



# SHAPING GLOBALIZATION FOR POVERTY ALLEVIATION AND FOOD SECURITY

## TECHNOLOGICAL CHANGE

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**M**odern agricultural technologies have transformed the global food situation from one of widespread shortages and famine in the 1960s to one in which food would be plentiful if it were more equitably shared. Yet despite this achievement, some 1.2 billion people remain in abject poverty and do not get enough to eat. Many more live on nutritionally inadequate diets.

About 90 percent of the developing world's poor live in Asia and Sub-Saharan Africa. Some three-quarters of those live in rural areas where they depend on agriculture for their daily existence. Agricultural growth is therefore crucial to raise them out of poverty. The globalization of agricultural markets brought about by trade liberalization and worldwide changes in markets and marketing channels poses special challenges for small-scale farmers and resource-poor areas in all developing countries. This brief focuses on Asia and Sub-Saharan Africa. Each of these regions faces a unique set of challenges and opportunities as it seeks to compete in global markets. Given their structural conditions, each of these regions needs its own approach to investments in technology and infrastructure in order to enable it to participate fully in global agricultural markets while benefiting the rural poor.

### ASIA

Asia's remarkable transition from daunting food deficits in the 1960s to national food surpluses today has been accompanied by an equally dramatic reduction in poverty. Half of all Asians lived in poverty in 1970, compared to one-quarter today. But Asia's current food situation is nonetheless paradoxical. On the one hand, many increasingly affluent Asians are diversifying and enriching their diets. This has led to a veritable explosion in demand for livestock products, fruits, vegetables, and vegetable oils, which in turn has led to rapid growth in demand for feed grains. On the other hand, despite the increasing affluence of many, some 800 million Asians still live in poverty and 20 million preschool children remain malnourished. They do not have the means to buy the food they need, in spite of its ready availability. They desperately need better livelihood opportunities.

The changing food consumption patterns of the more affluent offer Asia favorable opportunities for agricultural growth through diversification of production. Markets for horticultural and livestock products and feed grains are growing. While globalization and trade liberalization will enable more farmers to participate in supplying international markets, they will also increase competitive pressures in domestic markets. Farmers will prosper most in those regions that are best equipped to compete in the market. That is, where investments have been made in rural infrastructure and technology (roads, transport, electricity,

improved crop varieties, disease control) and where improvements have been made in marketing and distribution systems for higher value, perishable foods (refrigeration, communications, food processing and storage, food safety regulations).

Agricultural growth of this type can contribute to incomes and reduce poverty in rural Asia. But if left to market forces alone, many poorer regions and poor people are likely to be left behind. They will become victims of globalization, not beneficiaries, and be faced with worsening poverty and environmental degradation. To avoid this, two types of public interventions are needed.

- First are interventions to help small-scale farmers capture part of the currently expanding markets, even within regions that have good infrastructure. Agricultural research must give adequate attention to the problems of smallholder farming, and small-scale farmers must be better organized for efficient marketing and input supply.
- Second are interventions to spread the benefits of new markets to the less-favored areas where many of the rural poor live. Investments in the long-term economic growth of these regions are needed. Policymakers have been reluctant to do this in the past, preferring to rely on "trickle down" benefits from investments in high-potential areas (such as increased employment, migration opportunities, and cheaper food). Yet this has proven insufficient. Population densities and the number of people living in poverty in many less-favored areas are set to increase in the future. Without adequate investments in basic infrastructure, technology, and human development, less-favored areas will become even poorer and more degraded. But the right policies and investments could enable these areas to do quite well. Livestock and agroforestry, unlike crops, can often thrive in zones with poor soils and climate, but farmers there must have access to markets. Economic growth in Asia is also creating new opportunities for nonfarm activities in less-favored areas.

### SUB-SAHARAN AFRICA

Sub-Saharan Africa now faces a situation similar to that which faced Asia in the early 1960s, with widespread poverty and malnutrition, large national food deficits, and high and increasing dependence on food imports and concessionary aid. Also, like pre-Green Revolution Asia, African crop yields are extremely low and there is tremendous potential for increasing yields with the right technologies.

Rural Africa, however, has a much lower density of infrastructure and weaker institutions to support agriculture than



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much of South Asia had in the 1950s. Market access and transport costs, too, are obstacles to Africa's development. Input-intensive technologies are not economic when farmers must pay three to five times the world market price for their fertilizer and receive only 30 to 60 percent of the market value for their products. Nor are they economic when extra production simply cannot be transported and sold. Many Green Revolution projects have failed in Africa because they were not profitable for farmers after project subsidies and transport support systems were withdrawn.

Some irrigated and high-potential rainfed areas in Africa do have good access to markets and inputs. In these tracts, input-intensive technologies can be profitable and make important contributions to agricultural growth and national food security. These areas, which often lie along key road and rail transport corridors, will benefit from new market opportunities presented by trade liberalization. But for most African farmers, globalization of agricultural markets will make no significant difference to their livelihood opportunities until considerable improvements are made in infrastructure and marketing institutions.

Modern, input-intensive farming is unlikely to be economic in much of rainfed Africa for at least another two to three decades, until rural infrastructure, markets, and agricultural input supply systems have caught up. In the meantime, most of rural Africa, particularly small-scale farmers in rainfed areas, will need to look to lower cost alternatives such as low external input (LEI) farming technologies. Examples of these are mixed farming systems with integrated crops, livestock, and farm trees; intercropping, green manures, and crop rotations; improved fallows and cover crops; and judicious use of supplementary inputs like phosphate and lime.

While farmers have been using these methods for generations, there are still many opportunities to improve on indigenous farming practices and to transfer successes in one area to another. A growing body of evidence suggests that LEI techniques can make significant yield gains possible.

- The International Center for Research in Agroforestry (ICRAF) is working to combine the occasional use of phosphate (say every five years) with fallows improved by planting leguminous trees. Results from onfarm trials show promising increases in maize yields, from 1 to 3 metric tons per hectare applying modest amounts of phosphate and from 3 to 6 metric tons per hectare when combined with fallows planted to leguminous trees. (Results may further improve by substituting leguminous plants for the trees.)
- Numerous nongovernmental organizations are promoting LEI methods in Africa and have reported high yield increases and favorable impacts. Yet because the evidence is anecdotal and there are differences in measurement methods, more research is needed to validate the findings.
- As part of its research on less-favored lands in Africa, IFPRI's field surveys have found considerable variation across communities and farms in their resource manage-

ment practices and yields. This suggests opportunities for transferring knowledge from more successful communities and farms to those less successful based on in-depth understanding of the reasons and the enabling conditions needed for improved results.

While LEI technologies could lead to significant productivity increases on many rainfed farms in Africa, there are some important constraints to consider:

- Generating nitrogen and organic matter on the farm requires additional land and labor. Smallholder farmers have the labor but not the land. They cannot fallow or plant cover crops on land they need to plant with food crops each season. Nor are many farmers prepared to use their available organic matter for soil improvement, because they need it for household fuel. Farmers with larger holdings may have the needed land, but face binding labor constraints. More research is needed to develop LEI technologies that not only increase yields, but also improve the productivity of labor and land. This might well be possible, especially as advances in biology enable plant characteristics to be improved to generate more organic matter and nitrogen and to heighten drought and pest resistance.
- Even where LEI technologies are successful, more is needed to sustain agricultural productivity growth. Longer-term growth requires improved germplasm that thrives on the more fertile and moist soils that LEI can help to create, as well as on supplementary inputs, especially nitrogen. LEI technologies are a viable means of buying time in rainfed areas. This time should be used to build the infrastructure and support systems needed for a transition to higher input systems over the longer haul.

## CONCLUSION

Globalization can offer significant growth opportunities for many farmers in Asia, particularly in the context of rapidly growing demand within the region for better foods. But if the resulting growth is left to market forces alone, many of the rural poor (especially smallholders and farmers in less-favored regions) are likely to be left behind. The problem is even greater in Africa where most farmers have limited access to modern inputs and expanding markets and where growth in national markets remains more stagnant.

Governments have a key role to play in ensuring that globalization benefits the rural poor. This role includes public investments in agricultural research, developing rural infrastructure, and investing in human development, especially in less-favored areas. Finally, marketing institutions need to be created to support smallholder farmers. ■

**For further reading see Peter Hazell, "Policies For Achieving Food Security Without Degrading The Environment," *SCN News* No. 21, December 2000.**

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