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# **Ending Hunger: An Implementable Program for Self-Reliant Growth**

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## Chapter 15

# **ENDING HUNGER: AN IMPLEMENTABLE PROGRAM FOR SELF-RELIANT GROWTH**

*John W. Mellor*

### **PART I: THE OPPORTUNITY**

We are now within hailing distance of the elusive goal of a world free of hunger. The essential knowledge and resources are at hand. This chapter describes the problem and sets out a simple but large-scale incremental action plan on which foreign assistance can focus. In the analysis of a focussed action plan careful note is also made of critical ancillary efforts that must be maintained. The essential intellectual and political foundations for achieving the goal of a world free of hunger are now in place.

Unlike a few decades ago, we now know both who the poor and the hungry are and the varying circumstances in which they live. We understand the close, but complex relationship between hunger and poverty. We not only know that the hunger of vast numbers of the hungry poor can and must be dealt with through growth, but we also know the nature of the growth that will do so. We know far more than a decade ago as to how food aid can be used in the immediate future to concurrently eliminate present hunger and to catalyze self-reliant growth. A wealth of varied, contrasting and conflicting experiences from the past few decades are there to guide us as to which policies and actions are likely to be most effective, and under which circumstances.

In particular it is time to stop separating growth and poverty alleviation efforts, to the immense detriment of each. Food aid,

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public works projects and feeding programs are not providing the growth and hence self-reliance they are capable of providing. Vast investments in factories, the amenities of megalopolis and even large scale irrigation projects are not providing the poverty alleviation of which those resources are capable.

The massive international and national structural problems of the 1980s and the consequent economic stagnation of so many developing countries have marred the increased capacity for future growth by virtually all developing countries. Economic growth is basically a matter of building human capital. That involves increased education, better nutrition and health, and more effective organization of institutions. The human capital resources and the institutional capacities of developing countries are far greater now than they were a decade ago. This is true even of countries that have seemed to stagnate, or even to have retrogressed, during the immense structural maladjustments of the 1980s.

Now that we are close to coming out of those maladjustments and nascent signs of a return to growth are apparent, it is time to turn our attention to a concerted effort to achieve an end to hunger. In the ultimate analysis, hunger alleviation is linked to long-term self-reliant growth. Yet, there is an equally persuasive case for short-term solutions through foreign assistance, including food aid that will help initiate specific programs that facilitate long-term objectives. It is time for the world to turn its attention to a major increase in the foreign aid package meant specifically for a fresh offence against hunger. Part I delineates the magnitude of the problem and focusses on those characteristics of the poor that provide policy guidelines for the formulation of specific programs. Part II delineates the essential programmatic thrusts.

The innovative elements of this analysis of an implementable program for self-reliant growth are demonstrated through discussion of six propositions. The first proposition is that a large portion of the worst poverty can be eliminated through a high rate of return growth in rural areas responsive to modern agricultural technology. It is assumed that as a consequence there will be high returns in poverty reduction through the use of foreign aid focussed on these areas, particularly in the poorest countries. Secondly, there is a relation between growth and poverty reduction in low growth potential rural areas and a

consequent need for foreign assistance to such areas, including foreign assistance to middle income developing countries. Thirdly, there is a relation between foreign assistance, poverty reduction and environmental protection. Food aid can be used in much larger quantities to reduce poverty and environmental assault in the short run and provide sustainable, self-reliant growth in the long run. Conversely, food is currently used as a developmental resource at a grossly sub-optimal level. Fourth, there is a need for integration of food aid and other forms of aid, with food aid constituting a significant but far from dominant proportion of the total. Fifth, there is a potential for feeding programs, particularly for children, to reduce short-run poverty and to add to growth producing human capital. Sixth, there is potential for a large addition to foreign assistance by focussing on two massive programs which are simple enough to catch the imagination of developed country electorates and which provide the leverage for major policy shifts in developing countries.

## THE DIMENSIONS OF HUNGER

### Are Hungry People Massive in Numbers?

Hunger cannot be separated from the more general problem of poverty, and hunger and poverty together are a massive social problem. In 1980, roughly one fourth of the population of the developing market economies did not have the minimum food intake "below which even maintaining health becomes impossible" (FAO, 1985a). If these proportions do not decline, then, even by this unacceptably narrow definition, by 1990, 700 million people in developing countries will have grossly inadequate diets (Table 1). The definition of hunger used here does not even allow sufficient energy to maintain the level of activity required to make a living by physical activity. A more reasonable definition would include over a billion people.

## **Is There a Geographic Concentration of the Poor?**

Of the 700 million hungry people, about 350 million will be in South Asia, 140 million in Africa, and 75 million in China. The remaining 135 million will be about half in Latin America and the rest in East Asia/Pacific and North Africa and the Middle East. Clearly, there is room neither for complacency nor the expectation that the elimination of hunger is either simple or easily achieved.

It is clear that although the number of hungry people in other regions is not inconsequential, the major effort for the abolition of hunger must focus on South Asia, Africa and China, which include 80 percent of the hungry poor. As we will see later, the hungry in the other regions of the world — typically middle income countries — represent a less tractable problem that will require more resources per capita in solution than is the case for the poorest countries of South Asia and Africa. Even the effort to abolish hunger in China is a major problem, but it may be more easily managed than the abolition of hunger in middle-income countries where the resources per capita required for a solution are even greater.

## **Is the World Making Progress in Reducing Hunger?**

The number of people in the developing countries who are so poor as to be grossly undernourished increased by 14 percent from 1970 to 1980 (Table 2). The same percentage increase from 1990 to 2000 would add nearly 100 million people to the group of unacceptably poor. If the extrapolation is done separately for the low-income and middle-income countries, the increase would come to over 200 million due to the increased relative weight of the poor countries. That is indeed depressing news.

But, there is both a challenge and a basis for effective action within those numbers. From 1970 to 1980, the middle-income developing countries reduced the numbers of hungry poor by 44 percent (The World Bank, 1986). It is in the poor countries (per capita income under \$400 in 1983) that the numbers of hungry people grew, by 54 percent, from 1970 to 1980. And, since the

poor countries are much larger in population size than the middle-income countries, their very poor performance "over-balanced" the good performance in the middle-income countries. If we extrapolate those numbers to the 1990-2000 period, the number of poor in the middle-income countries would decline from 169 million to 95 million, a decline of 74 million, while they would rise by 289 million in the poor countries. At that point, 90 percent of the poorest people would be in the poorest countries.

Three observations are pertinent. First, growth is capable of major reductions in poverty. Second, it is in the poorest countries that poverty seems to be out of hand, suggesting a resource scarcity as a major cause of poverty and that intense poverty is increasingly a problem of the poorest countries. Third, it is largely in Africa and South Asia that poverty and hunger are increasing.

Given that normal growth seems capable of bringing about a major reduction in poverty, three questions arise for the 1990s:

- (1) Can the low-income countries be moved onto a growth path similar to that of the middle-income countries in the 1970s?
- (2) Can growth be achieved in such a way that the numbers of poor and hungry in the low-income countries would drop more rapidly than in the middle-income countries?
- (3) Are there policies which could reduce the numbers of poor at a faster pace in the middle-income countries?

To deal with those questions, we need to know more in detail about who the poor are and under what conditions they reside in from the point of view of production. Thus we ask whether the poor are rural based and the extent to which high-yield agricultural technology can reduce poverty.

### **Are the Poor Rural Based?**

The vast majority of the poor in developing countries are in rural areas. The less developed the country, the greater the proportion of the population that is poor and the greater the proportion of the impoverished that live in rural areas. In part this reflects the limited urbanization of the poorer countries but even in Latin America where the magnitude of urbanization and urban poverty is the highest, the incidence of poverty is higher in the rural areas. Available country studies suggest that in Africa,

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about 90 percent of the poor live in rural areas; in South Asia, about 80 percent; and in Latin America about 60 percent. In all, over three quarters of the world's poor live in rural areas (Table 3).

The lesson that emerges is that abolition of hunger must be a rural process since this is where the majority of poor, hungry people are living and where the problem is most acute. The solution, too, must come from within that system. Even for the roughly 125 million of the poor in 1990 who will be urban based, vigorous rural development will reduce the competition for jobs in the major metropolitan areas, reduce rural-urban migratory flows, and thus help to reduce urban poverty as well.

### To What Extent Can High-Yield Agricultural Technology Reduce Poverty?

The Green Revolution has markedly reduced poverty in Asia. Its effects have been direct, through increased agricultural employment, as well as indirect, through low food prices and increased nonagricultural employment stimulated by increased farmer incomes. In the North Arcot region of India, for example, the introduction of high-yielding rice varieties, expansion of irrigated area, and increased fertilizer use increased cropping seasons from one per year to three. While farmers' margins were reduced as costs increased, multiple cropping seasons increased average farm incomes by 169 percent between 1973/74 to 1983/84 and smallholders farm incomes by 28 percent. The indirect linkage effects of that growth on poverty are illustrated by an increase in family income, which includes both agricultural and nonagricultural wages, by 77 percent for smallholder families and by 138 percent for landless workers (Hazell and Ramasamy, forthcoming). Similarly in Bangladesh, in villages with well-developed irrigation and with high rates of adoption of modern rice varieties, household income was 29 percent higher and per capita income was 22 percent higher than in villages without such technology. Most important, the proportion of the population below the poverty line in those technologically-developed villages was lower, 32 percent, as opposed to 47 percent, in the underdeveloped areas. That record is analogous to the decline in poverty in the middle-income countries.

The extent to which the Green Revolution can have a major effect in reducing poverty in the future depends in large part on whether the poor are located in those rural areas where the Green Revolution is likely to have a significant future impact. The Green Revolution has tended to have its greatest impact under ecological conditions already favourable to agriculture. That is because the increased genetic potential is based on the strategy of taking advantage of ecologically favourable conditions. Thus we can usefully rephrase the question in terms of the yield potential of the various agricultural conditions. Moreover, since the density of rural population already supported is a good proxy for the initial productivity of resources and the responsiveness to high-yield varieties, we can rephrase the question further, *vis*: To what extent are the poor concentrated in areas of high rural population density?

The data available for answering this question are sparse, but they do suggest two important conclusions. First, a very large number of the poor and hungry are in high rural population density areas — perhaps 250 million of them. In India, about half the rural poor live on the eastern Gangetic Plain — traversing Uttar Pradesh, Bihar, Orissa, and West Bengal — on barely 22 percent of the total land area of India as a whole. (Centre for Monitoring the Indian Economy, 1982). Add to these the poor population of Bangladesh, on its fertile deltaic area, and we have a very high concentration of the poor in one geographical area which is also very fertile and potentially highly responsive to new technology if adequate infrastructure is provided. Within these high population density areas, the poor are found in disproportionate numbers in the still better areas with greater density. Similarly, in the low-population density areas, the poor are concentrated in the relatively higher population density sub-areas.

In Kenya, three provinces — Nyanza, Western and Central — account for between 64 percent to 77 percent of the rural poor. Population density reflects ecological potential (World Bank, 1983) and it is clear that a large proportion of the poor live in areas of high agricultural potential.

Second, such a concentration of poverty in the high population density areas seems to be the case for the low-income countries, but not so for the middle-income countries, which in turn suggests that as development progresses, poverty is rapidly

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and largely eliminated from the high-potential areas. Thus a major portion of the poverty problem in the low-income countries seems reducible by rural growth of a type we understand well. But, conversely, the remaining rural poverty problem in the middle-income countries is much more intractable. We will draw important programmatic conclusions from this in Part II below.

There is a sound logic for these relations. Highly productive soils in a static technological situation favour expansion of the population to a high density and can support far more people than are needed to till the land. As a result, a landless labourer class gradually develops. The final result is that, compared to low productivity situations, there is a higher average income, but also a large group of intensely poor. The percentage of very poor in the total population tends to be lower in the high potential area; but, because of the high population density, the total population of poor will be very large. With development, these numbers drop rapidly leaving the poor concentrated in the low-potential areas.

The case of the middle- and higher-income countries differs from that of the low-income countries. Known development processes in these areas have lifted the whole population to a much higher level of living and largely eliminated poverty and hunger. Where rural poverty remains it is found in areas that are environmentally fragile, have soils or climates not typically suited for traditional agriculture or are otherwise constrained by their institutional structures.

In Thailand and Brazil, almost half of the poor are concentrated in the Northeast region of each country, which are areas of relatively low population density (Meesook 1979). Poor soil quality is identified to be the major cause of the low productivity and resultant poverty in this sub-region of Thailand (Meesook, 1979). The reasons for the relative backwardness of the Northeast of Brazil also lie embedded in poor soils, vulnerability to droughts, grossly inequitable distribution of land (FAO, 1984b) and piecemeal efforts on the part of the government to develop the region. The Northeast in Brazil "exemplifies the extreme case of a large and persistent pocket of poverty in an otherwise dynamic, rapidly developing country" (Kutcher and Scandizzo, 1981). In Peru, rural poverty is almost completely concentrated in the Sierra region which is a region of

tough mountainous terrain.

Poverty alleviation initiatives in these "difficult" areas of middle-income countries will necessarily be somewhat different from those in the low-income countries. These areas will yield lower rates of return to investment than the high potential, high density areas in poorer countries. Policies in these "difficult" areas must be tailored around the specific features that have caused them to lag behind the rest of the economy.

### **What about Women and Children?**

The situation with respect to women and poverty is highly variable. However, in general, households headed by women do not figure disproportionately among the poor. It seems that single headed households are more prone to poverty but the sex of the single head is not as important a determinant of poverty as are other independent variables.

There is, however, evidence that at least in Asia within poor households, women and children receive a disproportionately small share of their caloric needs. Recent studies in Bangladesh and Papua New Guinea as well as earlier ones for Ghana, Guatemala, and Nigeria confirm that mothers and young children in general receive a smaller share of the family's food in relation to their requirements (FAO, 1985). Moreover, the lot of the mothers and children is interlinked. In Kerala, the participation of women in economic activities had a significant effect on nutritional status of the child (Kumar, 1988). At the same time, the nutritional status of the woman herself seems to be linked to her productive status.

Broad inter-regional contrasts indicate that a lower relative involvement of the females in productive or gainful activities may be an influence in gender bias. The ranking of the regions by activity ratios for women to men reflects the sex ratio and life expectancy rankings (Table 4). Northern Africa is an outlier, possibly because of the additional sociological constraints on women working in Muslim countries.

Additional evidence also confirms that the lot of women and children is worse in South Asia, where the activity ratios of women are lower than in Africa, even though the aggregate

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levels of undernourishment are the same in both regions (Table 5).

It is possible that the burden of infectious disease is higher in Africa or that the reference standards are too high. The differences may also be overstated due to the high incidence of non-traded crops in the diet in Africa which may not be captured in many estimates.

All this, however, argues for explicit, though not exclusive, attention to programs that address the special nutritional problems of women and children and this may be especially true for South Asia.

In summary, the poor and hungry are concentrated in the poorest or low-income countries, although their numbers are still large in middle-income countries. They are rural, and, in low-income countries, are disproportionately located in high-agricultural potential and high population density areas. Children are disproportionately represented among the poor. Thus, poverty alleviation programs must be rural-based, concentrated on the low-income countries and emphasize particularly the children. There is considerable scope for rapid progress in raising more than 250 million of the poor out of hunger in high-potential rural areas of low-income countries.

## PART II: A PROGRAM TO REMOVE HUNGER

### What are the Basic Principles Driving An End to Hunger?

There are four basic principles that will be necessary to keep in mind if we wish to remove hunger from the world.

First, growth can and does bring about rapid reduction in hunger. Of course, the more growth occurs where the poor are located (rural areas), the more it increases food production (the critical consumption item of the poor) and the more employment it creates (the basic source of income of the poor) the better. Thus, all the various complex policies needed for an agriculture driven, employment-oriented growth process need to be

pursued vigorously. Those processes of technology generation and input supply are well underway even in Africa. The efforts to expand them and to fine tune them must not slacken. Fine tuning includes increasing sophistication with respect to the interaction and the appropriate balance of private and public sector activities in these complex, decentralized processes of rural, employment-oriented growth.

Second, agriculture grows and has large employment linkages only when it is fully integrated into the total economy by the same system of roads, communications, and electric power that are so essential to urban growth. In the low-income countries in particular infrastructure is so inadequate as to leave half or more of the rural areas outside the processes of growth. It is in those unserved areas where poverty is the greatest.

Third, the concentration of the hungry poor in high-potential areas of poor countries — while the formerly hungry poor have been raised out of poverty in such areas in the middle- and high-income developing countries — tells us that there is a major resource constraint to reducing hunger in the poor countries. From the second point above, we know that this resource constraint is reflected particularly in deficient rural infrastructure.

Fourth, because economic growth in the middle-income countries has been and continues to be so effective in reducing poverty, it is important that this growth be maintained. However, the resources needed to reduce poverty in these countries are greater per person because poverty is now concentrated in the still rural but low-potential areas where returns to investment are lower and risks are higher. Continued rapid growth elsewhere in the economy will reduce those numbers in poverty, largely by out migration. Resource transfers from the wealthier countries can greatly accelerate the reduction of poverty by allowing large investments in these areas to be undertaken even as investment in accelerated growth continues for the rest of the economy.

Thus, substantial incremental increases in allocation and utilization of resources could greatly accelerate the process of removing hunger both in the low-income and in the middle-income countries.

## What Form Should a Major Incremental Aid Program Take?

Now is the time for a major action program to end hunger. For it to be effective, it must be:

- (1) Large enough to have an impact. Increased foreign aid to eliminate hunger must be mobilized in programmatic and impact terms.
- (2) Focussed enough to have visibility, clarity, and credibility. Increased foreign aid must have a *measurable* impact: first on the instruments of poverty reduction, and then on the end objective.

Because so much progress has been made on broad processes of development, such a formal program is now feasible, while it would not have been so 20 years ago. The focus is a response to the need for clarity and credibility in a current world in which much else is being done. It is not a reflection that development can be defined as involving only one or two efforts. It recognizes that a massive foreign assistance effort that is tightly focussed operates in a context in which many other efforts are proceeding and improving. In particular, technological progress must continue in agriculture, particularly in the poor countries; and the growth of the nonagricultural sector must move ahead, a process facilitated by growth in agricultural incomes.

There are two areas of investment which fulfil our major criteria: (1) To be programmatically delineable; (2) To have a major monitorable impact on growth that will make removal of hunger self-reliant; (3) To sharply and measurably reduce hunger in the short run while self-reliant growth gets underway; (4) To be designed to counter the malnutrition bias against children and women (especially important from the point of view of social integration, the quality of human capital, and the increasing educational skills the economy will demand); and, (5) To have substantial political appeal in major donor countries.

The two areas are rural public works and large-scale feeding programs, of which school lunches are central. In the past, foreign aid has supported programs of this kind, but typically they have been episodic, geographically confined, and only incidental to the general economic growth policies. We see them

as integral parts of an onward-looking growth-based strategy that recognizes the crucial interlinkages in the economy.

The scale required to largely end hunger in five years (which would provide sufficient time to build up the requisite institutional structure) and make it self-reliant in 15 to 20 years (which would provide the added time for the investment in roads, institutions, health, and education to pay off) would be on the order of an incremental \$20 billion per year — \$15 billion for rural infrastructure and \$5 billion for feeding programs. About one-quarter or \$5 billion would be in the form of food aid.

### **What are the Major Sources of Lack of Credibility of Such a Program?**

Do rural public works provide large, long-term employment multipliers? For the high-potential rural areas of poor countries, the answer is clearly documented through comparison of poor and middle-income countries (the latter have largely eliminated poverty in high-potential areas); and by comparisons of good and poor infrastructure areas in poor countries. Poor countries underinvest in these areas because of the large resource requirements and some continuing doubt about the size of the economic payoff.

Can a massive program of rural infrastructure investment be developed in a short period of time? In answering this question, the problems should not be underestimated. There are five problems and each is more uncertain than the first question of the returns to infrastructure for which the answer is now clear.

First, a massive infrastructure program requires decentralized administration not only to invest but to maintain as well. Ideally, that would be through local governmental bodies. However, true decentralization recognizes that instruments will vary greatly from place to place. The low-income Asian countries have now demonstrated a fully adequate level of capability to build and maintain such capacity and a build-up over a few years would be appropriate. The middle-income countries clearly have such institutional capacity. What about Africa, and to a lesser extent politically backward areas of Asia, such as Bihar state in India? Building such capacity and bringing the political commitment, would be a major element of

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the effort. A large-scale effort such as this could demand a focus on efficient management that would push the process forward in this area. The benefits to overall development of marshalling such commitment to decentralized development would be immense.

Where national capacities for massive infrastructure investment are limited, it would be useful to consider use of private voluntary organizations, both national and foreign. They could certainly play an important role in Africa as they have done already in Asia. Use of these agencies would allow one to get started on a large scale even as efforts were initiated to build up the national capacities. It should be reiterated that development of a national capacity at the local rural level to provide rural public works is a highly desirable element of both economic and political development.

The second major problem involved in a massive increase in rural public works programs is a donor problem. It is the problem of co-ordinating food aid and financial aid. Historically, these two areas have been kept relatively rigidly separated. Food aid has been seen not so much as a developmental input, but as a relief mechanism simply to provide food for poor people (or for dumping surpluses). In the thrust discussed here, we are talking about food aid as a developmental device. Rural infrastructure is something which is desirable in its own right. There is underinvestment in rural infrastructure in the developmental process which means that there is an underinvestment in employment of rural labour and hence an underutilization of food as a factor of production.

Now this process must be turned around. One must start with the assumption that if hunger is to be removed, at least in high-potential areas, there must be a massive investment in rural infrastructure. This means that the institutions with financing and project planning capacity, such as the World Bank and the financing part of bilateral foreign assistance agencies, must plan major rural infrastructure projects on a massive scale. They must delineate the various resources needed: the investment in cement culverts, the investment in the hard surface on the road, and investment in gravel, and of course the investment in labour. The investment in labour then must be converted into the food requirements. If labour will represent 50 percent of the input into a project and the labourers will spend 70 percent of their

incremental income on food, then the food component is 35 percent. There must then be co-ordination with the food aid agencies to see that the additional food aid will be provided either in the form of Food-For-Work project food aid if that is appropriate, or perhaps, as program food aid which is just simply putting food into the market and using the proceeds for financing labour costs. On this, as elsewhere, considerable flexibility will be required. The magnitude and the complexity of the task is suggested by the likelihood that major developmental agencies would have to reorganize and restaff to suit such a thrust. The suggestion is major; it is not a bit more of what is already being done.

Why do we translate this thrust into food aid and not simply, as with other resources, provide the financing to purchase the incremental food which is necessary? That is because food aid tends to be substantially, 80 percent according to World Food Programme surveys, incremental foreign assistance which is based on a major additional constituency. Thus when we talk of a \$20 billion incremental foreign assistance program to abolish hunger, we can think of it in terms of \$5 billion or so of that as not being as politically costly as the remaining \$15 billion. Thus, we want to keep the two elements co-ordinated but separate.

If food aid and financial aid are to be co-ordinated, then the efforts now going on between the World Food Programme and the World Bank must be increased in order to make the financing of infrastructure a central element. IFAD could perhaps play a role in this process. Bilateral agencies, such as USAID, also need to co-ordinate their food aid with their financial aid programs. To repeat, one needs to start with the development process of building infrastructure and then trace that back to the food requirements.

The third barrier to the program delineated, is the acceptability to developing countries of large additions of food aid. Food aid has a bad name. It is seen as part of the worst kind of dependency on developed countries. This attitude is particularly noticeable in India, which was sharply burned in 1968 by food aid upon which it had become very dependent, being put on a month-by-month shipping basis. Thus the problem is very real.

There are a variety of ways to make increased food aid for

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the purposes indicated here acceptable to developing countries. First, it needs to be set forth as a step towards self-reliant growth. It should be seen as a bridge loan — food being received now in order to build the capacity to produce more food in the future. There is a significant possibility for acceptability of this approach by developing country officials. It must be clear that massive rural infrastructure and human capital will be built, requiring large increases in food consumption above present levels in low-income countries for developmental purposes.

However, something more needs to be done than simply to indicate food aid as a step towards self-reliant growth. The real problems of reliability and variability must be dealt with. Food aid tends to be highly unreliable. Indeed, it tends to be in shorter supply when there are world shortages of food, and in longer supply when there are surpluses. This is the opposite of what developing countries need. There seems little hope that the developed countries will themselves become reliable funders of food aid. Thus there must be other mechanisms for dealing with this problem. The most obvious one is to broaden the scope of the International Monetary Fund Cereal Facility so that it provides guaranteed low-cost loans to deal with the needs arising from sudden increases in commercial cereal imports. Thus, if a country was suddenly cut off from the food aid component of the package which was put forward here, it would have immediate recourse to the International Monetary Fund. The IMF must also be brought into discussions of how to reduce hunger — not in a negative way to show necessary structural adjustment, but in a positive way, to innovate institutional support, within its mandate, of important, growth-oriented, hunger reducing efforts. Further, there needs to be an explicit statement by the developed countries (particularly the U.S. and the EEC) that they will manage their acreage reserves and their food stocks in such a way as to increase the reliability of their commercial supplies as well as food aid. If being a reliable supplier of food aid in the short run could be seen as building commercial markets in the long run, this would elicit a favourable response.

This brings us to the fourth problem with respect to the program, and that is the willingness of the food aid donors to increase their food aid substantially. The program delineated here would call for a tripling of food aid. That is adding 20

million tons to the current approximate 10 million tons of food aid. The lobby in developed countries for food aid is basically present — farmers, who are interested in larger markets, and the public generally who would like to help alleviate the worst form of poverty. What is lacking is the conviction by farmers that food aid represents truly incremental markets; and by those concerned with poverty reduction that it generally brings about a reduction in poverty. We have laid out the basis for carrying these points. They need to be driven home.

The fifth problem that arises is with respect to the low-potential agricultural areas. We can demonstrate clearly that a full one-third of the hungry poor in developing countries are in high-potential areas. What about those in urban areas and those in the low-potential areas? In the low-potential areas it needs to be recognized that the impact of a particular expenditure on self-sustaining growth will average out to be lower than in the high-potential areas and will be much riskier. Despite the lower returns there is a three-fold argument for such an effort for the low-potential areas. First, there is always a chance that some of these areas will turn out to have high-potential, development proceeds, as demand structures diversify, and infrastructure is provided. Second, if these are truly areas of poor and perhaps even nonexistent potential for local growth, then their populations need to be integrated into the larger society. Many of these people will have to migrate, as they may already be doing on a large scale. They will not be able to do so productively without education. Education requires the institutional development of schools which in turn require infrastructure if good teachers and administrators are to be brought to such areas. Infrastructure provides the means to gradually integrate those areas into the larger economy. Third, with large numbers of poor in such areas, how else can we improve their human capital, give them relief in the short run, and prepare them to move out other than through rural public works programs. There is a large history of such efforts, which have worked successfully of which perhaps the most striking is the Employment Guarantee Scheme (EGS) in the state of Maharashtra — a state that has large areas of relatively low-potential resources.

Perhaps special justification is needed for large-scale

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infrastructure investment in the low-potential areas of the middle-income developing countries. These are countries which in some respect should be able to finance those efforts themselves. As pointed out above, however, it is very important that high overall growth rates be maintained in the middle income countries, as that is the long-term solution for a high proportion of the poor in the low-potential areas who will migrate to the rapidly growing high potential areas, particularly the urban areas.

Finally, it would be reasonable to recognize that the low-potential areas are areas of particularly severe environmental degradation either because of low rainfall or steep topography, or because of the assault of poverty as growing populations claim fragile resources in a context where technology cannot raise the productivity of existing resources. It therefore would be useful to give heavy emphasis to environmental programs. Such emphasis would be in part productive, providing the basis for increased incomes from forestry and related activities. They might also involve substantial water conservation efforts through small tanks as well as through bunding and terracing. As a result of the widespread worldwide concern with environmental problems, such efforts might be highly favoured by developed countries even though the discounted rate of return on such investment would be lower than in the high-potential areas.

The environmental thrust would be major and two-fold. First, accelerated growth of the high potential areas, which generally are areas that can manage high input levels and are not environmentally fragile, would help reduce the pressure in the environmentally fragile areas. Second, in those latter areas major programs of environmental support would be required and aided in large part by food aid.

### Feeding Programs

It needs to be recognized that, as the employment multipliers and growth linkages work from agricultural growth, it will be possible to increase employment sufficiently rapidly so that the human capital with respect to the health, nutritional status, and education of the poorest members of the society will gradually

become limiting to increases in employment. It behooves us to begin immediately to improve that human capital so we can see those employment opportunities growing rapidly in the next five, ten, fifteen, or twenty years.

It is clear that the nutritional status of infants and children is particularly poor in low-income families. Low-income families must allocate a disproportionate share of the limited food supply to the principal wage earner, who tends to be the male household head. Women and children suffer. Further, in very poor households, the value of children's labour in tending cattle, scavenging, and other low rate of return activities tends to be greater than the discounted present value of the schooling they might have obtained. It is common in developing countries that offer universal primary education to have practically all children start school in rural areas, but a very high percentage drop out as the value of their labour begins to increase as they approach age 10 or thereabouts.

School-feeding programs or noon-day meals as they are called in some countries are doubly desirable. They improve the nutritional status of children of school age, and they provide a return to those children that can be fully competitive with the alternatives which they can earn outside of school. The effect on school attendance is dramatic. Thus one is building human capital directly by feeding these children, and indirectly by keeping them in school.

With respect to feeding programs, a number of criticisms must be dealt with promptly. First, it is argued that the gross addition to consumption by school children through a school-feeding program is greater than the net additions, that is, they get somewhat less food at home. This should be seen as an advantage not a disadvantage. It means that the nutritional benefits are being spread more broadly in the family. If this increases the ability to work of the male members, so much the better. Obviously, if the female members are improving their already low-standard of food intake that is highly desirable as well.

Second, there is the argument that for poverty reduction there are higher rates of return programs than school feeding. For example, feeding of preschool children is generally shown to have a bigger impact per dollar spent than feeding of school-age children. The response to that is simple. The returns to school-

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feeding programs are very high. However, if the returns are higher in other activities, they should be done. We can here make the point that with these two simple thrusts of feeding programs and rural public works, with each receiving massive resources, there will be more resources available for countries to make fine tuning decisions about other programs which are complementary. Preschool-age feeding programs would undoubtedly be a very important one of these.

The third problem with feeding programs that must be faced up front is that there are substantial administrative costs. For example, in Tamil Nadu, where resources were quite short for running a school-feeding program, the school teachers have operated the program. This has reduced the amount of teaching done. The response to such a situation is simple: Recognize the administrative costs, add them into the total program, and have them reflected in the budget numbers. In the Tamil Nadu case there would be a further advantage in that while the teachers are teaching, lower paid very poor women could be provided employment.

In India, the state of Tamil Nadu runs a very effective school-feeding program and the state of Maharashtra runs a very effective rural public works employment program. It is notable that there is no way that either state could afford both of these programs. How better to make the point of the need for substantial additional resource flows if we are serious about removing hunger in the near future.

### Cost

At this stage only a notional cost calculation can be provided. If we take the *FAO Fifth World Food Survey* measure of the dietary gap, in 1979-81 and inflate it to 1990 (estimated 700 million people in hunger), 20 million tons of cereals would be needed to fill the gap. The monetary cost of the food would be about \$4 billion. Assuming an income elasticity of demand for food to be 0.6, an incremental income of \$6.6 billion would be needed (which implies, therefore, that other consumption goods, including higher value food of a value of \$2.6 billion would be required). Assuming that the labour requirement in public works programs was 33 percent, about \$20 billion in total would be needed. That

leaves the food component at 20 percent of total costs — not an unreasonable proportion if the object is growth. The food component in rural public works is estimated at between 15 and 40 percent. School feeding would have a higher food proportion but other infrastructure efforts might be less. If one takes the Maharashtra Employment Guarantee Scheme and the Tamil Nadu school feeding programs and run each on a scale to cover all the poorest people in the world, the cost would be \$15-\$20 billion.

The proportional breakdown of the sum by geographic area would be:

	Billion US\$
Africa	4.0
South Asia	10.0
East and Southeast Asia	0.8
Latin America	2.0
Near East/North Africa	0.8
China	2.0

The tonnage breakdown would be the same for the 20 million tons of cereals.

The major problem area in absorbing that quantity would be Africa, where a major administrative effort would be needed.

The division among donors would be complex. A large number of variations are possible. One suggestion would be to split the additional aid required among the donors in the proportion they have been operating at in the 1980s. For example, the U.S. would be expected to provide an increment of 20 percent or \$4 billion, half of which would logically come from increased food aid. If Japan also provided \$3 billion, in financial aid only, the average share of food aid in the aid package of the 2 countries would be 25 percent. The \$2.0 billion of financial assistance from the U.S. would require reallocation of 10 percent of foreign aid away from security supporting assistance towards developmental assistance — a shift fully consistent with the current shifts in geo-politics.

### Implementation

A massive program of \$15 billion a year for rural public works and \$5 billion for feeding programs will require major donor co-

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ordination. It would seem logical that the World Bank and the World Food Programme should join together to become the lead agencies for such an effort. They would then demonstrate how project-oriented development projects of rural public works, school attendance, or school-feeding programs, could be developed as development projects and financed in part from food aid and in part from direct development resources. The major multilateral agencies are currently not structured to accommodate a major innovative program of this type and there would need to be a high-level meeting to discuss the full range of problems. At a very early stage, the President of the World Bank and the Director of the World Food Programme would have to come together. Their principal operating personnel would need to be brought on board.

The effort laid out is massive. Each country would have to give a primary concern to rural public works and to human capital involved in feeding programs. They would have to have a program for completely covering their country with rural roads and related infrastructure, for employment in the low-potential areas on environmental and infrastructural projects, and for the massive feeding programs which are indicated. Many countries already have the structures in place but they would have to be enlarged. Some countries would have to institute them *de novo*.

### Monitoring

A monitoring process for the foreign assistance donors and the countries receiving the assistance would be required given the scale of the effort to be undertaken. This process would require a monitoring of the inputs — measurement of the roads built, the numbers of people fed, school attendance — as well as monitoring of the output — numbers of people who are lifted out of poverty in the short run by the direct effect of these projects, and the growth of employment in the longer run. The standards of monitoring would have to be reasonable, recognizing administrative cost and inefficiencies.

### Conclusion

We have attempted to make the case that such a massive effort at ending hunger and eradicating poverty, as outlined here, makes

sense only if both development of human capital and rural infrastructure are seen as absolutely central elements in the development process. The program as set forth here is fully incremental to existing efforts. It is a simple impact-oriented program which can appeal to donors and recipients alike and provide a focus for both raising resources and for using them effectively. But, the program faces the reality that many other efforts must proceed concurrently if hunger is to be eliminated. Furthermore, the politics of foreign aid and national allocations have determined much of the present allocational pattern and it seems unreasonable to expect major changes to occur in the future.

However, if the current quantity and allocation of foreign aid is in equilibrium, why is it possible to make a major increment at this time. Two changes are underway. First, changes in the cold war status may call for reallocation of at least that part of the foreign aid expenditure that is effectively military-security oriented currently, to a redefined sense of security interests. Second, a clearly delineated hunger eradication objective can mobilize and strengthen new constituencies for foreign assistance. The Ending Hunger program is an effort to do just that.

Could there be at least some reallocation of resources in the hunger eradication direction? One should hope so. After all, the Ending Hunger program is a growth program and one which relies less on investment in highly capital-intensive industry and inefficient megalopolis. Some efficiencies and reallocations are quite possible but it is certainly difficult to see more than one third of the share from reallocation. It is particularly important to recognize that in such a program with a clear simple focus on large scale initiatives much else remains to be done and must be expanded — especially agricultural technology on the direct production side, and targeted programs to infant health and health generally on the direct human welfare side. Indeed, returns to those programs will be greatly enhanced by the two prongs set forth here.

## NOTES

1. This paper draws substantially on an earlier internal publication on *Ending Hunger and Poverty* by John W. Mellor and Jyoti Shukla. I am grateful to Rajul Pandya-Lorch as well as to other colleagues at IFPRI for major contributions to this and earlier drafts.
2. The criterion used for undernourishment is 1.4 times the Basal Metabolic Rate. This is one of the criteria the Fifth World Food Survey uses for energy requirements "below which even maintaining health becomes impossible" and is the activity associated with eating, washing, dressing, etc., as well as minimum movement and other forms of activity needed for communication.
3. Ten percent of the landowners representing only one percent of the labour force hold 70 percent of the land. Such a distribution of land has its inherent inefficiencies of unused land, while labour is underemployed.
4. When mothers are not in the labour force increases in wage income showed no incremental effect on child nutrition. For those mothers that are in the labour force it is their own income that primarily accounts for the positive effect of increased income on improved child nutrition.

**Table 1**  
**Projected incidence of undernutrition, 1990<sup>a</sup>**

	<b>Total Countries</b>	<b>Low-Income Countries</b> (numbers in millions) [percentages in brackets]	<b>Middle-Income</b>
Africa	137 [20]	99	38
South Asia	350 [50]	350	-
East Asia/Pacific	31 [ 4]	-	31
Latin America	72 [10]	2	70
Near East	34 [ 5]	4	30
China	76 [11]	76	-
<b>Total</b>	<b>700 [100]</b>	<b>531</b>	<b>169</b>

<sup>a</sup> The estimated incidence of hunger in 1990 is calculated using the proportions undernourished in 1979-81 as reported by the Fifth World Food Survey and the projected population for 1990 as reported in the World Development Report, 1988. The breakdown of the Far East into South Asia and East Asia/Pacific is on the basis of the distribution of poor in the two areas as given in *Poverty and Hunger*, World Bank, 1986. Division on the basis of low income and middle income is by the distribution of population in the two groups in each region. Incidence of poverty among low-income countries is assumed to be double that in the middle-income countries and this proportion is applied to each "region-specific" number. Low-income countries are those with per capita income of \$400 or less in 1983. Given the various assumptions in the calculations both in the original estimates and the projections, the numbers should be seen as indicative not definitive.

**Table 2**  
**Changes in the prevalence of energy deficient diets,**  
**1970 to 1980<sup>a</sup>**

	Percentage Change in Share of Population	Percentage Change in No. of People
Developing Countries <sup>b</sup>	-2	+14
Low-Income	+3	+54
Middle-Income	-9	-44
Sub-Saharan Africa	+4	+49
East Asia and Pacific	-14	-57
South Asia	+2	+47
Middle East and North Africa	-14	-68
Latin America, Caribbean	-4	-21

<sup>a</sup> World Bank, *Poverty and Hunger* 1986. The norm used is a calorie level which the World Bank defines as the benchmark below which there is 'not enough intake to prevent stunted growth and serious health risks.' The FAO in the Fifth World Food Survey shows somewhat different trends in that the proportions of hungry people declined in all regions, though for the least developed countries as a group the proportions increased. It should be noted that not only is the FAO methodology different but their definitions of the regions are also not identical to the World Bank, e.g., the FAO does not separate out the poorer regions of South Asia from South East Asia aggregating them together as the Far East so that the disparate trends within the region are obscured. Nor do they separate out Sub Saharan Africa from North Africa. Since we are interested in separating out the economically different regions, we use the World Bank trends. FAO reports over the decade of the seventies, the number of people getting insufficient diets declined by 18 percent while it increased by 19 percent in the low-income countries. From the policy point of view, these are extremely important trends. However, the authors are aware that typically the reduction in the numbers of poor people are derived by extrapolating uniformly an aggregate increase in income over the whole income distribution. Further, disaggregated research is needed to explore the link between income growth and poverty reduction.

<sup>b</sup> Does not include China.

**Table 3**  
**Rural-urban distribution of poverty and the estimated number of people living in areas of high potential, 1990<sup>a</sup>**

	Total	Urban	Rural	Agricultural Potential	
				High	Low
Africa	137	14	123	61(50)	62
South Asia	350	70	280	140(50)	140
East Asia	31	5	26	6(25)	20
Latin America	72	29	43	11(25)	32
Near East	34	10	24	11(33)	23
China	76	-	76	26(33)	50
<b>Total</b>	<b>700</b>	<b>118</b>	<b>548</b>	<b>255</b>	<b>327</b>

<sup>a</sup> The distribution by rural and urban classification is based on a survey of country poverty studies. All poverty in China is grouped under rural poverty. There are indications that there is little malnutrition in urban areas but this should not be seen as a statement on the absence of poverty in urban China, rather a reflection on the paucity of definite data. All numbers are tentative and should be seen as merely indicative.

**Table 4**  
**Gender bias in survival and female earning activities<sup>a</sup>**

Region	Sex Ratios 1980 f:m		Life Expec. Ratios 1980-5 f:m		Activity Ratios 1980 f:m	
	Values	Ranks	Values	Ranks	Values	Ranks
Northern Africa	1.024	1	1.071	1	0.645	1
Eastern and SE Asia	1.008	2	1.066	2	0.610	2
Western Asia	0.940	4	1.052	3	0.373	3
Southern Asia	0.935	5	0.989	5	0.336	4
Northern Asia	0.986	3	1.050	4	0.158	5

<sup>a</sup> Sen, Amartya. *Africa and India: What Do We Have to Learn from Each Other?* WIDER Working Paper No. 19, 1987.

**Table 5**  
**Indicators of malnutrition<sup>a</sup>**

	Children Under 5 Year					
	Low Wt/Age		Low Wt/Ht		Low Birth Wt in Women	Anemia
	m	%	m	%	(%)	(%)
Africa	22	26	4	7	14	40
Asia	115	54	33	16	19	58
Latin America	9	18	2	4	10	17

<sup>a</sup> *Fifth World Food Survey*, FAO, 1985.

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