of subsidies and currency devaluation that were carried out as part of the market reforms (Kherallah et al, 2000). The use of fertilizers is important for production not only in the immediate future, but in the long-term as well. The heavy loss of soil nutrients the countries face each year and the resulting degradation threaten future yields (Scherr and Yadav, 1996). To make fertilizer more accessible to poor farmers, subsidies may need to be reinstated on a temporary basis. When they are terminated, compensatory measures could be taken, such as the provision of increased credit, to enable farmers to continue using fertilizers (Bumb and Baanante, 1996). Better quality seed, ideally drought- and flood-resistant varieties, also needs to be made available to assure high crop output in the next agricultural season. Such seeds exist, but the means to distribute them must be found.

In the medium-term, small farmers will need to be provided with services and technologies that will enable them to achieve greater productivity with the inputs and natural resource base currently available. These services and technologies need to be provided in ways that ensure their relevance to women as well as men farmers, and to AIDS-affected households. Expanded microcredit is a service that would permit smallholders to increase and sustain their use of purchased inputs (Zeller and Sharma, 1998). However, additional production technologies would be useful. Small-scale irrigation systems, involving water capture at the micro-watershed level and the sustainable use of some wetlands could significantly increase staple crop production and help to ensure food security year-round (Meinzen-Dick and Makome, 1999). Low -external-input methods of farming, using organic material and different farming arrangements, will also boost productivity and improve soil quality. Some of these practices consist of rotational cropping, mixed farming, using livestock, trees and crops, and planting nitrogen-fixing legumes (Hazell, 2001). Agricultural extension services that can teach smallholders the use of such techniques and how to combine the various inputs for optimal production are also necessary. Regarding

women farmers, gender-sensitive extension services are needed. Women farmers are responsible for a large part of food production in the region and a concerted effort to make production-enhancing technologies and knowledge available to them, thus reversing the historical bias against them in agricultural policies, would have a significant positive impact on farm production and food security (Quisumbing et al, 1995). Women farmers who are heads of households also require legal title to the land they farm (Quisumbing and Otsuka, 2001). Finally, to tackle the impact that the AIDS epidemic has had on the agricultural sector, agricultural extension and technologies must be adapted to the needs of households that have been affected by the disease so that they can increase productivity and obtain higher incomes. One of the needs of these households is for labor-saving technologies (Gillespie and Haddad, 2002).

To achieve higher productivity in the long-term, investments will have to be made for the development of higher-yielding and drought-resistant staple-crop varieties. The potential to increase yields through conventional breeding remains strong in southern Africa (Pingali, 2001; Smale and Jayne, 2003), and as shown in many other parts of the world where small farmers predominate, such research can have a large and favorable impact on both poverty alleviation and agricultural growth (IFPRI, 2002). Unfortunately, however, investments in agricultural research have declined in southern Africa and this trend needs to be reversed (Pingali, 2001). Long-term measures could also include crop biofortification. The development of foods with improved nutritional content in such critical micronutrient as iron and vitamin A could bring major health benefits to the population. Hybrids with improved protein content could help save the lives of those stricken with AIDS, who require greater protein intake to remain healthy (Gillespie and Haddad, 2002). Biotechnology could hold the promise of substantially improving both yields and nutritional content if the necessary environmental and public health safety systems are established.

Food Stocks

An important safeguard against the threat of famine is the establishment or augmentation, and sound management, of grain reserves. Buffer stocks can be used to stabilize prices to offset fluctuations in domestic production or world prices, and thus reduce vulnerability to famine.

Because the poorest households have few resources and are primarily concerned with economic security, price stabilization benefits them most by helping them meet their basic food needs (Islam and Thomas, 1996). Food stocks could be created immediately through imported grain and increased later with domestically produced crops once agricultural production has revived. Staple grain reserves should be located strategically, including in remote areas, so that there will be food supplies to all areas of a country in the event of another food shortage. Accessibility to food should not have to depend on transportation infrastructure.

Several countries in Asia have practiced price stabilization. They did so, however, not to achieve this goal per se, but also meet other objectives. These were to ensure a floor or incentive price for producers or a ceiling price for consumers, or to attain staple crop self-sufficiency. At a macro level, while a country is still recovering from crisis, price stabilization may also allow higher growth rates by reducing production and marketing risks. Yet as markets are liberalized and trade is used to stabilize prices, there will be less of a need to reduce fluctuations through the use of stocks. Nevertheless, reserves can be employed in safety net programs to provide below-cost staple grains for the poorest and in food-for-work schemes (Islam and Thomas, 1996). Regardless of the role that stocks are to play, improved storage technologies and responsible management will be necessary to ensure that the quality of stocks is maintained and that they are available when needed.

Domestic Markets

To actually reinstate agricultural development, however, small farmers must have access to well-functioning and well-integrated markets. These depend to a large degree on the existence of infrastructure such as roads that serve remote areas where small farmers predominate, and storage facilities. Investment in infrastructure is essential to connect poor people to markets. Also required are supporting institutions.

The lack of infrastructure is one of the main reasons for the low profitability of agriculture for poor farmers. Small farmers simply do not have the incentive to increase production if they cannot transport their goods to markets. Because of poor infrastructure in much of southern

Africa, the transaction costs are extremely high. This in turn leads to wide marketing margins. Transportation costs account for a large part of the transaction expense, and these are passed on to consumers making it especially difficult for them to afford staple grains during periods of food shortage (Kherallah et al, 2000). Even if a production increase is achieved, famine can threaten a country because poor infrastructure and high transaction costs prevent the transportation of food from surplus to deficit areas (Gabre-Madhin, 2002; Gabre-Madhin, 2003).

Weak infrastructure not only prevents the integration of output markets, but also constrains input availability. Investment in road construction also leads to longer-term impacts. It contributed to poverty reduction in India more than any other factor, and it was the third most important factor in poverty reduction in China (IFPRI, 2002b). Preliminary results from a study on Uganda show that road infrastructure has a similar impact there as well (Fan, Zhang and Rao, forthcoming). Without good infrastructure, production increases and agricultural diversification will lead to little gains for the poor. The budget cuts that have taken place in southern Africa in the areas of infrastructure will have to be reversed.

Important for well-functioning and integrated markets are also liberalization through the gradual reduction of the role of parastatal agencies and the development of markets regulations. In spite of agricultural marketing reforms in the region, marketing boards are still active and continue to constrain private trade. These institutions are responsible for wide marketing margins. A decrease in their intervention would also lower food prices for consumers. Over the past decade, countries in southern Africa have tried to different degrees to minimize the activity of parastatals and liberalize their markets, but while marketing margins have decreased and staple crop prices have improved for both farmers and consumers, the reforms did not go far enough (Kherallah et al, 2000). Parastatal involvement is in the long run financially unsustainable, and these agencies leave little room for a potentially more efficient private sector. However, while low productivity threatens a country with famine, liberalization must be gradual and cautious. Past reforms that eliminated or reduced input subsidies resulted in stagnant or lower staple crop production.

Bangladesh's recent experience with adopting market liberalization shows that this approach is important for preventing food shortages. In the early 1990s, the public sector began to liberalize the food import market to guarantee the availability of staple commodities. Although Bangladesh had been a net importer of rice, production shortfalls threatened to reduce food availability and thus household food security. The government facilitated greater participation of private traders by easing a variety of restrictions. Although the food deficit levels also required the public sector to import rice, the quantities purchased were much less than those the private sector managed: private traders had far greater capacity for importation. By encouraging this trade, the government was able to increase rice supplies quickly and stabilize domestic prices (Dorosh and Shahabuddin, forthcoming). The Bangladesh experience illustrates that greater private sector involvement can make markets more effective and enhance or maintain food security. To alleviate the food shortage in southern Africa, the governments in the region could have enabled private traders to import food from other African countries. However, a more developed infrastructure network, which Bangladesh had, would have been necessary to make importation and distribution cost-effective. Additionally, some harmonization of the trade policies of the southern African countries with those that were potential exporters would have been required.

Improvements in infrastructure and liberalization also need to be accompanied by other measures if markets are to be integrated. These consist of market regulations and grades and standards for crops and the improved coordination of markets. These measures would reduce the high risk traders experience, improve their profits and lower transaction costs. They would also help to speed shipment of food from surplus to deficit areas (Gebre-Madhin, 2002).

Yet market liberalization without improved access to market information on the part of producers and traders may do little to improve food production, food availability and trade. Market information systems therefore need to be developed. Mali took this course as a part of the cereal market reforms it implemented in 1989. Aside from the government and donors' desire to have information on how price and supply conditions were evolving under the new reforms, the market information system was created to provide farmers with timely, accurate and low-cost information that would allow them to operate effectively in the newly liberalized context. Market information is collected and then e-mailed via FM radio waves and solar-

powered radio modems to offices throughout the country. The information is then sorted by region. The broadcasts are made in French and the local language of the region. In addition to market conditions, information is given on production and storage issues. Although more than half the population is illiterate, about 70 percent of it uses the radio market reports. Research has shown that access to improved information played a decisive role in facilitating the entry of new private actors in the cereal trade after the marketing board's disengagement, and increasing competitiveness. These outcomes along with greater transparency and increased trader confidence have led to lower transaction costs and marketing margins. The market information system has produced real benefits for poor farmers as it has improved their incomes. What the example from Mali illustrates is that market liberalization alone is not enough to help small farmers: after the deregulation prices swung considerably and were not the same from one market to another, and because prices were still not known, trading did not occur. As a result, when droughts occurred, the government imported food rather than procuring surpluses within the country. Mali's market information system has become a model for some of the other West African countries, namely Niger and Burkina Faso. It is planned that the systems in these countries will be linked to each other and to Mali's so that trade between the countries will be possible (Dembélé, Tefft and Staatz, 2000).

International and Regional Trade

Perhaps the greatest spur for recovery and agricultural development will come from increased regional and international trade. But this trade must involve and benefit the smallholder. Trade within regions in Africa has been increasing over the last two decades. However, its full potential has not yet been tapped. The creation of the Southern Africa Development Cooperation (SADC) free trade area is a promising start in this direction. Yet the share of southern Africa in world trade has remained low. The greatest gains from trade will come from exporting goods to the developed countries.

In developing-world agriculture today, high-value goods are earning the highest export revenues. The challenge therefore is to identify markets for non-traditional agricultural exports, diversify production accordingly, and develop and expand markets for these goods. A number of

countries, including some in Sub-Saharan Africa, have diversified their production to horticultural, livestock and fishery commodities to meet changes in consumer demand in the developed and developing world. Kenya has developed a lucrative export sector based on a variety of horticultural products. Smallholders supply about 75 percent of all vegetables and 60 percent of all fruits. By the mid-1990s, over 500,000 Kenyan farmers and distributors earned income from this export trade. It is today one of the country's fastest-growing foreign exchange earners, with horticultural exports having grown 10 times in volume over the past 30 years. A promising sign is that Zimbabwe and Zambia have also entered the trade in high-value exports (Gabre-Madhin and Haggblade, 2001). Boosting such trade is a necessary strategy because the export of staple crops is not likely to bring significant gains in the long run, as neither global demand nor prices for staple crops are likely to increase much in the future. Because many famine prone countries are net food-importers and among the poorest in the world, their trade deficits will grow unless they develop their agricultural export sectors and remove barriers to trade.

One alternative for the creation of higher-value goods, is value-adding processing of staple crops, which would also involve the creation of agro-industrial linkages. Developing high-value goods would thus not only benefit small farmers, but also increase non-farm employment. Generating employment off the farm should be an important goal of the governments in the region. Research on several African countries, including Mozambique and Zambia, shows that as farm size per capita, or the area under crop cultivation, is decreasing (and disparity in landholding is increasing at the local level), the rural labor force is increasing. Moreover, the poorest farmers, while some of their income comes from non-farm sources, continue to rely primarily upon their farms for their livelihood. The small size of their landholdings is a determining factor in their poverty. There is therefore a need to provide greater employment for the rural poor in both the short- and long-term (Jayne et al, 2002).

The creation of improved technologies and marketing systems, possibly with private sector investment, as well as new institutional structures for production, such as contract farming, might be required for the production of high-value goods. Furthermore, as infrastructure will play a key

role in the generation of benefits from regional and international trade, it will have to be regarded as one of the priority areas for investment.

To maximize the benefits of global trade, the southern African countries will have to adjust their macroeconomic policies. Countries that pursue trade-distorting measures, such as overvalued exchange rates and taxes on exports, will lose the opportunity to benefit from the changing world economy, and bear greater costs.

But diversification and the support of trade will generate few gains if the developed countries, especially the United States and European Union continue to provide trade-distorting subsidies to their own agricultural sectors, impose tariff barriers to developing-country exports and subsidize their exports. The current round of global agricultural trade negotiations within the WTO must result in a fair set of rules for poor countries. And, the nations of southern Africa being highly dependent on agriculture for livelihoods, national revenue and export earnings, must attempt to make strategic use of these negotiations.

Overall Lessons from International Experience

Based on the past experiences of those developing countries that were once vulnerable to famine, and of the sub-Saharan Africa region, there is a much better understanding of what needs to be done to remove the threat of food shortages and achieve recovery, and how.

One key lesson is that agricultural growth requires an enabling policy and economic environment. Simply getting "prices right" is not enough. There is a need for sustained public investment in the supply-side of agriculture, without which there is little aggregate supply response, and for effective public and private institutions. In fact, between 1980-86 a smallholder green revolution occurred in Zimbabwe due to heavy government investment in infrastructure and input support services (Gebre-Madhin and Haggblade, 2001; Smale and Jayne, 2003).

One of the more successful outcomes in recent decades has been the role of agricultural research in generating technological change. Improved varieties have helped to greatly increase food

supplies. There is considerable opportunity to raise yields in southern Africa, and scope to apply already available technologies if the conditions for widespread adoption can be improved. The application of conventional breeding and natural resource management can raise yields substantially (Hazell and Johnson, 2002).

Another lesson is that the public sector must allow, encourage and facilitate the entry of the private sector in the food trade. The withdrawal of parastatals and of subsidized inputs has left a vacuum in many agricultural marketing and input supplies services that the private sector has not yet been able to fill, especially in remote areas. The public sector has a key role to play in the provision of marketing and input services, but one different from the private sector. In addition to investing in infrastructure and agricultural R&D, government needs to establish market regulations and grades and standards, enforce contracts, and help coordinate markets to improve timing and availability. Action in these areas would enable the private sector to play a larger role (Gabre-Madhin, 2002; von Braun, 2002b).

Creating an enabling environment is particularly important given the trade opportunities in this increasingly globalized world. To be on a stable path towards poverty reduction and food security a country recovering from a food crisis must gradually adapt itself to the world economy so that it may take advantage of the opportunities that exist (Amani, 2003). Southern Africa's reliance on a few traditional export crops leaves it vulnerable to price downturns and prevents it from receiving greater benefits.

There are many characteristics in common among the southern African countries. We can therefore summarize the steps that the countries will need to take: they will have to:

- Reinitiate agricultural production for the short-term and increase yields in the long-run through the use of a variety of production-enhancing technologies, including higher-yielding crop varieties
- Establish or expand grain food stocks for the purpose of stabilizing prices to alleviate hunger in the event of another production shortfall, and to implement targeted distribution of food to the poorest

- Integrate domestic markets through the creation of infrastructure and the establishment of regulations, grades and standards, and liberalize them by reducing the role of parastatal agencies and facilitating the greater involvement of the private sector
- Develop higher-value agricultural goods and take greater advantage of regional and world trade opportunities, which includes using the WTO trade negotiations

While we may say that these measures apply to all of the crisis-affected countries of the region, each country will nevertheless need to tailor its own plans according to its unique conditions.

III. Relief, Development and Complementary Investments for Long-term Food Security

The measures suggested above would help to achieve agricultural development in the long-term. They would do little, however, to reduce vulnerability and foster recovery from the food shortage crisis in the short-run (von Braun, 2002b; von Braun, Teklu and Webb, 1999). Research has been conducted on the effectiveness of different policies and programs in mitigating famine and achieving recovery (von Braun, Teklu and Webb, 1999). One of the conclusions that can be drawn from this research is that there must be well-conceived investments in relief and that these investments must combine with policies to rejuvenate development to produce positive multiplier effects. One of the central ways in which relief investments can generate long-term benefits is if they are in human development. Health and education are two key areas in which such human development investments can be made. While it might seem that these investments – despite their considerable merits – would divert needed resources from investment in long-term food security, it is argued here that they are in fact complementary to the longer-term objective of achieving long-term food security in southern Africa. Investments in agriculture – whether they are in the form of the development and dissemination of disease-resistant or higher yielding crop varieties, the dissemination of improved natural resources management, improved delivery of inputs and more efficient market for agricultural production – require complementary investments in human capital if they are to succeed. By providing education and health services, particularly to mitigate the HIV/AIDS crisis, the governments of the region would also be building their human capital for the future.

This section first presents the argument that relief and development investments are complementary by illustrating the importance of education health for food security, poverty alleviation and development. It then explains how temporary shocks if not addressed can lead people to be trapped in poverty. The relationship between relief, development and food security is seen especially when we consider the HIV/AIDS crisis. Specific policy implications and tailored safety net programs that would meet both relief and long-term development objectives, namely modified pension schemes, public works programs and conditional cash or food transfer schemes, are then discussed.

Investing in Human Capital

Education

As an area for human capital investment, education “matters” for long-term food security in southern Africa. It facilitates the acquisition of new information through sources such as newspapers, radio and extension programs. Educational attainment has in fact had positive direct effects on adoption of new technologies and on productivity (Feder, Just and Zilberman, 1985; and Foster and Rosenzweig, 1996; von Braun and Kennedy, 1994). In Malawi, educational investments helped smallholders enter into tobacco production (Carletto, 1999). Better access to information, together with improved ability to use it may be especially valuable in circumstances of rapid change; a concept neatly described by Schultz (1975) as the value of the ability to deal with disequilibria. In such circumstances, it plays an important role in assisting in the mastery of new combinations of inputs and technologies (Huffman, 1977; Schultz, 1988) – important components of investments in agricultural development. With regard to gender, increasing the educational level of female farmers by giving them universal primary education has higher marginal effects on the probabilities of new technology adoption than increasing the educational level of male farmers, due to the generally lower levels of female education in most rural areas (Quisumbing, 1996).

Health

Health also “matters” for long-term food security in southern Africa, not least because there are well-documented associations between health and productivity. For example, in the Philippines adult height affects market wages for adults engaged in sugar cane cutting (Haddad and Bouis, 1991). And, based on a study in Cote d’Ivoire and Ghana on the impact of self-reported adult illness on labor supply and wages, Schultz and Tansel (1997) find that an additional day per month of ‘expected disabling illness’ is associated with a decline of about 10 per cent in male wages and a 3 per cent fall in labor supply. An increasing body of evidence links adult weight or Body Mass Index¹ (BMI) to agricultural productivity and wages (Dasgupta, 1993; Dercon and Krishnan, 2000; Strauss and Thomas, 1998; Pitt, Rosenzweig and Hassan, 1990).

Temporary Shocks and Permanent Poverty Traps

The key feature that links shocks such as drought to human capital formation and long-term food security is that that “*temporary*” shocks such as drought can have *permanent* effects. As such, a focus on the short-term losses associated with reduced consumption following shocks may understate their full consequences (Dercon and Hoddinott, 2003). Shocks affecting health or education may then even be a cause for a form of poverty trap: a permanently lower equilibrium income stream in the long-run following a negative shock, making previously feasible outcomes impossible.

Unfortunately, there is good evidence to suggest that such traps exist in southern Africa. Hoddinott and Kinsey (2001) examined the impact of the 1994/95 drought on the heights of children living in three resettlement areas in Zimbabwe. (Once age and sex are taken into account, height is a good summary measure of child health). Using longitudinal data across five years (1993 through 1997), they find that children aged 12 to 24 months at the end of the drought – who are deemed to be at particular risk from shocks - grew more slowly than comparable children in non-drought years, losing approximately 15-20 per cent of growth velocity. When these children were examined four years later (when they were between 5 and 6 years old), Hoddinott and Kinsey (2001) found that children from wealthier households had made up this

¹BMI is the Body Mass Index, defined as weight in kg, divided by the square of height in meters.

loss of growth but children from poorer households had not.² A study has examined the impact of the 1982/83/84 droughts in Zimbabwe, as well as exposure to the civil war preceding independence, on longer-term measures of child health and education. It found that exposure to the civil war lowers child height as does drought shocks if the child is in the critical 12-24 month age category (Alderman, Hoddinott and Kinsey, 2002). When these children were interviewed again in 2000, it was discovered that these drought and civil war “shocks” had persistent effects in terms of lowered stature in late adolescence as well as delays in school enrollment and reductions in grade completion (Alderman, Hoddinott and Kinsey, 2002). The magnitudes of these impacts are meaningful. For example, the 1982-84 drought in Zimbabwe led to a loss of stature of 2.3 centimeters, 0.4 grades of schooling, and a delay in starting school of 3.7 months. Based on estimates of returns to stature and schooling in southern Africa, this translates into a permanent 7 per cent loss in lifetime earnings for these affected individuals.

These inter-relationships between drought, health, human capital and agriculture taking on added importance given the conjunction of the current crisis with high prevalence of HIV/AIDS in southern Africa. As is well understood, it affects the most economically productive members of society, increasing household dependency ratios while impairing the inter-generational transmission of knowledge. Afflicted households share a double burden: the loss of the labor-power of a prime age adult and the loss of labor time to care giving. HIV/AIDS has both urban and rural dimensions; ill or dying individuals return to rural areas as to children following the death of an urban worker. Consequently, coping strategies such as access to urban remittances or increased use of casual labor are no longer feasible. Because the disease raises nutritional requirements, malnutrition brought about by drought and food shortages shortens the asymptomatic period of HIV infection, hastening death (Gillespie and Haddad, 2002). The interaction of HIV/AIDS with drought increases the likelihood that households will be forced to sell assets, withdraw children from school and lose access to social capital and networks (Gillespie, 2002; Kadiyala and Gillespie, 2002). This further compromises households’ ability to recover from drought.

² Wealth was defined in terms of whether the household had livestock holdings below or above the sample median

If temporary shocks do indeed have long-term consequences, the dichotomy between relief *or* development becomes a false one. A failure to implement adequate *ex ante* interventions, to adequately mitigate the impact of drought shocks, to consider the current crisis through an HIV/AIDS lens risks permanent losses of financial, physical and human capital that, in turn, have adverse impacts on longer-term strategies for food security. The falseness of this dichotomy becomes even more apparent when one recognizes that the portfolio of appropriate responses includes a number of measures that will enhance agricultural productivity and growth.

Shocks such as droughts affect households through several channels: loss of productive assets; lower returns to existing assets (including lower returns to labor as evidence by falling wages) and increases in the cost of acquiring food and other goods. These shocks affect consumption when households *either* lack savings or access to informal insurance mechanisms *or* where instruments for savings are unavailable or inadequate *or* where public responses such as drought relief fail to fully offset the loss in income brought about by the shock. As such, interventions designed to improve agricultural productivity such as improved infrastructure, better access to savings instruments and more efficient marketing channels actually fulfill a dual function – both enhancing long-term food security while improving resilience to drought and other shocks.

But perhaps the primary reason for immediate investments in the human capital of the poor is that while functioning markets, enhanced trade opportunities and increased agricultural production will generate higher incomes in the future, they will not be immediately effective in helping people to get back on their feet after the effects of the food shortage. Targeted safety net programs should be in health, education, child nutrition and for the destitute, who will benefit little in the short term from policies that promote agriculture. The most effective way to reach the neediest and minimize leakage to the non-poor is to make programs self-targeting.

Expanded health services and nutritional programs with strong outreach components will be required first to ensure that while the food situation at the national level improves, the most vulnerable members of society, especially children, the elderly and those living with HIV/AIDS in poverty, are not still malnourished and at risk. These groups may remain susceptible to diseases given the malnutrition they experienced. Public investments in health services should

also be for clean water and safe sanitation. How can health services contribute to food security? While higher incomes from increased agricultural production and marketing will better enable poor farmers to obtain health services, the improved health of the poor will also lead to a greater productivity. In this way, safety net programs in health are an investment in human resources (Hazell and Johnson, 2002). The health sector must also tackle the AIDS epidemic. The consequences of food shortage for HIV/AIDS-affected poor people are quite serious since they are likely to have been malnourished before they became infected. At an economy-wide level, the epidemic has led to a serious decline in farm output.

An issue that is particularly important for the health sector to address is child nutrition. Programs in this area have often proved to be an effective component of integrated child survival efforts. India's Integrated Child Development Services is a good example. Food aid may be used effectively in child nutrition programs. Addressing the nutritional deficiencies of poor children will enable them to lead healthier and more productive lives in the future.

Education for the poor is another vital area in which the southern African countries must invest for the long-term reduction of poverty and to catalyze development. A program that can both, increase food security and cultivate young minds is one that provides food to poor households if those households agreed to send their children to school. Food for schooling schemes enable children to eat, get education, and provide essential nourishment for their families as well. In the case of education as well, food aid can be channeled into food for education programs. Bangladesh was the first to develop such a program. Its targeted food for schooling scheme increased primary school enrollment, with the enrollment of girls being greater than that of boys, promoted school attendance, reduced dropout rates and improved calorie and protein consumption in the beneficiary households (Ahmed and del Ninno, forthcoming). Research in a number of developing countries has found that educating girls, as well as boys, has a huge impact. Improvements in female education accounted for over 40 percent of the decline in child malnutrition levels in the developing world between 1970 and 1995 (Smith and Haddad, 2000).

It is especially necessary for such programs to be implemented in southern Africa given the impact of the food shortage and the AIDS epidemic. Because household resources are scarce

during and after food shortages, youth are often kept home from school to save on education fees, to work, or to care for family members with HIV/AIDS. These young people will, as a result, not learn the skills needed for employment (Gillespie and Haddad, 2002). To help prevent this destructive cycle and keep children in class, schools can provide meals to students.

Finally, many households are destitute, especially those headed by women or the elderly. These households will not benefit in the short-term from standard agricultural technology transfers and will need targeted food aid even after the crisis has past. While smallholder-led growth can make deep inroads into poverty, it will not be enough to eliminate it or reach the poorest of the poor. The poor have complex livelihood strategies and agricultural development will not be sufficient on its own to eradicate food insecurity (Hazell and Johnson, 2002). A lack of such assistance would lead to a significant decline in human and social capital for future development.

New Solutions for Relief and Development

In addition to the general safety net programs discussed above, it would be helpful to consider a few solutions that are more imaginative. Large-scale, weather related shocks, whether they are droughts or floods, re-occur in southern Africa with some frequency. Zimbabwe alone has experienced three significant droughts in 12 years. Rather than continually relying on *ad hoc* and *ex post* responses, there may be considerable gains to be had by putting into place *ex ante* shock mitigation programs. We consider three here; utilizing pension schemes, food-for-work programs and conditional cash or food transfer programs.

The first takes as its starting point the fact that three southern African countries – South Africa, Namibia and Botswana provide non-contributory pensions to their elderly citizens (Devereux, 2001). Further, given the demographic structure of many African households – specifically the existence of “skip” households in which a grandparent(s) and grandchildren are present but not parents – these are an effective means for reaching two vulnerable groups, the elderly and the young (Case and Deaton; 1996; Devereux, 2001). Where the administrative structures for pension delivery are already in place, and pensions appear to be well-targeted towards the poor (in fact, the South African pension scheme is means-tested); during shocks such as droughts,

additional resources could be transferred to these two vulnerable groups by temporarily raising the value of the pension.

Public Works Programs

The second is to re-think the role of public works. Specifically, rather than use these in an *ad hoc* fashion, there is a case for considering whether these should be made permanent. Public works programs are a form of safety net for the able-bodied poor and which also create public goods. It is now generally recognized that public works programs are an important component of strategies to alleviate poverty and hunger in the developing world. Yet in addition to offering short-term income, such programs serve as risk insurance for the poor, and, by providing society with productive resources, create public assets important for food security, such as infrastructure and a healthier natural resource base (von Braun, Teklu and Webb, 1999). Public works programs also provide the society with access to productive resources and the poor with employment. They should be targeted to the poorest households that are able to participate (IFPRI, 2002c).

In India, such a program has been proven effective in meeting these goals and has been one of the main tools to prevent famine. The most important one is the Employment Guarantee Scheme (EGS) of Maharashtra State, one of the largest in the developing world. Initiated in 1972, it guarantees employment at a defined wage. The ability to work is thus an entitlement, unlike as in other public works programs. The goal of the EGS is to sustain household welfare in the short run and contribute to agricultural and rural economic development in the long-run by carrying out drought prevention measures and building infrastructure. Employment in the program currently consists of approximately 80-90 million person-days, and makes up for a lack of employment opportunities in the agricultural sector. Studies have shown that it not only effectively targets the poor, but also has employed an increasing number of young women who are heads of households. The program has served to stabilize incomes and reduce seasonal malnutrition that occurs in off-seasons and droughts. The EGS has had positive effects at the macro level as well. The decline in poverty has been much more rapid in Maharashtra than in India as a whole. The assets that the program has created have led to the development of agricultural and rural non-agricultural activities, including the generation of higher paying

agricultural employment (Dev, 1995). The example of the EGS is worth noting because although it is perhaps primarily a relief program that has succeeded in attaining extensive coverage, the EGS has also simultaneously been contributing to long-term agricultural development.

However, the need to complement public works schemes becomes apparent when the current crisis and recovery is seen through an HIV/AIDS lens. Public works programs, we will have to realize, may be less effective as either short-or-long term mitigation measures where a significant proportion of adults are ill; to the extent to which they cause greater labor mobility, they may occasion the formation of new sexual networks and an expansion of sex work (Cohen, 2002). Further, the practice of switching from general relief operations to FFW programs to discourage dependence may need to be rethought; doing so may also deny the benefits of assistance to those who need it most (Kadiyala and Gillespie, 2002).

Conditional Safety Net Transfer Programs

The third approach is to consider the implementation of conditional cash or food transfer programs such as the PROGRESA program pioneered in Mexico. The attractive feature of these programs is that they address both current poverty – via the cash or food transfer – as well as reduce future poverty through investments in health and education. Mexico's PROGRESA offers an example of a safety net program in which education, health and nutrition services are integrated. The program provides cash transfers to households conditional upon their participation. Such integrated safety net programs, we might hypothesize, may more effectively tackle the various obstacles the poor face in trying to move out of poverty.

In the areas of education, health and poverty reduction, PROGRESA has shown positive outcomes. With regard to education, PROGRESA has had positive effects on enrollment for boys and girls, the level of education attained, and school performance. As a result of the program, there has been increased demand for education in the areas served. Because of the program's nutritional and preventive care services, the health of young children has improved in a number of ways and adults are healthier as well. Moreover, the program has not appeared to create negative incentives for the participants to work. In fact, PROGRESA reduced the number

of people below the poverty line by 10 percent. With all of these achievements it should be noted that the administrative costs of getting transfers to households are relatively small compared to the costs of other programs in the developing world (IFPRI, 2002a).

Safety net schemes that consist of health, education, public works and pension programs can prevent poor households from sinking into inescapable poverty and strengthen their human capital for long-term development. Rather than regarding relief and development as goals that compete for the same investments, the two must be seen as complementary. In fact, without measures to alleviate the suffering that is a result of the food crisis and reduce the vulnerability of poor households, it is likely that significant advancements towards agricultural development, poverty alleviation and food security in the long-run will not be possible. Furthermore, just as the State cannot leave development to the private sector, but rather must take a leadership role and facilitate the process, so the State, in spite of public sector reforms, has the chief responsibility of generating recovery and building the human capacity of its people (von Braun, Teklu and Webb, 1999).

IV. A Strategic Framework to Achieve Development, and Capacity Building

Along with a need to focus on certain sectors and programs to bring about recovery and development, a strategic framework to determine what kinds of investments should be made, where they should be targeted and how they should be evaluated, must be devised, and the capacity of the policymaking system needs to be developed.

In terms of a framework, what is required is a strategic analytical and knowledge support system to guide and inform agricultural and human development strategies. Those involved in policymaking will have to be able to first, articulate and clarify the issues facing their country or region. They will then have to identify the key challenges and investment options to address these issues. Following this, the policymaking system will have to select and justify the best options, determine where the investments should be targeted, identify the best approaches to effectively and efficiently implement the options, and monitor and evaluate the impact overtime

to ensure that the investments are achieving results and revise the action plan if necessary (Hazell, Johnson and Wood, 2003).

As a part of the framework, strategic goals must be defined based on an understanding of the challenges facing the country. For instance, the overall goal might be to stimulate agricultural growth and rural incomes in order to drastically reduce hunger and poverty. Strategic goals may also have particular target groups and regions in mind, for example, smallholders or remote areas, respectively. The objective of the first step of the framework is to help identify key investment priorities through rigorous analysis in order to inform decision makers on the type of investments required to achieve the desired goals (Hazell, Johnson and Wood, 2003).

Determining the key investment priorities would require several steps to be taken. Development zones within each country or sub-region will need to be identified and characterized according to agro ecological conditions and production potential, remoteness, population density, poverty level and other indicators to better differentiate the type of constraints and thus investment options faced in each zone. Priorities will have to be set based on spatially defined development zones unique to each country for targeting appropriate agricultural investments because agricultural production and marketing has spatial ramifications. Spatial analysis will help to highlight key constraints to agricultural and economic growth within each of the development zones, allow for better targeting in terms of growth, hunger and poverty reduction and help address site specificity in terms of dealing with environmental problems. Therefore, the capacity to conduct complex spatial analysis will need to be developed (Hazell, Johnson and Wood, 2003).

Within each of the identified development zones, the next step would be to identify and select the type and level of investment options needed to achieve the desired goals. The objective may be to increase production of a particular commodity, for example. In that case the priority commodities within each development zone can be identified, and the type of intervention, based on the key factors constraining production and market opportunities, considered. The criteria for selecting priority commodities might then be:

- Which commodities (food and cash crops) have the most promising demand opportunities?
- What is the comparative advantage in producing these promising commodities and in what development zones?
- Is there significant agronomic potential to increase production of these commodities and in what development zones? And,
- Could the production (and commercialization) of select commodities benefit the poor and malnourished and in what development zones?

The next steps, upon identifying the ‘best bet’ investment priorities, is to begin the process of assessing what type of interventions are needed and how to go about designing and implementing the selected interventions. To determine the type of interventions called for, these will depend on the type of constraints surrounding a particular investment priority. For example, researchers may need to ask: what is currently constraining increased production and/or commercialization of these commodities? And, what is the likely economic return and reductions in hunger and poverty resulting from specific investments to overcome production and commercialization constraints? Every effort should be made to ensure that investments are being designed to complement other ongoing or planned activities. There should be consistency and linkages with other proposed investments, including national, regional and global initiatives. Once a final set of investment priorities and interventions have been selected, the next step will be to design and implement the chosen investments. A review of best practice approaches and lessons learnt would be helpful (Hazell, Johnson and Wood, 2003).

The final phase involves conducting rigorous analysis to monitor and evaluate the interventions, assess their impacts, ensure that the desired goals are being met and re-evaluate priorities where needed. A monitoring and evaluation system would be desirable if it could trace project level impact through to its broader implications in terms of ending hunger, establish causality between program inputs, outputs and final impact, use standardized and consistent indicators that can be added up across operating units, and be rigorous and informed by sound data. Information from monitoring and evaluation must be able to loop back into the priority-setting exercise (Hazell, Johnson and Wood, 2003).

Because it will be necessary to be able to trace key pathways linking selected investments to final outcomes and impact of reducing hunger and poverty, while controlling for the effects of other exogenous forces, a carefully developed analytical framework and collection of indicator data at different stages along the pathways is required. Some criteria that could be used to select input and output indicators for each chosen investment and targeted development zone are:

1. At the project level, what does the investment directly affect –quantities, yields, prices, costs, nutrition, access to assets or services, environment, etc.?
2. How does the investment empirically affect economic livelihoods, nutrition and any other higher impact goal (e.g. evidence from elasticity estimates)?
3. What are some key independent (or exogenous) factors that could affect the success of the project?
4. Is there a gender bias in the targeted activity? What share of women’s chores, incomes? will women benefit, and to what extent will their participation influence overall goals?
5. How much does the investment affect rural and smallholder well-beings? Or what share of production and/or marketed quantities comes from the targeted zone and/or groups? Who benefits the most?

With a fully operational M&E system of the kind described above it should be possible to, report on changes in key target variables over time (e.g. poverty and hunger) and to calculate how much of the change is due to the investments. Such a system would also help analyze the pathways linking investments to final impacts to identify bottlenecks that reduce impact, and hence to target new investments so as to enhance impact (Hazell, Johnson and Wood, 2003).

Clearly for implementing this framework and designing both, relief and long-term development strategies the development of the capacity of institutions involved in the policymaking process will be essential. Building institutional capacity involves enhancing the skills of public and NGO sector staff in policy analysis and program planning and implementation. One of the main requirements for adopting the framework outlined above is the further development of databases and information systems. This in turn will require the training of researchers in agriculture and other sectors, and computer experts. Other areas in which advanced skills will be needed are the natural and human sciences, spatial analysis, and simulation modeling. USAID is supporting the development and institutionalization of such a strategic analysis and knowledge support system in a number of countries through its new Initiative to End Hunger in Africa (IEHA).

Critical for policymakers to make the right decisions, policies that are evidence-based, is strong communication between them and policy researchers. The key challenge is to find institutional mechanism through which new information can be harnessed and better linked to the work of planners within key government agencies. Furthermore, research must begin to ask the "how" questions in addition to the "what" and "why" questions if it is to be relevant and go to the heart of the region's problems. That is, researchers, both in the region and outside it, need to look at how food security and poverty alleviation goals can actually be achieved in the real-world context; what the operational feasibility of the different policy options is and how the best options can be implemented. This may involve examining institutional innovations and considering the historical context in which a proposed reform succeeded. If research does not tackle the real policy questions its findings will fail to resonate with policymakers and seem undeserving of future support (Omamo, 2003).

Given the expanded mission that agricultural extension will have to pursue, extension agents will also require considerable training. Finally, capacity building will have to occur with regard to the legal and regulatory issues affecting the market. Trained people must exist to enforce contracts, laws and property rights, and develop market regulations. Past investments in training did help increase the supply of some types of key personnel. But HIV/AIDS, ageing, low salaries and morale within public institutions and the lack of resources have led to shortages of skilled personnel. A conducive institutional environment will also play an important role in improving overall macroeconomic and sectoral policies which can affect the incentives for private sector investments and growth (Kydd, 2002).

V. Conclusion

This paper presents some of the approaches that other developing countries once threatened by famine used to avert future food crises and embark on a path towards long-term food security. These approaches might suggest options for the countries of southern Africa. The paper also argues that for long-term investments to work, the countries must develop the capacity of their public institutions, particularly in the areas of policy analysis, research support, data and information collection and management, analytical capacity for strategy development, and planning, monitoring and evaluation. Finally, it considers the questions of precisely what kinds

of investments are needed to get agriculture moving again in the region and create a "win-win" situation for relief and development. Designing the appropriate policies and making the right investments will effectively place the region on a path to food security.

But will a policy-based approach be truly sufficient to avoid future food shortages and reach a state where no one is in dire hunger? The answer is most likely no. Good policies and programs can be ineffective if the public institutions that implement them do not function responsibly. Also required is a serious commitment by senior policy makers to agricultural development, matched by improved governance and institutional performance to enable the required changes to occur. One possible approach is to adopt an official policy of food being an essential human right. Such an approach would require concern with issues of governance; how food policies are implemented, whether people in need actually have food available to them and what course of action can be taken for redress if necessary. Why is a rights-based approach necessary? Because in spite of decades of policy-making, hunger continues to exist on a massive scale, not only in southern Africa, but in other developing countries as well. The approach is slowly gaining support in international forums. Certainly, fulfilling the right to food would be a complex task for any nation. It requires a better definition of the rights related to food, and of how these rights can be realized. A country would also need to develop a strong and independent judiciary accessible to all groups, and greater involvement of the legislative branch. A greater challenge would be to have conditions--international trade, for example--and institutions in the larger world support these rights.

But at a more basic level, the approach calls for a system of good governance, in which there is the rule of law, democracy, accountability and transparency, and according to which the state respects, protects and facilitates the right to adequate food. The rights-based approach would (or should) also facilitate broad-based action for food security, involving non-governmental organizations, community-based organizations and the private sector, and empower the poor. Reaching the stage where everyone's right to food is protected will take a long time and fighting hunger with this vision will not be cheap. But each step taken will go long way towards achieving the goal. And, after all, why do we pursue policies for food security if not for ethical

reasons (von Braun, 2002)? Southern Africa, the other developing countries and the larger world must take serious steps along the rights approach: the hungry have little time to wait.

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