

The African Food Crisis: Looking Beyond The Emergency*

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ABSTRACT

This paper on the African food crisis is presented in four parts. The first section focuses on the current nexus of problems that has created an endemic economic crisis in many African countries, the background against which both the drought and certain domestic policies have operated. The second part introduces the concept of entitlement, a concept that is used to understand better the human response to a diminished ability to produce or purchase food. This section looks at the food crisis as an income and productivity crisis, rather than food shortages *per se*. In the third section, a formulation is introduced that describes three stages of disinvestment among affected people, stages that have been observed historically as a result of drought and famine. The last section examines possible solutions and the most appropriate national and international response to the various stages described.

Introduction

The purpose of this paper is to view the African food crisis of the last few years in both a broad economic context that sheds light on long-term development issues in Africa, and also with a methodology that emphasizes the structural causes and results of the event. Neither drought nor famine are new phenomena in Africa or other parts of the world, and issues that have been raised in previous circumstances can help us look at the current situation with some perspective. Food shortages, while clearly most critical during abnormal times, are also a result of chronic conditions, such as land degradation, desertification and domestic policies of the countries concerned. In Africa, the nexus of abnormal weather conditions and internal policies produced a situation acute enough to elicit broad international relief efforts. Yet a review

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of economic indicators in Africa for a period longer than the drought provides important insights into what conditions permit a drought of two to three years to create emergency conditions.

This paper has four parts. The first section focuses on the current nexus of problems that has created an endemic economic crisis in many African countries, the background against which both the drought and certain domestic policies, in particular those affecting agriculture, have operated. The second part introduces the concept of entitlement, a concept that is used to understand better the human response to a diminished ability to produce or purchase food. This section looks at the food crisis as an income and productivity crisis, rather than food shortages *per se*. In the third section, we introduce a formulation that describes three stages of disinvestment among affected peoples that have been observed historically as a result of drought and famine, the last of which is not entirely reversible even when the rains come. Its demographic implications and their potential impact on development prospects are wide-ranging and will entail long-term adjustments. The last section asks what can be done: what is the most appropriate national and international response to the various stages described.

I The evolution of the African situation

The question to be answered here is how Africa in the mid-eighties has arrived at a situation in which agricultural output has been declining for over a decade, where imported food dependency is at an all-time high, and where the secondary effects of the above, such as falling nutritional standards and impoverishment have become endemic in many areas. The statistics on these key trends portend a much more worrisome and persistent problem than the term 'food crisis' suggests. Taking figures from periods before the drought, comparing the period 1960-1970 to 1970-1982, one sees a fall, for the countries of Sub-Saharan Africa, of growth rates in production of food of an average of 2.5 per cent to 1.7 per cent, as Table I shows:

TABLE I
Growth of Agriculture (Sub-Saharan Africa)

Average annual growth rate of volume of production (percent)				Average annual growth rate of total production per capita (percent)			
Food		Total agriculture		Food		Total agriculture	
1960-70	1970-82	1960-70	1970-82	1960-70	1970-82	1960-70	1970-82
2.5	1.7	2.5	1.4	0.2	-0.9	0.2	-1.1

Note: Figures are weighted averages

Source: World Bank 1984: 77

Trends in the growth rates of both cereal imports and food aid for low-income and middle income Sub-Saharan Africa as shown in Table II reflect the impact of the fact that of all the world's regions, only in Africa has food production per capita fallen from the levels of the 1970s.

TABLE II

	Cereal Imports (Thousands of Metric Tons)		Food Aid in Cereals (Thousands of Metric Tons)		Rate of Growth Per Annum (per cent)		
	1974	1983	1974/75	1982/83	Imports 1974-83	Aid 1974-83	Total 1974-83
Low Income	2 232	3 277	765	1 969	4.4	12.4	9.6
Middle Income	1 521	4 859	111	411	13.8	17.8	13.9
Total SSA	3 753	8 136	876	2 380	9.0	13.3	9.6

Source: The World Bank, 1985: 184.

The implications in Table II for food self-sufficiency are alarming. A comparison of Sub-Saharan African countries in 1964-1966 and 1978-1980 shows that among 25 low-income countries only three were totally self-sufficient in the earlier period (Chad, Malawi, Niger) and none in the second. Significantly, food self-sufficiency had fallen in all but two of the low income countries; among the 17 middle-income countries, only three had increased their self-sufficiency. Over all, 39 of 44 countries had lost in food self-sufficiency (Singh, 1983:30). Another calculation puts food self-sufficiency at an average of 98 percent in the 1960s falling to 86 percent in 1980 (World Food Council, 1984:1).

One cannot look at food production without looking at population. Population growth in Africa outstrips that in every other region of the world: its average growth between 1965 and 1973 of 2.6 per annum, which was comparable to other low-income countries, has increased to three percent, and in some African countries it is now as high as four percent. The population of Sub-Saharan Africa is expected to double in twenty-two years. The African demographic profile is also taking on new features which have long-range repercussions: for example the rate of urbanisation, at around six percent per year between 1970 and 1982, is the world's highest. In 1980, 22 percent of Sub-Saharan Africa's population lived in towns and cities; that percentage is expected to increase to about 35 percent by the year 2000. Feeding the cities has become a major policy concern of most African countries.

As a result of the stagnation of food output and rapid increase in population, daily caloric supply per capita in Africa is again the world's lowest: in the low-income countries in 1982 it was only 91 per cent of the *minimum* requirement (World Bank, 1985). Production of meat for domestic consumption averaged between 1978 and 1980 4.7 million tons, or only 11 kilograms per person per year (World Food Council, 1984). Africa has the highest mortality rate in the world. It also has the greatest proportion of youth: in a number of countries, the population 15 years and under approaches 50 percent of the total, with children under five making-up 15-20 percent. Yet in 1960 a third of African children died before their fifth birthday, and in 1982 the figure was one quarter.

A number of inferences can be drawn from the above statistics. From the perspective of population growth and population distribution, one can conclude that just to feed the increased numbers of people, African food output must increase by over three percent per annum, but to bring about improvement in the nutritional standards which, from the mortality and caloric figures, is clearly indicated, the rate of food output must be even higher. Urbanisation means a concentration of people who are food-import dependent: moving food aid and domestic food products puts considerable strain on weak infra-structural systems. The bulge in youthful population also has other ramifications: while the young are used in agricultural efforts, they are clearly less productive than adults. The traditional rationale for large families is labour and security in old age; the food crisis adds a negative dimension to this calculus.

Any calculations of poverty are by nature very broad, but today, if all available food in Africa, including imports, were divided equally, it would not meet minimum per capita caloric requirements. The average per capita income of about US \$400 per annum means that one half to three quarters of the population lives in absolute poverty; an estimated 60 per cent of Africans are chronically malnourished (Jaycox, 1985).

The fixed measure against which productivity and population trends must be measured is, of course, the land. Sub-Saharan Africa has nine percent of the world's people living on 22 percent of the world's cultivatable land. On the face of it, land would seem the solution to the problems of output and absorption of population increase. However, there are a number of reasons that this is not possible in the current situation. The distribution and impact of good quality land is not consistent with population because of arbitrary national boundaries, tribal and linguistic differences and poor internal transportation which reduces the ease of trade. In addition, non-technological methods of African farming require long fallow periods in which soil can regain its fertility. To reduce fallow periods would require inputs such as fertilizers and improved tools which are generally unavailable. Thirdly, Africa is not yet experiencing an

agricultural revolution such as the Green Revolution in Asia; research to find better-yielding varieties of food crops is at an early stage and inputs of fertilizer and draft animals are only slowly being introduced. Lastly, land degradation and the loss of ground cover are taking their toll. The result can be desertification which is a dual process of desert encroachment in which prolonged periods of dryness cause the land to lose its carrying capacity, but it is also the result of resource abuse, in particular the strains urban areas put on surrounding rural sources of fuelwood, and the use of marginal lands for grazing.

The drought which peaked in 1983-1984 had started in 1968 in Ethiopia, in 1982 in Southern and parts of Western Africa, and spread to the Sahel in 1983. By 1985, the rains had come in most countries, although some 9-11 still were experiencing problems, notably the Sudan. During this period, 34 countries had been affected. How severe was the drought, and what impact did it have? The Sahelian drought rivaled the earlier 1972-73 drought although Northern Nigeria was unaffected, and the drought in Ethiopia is considered to be worse than the one in 1973-74. Reduced rainfall rarely hit an entire country, but in certain localities the rain failures were extreme both in duration and intensity. The most complete information exists in time line series for the Sahelo-Saharan, Sahelian, Soudanian and Soudano-Guinean zones that go back to the beginning of the century, and give a clear indication that the current drought is the worst to date. The period after 1910 for the first three was severe until mid-decade; the 1940s were also a period of drought, but starting in 1968, the current drought(s) have shown rainfall consistently below the average, by 15-50 percent (Nicholson, 1982). Many affected countries simply had no rains: in Ethiopia, showers expected in 1984 from November to February to permit grazing to occur during the dry season did not occur, and the short rains of February-May (1984) needed for sorghum and maize never came; the main rains from June to October were very meagre. In the Sudan, there has been a secular decline since the 1950s; in rain-fed areas, farming can only be sustained if mean seasonal rainfall exceeds 450 mm, and if no more than one season in five has less than 350 mm. In each of the last three years, in large areas of the Sudan precipitation dipped to 250 mm and as low as 100 mm in large rain-fed zones.

The drought of 1983-84 (although as indicated above, its duration is longer in many areas) has affected food crops, cash crops, livestock, water levels and power supply: in effect, all economic activity. Some examples give the extent of the impact: the groundnut crop in Senegal was the worst in 10 years; cereals production in 1983 was round 60 percent lower than in the previous two years. With herd lands drying, and an influx of cattle from Mauritania, animal mortality rates rose 10-20 percent. GDP was expected to fall significantly, and the current account deficit to rise. In Mali, 42 percent

of the population was affected by the drought; the rainfall deficit in the Gao region was -58 percent, compared to the 1950-80 average. The rainy season was two months short in 1983. Feed for livestock was non-existent in the Northeast of the country.

In the Ivory Coast, 1983 rainfall was 20-40 percent below the annual average; in most areas coffee crops were cut by more than half; cocoa from 10-15 percent. One of the most striking impacts was on the energy sector: in 1982-83 river flows to dams were 52 percent of the previous 20 year average. Lost revenue and the cost of using thermal power exerted large drains on the government treasury. Drought effects to agriculture and energy could be expected to result in a decline of real GDP to both sectors. In Ghana cereal production fell 25 percent from the earlier average. Cocoa production in 1983 fell 17 percent and bush fires destroyed 10 percent of the trees. Power generated by the Volta River Authority fell to 25 percent of its capacity two years before, with attendant lost revenue. In Botswana, cereal production in 1983 was less than a quarter of the 15-year norm. The loss of cattle—in part slaughtered as part of a government famine relief scheme—was extreme: in 1982 there were 3 million, in late 1984, 2.4 million expected to fall to 2 million. In Zimbabwe, 1983 brought the worst drought since 1890, with two-thirds of the country receiving less than 60 percent of its average rainfall. In Swaziland the 1983 maize crop fell to one third, and cotton production was halved; hydropower fell by 60 percent. In Mauritania cereal production fell to two-thirds its normal level, and 40 percent of Niger's population was considered affected with as many as 400,000 people displaced (UNEOEA, 1985).

The drought has accelerated the decline in cereal production and increased reliance on imported food, as well as food aid, dramatically. We have noted that the trends were in place, but they reached crisis proportions by 1984. In the 24 countries identified as most affected by drought by the Food and Agriculture Organisation (FAO) in 1983/84, cereal production declined by 14 per cent between 1981 and 1983, and 11 per cent between 1983 and 1984 (USDA, 1984). In 1984, 140 of Africa's 531 million were fed entirely with grain from abroad (UN, 1985). Not only have food export crops been hurt, thus reducing earnings to be applied to food purchase, but also price distortions due to food aid have been introduced. Worse is the possibility of persistent food aid dependency.

Not only has the drought put pressure on foreign exchange at a time of unprecedented requirements for debt service, but also low commodity prices including those for food crops for export, have additionally reduced available foreign exchange. A further result of the drought and attendant food imports is that foreign exchange must be spent in ways that are unproductive as investment. This can mean a significant decline in productive investment with

the result that in several countries a process of disinvestment may have begun to take place. This takes the form of lack of imports of the parts necessary to keep machinery, transport vehicles and buildings functional, and also the inability to replace them when they are worn out. It is very difficult to calculate the rate at which this is happening versus new investment and to arrive at net figures. However, data show that the rate of growth of *gross* domestic investment in African countries has been, in the decade 1973-1983, negative in at least 10 African countries whereas only two of these countries registered negative growth of gross domestic investment in the previous eight years (World Bank, 1985).

While the problems of African agriculture are deep-rooted and any solutions long-term, the recent drought has introduced a qualitative difference to an endemic problem. We must therefore look more closely at the coping mechanisms and failures that have marked this crisis, to better understand not only how it happened that drought in some countries turned into famine, but also what can be done to prevent it in the future. We must also ask whether the dislocations can be reversed when the rains come, and agricultural productivity restored. This paper suggests that there should be no assumption that there will be an automatic reversal of the crisis and restoration of an equilibrium that has been upset. Certain changes have taken place that carry with them their own imperatives and coping with them will require much more than watching the damage from the drought subside.

II Household entitlement

To assess what is likely to happen we will look beyond African food production and the international ability to fill food deficits—through food aid—important as these are. We will start in the village, with the farmer who is living with or, in many cases, fleeing his crisis. The fundamental assumption here is that it is not the availability of food that is the long range problem, but the poverty of the African farmer that turns a drought into a famine.

The key concept here is one of entitlement which is what a farmer has that can be traded for food.¹ The concept of entitlement changes the focus from the availability of food to a person's loss of ability to purchase what food there is through losses in his entitlement, either directly through crop losses, or through a lesser value for his labour, or higher food prices. Food scarcity does not stand alone as the cause of famine—it interacts with what people have and do not have, and their ability to surmount or not surmount the obstacles to purchasing or growing adequate food. In addition we must remember another entitlement—social security—that is also part of a person's entitlement "bundle"—we mention this in particular because it is a feature of the African human and ecological landscape that social security has been provided through the family

and extended family, and that famine has threatened the functioning of this fundamental fall-back entitlement. Another feature of the African landscape, which was mentioned in the previous section is population: population growth which outstrips food production growth affects the value of entitlements of the individual and the family. The ratio of food to population is fundamental yet it is not the dynamic that most concerns us here: we must think not only in terms of what exists but in terms of who can command what. Let us add one more thought about entitlement: in some ways entitlement and income are similar. Starving means not being able to buy food. But focusing only on income leaves out the first part of the story—why there is not enough income to buy food. The entitlement concept also takes account of the peasant and the food he has grown apart from the act of purchasing food, and the nomad who exchanges cattle for grain. It provides us, in other words, with a comprehensive account of a person's ability to command commodities in general and food in particular. To summarise: the entitlement approach views famines, as we must, as economic disasters—and human disasters—not just food crises.

Amartya Sen's research (1981) on four of recent history's great famines – those in Bengal, Ethiopia, the Sahel and Bangladesh – reaches the conclusion that viewing food availability as the cause and solution – in other words responding to poor harvests with what are often belated relief operations – is inadequate. It is the loss of real income that both explains why famines occur and who gets hurt. The loss of income can be due to loss of direct entitlement – a harvest is lost – or loss of wages. In 1973 the Wollo of Ethiopia whose crops were lost could not find other work; in 1974 in Bangladesh farm workers lost jobs when production declined; in 1943 in Bengal rising prices and falling wages meant starvation; in 1972-73 in the Sahel pastoralists lost herds to drought and had to sell poor cattle at low prices.

The Bangladesh famine was not caused by lack of availability of food – but rather the fact that the rice entitlement of labourers fell precipitously: 58 to 70 percent in some districts (Sen, 1981:147). The flood destroyed employment possibilities before it created food shortages. The output and availability of food grains actually peaked in 1974 but the market forces determining relative wages versus rice moved against labourers. The application to Africa of this lesson is that where there are significant numbers of landless agricultural labourers without direct entitlements through subsistence farming, there will be vulnerability to price-induced famine.

The Ethiopian famine of 1972-74 (actually two famines, one in Wollo and one in Harerge provinces) took place with no abnormal reduction in food output in Ethiopia generally, although food output in Wollo was sharply reduced. Food prices did not rise significantly, but the pastoral population had already had their pasture lands reduced by commercial farmers. The terms of trade of animals for grain fell: thus the exchange relations between the pastoral

and the agricultural economies contributed to the starvation of the herdsmen.

The lessons here for the current food crisis in Africa are that a simple calculus of crop loss and food needs does not explain the economic exchange system for those made vulnerable by the loss of entitlements. During the 1984/85 season, Zimbabwe was able to produce a bumper crop of sorghum and maize—about 1 million tons more than consumption needs—but the purchasing power of neighbouring countries has been reduced and much of this crop must be stored and sold later at world prices. In Burundi, prices have gone up in the face of shortages: beans and maize are beyond the reach of the urban poor in Bujumbura. In Ethiopia, when the Relief and Rehabilitation Commission of the government calculated 1983 and 1984 prices of certain basic food stuffs in selected areas the change in each case was steeply rising prices, often double previous levels.

In the Gambia not only was there a food production fall of 50 percent in 1983–1984 over the previous year, but the partial failure of the groundnut cash crop meant farmers could not buy imported rice (Anon, 1984:383). In Burkina Faso, there was no harvest in 1983 in the North, but adequate stores existed in the South. However traders would not sell at depressed prices, and some Southern farmers were switching to cotton so as to be able to command a government-supported price for their crops. Speculators bought the 1982 cereals harvest at 30 francs a kilo and offered it for re-sale seven months later at 120 francs. State trading agencies generally cannot reach the rural poor, so that subsidized grains primarily benefit the cities (Twose, 1984:12). The story is repeated in the Sudan: in early 1985 there was a surplus sorghum crop in the East, but the price was four to five times normal, and peasants, whose source of income is livestock, could not afford to buy food (Anon, 1985:7557).

III Three phases toward famine

In order to apply the entitlement thesis to the African situation we will distinguish between three phases through which African peasants are progressing. These phases are not distinct and vary according to whether one is talking about herders or sedentary farmers, but they give an indication of how the coping mechanisms are in fact based on ways to increase income and thereby command over food. The first stage through which the affected progress is a series of efforts to increase earning power and therefore the ability to purchase food. There are two main ways to do this: market labour and sell the economic insurance that is represented by herds. The London-based Food Emergencies Research Unit (FERU) has developed a method of predicting food emergencies by looking at the economic behaviour of victims rather than counting food stocks. With Ethiopia as a current example, this group has been

able to show that certain behavior warns of trouble ahead. For example, in the pre-harvest period when farmers begin to expect crop failures, they will start to protect themselves by selling less important livestock—sheep and goats for example—to get the money to buy food. They will also start to market their labour to earn needed cash. An unfortunate side of these activities is a fall in the prices of both labour and livestock (Economist, 1984).

A graphic illustration of how farmers look at their options in this first stage of trying to generate the resources to meet food needs through increased income comes from a survey taken in Northern Nigeria during the Sahelian drought of 1972 (Caldwell, 1975:48). The farmers in Yelwa were asked how they react to drought: the activities listed, in descending order of percentage response, were to go hungry (99%), pray (98%), sell firewood and their various skills (84%), spend more time fishing (74%), seek help from relatives (59%), seek labouring jobs (55%), plant late crops (19%), sell belongings (11%). It is significant that selling labour is a much more immediate response than selling belongings.

A second response to the economic crisis of loss of ability to produce or purchase food is one that cannot so easily be reversed when the rains begin and the land becomes productive again. This is when herders sell their source of food security, or that which they exchange in the market for grain – their herds. This is what happened in the Sahelian drought of 1972-73: herds were liquidated at ever-falling prices as nomads tried to barter cattle for grain. Drought already reduces both the size and health of the herd, and its pastureland, so that this source of income is rapidly depleted. For farmers, the second phase of response to the food crisis is one in which men will seek work off the farm, leaving their lands behind in the hands of their families. In the Ethiopian drought of 1972-73 in Wollo province, farmers sold land, but in much of Africa, land is held communally and by tradition, with an ownership system far less rigid and legalised than that which exists elsewhere. This means title to the land may remain, but its value will diminish as the land is not allowed to regain its fertility, and is being farmed more marginally. In addition, in this phase, herds will be moved into marginal farm lands and hasten the degradation of the land. Thus both herds and land lose some of their productive value, and to build this back up, through re-stocking and investing in the land, takes resources that will have to come from government and external sources, as the farmers and herders will not have the saved income to invest. National plans to forestall movement from phase one response to phase two in which divestment takes place are costly but far more timely than the foreign relief programs we have seen operate in the last few years. Botswana has been able, through advance national planning, to avoid movement from phase one to phase two: in 1984 it responded to the crisis by greatly expanding ongoing feeding programs in schools and hospitals and employment programs, while

carrying water to its most affected regions and readying its agricultural programs toward recovery efforts when the rains returned.

The third stage is the stage when famine forces people to flee physically. Currently, in the Sudan after farmers had not been able to harvest anything for two to three years, their initial response was to turn to non-farming sources of income such as wood collection and the sale of livestock. Once these were depleted families abandoned their villages. Large permanent population movements from North Kordofan and North Darfur have been reported. Seasonal migration is common in large areas of the Sahel, and is a traditional feature of nomadic life. What is happening now, however, is the movement of economic refugees into areas in which they have no traditional ties, into feeding camps where they become dependent on aid, and away from the traditional sources of their income. Cities become the focus of much of this migration. In the Sahelian drought of 1972–73, the cities of Nouakchott and Agadez doubled their populations in 1973 despite their relatively inelastic economies (Caldwell, 1975:31). It appeared that in that drought nomads were more able to make the leap to the cities rather than settled farming, and this has implications both for agricultural productivity and the increased food needs of cities. In the current drought Nouakchott is said to have swollen to a population of 500 000 in a country with a population of only three times that figure (Anon 1984). In Chad, the capital city in N'Djamena was swollen by 80 000 people waiting for food relief. Migration is also international, with the added insecurity of workers being sent home from countries such as Nigeria when those economies have had to contract.

African governments must consider strategies to control the drain from rural areas of some of the most able-bodied and productive workers. The lack of water, sanitation and basic health facilities are strong disincentives for staying on the farm. From the vantage point of the countryside, facilities in the cities seem more attractive, even if in fact they are sorely overtaxed. Internal migrations of this type have the unfortunate consequence of leaving behind on the farm the relatively young, ill, infirm and female, who are coping with an increasingly difficult task. One study asserts that in 1960 about 80 percent of households were peasant producers, but that in 1980 this had fallen to 65 percent. With population growth around three percent, to maintain output per capita would have taken a 50 per cent increase in food production per household – a clearly unrealistic possibility (Hanlon, 1984).

It is very difficult to measure the actual number of economic refugees in Africa. Political turmoil and civil war are as disruptive as drought for farmers who are forced to seek refuge. In July 1985, the United Nations High Commission on Refugees held a conference – ICARA II – on the African refugee problem. The working figure for refugees (and the definition here is political) was 2.5 to 3 million out of the world's approximately 10 million refugees. The

countries most affected – Ethiopia, Somalia, Sudan and Chad – also have been affected by drought. UN High Commissioner Hartling quoted a figure of 1 million additional refugees in 1984, which was the worst year of the drought. Whatever the origin of migration, it puts an enormous additional burden on national resources, even when external aid agencies assume the responsibility for maintaining camps and providing food.

The result of the physical migration of people beyond established seasonal movements is that when rains come, people cannot move back to their farms in time to plant and harvest. The problem becomes not one of simply allowing the rains to re-establish the fertility of the soil, but a question of re-establishing whole villages and rural systems with trading areas, grazing areas and growing areas. It is too early to tell how much disinvestment of this kind has taken place in various areas of Africa, but it is not too early to speculate about the long-term impact of the migrations that have taken place. The task of reuniting families, in which the man has sought work in the cities and his family refuge in feeding camps, is most difficult. People will have to re-establish their residence, they will have to command seed and implements, they will have to restore the productivity of the land, and also, after the wrenching experience of physical migration, their own vitality. This is a development challenge of immense proportions.

IV Finding the appropriate response

We have made the point in the previous sections that the food crisis in Africa today, despite the impact of the drought and problems of desertification, and the constraints of population and limitations about how much more the land can produce under current levels of technology and knowledge, should be viewed as an income crisis. It is because the African farmer has such a small margin of resources that he is so immediately affected by adverse weather. This section suggests some of the policies that could be adopted and measures taken to cope with the various stages that have led to famine so that this phenomenon need not be the outcome of poor harvests and episodic drought.

We have seen that the first phase of response to a food crisis is an income response: people seek either through labour or the sale of herds to generate income adequate to buy food. The solution to the problem—which is one in which available resources are too meagre to command adequate recompense—is a series of policies undertaken by national governments to buoy incomes. We have seen that in Africa, agricultural productivity has been falling, and is negative when put in per capita terms. Exogenous shocks to African economies such as the enormous increase in the price of energy, the burden of debt and deteriorating terms of trade impose an even greater burden on African governments to come up with policies that provide an impetus to greater

productivity in agriculture. These include more realistic exchange rates, pricing policies to encourage the production of marketable surpluses of food, a tax system that does not discriminate against the farmer, a careful weighing of the impact of price subsidies for food consumed in urban areas, and a clear priority of investment in agriculture. Incentives are important. Taxation of rural production, inefficient marketing systems, inadequate roads and vehicles (as was graphically illustrated in recent relief efforts), lack of storage facilities, and the shortage of incentive goods have all reduced rural incomes. The outcome has been migration to towns, subsistence agriculture, smuggling produce over borders and using parallel markets.

Producer prices are critical to encouraging agricultural production, and a number of African governments are increasing farmer prices. Complementary to this effort are two other government-controlled mechanisms that can give long-term support to the African small-holder. Firstly, tax systems must spread the burden of support for government expenditures more equitably. It has proven too easy to use marketing boards and over-valued exchange rates to extract resources from agriculture. This is, however, ultimately inefficient and has a deadly effect on incentives. Secondly, credit is critical to making up for short-falls in farmer income. Government must find efficient ways of advancing credit for implements, seed and inputs to the small farmer. Lending decisions must be taken out of the realm of group affiliations, family and political considerations. The African food farmer who has not been able to take advantage of export support needs special help. It is obviously a great challenge to develop an emergency- or drought-proof credit system, because in just such times the government is most pressed to spend its resources on crisis relief. Yet farmers world wide rely on credit schemes to tide them over the years of short-fall. In addition, reliable credit should encourage the investment needed to increase productivity. It is important to emphasize that credit must be flexible and its terms ones that the small-holder can afford.

Another government responsibility is to determine the proper balance between emphasis on export crops and food imports. In countries in which there is a comparative advantage in export crops it may be efficient to import a certain amount of food to meet normal needs. Food strategies to create food security have to be undertaken with a view to avoiding the crises that require extraordinary expenditures on imports. In planning for periods of transitory food insecurity, governments must balance these needs. World-wide, there is adequate food that can be purchased, but this requires that the purchasers have the means at their disposal when need arises. Famine relief is slower and also inimicable to development planning. Rationalising domestic prices with world prices for both food and for export goods requires constant re-evaluation. One pitfall that should be avoided however is creating a false dichotomy between export crops and food crops. While certain countries may have a comparative

advantage in one or the other, it is actually the strengthening of the entire agricultural sector that is important. There is a high positive correlation between performance with export crops and food crops. As the bulk of the resources in most African economies lies in agriculture, and as the bulk of the labour force is also in this sector, raising agricultural productivity will produce broad increases in per capita income. This in turn should create the domestic market to absorb increases in output. In the long-run strengthened agriculture will form the basis for industrialisation that in turn can produce the consumer goods needed as incentives, and the necessary inputs to agriculture.

The proper responses to the second stage we have described in the current crisis – the disinvestment of stock and land – are technological and institutional. First of all, how can one make African agriculture, which is almost entirely rain-fed, more resistant to drought? The long-term strategy for drought-prone countries must be to develop various ways to withstand the effects of lack of adequate rainfall within the existing farming and economic systems. One approach is to try to find more drought-resistant varieties of the major crops found in these regions – millet and sorghum – acknowledging that to date no breakthrough has been achieved in genetic improvement of local species. Still, while such research is going on, emphasis can be placed on improving cultivation practices. Moisture conservancy techniques can also be developed.

While rain-fed agriculture dominates in Africa, any long-term solution must take account of the potential for irrigation. The larger rivers, such as the Senegal, White and Blue Nile, the Niger and Lake Chad, offer possibilities for the irrigation of large areas of the Sahel. In the Sudan, irrigation schemes for the large plantations have long been in place. One of the constraints to developing this potential has been lack of experience in the development and management of irrigation as well as the lack of trained manpower and institutional structures. The constraints to large-scale irrigation are obvious: high development and maintenance costs, and inadequate cost-recovery mechanisms are major ones. However, these problems can be overcome in time, and should not be allowed to deter planning for such schemes. Small-scale irrigation has encountered fewer problems and received a boost from the experience of the Sahelian drought of 1972-73. Efforts to encourage farmers to make the necessary investment of time and resources must continue.

Deforestation is now recognized as one of the major scourges of African agriculture, affecting not only herd-lands but the retention of fragile top-soil for cultivation. The balance that used to exist between forest cover and population has been upset, partly as a result of clearing new lands and very significantly as a result of demand for fuelwood. Fuelwood consumption exceeds the growth of new trees by a factor of ten in Mauritania and Rwanda, by five in Kenya, and by two and a half in Ethiopia, Nigeria and Tanzania (World Bank, 1984:32).

A great deal of interest has been expressed recently² in the ecological crisis that Africa is facing, especially through deforestation. Wood gathering and land clearing create an ecological instability that gets increasingly hard to reverse. Technologies for alternatives to fuel woods, more efficient stoves and replanting with fast-growing tree species are of most pressing concern. Specialists see areas of irreversible decline, for example in Ethiopia's Tigre and Eritrea provinces.

African agricultural research and data collection – accurate information on crops – is essential to upgrading farmer performance. It is recognized that to date Africa's returns to agricultural research have lagged far behind those of other regions (Lipton, 1985:78). The greatest need is in upgrading local research institutions through strengthening their budgets, management, leadership and policy support. Regional and national research institutions need to work together to test their research results locally. African governments have spent significantly on research centres—in 1982 the annual expenditure of national systems was around US \$395 million (in 1984 dollars) annually. Other international centres are also spending funds on research on African crops, with a total expenditure from national governments, bilateral and multilateral lenders of over \$500 million per annum.³ The bottleneck is in the testing and diffusion of the technologies being developed: the delivery system to the African farmer is weak.

This requires the funding of extension services that can reach the smallholder and give both the needed information and inputs. One analyst has argued that the successes of agricultural research in Africa – hybrid maize in South Africa, the development of wheat in Kenya, advances in tea technology – have happened in communities with large-scale non-indigenous farmers “when the researchers and the farmers speak the same language, literally and figuratively.” (Carr, 1985:9) Yet the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria, has been able to make the connection to local food farmers with improvements to such crops as plantain, cassava and cowpeas. (Mathews, 1984:1) The essential ingredient to effective research is localisation: with so much regional variation, African agricultural technology must be adapted to local resource endowments, local economic and social conditions and the local ecology.

We have discussed how to cope with the challenges presented by low farmer income and farmer disinvestment. But is there a solution to the third phase in which famine has struck and people have become dispossessed? We are talking of those peasants in the Sahelian countries from Mauritania to Somalia who have left their homes to move South and may not all move back, about people in Angola who are living along roads and rail lines and in the cities as beggars, in Mozambique, where hundreds of thousands have fled their land, and on a much larger scale as many as eight million Ethiopians and five million

Sudanese who are currently at risk and dependent on international aid, who are moving in many cases to feeding stations. One can only speculate about how to reverse such trends, and if they cannot be reserved, anticipate their impact.

One of the effects that could result from the famine is irreversible urbanisation. In South China – Canton – and India – Calcutta – huge cities resulted from the refugees from famine who did not return to the land; currently Khartoum is burgeoning with refugees. In Africa, the question is acute where boundaries have been crossed: should refugees be settled and made productive or resettled as soon as possible in their traditional homes? Is the latter feasible? One clear imperative is that African governments must assess the impact of the rapid urbanisation that is already taking place and which may increase as a result of the famine. What can be done to “hold” rural populations in rural areas? Can immigration realistically be controlled by sending people back from the cities, or reducing the food subsidies there? Most African governments are aware of the political impact of city population and are reluctant to make decisions that could light a spark. Thus the solution seems to be to try to make rural areas productive enough to hold their populations, and thus reduce the incentive to move.

At the same time it is well to remember that migration is an African solution to the chronic problem of drought. Today there are indications in a number of countries that 1985 bumper crops are drawing people back to farm lands to which they have traditional rights. City dwellers are maintaining ‘weekend’ farms at the periphery of the town. Because rural ties remain unbreakable in many places, and because it is often the man alone who migrates, the long-term demographic changes may not be as radical as has happened elsewhere.

Yet the 1983-85 famine in Africa has exposed that continent as never before to a critical examination of the economic relationships that permitted this kind of tragedy to happen. Major international efforts are needed to provide the concessional funds to allow effective national planning to take place, and to support the technological improvements and institutional growth that will make Africa more resilient against another crisis brought on by economic stagnation and drought. This provides African governments and the international community with the greatest development challenge they have faced in decades.

In the words of the Harare Declaration adopted at the Food and Agriculture Regional Conference in July, 1984, we must “solemnly resolve to overcome the crisis of food and agriculture in Africa and . . . pledge ourselves to continue to give the highest priority to agricultural and rural development among our national priorities, plans, budgets and programmes . . . We solemnly put forth this Harare Declaration on the food crisis in Africa in the

conviction that we possess the will and capacity and have the full support of the international community to feed all our peoples and to lay the foundation for greater economic prosperity and self reliance in Africa."

Footnotes

1. The concept of entitlement was developed in the work of Amartya Sen, especially his 1981 book *Poverty and Famines* which he subtitled an essay on entitlement and deprivation. Sen defines entitlements as ownership of things such as land, labour, tradable goods and things that can be exchanged for food or livelihood, such as labour/non-labour assets, products that can be sold. The exchange can be done through trading or production. The set of all the alternative bundles of commodities that can be acquired in return for what one owns is called the "exchange entitlement". The exchange entitlement mapping is the relation that specifies the set of exchange entitlements for each ownership bundle.
2. See A Wijkman and L Timberlake, *Natural Disasters: Acts of God or Acts of Man*. Earthscan, 1984 and L Brown and E Wolf *Reversing Africa's Decline*, Worldwatch Paper 65, June 1985.
3. Figures presented at CGIAR Meeting, World Bank, May, 1985.

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