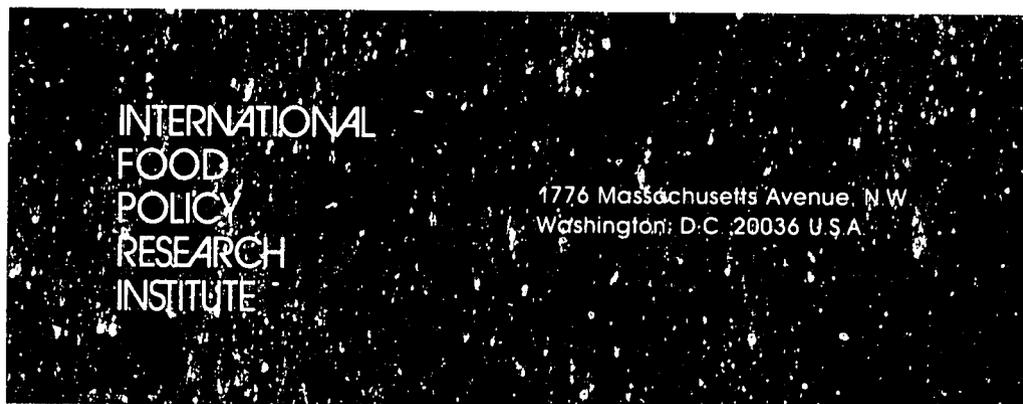


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The new political economy of food and agricultural development

John W. Mellor and Richard H. Adams, Jr

This paper emphasizes the benefits of an agricultural strategy of development in the Third World. It begins by analysing the close links between food and employment in the development process. This is followed by an examination of the important contribution that technological change in agriculture can make to the growth process, and the role of politics and the state in influencing such a pattern of development. It concludes that an agricultural strategy of development can increase domestic food production at the same time that it stimulates an equity-oriented pattern of economic growth in the Third World.

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We live in a paradoxical world. In the developed countries of Europe, Australia and the USA food surpluses continue to pile up at record rates. In these countries agricultural production is frequently subsidized by the state, and farmers are often paid *not* to produce more food. However, in the developing countries of Africa, Asia and Latin America the picture is quite different. In these countries food deficits – not food surpluses – are the recurrent theme, and farmers often labour under the burdens of high effective rates of taxation and low levels of support services from the public and private sectors.

Given these circumstances, it might be tempting to suggest food trade as the easiest solution to the world's food problem. Shipping food from more developed 'surplus' countries to still developing 'deficit' countries might seem to represent the easiest solution to the world's food problem.

Such a simple-minded solution would, however, neglect one very important factor, namely, the lack of purchasing power in many Third World countries. Hundreds of millions of poor people in Africa, Asia and Latin America now lack the means to buy more food at *any* price. These poor people suffer from the disabilities caused by a lack of income and employment opportunities. Thus, increased food trade between the developed and developing countries of the world must be coupled with efforts to raise the purchasing power of low-income people throughout the Third World.

In this context it becomes advisable for many developing countries to place a far greater emphasis on agriculture than they have in the past. In most cases increased agricultural production can play several important roles in the development process. First, it can help increase overall domestic food supplies. Second, it can boost overall rates of economic growth. Third, as part of accelerated growth, it can help increase the poor's access to expanded food supplies. Accelerated agricultural growth increases the income and employment opportunities of rural

producers. This is important inasmuch as the bulk of the rural population in many developing countries lives in the rural sector. Expanded opportunities for these people therefore helps to facilitate broad-based employment and income growth in other sectors of the economy.

The purpose of this paper is to emphasize the benefits of an agricultural strategy of development in the Third World. It begins by analysing the close links between food and employment in the development process. It then examines the important contribution that technological change in agriculture can make to the growth process and the role of politics and the state in influencing such a pattern of development. The paper concludes that an agricultural strategy of development can increase domestic food production at the same time that it stimulates an equity-oriented pattern of economic growth in the Third World.

Food demand and the structure of economic growth

In the developing world two principal forces tend to fuel a steady rise in the demand for food: population growth and per capita income growth. The manner in which these two dynamic forces interact is illustrated in Table 1, which depicts five stylized phases of food demand and economic growth.

Row one of the table shows an early stage of economic growth in which people are very poor, desperately wishing to consume more food, yet unable to do so because of low incomes. In this stage poverty causes high death rates and, hence, only modest rates of population growth. The result is a 3% or less growth rate in the effective demand for food – a rate that can be met by more effort on a slightly expanded land base.

As development occurs, the population growth rate increases. But, even more importantly, income begins to grow rapidly and the two together increase the growth rate of demand for food by some 30% over the earlier phase. Such a rate of growth in food demand exceeds all but the most rapid rates of food production growth. Thus, a high rate of technological change in agriculture is needed in this stage of development (row three of table).

However, in recent years even those countries with the most impressive rates of technological change in agriculture have been unable to meet their rates of food demand growth. For example, the 16 developing countries with the fastest growth rates in basic food staples production over the period 1961–76 collectively more than doubled their net food imports (in tons) during this time period.¹ These data demonstrate that most countries in the high growth, medium income stage of development find it necessary to rely upon food imports to meet a portion of their surging food demand growth.

¹Kenneth L. Bachman and Leonardo A. Paulino, *Rapid Food Production Growth in Selected Developing Countries*, Research Report 11, International Food Policy Research Institute, Washington, DC, USA, 1979.

Table 1. Comparison of growth of demand for agricultural commodities at different stages of development, hypothetical cases.

Levels of development	% of population in agriculture	Rate of population growth	Rate of per capita income growth	Income elasticity of demand	Rate of growth of food demand
Very low income	70	2.5	0.5	1.0	3.0
Low income	60	3.0	1.0	0.9	3.9
Medium income	50	2.5	4.0	0.7	5.1
High income	30	2.0	4.0	0.5	4.0
Very high income	10	1.0	3.0	0.1	1.3

Source: Adapted from John W. Mellor, *The Economics of Agricultural Development*, Cornell University Press, Ithaca, NY, USA, 1966, p78.

In the later stages of development, of course, population growth rates decline and growth in income begins to have little effect on the demand for food. Meeting food demand growth then becomes more manageable, particularly since by then, food production growth rates have become institutionalized at high levels. It is in this stage that food imports become unnecessary and agricultural surpluses begin to accrue.

In the modern world, many developing countries are currently in the high-growth, medium-income stage of development. They are, therefore, facing rates of food demand growth that severely strain local production capabilities.

According to the data in Table 2, 42 developing countries, containing some 1800 million people, averaged annual growth rates of 3.0% or better in GNP per capita during the period 1966-80. In these countries growth in the rate of food consumption far exceeded growth in the rate of domestic food production. In the fastest growth countries (over 5% annual increase in GNP per capita), the rate of food consumption growth was almost twice that of the rate of food production growth. This is, of course, due in part to the inclusion of a number of oil-exporting countries in this fast-growth category. During the period 1966-80 oil-exporting countries experienced a tremendous rate of growth in GNP per capita relative to their stages of agricultural (and industrial) development.

A close reading of the data in Table 2 suggests that as GNP per capita increases, the ability of domestic agriculture to meet food demand growth falls. For instance, the last column in Table 2 shows that as GNP per capita rises, the food production growth rate expressed as a percentage of the food consumption growth rate declines rapidly. The only exception to this finding is the slowest-growth countries (less than 1% annual GNP per capita increase).

Food, employment and technological change in agriculture

The surging rate of food demand growth in the Third World must be met largely through technological change in agriculture. Technological inputs – such as high-yield seeds, fertilizers and irrigation systems – play a critical role in virtually all modern methods of agriculture. For example, the adoption of new agricultural technology in India helped increase cereal yields 29% between the periods 1954/55 to 1964/65 and 1967/68 to 1977/78. Agriculture is particularly dependent on improved technology for growth because of the limited capacity to expand land areas.

Table 2. Growth rates of population, staple food production and consumption in developing countries, 1966-1980.^a

Country group	Population		Average annual food production growth rate (1966-80)	Average annual food consumption growth rate (1966-80)	Production growth rate as % of population growth rate	Production growth rate as % of consumption growth rate
	Growth rate (1966-80)	Millions (1980)				
Developing countries ^b	2.41	3295	2.94	3.25	122.1	90.5
<i>By GNP/capita growth</i>						
< 1%	2.62	354	1.50	2.08	57.2	72.0
1-2%	2.42	1103	2.93	2.85	121.3	102.9
3-4%	2.33	1584	3.41	3.69	146.6	92.5
5% and over	2.57	253	1.62	3.24	63.0	49.9

Notes: ^a 'Staple Foods' include cereals, roots and tubers, pulses, groundnuts, bananas and plantains. Rice is in terms of milled form.

^bDeveloping countries include a total of 105 Asian, African, Middle Eastern and Latin American countries. The People's Republic of China is included here.

Sources: Population data from UN sources; production data from FAO, 'Production' tape, Rome, Italy, 1983; and consumption data from FAO, 'Supply utilization account' tape, Rome, Italy, 1981.

Technological inputs stimulate agricultural output by raising crop yields. Throughout the world, even in Africa, the rate of growth of the cropped area has declined sharply in recent years. Thus, an ever-increasing proportion of the food needed to feed the world must come from increased yields per unit of land.

In the past two decades crop yields have, in fact, become the main source of food production growth in the developing world. Between 1961 and 1980 output per hectare of major food crops in the developing world rose by 1.9% annually, and accounted for more than 70% of total food production growth (Table 3). During this period, increases in the harvested area averaged only 0.7% a year, and contributed the other 30% of total production growth in the Third World.

In addition to boosting crop yields and improving overall agricultural production, technological change in agriculture can also help stimulate broader patterns of rural and economic change. In most situations, technological change in agriculture can play three central roles in the overall development process.

First, it is important to recognize that food and employment represent two sides of the same coin. In the developing world low-income people typically spend the bulk of additional income on food. As shown in Table 4, average budget shares for food among the poor range between 50% and 80%. Thus, any strategy of development that leads to a rapid growth in the employment and income of the poor, also leads to a large increase in the effective demand for food. If more food is not forthcoming, food prices will rise, the real cost of labour will increase, and investment will swing to more capital-intensive processes.² Thus, any strategy of development that entails more employment for the poor will also require the wage goods – particularly food – to support such economic growth. In this sense, a high employment policy is also a high food demand policy.

Second, technological change in agriculture has important employment and income linkages with the rural non-farm economy. Technological change in agriculture raises the incomes of landowning farmers, who spend a large proportion of their new income on a wide range of non-agricultural goods and services. In Asia, for example, farmers typically spend 40% of their increments to income on such locally-produced, non-agricultural goods and services as textile products, transportation and health services, and housing.³ The small enterprises that produce such goods tend to be far more labour intensive than any fertilizer factory or steel mill. They thus provide the rural poor with a whole spectrum of new non-agricultural employment opportunities.

²John W. Mellor, *The New Economics of Growth: a Strategy for India and the Developing World*, Cornell University Press, Ithaca, NY, USA, 1978.

³Peter Hazell and Ailsa Röell, *Rural Growth Linkages: Household Expenditure Patterns in Malaysia and Nigeria* Research Report 41, International Food Policy Research Institute, Washington, DC, USA, 1983.

Table 3. Average annual growth: rates of production, area harvested, and output per hectare for major food crops in developing countries, 1961–80.^a

	Production ^b (%)	Area harvested (%)	Output per hectare (%)
Developing countries	2.6	0.7	1.9
Asia (including China)	2.8	0.4	2.4
North Africa and Middle East	2.5	1.1	1.4
Sub-Saharan Africa	1.6	1.5	0.1
Latin America	2.8	1.5	1.3

Notes: ^aIncludes cereals, roots and tubers, pulses and groundnuts. Rice is in terms of milled form. ^bAnnual growth rates of production may differ slightly from those shown in other tables, because of the differences in time period and because the data here exclude the outputs of bananas and plantains, for which estimates on the area harvested are not available.

Source: Leonardo Paulino, 'Food in the Third World: past trends and projections to 2000', International Food Policy Research Institute, Washington, DC, USA, forthcoming.

This increases the effective purchasing power of the poor at the same time that it provides for new rounds of growth in the economy at large. As the poor begin to work regularly, they demand more and higher-valued foodstuffs. This helps to stimulate the demand for foodstuffs and to strengthen the need for further technological change in agriculture.

Third, technological change in agriculture encourages employment growth in the urban sectors of the economy. Inexpensive food helps keep labour costs down, thereby increasing the comparative advantage inherent in labour-intensive exports. In addition, technological change in agriculture stimulates domestic demand for those labour-intensive, consumer goods – such as clothing and textiles – in which developing countries possess a distinct comparative advantage. Over time, firms specializing in the production of these commodities can acquire the experience and efficiency needed to compete on the world market. This is important, inasmuch as any successful strategy of development requires the production of export goods to pay for a wide range of capital-intensive goods – for example, fertilizer and pesticides for agriculture, and steel and petrochemicals for industry. A strategy of technological change in agriculture, which stresses the increased production of primary and consumer goods, is able to contribute to these export needs.

In the early stages of development, technological change in agriculture helps produce the agricultural commodities that are needed to earn foreign exchange. In the latter stages, technological change in agriculture helps create the domestic demand needed to facilitate the growth of those labour-intensive industries that can compete on the world market. Taiwan is a good case in point of a country which used an agricultural strategy of development to create small-scale manufacturing and industrial enterprises that could compete on the world market.

The relationship between technological change in agriculture and employment growth is highly complementary and must be a major focus

Table 4. Average budget shares spent on food among the poor in selected cities and countries.

City/Country	Low-income		
	Population group	Budget share	Source
Bogota/Colombia	Lowest 25%	0.59	Musgrove ^a
Barranquilla/Colombia	Lowest 25%	0.65	Musgrove ^a
Cali/Colombia	Lowest 25%	0.68	Musgrove ^a
Maracaibo/Venezuela	Lowest 25%	0.58	Musgrove ^a
Brazil (urban)	Lowest 30%	0.51	Gray ^b
Brazil (rural)	Lowest 30%	0.65	Gray ^b
India	Lowest 20%	0.71	Mellor ^c
Sri Lanka	Lowest 10%	0.79	Sahn ^d
Thailand	Lowest 10%	0.67	Traitatvorakul ^e

Notes: ^a Philip Musgrove, *Consumer Behavior in Latin America*, The Brookings Institution, Washington, DC, USA, 1978.

^b Cheryl W. Gray, *Food Consumption Parameters for Brazil and Their Application to Food Policy*, Research Report 32, International Food Policy Research Institute, Washington, DC, USA, 1982.

^c John Mellor, *The New Economics of Growth: a Strategy for India and the Developing World*, Cornell University Press, Ithaca, NY, USA, 1978.

^d David Sahn, 'Food consumption patterns and parameters in Sri Lanka: the causes and control of malnutrition', International Food Policy Research Institute, Washington, DC, USA, forthcoming.

^e Prasarn Traitatvorakul, *The Effects on Income Distribution and Nutrition of Alternative Rice Price Policies in Thailand*, Research Report 46, International Food Policy Research Institute, Washington, DC, USA, 1984.

Source: Per Pinstrup-Andersen, 'Agricultural policy and human nutrition', Paper prepared for Agricultural Policy Workshop, Santiago, Dominican Republic, International Food Policy Research Institute, Washington, DC, USA, 1985.

Table 5. Population and staple food crop production in the developing world, 1966-80.

Country group	Average annual population growth rate, 1966-80	Average annual staple food crop production growth rate, 1966-80
Developing countries	2.41	2.94
Asia (including China)	2.28	3.31
North Africa and Middle East	2.73	2.60
Sub-Saharan Africa	2.95	1.60
Latin America	2.53	2.23

Notes and sources: See Table 2.

of policy. In Asia, with the green revolution under way, the focus needs to be on seeing that capital allocations are efficient so as to keep employment growth commensurate with the improved agricultural record. Several Asian countries are now deficient in this respect. In Africa, however, the effort needs to be more on instituting technological change in agriculture, simply to get the now-stagnant rural sector moving. While per capita food production has been increasing in recent years in the developing world as a whole, in Africa it has been falling. During the period 1966-80, per capita food production in sub-Saharan Africa fell an alarming 1.35% per annum (Table 5). Clearly, much needs to be done in Africa in order to get the food production sector moving.

Technological change and the politics of agriculture

Since it is often neglected, the role of the state in promoting technological change in agriculture needs to be emphasized. In general, the new seed-fertilizer inputs commonly associated with the green revolution cannot succeed without considerable state intervention in agriculture. The public sector needs to come in and establish those types of rural structures and services that the private sector will not undertake. Most developing countries would have to wait a very long time for the private sector to build efficient agricultural research and technical education facilities, or even irrigation and fertilizer distribution systems in the countryside. All of this focuses attention on the need for a high level of public investment in what might be termed the 'basic building blocks' of agricultural development: irrigation, input facilities, rural roads and especially agricultural research systems.

The historic examples of Taiwan, Japan and the Punjab of India illustrate quite graphically the benefits of a high rate of state investment in agriculture. In India, for example, about 20% of the central government budget was devoted to agriculture in the early 1960s.⁴ A good deal of this investment focused on the Indian state of Punjab, an area that already had good water supplies and soil fertility. When the new high-yield seed-fertilizer inputs appeared, this investment enabled the Punjab to achieve a remarkable 8% annual increase in major food grain production between 1960/61 and 1978/79.⁵

Of course, the level of public investment is not the only factor determining agricultural success in the developing world. Certainly such factors as the character of land distribution, the quality of human capital stock and other socioeconomic factors also play a leading role. But public investment in agriculture is clearly an important factor, if for no other reason than the common pattern in many developing countries is

⁴Uma Lele, 'Rural Africa: modernization, equity and long-term development', *Science*, Vol 211, February 1981.

⁵Y.K. Alagh and P.S. Sharma, 'Growth of crop production: 1960/61 to 1978/79 - is it decelerating?', *Indian Journal of Agricultural Economics*, Vol 35, No 3, April-June, 1980.

Table 6. Percentage of central government expenditures on agriculture in selected African countries, 1978-80.

	1978	1979	1980	Average all years
Ghana	12.2	10.4	12.2	11.6
Rwanda	10.3	12.7	-	11.5
Madagascar	11.5	11.4	10.2	11.0
Sudan	9.0	11.3	9.4	9.9
Botswana	10.5	9.2	9.7	9.8
Somalia	12.6	10.6	5.6	9.6
Kenya	8.5	8.4	8.3	8.4
Tanzania	9.3	7.0	-	8.2
Niger	7.1	8.9	6.8	7.6
Liberia	9.0	2.7	3.1	4.9
Cameroon	4.1	4.3	4.2	4.2
Sierra Leone	4.2	4.1	-	4.2
Upper Volta	4.2	3.9	-	4.1
Ivory Coast	2.9	-	3.4	3.2
Nigeria	2.6	1.4	2.5	2.2

Source: International Monetary Fund, *Government Finance Statistics Yearbook*, Washington, DC, USA, 1982.

to underinvest in the rural sector. For example, governments in Africa have typically spent very little on agriculture. During the period 1978-80 the median annual expenditure on agriculture in 15 African countries was only 7.4% of the total government budget (Table 6).

During this same time period, foreign donors have generally paid less attention to African agriculture than national governments. As a result, most African countries today suffer from a poorly developed rural infrastructure, little research on food crops and inadequate input delivery systems. In fact, while the famine-prone Asia of the early 1960s represented life for the poor without a green revolution, now Africa has taken over that role with terrible consequences for its poor.

Given the current state of affairs in Africa, it becomes useful to ask why these (and other) developing countries do not allocate more resources to agriculture. Why don't these countries choose to follow the examples of Japan and Taiwan, for whom state-supported technological change in agriculture led to the development of a highly advanced economy?

The answer to this question is more political than economic or social. From the standpoint of most developing countries, agricultural policy is more derivative than initiative; it is designed more to cope with urban political concerns than it is to meet pressing problems of low rural productivity. In Africa, as well as other developing countries, agricultural policy finds its origins in the struggle between governments and urban interests on the one hand, and rural producers on the other. In this struggle it is usually the latter who are the losers.

It is, unfortunately, a sad fact of life that the governments of many Third World countries are authoritarian regimes. They are often based on the rule of a narrow slice of military or ethnic elite. Anxious above all to stay in power, these elite tend to cater to the interests of those they fear most: namely, the urban masses. Since they are geographically concentrated, urban masses can be quickly organized against the government.⁶ Rural masses, however, are more scattered and dispersed; they are slower to erupt into action than their urban counterparts. As recent events in the Philippines, Haiti and the Sudan suggest, widespread urban unrest is often the first step leading to the overthrow of unpopular Third World regimes.

The politics of 'catering to the interests of the urban population' has a number of important implications for the choice of development strategy. Most basically, it means that the leadership of these countries

⁶Robert H. Bates, 'Governments and agricultural markets in Africa', in D. Johnson and G. Schuh, eds, *The Role of Markets in the World Food Economy*, Westview Press, Boulder, CO, USA, 1983.

tend to identify development with the processes of urban and industrial expansion, and to generally neglect the role that food and agriculture can play in the development process. To industrialize, governments need resources; they also need foreign exchange. Since agriculture often represents the single largest sector in many developing countries, these governments typically try to transfer surpluses – especially taxes – from agriculture to the urban, industrial sector. Such transfers are exacted by fixing low prices for agricultural commodities and by overvaluing the value of national currencies *vis-à-vis* those of other countries. In some situations the level of such taxation on food and export crops has been quite high. In Africa, for example, the rate of taxation on export crops has varied on average between 40% and 45% in recent years.⁷

On the one hand, such high rates of taxation serve to effectively transfer resources from rural producers to the state and urban consumers. The state benefits through the expansion of its various government bureaucracies, which employ ever-increasing numbers of urban workers. Urban consumers benefit from the effects of lower food and agricultural prices. Yet at the same time, such high rates of taxation have a deleterious effect on the agricultural sector. Heavily-taxed peasants possess neither the desire nor the resources needed to adopt new agricultural techniques. In Africa, for example, the combination of high taxation, low public investment and an 'urban bias' against agriculture have all played a prominent role in creating that continent's serious food production problems.

If food production is to rise significantly in many African countries, the leadership of these countries must adopt a more enlightened view of agriculture. The leadership of several Asian countries have already made the type of conscious policy shifts needed to encourage agricultural production, but this is the case with only a minority of African countries. Throughout Africa investment, pricing and exchange rate policies all must be revised with a view to encouraging agricultural production, not penalizing it. Such policy reappraisals can be guided by advice from two groups: the donor community, and rural African producers.

The donor community can do much to encourage African policy makers to revise their attitudes toward agriculture. From a policy standpoint, expatriate economists and financial experts can help African policy makers recognize the need for proper incentive structures in agriculture. Other social scientists can then help show policy makers the socioeconomic benefits of a widespread pattern of technological change in agriculture. From a technical standpoint, agronomists, plant breeders and the like can help build the cadre of trained agricultural experts that is presently missing in many African countries. Such experts are needed not only to supervise the process of technological change in agriculture, but also to lobby their governments for the means with which to pursue such a policy.

In a similar vein, rural African producers are likely to become – over time – a powerful agent for change in government policy. At present, African farmers possess precious little input into government decision-making regarding the rural sector. Yet as they become better educated, more represented in the bureaucracy and more cognizant of the political strength of their numbers, African farmers are likely to become an important lobbying force. A good case in point here is that of India. Over the years Indian farmers have come to wield significant powers in

⁷World Bank, *Accelerated Development in Sub-Saharan Africa: an Agenda for Action*, Washington, DC, USA, 1981.

a wide range of matters, including the pricing of agricultural commodities and the placement of new irrigational facilities.

Conclusion

In the long run, a strategy of development stressing technological change in agriculture represents the most practical means for meeting the ever-increasing food needs of the Third World. Such a strategy of development is production oriented, in the sense of providing the foodstuffs needed for eliminating the most extreme cases of hunger in the Third World. It is also poverty oriented, in the sense of boosting the poor's ability to buy such foodstuffs through the creation of new income and employment opportunities. The latter is important, inasmuch as most poor people in the developing world live in the countryside. As the incomes of these people begin to rise, labour-intensive growth and structural change become possible in other sectors of the economy.

We now know in broad outline how an agricultural strategy of development can stimulate rural and economic growth. The recent turn around in Asia is evidence of this. The present situation in Africa, however, will probably take longer to solve, but it too will respond.

In attempting to solve the present dilemma in Africa we need to be much more concerned with effective demand for food. Some of this effective demand will come from increased incomes and employment in agriculture, but a substantial portion will have to come from accelerated employment growth in the non-agricultural sector. This in turn will call for very different investment policies in agriculture than those presently followed by many African countries. In these countries more public investment in input facilities and rural roads is absolutely essential.

Such a pattern of development and investment requires an active partnership between the developing and the developed world. On the one hand, the developing countries must come to recognize the very positive role that agriculture can play in their development. They must then make hard policy decisions with respect to the allocation of scarce financial and human resources. On the other hand, the developed world must seek to encourage such policy reappraisals by making the technical and financial resources necessary to support an agricultural strategy of development in the Third World. The developed world must also be prepared to provide the food imports (and food aid) that, surprisingly, accompany the process of agricultural growth in the developing world. From the dynamics of such a partnership, the world could conceivably evolve into a place where adequate food is not just a right of all people, but an accepted fact.