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Essays:

Time to Stop Dumping on
the World's Poor

Developing Countries and
the WTO Negotiations

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI®) was established in 1975. IFPRI's mission is to identify and analyze alternative national and international strategies and policies for meeting food needs of the developing world on a sustainable basis, with particular emphasis on low-income countries, poor people, and sound management of the natural resource base that supports agriculture; to make the results of its research available to all those in a position to use them; and to help strengthen institutions conducting research and applying research results in developing countries.

While the research effort is geared to the precise objective of contributing to the reduction of hunger and malnutrition, the factors involved are many and wide-ranging, requiring analysis of underlying processes and extending beyond a narrowly defined food sector. The Institute's research program reflects worldwide collaboration with governments and private and public institutions interested in increasing food production and improving the equity of its distribution. Research results are disseminated to policymakers, opinion formers, administrators, policy analysts, researchers, and others concerned with national and international food and agricultural policy.

IFPRI is one of 16 Future Harvestsm agricultural research centers and receives its principal funding from governments, private foundations, and international and regional organizations, most of which are members of the Consultative Group on International Agricultural Research.

Cover Photo: © 2002 Benoit Gysembergh from *A Day in the Life of Africa*

An elegant islander visits his son's general store on São Tomé, the former Portuguese colony in the Gulf of Guinea.

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MESSAGE FROM THE CHAIR OF THE BOARD OF TRUSTEES

IFPRI has experienced several major transitions over the past year, while forging ahead on the path of research, policy support, collaboration, and cooperation.

In September 2002, we bade farewell to Per Pinstrup-Andersen as IFPRI's director general. It was during Per's tenure, and based on his clear ideas about the steps needed to rid the world of hunger, that IFPRI launched the 2020 Vision for Food, Agriculture, and the Environment Initiative, which proved to be one of our most successful outreach ventures. Per received the 2001 World Food Prize for a distinguished career of impressive achievements, including 17 years at IFPRI as a research fellow, division director, and director general.

Our new director general, Joachim von Braun, is no stranger to IFPRI, having spent a decade as a research fellow and division director in the 1980s and early 1990s. Joachim led major research efforts on the impact of agricultural commercialization on nutrition and on mitigating and preventing famines, before returning to academia in his native Germany. There, he was director of the prestigious Center for Development Research at Bonn University. Joachim will complete his three-year term as president of the International Association of Agricultural Economists in 2003. We are fortunate to have him as IFPRI's chief executive.

Joachim has led IFPRI research and outreach divisions and partners in preparing a long-term strategy paper that will guide IFPRI's food policy research, capacity strengthening, and communications activities over the next decade. The Board discussed the paper and agreed to treat it as a living document, to be revisited every few years. The strategy seeks to keep IFPRI on the cutting edge to help build a world without hunger and malnutrition.

We also said goodbye in early 2003 to Geoff Miller, who served for six years on the Board and three years as Board Chair. Among Geoff's many accomplishments was his energetic and effective leadership of the search process for our director general in 2001. Geoff inspired all of us on the Board with his vision of good corporate governance. Geoff's is a difficult act to follow.

I assumed the position of Board Chair on April 1, 2003. I am happy to be the first woman to lead IFPRI's governing body. I am also happy to note the good work that IFPRI has done over the years on the important and multiple roles that women play in achieving food security, and the attempts that are being made to mainstream gender into all of our research and outreach activities.

At a time when globalization is raising concerns of different types in different quarters, it is appropriate that we take up in this report the critical question of how to maximize the gains from globalization, especially for the poorest people in the poorest countries, while minimizing the very real risks. An overview essay by Joachim von Braun and Kevin Watkins, the head of research at Oxfam Great Britain, looks at the need to create a more pro-poor global agricultural trading system. The second essay, which examines the ongoing Doha Round trade negotiations from the point of view of developing countries, is by Eugenio Díaz-Bonilla, IFPRI senior research fellow, and Ashok Gulati, the director of the new Markets, Trade, and Institutions Division. These two essays address key issues on IFPRI's research and outreach agenda in the years to come.

Isher Judge Ahluwalia
Chair, IFPRI Board of Trustees



INTRODUCTION FROM THE DIRECTOR GENERAL

When I assumed the leadership of IFPRI at the beginning of September 2002, I came to a research institute that—due to the wise guidance of my predecessor, Per Pinstrup-Andersen—was both healthy and mature. IFPRI remains healthy, producing research that addresses all policy aspects of the global food system. Our finances are sound. Over IFPRI's 28-year history, it has become widely recognized as second to none in food policy research. Our research partnerships span the globe and include universities and government agencies as well as nongovernmental organizations in both the developed and developing world. IFPRI also enjoys strong cooperation with our sister centers in the Consultative Group on International Agricultural Research (CGIAR).

But the environment affecting food policy is constantly and rapidly changing. The disappointingly slow pace of progress in combating hunger and malnutrition leaves no room for complacency, and the long-term global food situation is not secure. Moreover, the number of players involved in making and influencing food policy has grown dramatically. It is no longer sufficient to pass research results on to central government officials in order to have an impact on policy. Technological change offers great promise for advancing food security. But research is needed to identify policies that include poor people and assure that they have access to new technologies. Finally, global health crises, such as the tragic pandemic of HIV/AIDS, impinge enormously on food and nutrition security.

Given these forces, I was very pleased to take on the task given to me by IFPRI's Board of Trustees, namely to prepare a long-term strategy for the Institute's research,

capacity strengthening, and policy communication activities during the next decade. Visit our website to download the full strategy paper, which was developed through extensive consultations with stakeholders and approved by the Board. It is available in English, Spanish, and French at <http://www.ifpri.org/about/gi14.htm>.

The strategy reaffirms IFPRI's mission *to provide policy solutions that reduce hunger and malnutrition* through research and related capacity strengthening on 12 themes:

1. Global food situation and scenarios of policy risks and opportunities.
2. Globalization, retail food industries, and trade negotiations related to food and agriculture.
3. Managing natural resources of particular importance to food, nutrition, and agriculture—land, water, trees, genetic resources, and biodiversity—and responding to climatic change.
4. Food systems in disaster prevention and relief, and rebuilding after crises.
5. Appropriate roles of state, market, and civil society in food, agriculture, nutrition, and natural resource management policy.
6. Food and water safety policies.
7. Policies addressing hidden hunger, enhanced food and diet quality for poor people, and the nutrition transition in developing countries.
8. Policies and interventions for sustainable poverty reduction and nutrition improvement.
9. Cross-cutting research on country and regional food, nutrition, and agricultural strategies.

10. Food- and nutrition-related science and technology policy (molecular biology, biosafety, and information and communications) serving poor people.
11. The future of smallholder farming in efficient and equitable food systems.
12. Urban–rural linkages and nonfarm rural development.

Some of these themes cover work that is already underway, such as IFPRI research on the most effective and appropriate policies and interventions for sustainable poverty reduction. IFPRI will continue to strengthen the capacity of research collaborators in developing countries to design and carry out food policy research and communication. It also seeks to get food policy research results into the hands of all those who can apply or use them. The emphasis is on reaching the full range of players in the food-policy-making process, including the general public via the news media.

The strategy calls for IFPRI to move into new research areas, such as food and water safety policies. Two major new initiatives are part of the CGIAR's Challenge Programs—one on water, with the International Water Management Institute, and another on biofortification, co-

led with the International Center for Tropical Agriculture. In addition, IFPRI has become the home of a large, new research and capacity-building program funded by the United States Agency for International Development (USAID) on biosafety, in cooperation with the International Service for National Agricultural Research, and a new joint program with the International Livestock Research Institute on livestock market policies.

IFPRI has reorganized to implement the strategy. The Markets, Trade, and Institutions Division integrates research that was previously handled by two divisions, and the new Development Strategy and Governance Division manages research on how food and agriculture fit into comprehensive development plans and on the role of governance in achieving food security. IFPRI has started to decentralize by opening offices in partner organizations in Africa, Asia, and Latin America staffed by IFPRI senior researchers.

The ultimate goals of the strategy are to assure that IFPRI remains a trusted global research center that provides the knowledge needed to foster sustainable food security for all, and to advance the Millennium Development Goal of cutting hunger in half by 2015.

Joachim von Braun

Director General, IFPRI

TRADE POLICIES AND FOOD SECURITY

Globalization could and should benefit developing countries. But unlike a rising tide that lifts all boats, large and small, globalization is unequal. It has fallen far short of its much-ballyhooed potential to help the world's poorest people out of poverty. Instead, a combination of policies in both rich and poor countries creates conditions for the rich to prosper and many of the poor to fall more deeply into destitution.

Agricultural protectionism in rich countries enables them to skew markets in their favor. Tariffs and trade barriers routinely exclude developing-country products. Other non-tariff barriers, such as non-transparent phytosanitary regulations, present additional impediments to poor farmers seeking to enter the global marketplace. Instead of distorting the marketplace, rich nations must pay more than lip service to the ideal of free and fair trade. The World Trade Organization (WTO) is the arena to do so internationally.

Public policies in developing countries also harm poor farmers and producers, who often lack the basic conditions for prosperity: health, education, land, capital, information, and the marketing infrastructure needed to take advantage of export opportunities. Developing-country governments can and must change domestic policies on markets, land tenure, research and extension, and credit to enable smallholder farmers to compete.

The two feature essays in this year's annual report examine who must do what in order for agricultural globalization to work for the poor. Unilateral measures by one side or the other will help. But only concerted effort by both developed- and developing-country governments and institutions to change trade rules, regulations, and practices will enable the very poor to feed their families and live a better life.

TIME TO STOP DUMPING ON THE WORLD'S POOR

Kevin Watkins and Joachim von Braun

WHAT CAN GOVERNMENTS IN RICH COUNTRIES DO ABOUT
POVERTY IN POOR COUNTRIES, APART FROM INCREASING AND
IMPROVING AID AND ENDORSING AMBITIOUS POVERTY
REDUCTION GOALS?

RICH
COUNTRIES
NEED TO
REFORM
THEIR FARM
AND TRADE
POLICIES

ANSWER: GET SERIOUS ABOUT REFORMING THEIR OWN FARM
POLICIES AND START DISMANTLING THE AGRICULTURAL TRADE
RESTRICTIONS AND SUBSIDIES THAT CONTRIBUTE TO MASS
POVERTY ACROSS THE DEVELOPING WORLD.

When the current round of World Trade Organization (WTO) talks was launched at the end of 2001, northern governments promised to overhaul agricultural trade rules—and their own farm policies. That commitment is at the heart of the so-called Doha “development agenda.” Unfortunately, fine words have been followed by business as usual. Disagreements between the agricultural superpowers, the United States (U.S.) and the European Union (EU), have produced the familiar pattern of mutual recrimination and deadlock at the WTO, potentially jeopardizing the entire round. And neither protagonist shows any inclination to cut agricultural subsidies at home. The EU reform of the Common Agricultural Policy (CAP) of June 2003 was at best a modest step in the right direction.

REFORMS
HAVE BEEN
INEFFECTIVE
SO FAR

Meanwhile, developing countries have failed to develop the alliances that might shift the terms of the debate at the WTO. The Cairns Group (an alliance of agricultural exporting countries, 3 of which are developed and 14 of which are developing) is seen as a representative of large-scale commercial exporters, African interests have been particularly neglected, and India and China continue to wrestle below their weight class, even though their joint engagement could fundamentally change the WTO round. At risk of understatement, the crucial links between agricultural trade, poverty, and food security do not figure prominently on the WTO agenda.

All of this is bad news for global poverty reduction efforts. More than three-quarters of the poor in the developing world—some 900 million people—live in rural areas. Most are small farmers. That is why agricultural growth based on smallholder producers is one of the most powerful catalysts for poverty reduction: for every additional \$1 generated through agricultural production, economic linkages can add another \$3 to the rural economy. Support to agriculture in rich

countries matters because it restricts opportunities for the pro-poor rural growth that northern governments like to endorse at international meetings. And it matters because the rural poor cannot wait any longer for meaningful reform.

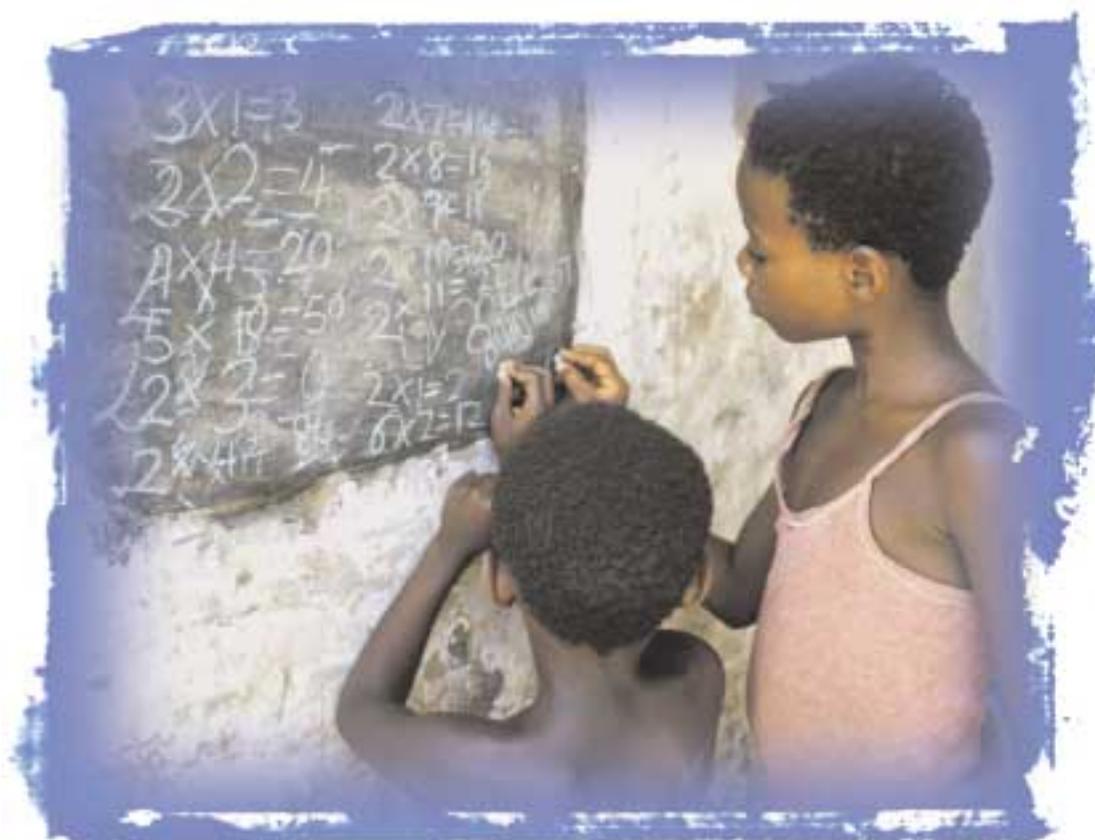
There is a cruel irony at the heart of the current agricultural trading system. In rich countries, agriculture represents a small share of national income and employment, typically less than 2 percent of the total. By contrast, agriculture accounts for 17 percent of gross domestic product (GDP) in middle-income countries, rising to 35 percent in the poorest countries. Agricultural exports exceed one-third of the total in almost half of all developing countries. Yet industrialized countries systematically use subsidies to skew the benefits of agricultural trade in their favor.

It does not automatically follow that northern agricultural policy reform will create a new, more equitable pattern of globalization. In the absence of wider measures taken by developing-country governments themselves to address the underlying causes of poverty and inequality, the opportunities created by trade will bypass the poor.

There are four priorities for developing-country policymakers. First, developing countries have to reform their own market and trade policies (see the accompanying essay by Eugenio Díaz-Bonilla and Ashok Gulati). Second, rural development needs to figure more prominently in national

**REFORM IS
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TO FIGHT
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**DEVELOPING
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budgets. Third, more weight has to be attached to improving poor people's access to education, health services, and productive assets. Fourth, countries must provide effective institutions, through which the poor can articulate their interests. But agricultural trade reform in rich countries is necessary to create an enabling environment in which pro-poor domestic reforms can work—and it is a condition for making globalization work for the poor.

The fundamental problem at the heart of the WTO negotiations is this. Each year, rich countries spend in excess of US\$300 billion in support of agriculture—some six times the amount they allocate to foreign development assistance. Most of the subsidies end up supporting production and generating large surpluses, which are then dumped on world markets at prices that bear no relation to production costs.

Meanwhile, high tariffs and other trade barriers are used to keep imports out. Tariffs on agricultural goods in the EU and U.S. are four to five times those applied to manufactured goods, and peaks in excess of 100 percent—for groundnuts in the U.S. and dairy produce in Europe, for example—are common. While the poorest African countries may not be able to produce an exportable surplus of dairy products, they could do so for beef, sugar, and cotton. Beef and sugar, however, are the most protected products in the EU, even more than dairy products, and U.S. cotton policy hinders African growth.



WINNERS AND LOSERS

Who benefits from these policies? Research by Oxfam has shown that the distribution of subsidies among farmers in both Europe and the U.S. is more unequal than the distribution of income in Brazil, one of the world's most unequal countries in terms of income. The biggest 25 percent of EU subsidy recipients receive more than 60 percent of all subsidies. In the U.S., 60 percent of farmers get no support at all, while the biggest 7 percent account for 50 percent of government payments. The large slice of subsidies directed toward sugar and dairy producers makes up part of this distorted picture. To make matters worse, most of the benefits generated through agricultural support do not even reach producers: the supports are capitalized into higher land values and higher input prices. According to OECD (Organisation for Economic Co-operation and Development) estimates only 25 percent of price supports end up as net income gain for farmers. The system results in unfair distribution and is highly inefficient. In the long run it provides false signals to the incoming generation of farmers and contributes to loss in equity for many. Furthermore, it contributes to disarray in world agriculture and to poverty worldwide.

Whoever wins from the farm subsidy bonanza in rich countries, it is the developing countries that lose in aggregate, even though a few may gain with the EU's "Everything but Arms" initiative (EBA). An IFPRI model predicts that an end to rich-country support in agriculture would generate annual gains of US\$40 billion for developing countries, with Sub-Saharan Africa, the world's poorest region, gaining US\$3.3 billion. The gains result from an increase in exports (especially for Latin America) and import substitution effects.

Small farmers in developing countries suffer on several counts from rich-country farm policies. Northern production subsidies lower prices for farm produce. Unable to compete against subsidized competition, the world's poorest farmers are often pushed out of international and even domestic markets. The upshot is an agricultural trading system in which success depends less on comparative advantage than on comparative access to subsidies. Small farmers are efficient, innovative, and potentially competitive, and creatively combine farming with off-farm work. But the world's poorest farmers cannot compete against the world's richest treasuries, nor should they have to.

RESTRICTED EXPORT OPPORTUNITIES

Northern import restrictions and production subsidies help to explain two features of the world agricultural trading system left intact under globalization: slow growth and continued domination by industrialized countries. Agricultural growth in developing countries declined to 2.2 percent per year in the past 10 years, compared to 3.4 percent in the previous decade. Although agricultural trade has increased in absolute terms over the past decade, its share in total trade has dropped to less than 10 percent. And developing countries account for about one-third of exports, roughly the same share of exports as in 1980.

ENDING RICH-COUNTRY SUPPORT TO AGRICULTURE WOULD GENERATE \$40 BILLION FOR DEVELOPING COUNTRIES IN NET AGRICULTURAL EXPORTS



The structure of agricultural protectionism in rich countries reinforces unequal globalization. Within the agricultural sector, high-value-added goods represent the most dynamic growth point. These goods include products such as meat, fruits and vegetables, and nuts. Exports for this category of goods are growing in excess of 8 percent a year—almost four times the growth rate for the sector as a whole. But developing countries seeking access to high-value-added markets face a daunting array of trade barriers.

Tariff escalation, or duties that rise with each step of processing, is a standard feature of industrialized-country protectionism. In the EU fully processed food products face tariffs almost twice as high as tariffs in the first stage of processing. Latin American exporters to the EU face tariffs that are five times higher for tomato sauces than those levied on fresh tomatoes. At the same time, fresh tomatoes may face prohibitive tariffs in the EU during several months of the year to protect mainly Italian and Spanish producers from Latin America, and less so from African producers, who benefit from the EU's ACP (African, Caribbean and Pacific Group of States) agreement and the EBA.

Such practices create disincentives for investment in local processing and deny producers in developing countries opportunities to enter higher-value-added markets, where new jobs could be created. Other high-value-added markets are protected by huge tariff peaks. Developing countries (other than ACP and EBA countries) wanting to export beef to Europe face tariffs of up to 150 percent, while fruit and nut exporters to the United States face tariffs of 200 percent or more. And this is before taking into account the arsenal of non-tariff barriers, including phytosanitary regulations. While the protection of consumer health is clearly a legitimate priority, it is difficult to escape the conclusion that the selective application of health standards is often directed toward protectionist goals.

The upshot is that many developing-country agricultural exporters are operating in the least dynamic part of the global economy—and they are systematically excluded from a larger stake in higher-value-added trade. The present pattern of agricultural trade is thus reinforcing wider inequalities in globalization, with attendant implications for poverty.

Of course, there are those who see restrictions on export opportunities for developing-country agriculture as a blessing in disguise. In recent years EU ministers for agriculture and some in the anti-globalization movement have joined hands to warn against the perils of export agriculture, claiming that it will displace local food production, exacerbate inequalities, and reinforce poverty in developing countries. Whether motivated by a concern to defend indefensible farm policies or by genuine conviction, these siren voices are wrong. The problem is not agricultural trade per se, but the rules that govern it and skew the benefits away from poor countries and poor farmers.

Under the right conditions, agricultural exports can act as a dynamic force for poverty reduction, providing small farmers with opportunities to generate income, diversify their livelihoods, and

reduce vulnerability. In parts of East Africa and Central America, small farmers have succeeded in entering markets for high-value-added fruit and vegetable exports. And IFPRI research shows that export agriculture has played a critical role in reducing rural poverty in Uganda and Vietnam. Far from displacing food production, export success in both countries has gone hand in hand with an increase in output of basic food staples.

None of this implies that agricultural trade generates automatic benefits for poverty reduction. Small farmers—especially women—often lack access to the land, capital, information, and marketing infrastructure needed to take advantage of export opportunities. In the absence of public policies in developing countries to overcome these disadvantages—especially land tenure and credit policies—export growth can marginalize the poor. Surely this situation calls for domestic policies that redistribute opportunities to the poor, rather than denying the potential benefits of agricultural exports or turning a blind eye to northern policies that restrict those benefits.

HARVESTING THE COTTON SUBSIDY

When it comes to harvesting subsidies, the U.S.'s 25,000 cotton producers are first among equals. In 2001, government support to the sector reached about US\$3.4 billion—a sum that exceeds U.S. aid to Sub-Saharan Africa. Most of this support is directed toward agricultural corporations operating capital-intensive, highly mechanized operations on vast commercial



estates. Because the U.S. is the world's largest exporter of cotton, accounting for about 40 percent of the world market, its domestic subsidy programs have global market implications. According to the International Cotton Advisory Committee, these programs artificially lowered world prices by about one-quarter in 2001.

The losers have included desperately poor farmers in West Africa. This is potentially one of the world's most productive cotton-producing regions, thanks partly to the high quality associated with non-mechanized production. Over the past decade production has almost doubled, creating benefits for household income, agricultural growth, and exports. An estimated 10 to 11 million people now depend on cotton production. For many households, cotton is the only cash crop. It is often grown on small farms jointly with basic food staples, such as maize. Not only does cotton production have a major bearing on household food security, agricultural investment, and rural wages, in several countries it is the largest source of export receipts and government revenue.

African cotton farmers do not figure prominently in debates on U.S. farm policy. They ought to. Using household survey data on income and expenditure for Benin, IFPRI has simulated the effect of a 25 percent increase in the world price of cotton, roughly corresponding to the effect of the



elimination of U.S. subsidies. The estimates suggest that a price increase of 25 percent would cause the national incidence of poverty in Benin to decline by 4 percent, enabling 250,000 people to rise above the poverty line, which, in this context, consigns those who live below it to hunger.

West Africa's experience also highlights tensions between aid policies on the one side and agricultural trade policies on the other. The lower world prices induced by U.S. subsidies are estimated to have cost the region about US\$190 million in 2001, exacerbating foreign debt and balance-of-payment constraints. Much has been made of the debt relief provided under the Heavily Indebted Poor Countries Initiative. Yet Burkina Faso has lost more as a direct consequence of U.S. cotton subsidies than it receives in debt relief. And Mali's losses dwarf American aid to the country.

THE COMMON AGRICULTURAL POLICY

In the interest of balance, we must also acknowledge the egregious role of the EU's Common Agricultural Policy (CAP). The EU likes to defend its record by pointing out that, on a per capita basis, American farmers get more subsidies. On the other side of the coin, it should be pointed out that the US\$104 billion in producer support provided by Europe accounts for one-third of the value of output, compared with one-fifth in the United States.

Transatlantic rivalries aside, there is no doubt that on aggregate the CAP hurts poor farmers. Take the sugar sector. By world standards Europe is an exceptionally high-cost producer of sugar. It is also the world's largest exporter of white sugar, accounting for 40 percent of the global market. Under the CAP, farmers in Europe receive a guaranteed price that is typically two to three times the world market price. Some developing countries in the ACP group—notably Mauritius—also benefit from this price for a fixed quota of exports under a system of trade preferences. Imports are kept out through tariffs in excess of 140 percent. The high margins provided by guaranteed prices support levels of production far in excess of domestic demand—hence the large exports.

Subsidized EU exports, stimulation of domestic production, and taxation of domestic consumption hurt non-subsidizing, developing-country exporters, forcing countries such as Malawi, Thailand, and Zambia out of third markets. CAP exports also lower world sugar prices by around 15 percent.

In 2001 Europe announced the EBA initiative, aimed at removing all import barriers for developing countries. But sugar—along with rice and bananas—was put on the back burner. The reason: vigorous lobbying by assorted sugar-processing and big-farm interests. Developing countries will either have to grow other crops or will continue to lose, as world prices for sugar remain lower than under non-protectionist policies. The EBA initiative is positive because it will force EU policies to change, but the situation would be better if EU policies had changed beforehand.

Hopes that CAP reform would usher in a new approach to agricultural trade by the EU were dashed by the reforms of June 2003. The European Commission had proposed real decoupling, aimed at reducing market-based incentives to produce. However, at the end of the process of member-state wrangling, decoupling has been only partially introduced in cereals, but countries can delay this until 2007. Sectors such as sugar and dairy that account for the bulk of export subsidies are either untouched or subject to only modest reforms. Meanwhile, overall levels of subsidy spending will probably continue to rise until 2013.

IMPLICATIONS FOR FOOD IMPORTERS

For countries that are net food importers, standard consumer welfare models register the lower food prices associated with northern production subsidies and export dumping as a positive gain. This situation raises an important policy question that has figured prominently in debates at the WTO: namely, would an end to export dumping by rich countries hurt food security in developing countries?

The answer is no. Standard consumer welfare models tend to obscure the damage caused by agricultural dumping. Export subsidies in industrialized countries undermine incentives for small farmers in developing countries, and destabilize local markets. These subsidies raise important questions for policymakers in developing countries, notably with regard to import liberalization.

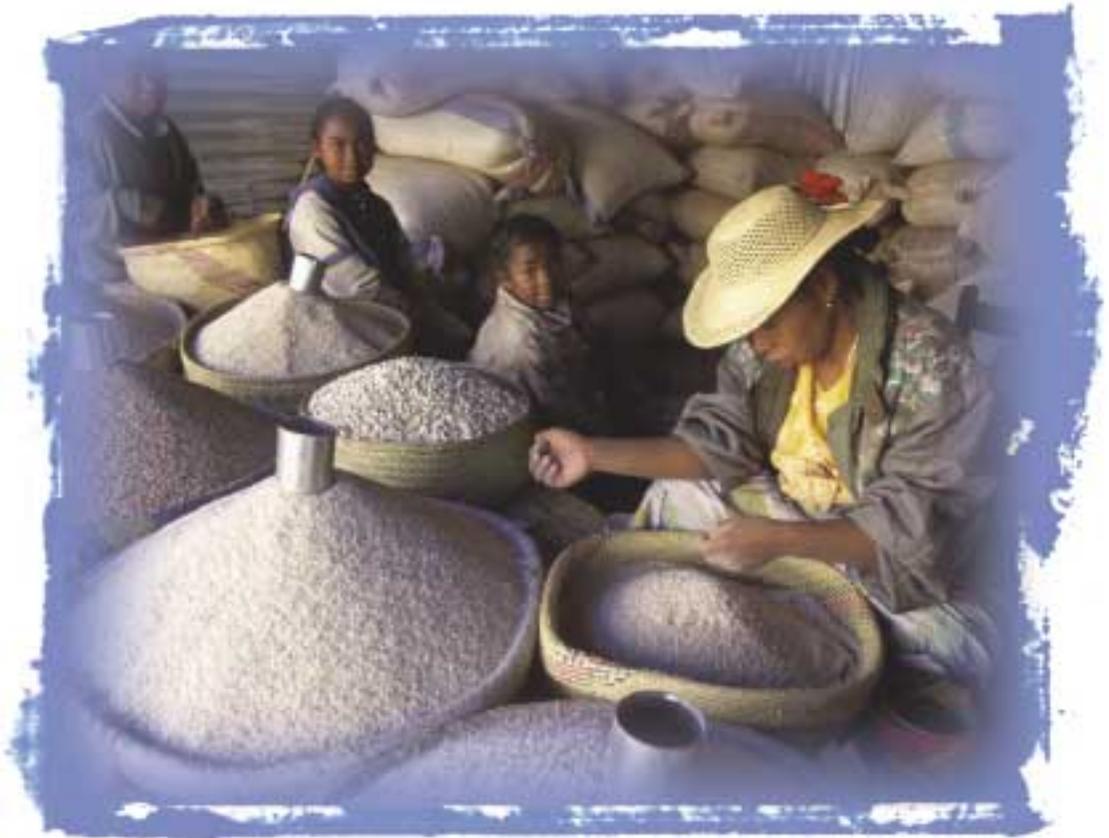
In India, surges in imports of dairy products forced the government to sharply increase tariffs at the end of the 1990s. Some critical voices saw the move as a retreat from free trade. But what does free trade mean in a context where the world's largest exporter of dairy produce, the EU, is providing subsidies in excess of US\$3 billion a year?

Under prevailing market conditions, rapid import liberalization can inflict enormous adjustment costs on small farmers. When Haiti opened up its rice market in 1995, imports from the U.S. flooded in, driving prices down by 25 percent and displacing local farmers. At the time agricultural subsidies to U.S. rice producers represented 40 percent of the value of output.

Without fundamental reform of northern agricultural support systems, import liberalization will remain a prescription for unfair competition. For example, the 2.4 million Mexican farmers whose livelihoods partly depend on maize production are currently being integrated into a regional market with the United States, whose maize farmers benefit from support estimated at US\$9 billion a year, according to the OECD. Given the dilapidated state of the infrastructure supporting Mexican maize farmers, especially in rain-fed areas, the unbalanced competition would appear likely to reinforce rural poverty and migration.

While developing countries may suffer from opening their markets to cheap imports, they also lose from keeping their markets closed. IFPRI research on African markets has shown that the indirect effects of protectionism in undermining the very creation and growth of market

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UNDER THESE
CONDITIONS**



institutions, including those related to financing and banking in rural areas, have adverse long-term consequences for development.

Among the most serious problems associated with northern export dumping is the signal it has sent to governments in developing countries, notably in Sub-Saharan Africa. The ready availability of cheap food for urban populations has provided a rationale for failing to give priority to the economic setting in which small farmers operate and for neglecting rural infrastructure. In fact, public investment in agriculture and rural development had fallen off the agenda of ministries of finance, despite the developmental payoffs. Only recently has it been given higher priority by donors, such as the World Bank, once the detrimental effects of its neglect had become clear.

One consequence of falling agricultural investment has been the dangerously high level of dependence on food aid and commercial imports witnessed in many countries. Of course, these countries should not seek food self-sufficiency for its own sake, but instead seek food security. A central challenge for these countries, and for much of Africa, is to increase smallholder production of food, not just to reduce foreign exchange costs, but also to generate income and employment. Northern export subsidies make this task less attractive.



THE WAY AHEAD

The Doha “development round” provides a critical opportunity to start making agricultural trade work for the poor—and to chart a new course toward a more equitable pattern of globalization. Seizing that opportunity is vital, not just in the interest of small farmers in developing countries, but also in the interest of restoring the credibility of the rules-based multilateral trading system.

**WE NEED
AN HONEST
ASSESSMENT
OF WHAT HAS
HAPPENED
UNDER THE
AOA**

Five things need to happen to turn the pleasant words of the Doha Declaration into action.

First, we need an honest assessment of what has happened under the Agreement on Agriculture (AoA) adopted at the end of the last round of world trade talks, the Uruguay Round. And what has happened is not encouraging. Under the AoA industrialized countries promised to cut agricultural support by 20 percent. The pattern of subsidies has somewhat changed from subsidies tied to production to those that are partly decoupled. The June 2003 reform of the EU CAP promises to go further in the right direction. Much will depend, however, on actual implementation of the stated policies, because “coupled elements of payments may be

maintained to avoid abandonment of production,” as the EU deal states. Developing-country small farmers cannot even dream of such policy stipulations for themselves.

Broadly speaking, there has been a diminishing use of policy instruments that reward farmers for what they produce with price supports (defined by the WTO as “trade-distorting”). Although there is no question that some subsidies distort trade more than others, nominally decoupled supports often help sustain production capacities. Producer support estimates (PSEs), which include both types of subsidies (coupled and decoupled), have actually increased under the AoA, as measured by the OECD.

How has this been possible? The European Union and the United States have invented a category of support—known as the Green Box and the Blue Box in WTO talks—deemed to be decoupled from production and therefore exempt from cuts in subsidies. In effect, they have shifted their support channels through an elaborate repackaging exercise. Blue box measures were allowed only because the EU had lowered grain prices by 30 percent and had instituted measures to curtail production (set-aside). Blue-box payments are related to land, and to the number of cows for beef production. Subsidies for beef production were introduced at a time when beef prices were lowered. Nevertheless, this category of subsidies should be forbidden. These subsidies might have been justified at the time of the price cuts in order to provide some adjustment aid. But such adjustments are not needed for long.

Take the case of EU cereals. Currently, wheat producers receive a direct payment equivalent to about US\$60 per metric ton, or some 60 percent of the export price. Under WTO rules this payment does not count either as a production subsidy or as an export subsidy. The reason: it is classified as a “decoupled” payment because it is not coupled to current production. This rationale might make sense to trade lawyers and accountants. But food staple producers in West Africa trying to compete against EU imports might take a less benign view. It is vital that the Doha Round deliver real decoupling and real cuts in all support measures that create unfair competition.

Second, the Doha Round must deliver a comprehensive prohibition against export support measures that act directly or indirectly as export subsidies. Farmers in developing countries need rules that outlaw the export of agricultural goods at prices below those received by producers. Those rules must extend beyond direct export subsidies to cover the full range of measures currently in place. These include:

- direct payments for commodities in surplus, such as EU wheat and U.S. cotton;
- export credit programs, such as the US\$5.7 billion in officially supported export credit provided under the 2002 U.S. Farm Act; and
- food aid programs used to indirectly cofinance commercial exports.

**BLUE BOX
MEASURES
SHOULD BE
ELIMINATED**

**REAL
DECOUPLING OF
PAYMENT AND
PRODUCTION IS
NEEDED**

**EXPORT
ENHANCING
MEASURES
SHOULD BE
FORBIDDEN**



In this round donors must make a credible commitment to adequate levels of food aid, delivered in non-distorting ways, effectively reaching the needy, and responding swiftly to emergencies.

Third, rich countries need to open their own markets. As the president of Brazil, Luis Inácio “Lula” da Silva, has written: “Any export efforts we might make will be worth nothing if the rich countries continue to preach free trade and practice protectionism.” One of the aims of the Doha Round should be an “early harvest” of measures to lower tariff and nontariff barriers on agricultural goods and to eliminate tariff escalation.

Fourth, developing countries must retain the right to protect their agricultural systems from instability and unfair competition associated with northern agricultural subsidies. Developing countries themselves have put forward proposals in this area. For example, the Government of India has advocated a “special safeguard” provision under which higher tariffs would be triggered if import prices fall below specified levels.

**DEVELOPING
COUNTRIES
NEED SPECIAL
SAFEGUARDS
AGAINST
DISTORTED
WORLD PRICES**

For their part, the EU and the U.S. have resisted calls for entrenched rights to protect food security, arguing that any safeguards should be limited to a narrow range of “food staples” and a small group of countries. This is a particularly hypocritical way of thinking about food security. Protection of the livelihoods of small farmers cannot be reduced to a small range of food crops.

Fifth, while the largest benefits of agricultural liberalization would arise from multilateral negotiations under WTO, regional and bilateral negotiations of free trade agreements (FTAs) are currently ongoing. These negotiations put healthy pressure on the WTO process, but they also endanger progress at the global level, if continued in an erratic fashion. For the time being, Europe and the United States should hold back on further bilateral FTAs and fully concentrate on achieving progress in the WTO negotiations.

These five actions will help establish a more equitable system of international trade that is not rigged against small farmers in developing countries. By ending the self-serving instincts that currently dictate their approach to agricultural trade, rich countries can help to create an enabling environment for poor farmers. Then it is up to developing-country governments themselves to create the conditions under which their people can exploit trade opportunities to reduce poverty and hunger. Under these conditions international development finance would have a greater, more beneficial impact as well.

Kevin Watkins is head of research at Oxfam. Joachim von Braun is the director general of IFPRI.

**RICH
COUNTRIES
NEED TO FOCUS
MORE ON
MULTILATERAL
TRADE
NEGOTIATIONS
THAN ON
REGIONAL
AGREEMENTS**

DEVELOPING COUNTRIES AND THE WTO NEGOTIATIONS

Eugenio Díaz-Bonilla and Ashok Gulati

A DYNAMIC AGRICULTURAL SECTOR IS CRUCIAL FOR ECONOMIC GROWTH, POVERTY ALLEVIATION, AND FOOD SECURITY IN DEVELOPING COUNTRIES. ALTHOUGH PRIMARY AGRICULTURAL ACTIVITIES ARE DECLINING OVER TIME AS A SHARE OF THE ECONOMY, THEY STILL REPRESENT ABOUT ONE-FOURTH OF TOTAL ECONOMIC ACTIVITY AND 60 PERCENT OF TOTAL EMPLOYMENT IN LOW-INCOME DEVELOPING COUNTRIES. PRIMARY AND PROCESSED FOOD PRODUCTS ACCOUNT FOR ABOUT 20 PERCENT OF THESE COUNTRIES' MERCHANDISE TRADE. MOREOVER, OF THE 1.2 BILLION PEOPLE LIVING ON LESS THAN US\$1 A DAY, ABOUT 75 PERCENT LIVE AND WORK IN RURAL AREAS IN DEVELOPING COUNTRIES.

In spite of its importance, agricultural growth in developing countries has been hampered over the years by a series of factors. First, as developing countries sought to industrialize their economies, they usually taxed agriculture. The bias against agriculture in developing countries also hurt the poor, who often depended heavily on that sector for income and employment. Although several developing countries have reduced or even eliminated that policy bias since the early 1990s, another negative factor has become increasingly apparent: the subsidization of agriculture in rich countries. During the 1980s these subsidies led to surpluses that rich countries disposed of on world markets with the heavy use of export subsidies. The combination of agricultural protectionism and subsidies in industrialized countries has limited agricultural growth in the developing world, increasing poverty and weakening food security in vulnerable countries. Those policies have also hurt the rich countries themselves through higher food costs and a larger tax burden on citizens. And rich countries' claim that the expected benefits of their agricultural policies, in terms of safer food, a cleaner environment, and better income distribution, are larger than the costs rings false, given recent food scares like "mad cow disease" in Europe, the environmental pollution linked to agriculture in industrialized countries, and the fact that most transfers go to large farmers.



AN OPPORTUNITY TO LEVEL THE PLAYING FIELD

The Uruguay Round of trade negotiations initiated the process of bringing agricultural policies under a common set of rules, in an attempt to reduce the negative impact of prevailing practices on world welfare. But the reform process is far from complete. Like the textile industry (another sector in which developing countries have a comparative advantage), agriculture continues to receive separate treatment under the new World Trade Organization (WTO) framework. This framework allows the artificial expansion of agricultural production in industrialized countries, while limiting the potential expansion of agriculture in developing countries. Some have sarcastically called this separate treatment of agriculture and textiles “special and differential treatment” for the rich countries. The Doha Round offers the opportunity to level a tilted playing field. To do that, the negotiations will have to complete the unfinished business of the Uruguay Round in reducing protectionism and subsidies, particularly in rich countries, while at the same time considering the needs of vulnerable countries and groups.

**THE DOHA
ROUND MUST
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REFORM
PROCESS
BEGUN UNDER
THE URUGUAY
ROUND TO
LEVEL THE
PLAYING FIELD**

In the Doha Round negotiations, developing countries have been following two basic approaches to varying degrees. One is to “play offense” by trying to limit the ample legal room industrialized countries have under current WTO rules to subsidize and protect their own agriculture (for which they also have large financial resources). The other is to “play defense” by asking for additional exemptions (that is, “special and differential treatment”) to be able to subsidize and protect agriculture in developing countries. The combination of offensive and defensive tactics varies by country and partly reflects the heterogeneity of developing countries in general and of their agriculture sectors in particular.

THE VARIED INTERESTS OF DEVELOPING COUNTRIES

THE DIFFERENT
POSITIONS
DEVELOPING
COUNTRIES
HOLD IN THE
DOHA ROUND
REFLECT
THEIR
DIFFERENT
COMPARATIVE
ADVANTAGES
AND FOOD
SECURITY
CONDITIONS

The differences among developing countries and their agriculture sectors manifest themselves at several levels. Africa and Latin America and the Caribbean, for instance, have more available arable land per capita than Asian developing countries, but land appears to be distributed more unequally in Latin America and the Caribbean. Asia and Latin America and the Caribbean, however, have better infrastructure than Africa. Although all developing regions have experienced increases in trade of fruits and vegetables, Asia and Latin America and the Caribbean have been more dynamic oilseed exporters. Africa has been losing export market share in world agricultural markets. Latin America and the Caribbean is a net agricultural exporter, Asia became a net importer in the early 1970s, and Africa, which had a strong positive agricultural balance in the 1960s and 1970s, has experienced deficits since the early 1980s. The direction of trade also varies. Asian countries trade mainly within the region; Latin American and Caribbean countries trade with Europe, the United States, and other countries within the region; and Africa trades mostly with Europe.

An IFPRI study using cluster analysis also showed the large differences in food security status among developing countries. Those countries appear scattered across nearly all levels of food security and insecurity, although none appear in the very high food-secure group. Among food-insecure countries, the profiles also differ: some are predominantly rural (mostly in Africa and South Asia) whereas for others the urban population is more important (like many countries in Latin America and the Caribbean and in transition economies). Obviously the same policy (such as maintaining high prices for producers) will have different impacts in these two types of countries.

Some countries are food insecure mostly because of low levels of calories and proteins per capita, although they do not use large percentages of their exports to buy food. In the terminology of the study, these countries are “consumption vulnerable” but not “trade stressed.” Other food-insecure countries are a mirror image: they appear trade stressed (using a large percentage of their exports to buy food) but less consumption vulnerable (their current levels of calories and proteins per capita are close to the average for all countries

considered). Again, the policy options for these two types of countries are different: the first group may increase imports to improve availability of calories and proteins, whereas increasing imports may not be an option for the second group.

The different positions taken by developing countries in the Doha Round negotiations reflect this heterogeneity. The Cairns Group (an alliance of agricultural exporting countries that includes 3 developed-country and 14 developing-country members) has mainly emphasized playing offense. It is interesting to note that, although the Cairns Group is usually perceived as encompassing countries that are large commercial exporters, in fact 3 countries in this group are in food-insecure clusters. Other developing countries have emphasized a defensive approach advocating additional levels of support and protection for developing countries (such as the 11 WTO members, including Cuba, the Dominican Republic, Pakistan, Sri Lanka, and others, that presented those proposals under the general name of a “Development Box”) while also asking for a reduction in subsidies and protection in industrialized countries. Still other countries are trying to coordinate both approaches. India is an interesting case. On the one hand, playing offense seems reasonable for a country that in the past few years has emerged as one of the world’s top net exporters of agricultural products. On the other hand, a large percentage of India’s poor population lives in rural areas. Concerns about possible negative impacts on the rural poor have therefore underpinned the defensive components in India’s WTO proposal, embedded in the notion of a Food Security Box (with proposals for additional levels of support and protection comparable to the Development Box).

Acknowledging that heterogeneity, we may still make some general points. As indicated, a dynamic agricultural sector is crucial in developing countries, particularly the poorest ones, and research has shown that agricultural exports appear to be associated with higher levels of growth. Higher growth, if it is broad based and stable, in turn helps reduce poverty. Conversely, closed economies relying on the dynamics of small domestic markets tend to show slower and more halting growth rates. If countries follow their comparative advantage, international trade by labor-abundant, poor developing countries should increase employment and wages, further alleviating poverty.

To the extent that poverty is the main cause of food insecurity, international trade opportunities should also help improve food security. The expansion of trade in goods and services over the past decades, along with the decline in food prices resulting from technological advances, has led to sharp reductions in the size of the total food bill of developing countries as a share of total export earnings.

Of course, differences in agrifood production and export performance by developing countries depend on several factors, such as income and population growth, natural resource base and climate, and technological progress. But economic policies, in both

**INTERNATIONAL
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industrialized and developing countries, also have a major impact. The WTO legal framework and the current negotiations are crucial precisely because of their likely effects on trade and agricultural policies worldwide. When considering negotiating positions from the point of view of the developing countries, it is important to analyze their policies separately from those of the industrialized countries.

THE PRICE OF AGRICULTURAL PROTECTIONISM

Since the 1970s various studies have tried to quantify the impact that agricultural protectionism in industrialized countries has had on the world. Those studies have consistently reported that agricultural surpluses in rich countries, generated through protection and subsidies and then dumped onto world markets, have hurt agricultural development in developing countries. Recent simulations by IFPRI show that those policies by industrialized countries have displaced about US\$40 billion in net agricultural exports per year from developing countries and reduced agricultural incomes in those countries by nearly US\$30 billion (counting both primary and manufactured agricultural products but not related activities such as trade, commerce, and other services). Moreover, these estimates may be low because they do not include dynamic effects from additional investments that better



market opportunities may elicit or second-round multiplier effects from those agricultural incomes that never materialized. More than half of these displacement effects have resulted from the policies of the European Union (and other European countries such as Norway and Switzerland), somewhat less than a third from U.S. policies, and about 10 percent mainly from Japanese policies, with the balance resulting from the policies of other industrialized countries.

These results should give some pause to the proponents of “multifunctionality” in rich countries who argue that agriculture has additional benefits for their societies, and that, therefore, it must be protected and subsidized. But an important effect of those policies is that agriculture in many poor countries is forced to contract. So whose multifunctionality is being advanced, and whose is being trampled upon? The losses resulting from the displaced production are particularly damaging in the many low-income countries whose economies depend heavily on agriculture and agroindustrial production and where most poverty occurs in rural areas.

Current WTO negotiations must complete the unfinished business of correcting those imbalances to allow broad-based economic growth in developing countries. In addition to the obvious and compelling humanitarian arguments, enlightened self-interest also dictates that developed countries combat hunger and poverty: poor, developing countries continue to spawn health, environmental, military, and humanitarian crises worldwide that directly or indirectly impact developed countries, while poverty and hunger deprive the world of the creative potential and economic contribution of billions of human beings.

THREE CHALLENGES TO LIBERALIZATION

Three concerns have been raised against the general proposition that the imbalances in trade rules must be corrected. First, it has been pointed out that liberalizing agricultural policies in the industrialized countries may increase the food bill of developing countries that are net food importers. Although the agricultural policies of the rich countries have hurt developing countries that are net exporters, this argument suggests that those same policies may have helped the balance of payments position of developing countries that are net importers of the same products. Second, for those developing countries that have preferential access to the protected markets of rich countries, the liberalization of trade in those markets may lead to the erosion of trade preferences (that is, by having access to a protected market those countries can sell at prices higher than those prevailing in world markets). Finally, some have argued that by expanding their exports, developing countries may worsen poverty and food security because export crops may compete with staple crops and through other mechanisms may affect the poor and women unfavorably.



STANDARD
ARGUMENTS
AGAINST TRADE
LIBERALIZATION
DO NOT HOLD



The first argument, however, omits the differences in distributional impact within developing countries between consumers and producers and across various types of households. Moreover, agricultural trade policies in industrialized countries may have had a stifling effect on agricultural and agroindustrial production in all developing countries, regardless of their net trade position. Given that these sectors are the main economic activities in many developing countries, particularly poor ones, and that growth in these sectors is usually multiplied throughout the whole economy, poor developing countries, even net importers, may have lost a substantial source of dynamic benefits. In fact depressed world prices of many food products caused by agricultural protectionism and subsidies in industrialized countries may have contributed to some developing countries' becoming net food importers, pushing them into a more extreme specialization in tropical products.

A welfare-enhancing approach would be to proceed with the liberalization of markets in rich countries while offering cash grants or other financial schemes to help poor countries with possible balance-of-payment problems. The analysis of the possible impact on the balance of payments must be conducted considering the entire economy in a general equilibrium context, because even if agricultural prices rise, the negotiations may have other price and volume effects on exports and imports that compensate for agricultural price effects.

The second point focuses on the possible erosion of preferences for a number of developing countries that have special market access arrangements with industrialized countries. For low-income developing countries, such preferential access usually represents a large percentage of agricultural exports and sectoral value-added and has important implications for rural employment and the balance of payments. Yet, it is not clear how much countries with access to rich countries' markets benefit from the current arrangements, considering that the specific mechanisms for operating those preferences may have high administrative costs, may be uncertain over time, and may tilt the distribution of benefits toward domestic importers and away from the exporting developing countries. Several options offer greater benefits in national welfare terms than maintaining current levels of protection in rich countries. In some cases, changing the way tariff rate quotas operate could compensate for the erosion of preferences in the short run. One possibility would be to grant import licenses to the exporting countries instead of giving them to domestic importing companies and to reduce to zero the "in quota" tariff for those exporting countries. This approach would transfer the complete quota rent (that is, the difference between the higher domestic price and the lower world price) to the exporting developing countries.

Another possibility is to transform the equivalent value of the trade preferences lost into foreign aid. This approach would mean extending to the affected poor developing countries the same logic applied when industrialized countries compensate domestic producers for the reduction in direct support. These lost preferences should also be calculated considering the economy-wide impact as a whole.



The third question is linked to earlier criticisms of the Green Revolution, later extended to commercialization and international trade. It has been argued first that the limited resources of small farmers could prevent them from participating in expanding markets and lead to worsening income distribution. Second, and more worrisome, if relative prices shift against the poor or if the power of already dominant actors (large landowners, big commercial enterprises) is reinforced to allow them to extract income from the poor or to appropriate their assets, the poor could become worse off in absolute terms. It has also been argued that food security could decrease if cash crops or export production displace staple crops and if these changes result in women having less decisionmaking power and fewer resources.

Yet several studies have shown that the Green Revolution—and domestic and international commercialization—can and did yield benefits for the poor because of its effect on production, employment, and food prices, although any uniform attainment of benefits is by no means guaranteed. Trade expansion that creates income opportunities for women may also give them greater control over expenditures, with positive effects on child nutrition and

development, as well as greater incentives to invest in girls. But there may be a trade-off between income-generating activities and the time allocated for childcare—an issue currently being analyzed at IFPRI. Generally, developing countries need to pursue complementary policies that will increase the physical and human capital owned by the poor and by women, build general infrastructure and services, ensure that markets operate competitively, build effective safety nets, and eliminate institutional, political, and social biases that discriminate against vulnerable groups.

POLICY OPTIONS FOR DEVELOPING COUNTRIES

Although eliminating welfare-reducing policies in rich countries should be paramount in these negotiations, at the same time developing countries need to carefully consider their own agricultural policies. For years many of them have discriminated against agriculture, and although the most obvious macroeconomic biases may be gone, many countries still do not invest enough in agriculture and rural development.

Several developing countries have expressed concern that further trade liberalization could create problems for their large and predominantly poor agricultural populations. Poor



countries have argued for a slower pace in reducing their own tariffs on the premise that industrialized countries should first eliminate their higher levels of protection and subsidization. A related concern has been how to protect the livelihoods of poor producers from sudden negative impacts resulting from unfair trade practices such as subsidized exports and from import surges.

While insisting on a rigid sequence in which developed countries first eliminate all their own distortions seems a sure recipe for stalemate, developing countries seem justified in asking for significant down payments in the reduction of protection and subsidies in industrialized countries. Also, food-insecure and vulnerable countries need (1) longer transition times that must be used to implement adequate rural development and poverty alleviation strategies, and (2) simplified and streamlined instruments to confront unfair trade practices and import surges that may irreparably damage the livelihoods of small farmers. In particular, in the context of the negotiations it is important to clarify the possible use by developing countries of other trade remedies against domestic and, especially, export subsidies of industrialized countries.

Some observers, however, have argued for maintaining high levels of agricultural protection in developing countries, or even increasing it further, as a way of reducing poverty and promoting food security. Sometimes this suggestion is accompanied by the argument that protection “does not cost money” and is easier to implement than subsidies in poor countries. Yet contrary to the common perception that protection is a tax paid by foreigners and collected by governments, much of the implicit tax is paid by domestic consumers and collected privately by producers in the form of higher prices. This tax on food has an obvious negative impact on poor households, which in many developing countries spend more than half of their income on food, and is mainly received by bigger agricultural producers with larger quantities of products to sell. Landless rural workers, poor urban households, and many poor small farmers tend to be net buyers of food. The problems faced by poor farmers and poor consumers are better addressed through policies and investments targeted to them directly. The focus should therefore be on vulnerable groups rather than on crops.

The best approach for developing countries is to eliminate biases against the agricultural sector in their general policy framework and to maintain a neutral trade policy that reduces protection over time. They should use transition periods negotiated in the WTO to increase investments in human capital, land tenure, water access, technology, infrastructure, nonagricultural rural enterprises, organizations of small farmers, and other forms of social capital and political participation for the poor and vulnerable. None of these policies is constrained under the WTO Agreement on Agriculture. The claims that more protection is necessary to shelter small farmers would ring hollow if the current underinvestment in rural development and poverty alleviation in developing countries continues.



**DEVELOPING
COUNTRIES
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RURAL
DEVELOPMENT**

More investments targeted to the poor and vulnerable also require additional financial resources from the international community. Industrialized countries can help by agreeing to significantly reduce their own protectionism and subsidies in the current trade negotiations, while simultaneously making sure there is increased funding by international and bilateral organizations for rural development, poverty alleviation, and health and nutrition interventions. At the same time, governments in developing countries should support macroeconomic stability, good governance, and peace, if they want to overcome poverty and hunger. Without addressing these other key factors, any modification in the WTO agreements will have limited benefits. ■

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OVERVIEW

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

Agricultural science and improvements in food production have significantly helped to feed the world's growing population over the past 30 years. But within the last decade, progress in the fight against hunger and malnutrition has slowed. Major challenges remain. Of the 4.5 billion people who live in the developing world, 1.2 billion still confront the ravages of poverty daily; 170 million children under five are malnourished. Natural resources that support food production are being degraded. Agricultural productivity growth in developing countries, once rapid, is now decelerating. By 2020, there will be 1.5 billion more people on the planet, putting even more stress on limited resources.

Achieving food security for all will require access to resources by the poor within their communities and by poor women within their households and societies; better technologies for producing and distributing food supplies; more efficient and accountable governments; and timely, appropriate policies on food production, nutrition, natural resource management, markets, and trade.

The following pages describe the organizational changes IFPRI has made and the research it has undertaken in 2002 and part of 2003 to help achieve these goals.

Without bold and courageous action now, by both developed and developing countries, the world community will not even come close to achieving the Millennium Development Goal of cutting the number of hungry people in half by 2015. Many factors contribute to the current sluggish pace of progress against hunger. Rapid changes in the structure and authority of governments, the farming sector, and global and local food industries, along with the liberalization of markets, the globalization of economies, and the development of new biotechnologies, make it imperative to rethink our approach. And while these policy, market, and science environments have been changing, other realities have emerged. In Sub-Saharan Africa, for example, natural disasters, failed states, protracted civil wars, and the AIDS epidemic have drastically curtailed people's ability to acquire enough nutritious food to lead active, healthy lives.

Business, industry, nongovernmental organizations (NGOs), citizens' groups, and local governments have become important actors in the economic scene in less-developed countries. Yet much of the latest agricultural research is market driven and focuses not on meeting the needs of poor farmers and consumers in developing countries, but on the demands of food-secure people in rich countries.

IFPRI directly supports developing-country policymakers and civil society, including NGOs, to help the poor by researching and analyzing different policy options for meeting food needs in a sustainable manner. The Institute's research findings also reach opinion leaders, donors, advisers, and media that influence national and international decisionmaking. IFPRI's research, capacity building, and policy communications focus on sustainable intensification of agricultural production, economic access to food for the poor, nutrition, agricultural market functioning, global and regional trade policies and agreements,

globalization, macroeconomic policy reforms, and building the capacity of developing countries to carry out policy analysis.

IFPRI'S MISSION

- Accelerate improvement of food and agricultural systems in the developing world
- Reduce pressure on fragile natural resources
- Prioritize the most severe and widely experienced food problems
- Carry out research that creates the knowledge needed for innovation
- Generate results likely to benefit the greatest number of poor people in the developing world
- Create international public goods for the hungry and malnourished poor

IFPRI REGROUPS FOR THE CHALLENGES AHEAD

Strategizing is a permanent, continuous activity at IFPRI, which seeks to recognize trends, key dynamics, and underlying forces; anticipate opportunities and risks in developing-country food systems; and address these with research, capacity strengthening, and policy communication. In 2002, at the request of the Board of Trustees, IFPRI initiated a formal review of its priorities. Researchers, partners, and other stakeholders considered the emerging issues that most directly affect food security, nutrition, and poverty. Their deliberations and conclusions were published in 2003 as *IFPRI's Strategy: Toward Food and Nutrition Security*. For the next 10 years, IFPRI's research will concentrate on three overarching objectives: improving global food system functioning, global and national food system governance, and food system innovations. Twelve interlinked strategic

research themes fall under these categories and will serve as the organizing principles of IFPRI research and of this annual report.

In the coming years, IFPRI must be nimble. Food security situations and the environments that shape them continue to change rapidly. Conducting research that produces pro-poor food policies requires not only the foresight to predict emerging trends and issues, but also the ability to initiate or terminate programs. IFPRI has reorganized for greater flexibility and responsiveness to changing circumstances.

During 2002 and the first quarter of 2003, IFPRI had four research and outreach divisions and a communications division:

- Environment and Production Technology, directed by Peter Hazell;
- Food Consumption and Nutrition, directed by Lawrence Haddad;
- Markets and Structural Studies, directed by Ashok Gulati;
- Trade and Macroeconomics, directed by Sherman Robinson; and
- Communications, directed by Klaus von Grebmer.

These divisions were restructured in April 2003. As governments and donors work toward achieving the Millennium Development Goals regarding food security and nutrition, they have increasingly sought IFPRI research support, technical assistance, and training for capacity building to help make policy, invest resources, and reform their institutions. In response, IFPRI has reconfigured its talented research teams to maximize synergism, innovation, and ultimately IFPRI's capacity to provide relevant services to constituents in addressing the needs of poor and hungry people.

NEW DIVISIONAL STRUCTURE

The **Development Strategy and Governance Division (DSGD)**, formed on April 1, 2003, with staff from the Environment and Production Technology and the Trade and Macroeconomics Divisions, will undertake research on food and agriculture strategy in an economy-wide context. The division's research and outreach agenda will help identify development strategy options for different types of countries through cross-country analysis, country case studies, research on cross-cutting issues, and the design of country and regional strategic analyses. DSGD will create practical tools for strategic planning to guide country investments in poverty reduction, food security, and agricultural growth, and will support national efforts by maintaining a presence in selected countries and by working through regional policy research networks. Peter Hazell is DSGD's division director. Watch for DSGD's exciting work plan later in 2003.

Because World Trade Organization (WTO) negotiations are now focusing heavily on domestic distortions and standards, bringing markets and trade together in one division seems timely. To address in a comprehensive way the institutional innovations and infrastructure related to markets, IFPRI formed the **Markets, Trade, and Institutions Division (MTID)**, a hybrid of the Markets and Structural Studies and the Trade and Macroeconomics Divisions. MTID's director is Ashok Gulati.

Liberalizing trade can encourage agriculture-led economic growth in developing countries, many of which have increased production, expanded exports, and raised incomes as a result of more open markets. But the transformation of rural economies can cause hardship for smaller farmers who cannot meet new production standards or who lack credit or specialized knowledge. Moving toward

a commercial, market-oriented economy is complex; high transaction costs, falling producer prices, and rising food prices hurt the poor. Without oversight, ineffective policies, weak institutions, and inadequate infrastructure can create market inefficiencies. MTID analyzes these economic transformations to understand how to broaden the benefits of market reform to include the poor; identifies constraints on market efficiency; and focuses on the institutions and policies most likely to help smallholders access markets.

Former TMD director Sherman Robinson now serves as an Institute Fellow based in the director general's office to contribute to crosscutting research, facilitate interdivisional cooperation, and help build DSGD.

The ***Environment and Production Technology Division (EPTD)***, under the new leadership of Mark Rosegrant (taking over from interim director Ruth Meinzen-Dick), will continue to focus on ways to increase agricultural growth in developing countries, reduce poverty, and sustain the environment. Whether these closely linked goals complement or compete depends on each country's mix of policies, technologies, and investment strategies. EPTD quantifies the trade-offs and links between agricultural ecosystems and poverty reduction so that policymakers and practitioners can establish research-based priorities for action. To drastically reduce the number of hungry people and feed the generations to come, agricultural production must grow. But current agricultural systems are threatened by land degradation, water scarcity, and erosion of genetic resources. Solving these problems requires technologies that can improve yields and contribute to better natural resource management. It also requires that institutions and policies be in place to provide poor people with opportunities and incentives to conserve and manage natural resources efficiently.

The ***Food Consumption and Nutrition Division (FCND)***, led by Lawrence Haddad, will remain as is. FCND researches how policies and programs affect community, household, and individual nutrition levels and food security; how poor people generate income, get food, and ensure good nutrition and health for themselves and their families; how diets change and affect food security and poverty over time; why some communities develop and prosper while others remain mired in poverty; and how institutions assist or constrain people and communities in moving out of poverty. Sustainable food production alone does not eliminate malnutrition. Economic access to food and the ability to harness food for physical growth and nutrition are also essential. FCND seeks to understand what influences the behavior of communities, households, and family members, and the importance of gender for planning and implementing specific policies or program interventions.

The ***Communications Division (CD)***, under the direction of Klaus von Grebmer, serves the entire institute by getting research results to those who need them. World events in 2002 focused international attention on the importance of food security as a basic human right and as a factor in political, social, and economic life. In addition to publishing IFPRI research findings, the Communications Division used them to disseminate information on some of the most important issues of our time to policymakers, researchers, NGO staff, and others active in civil society. To grapple with famine and food crisis in Africa, the Communications Division helped to produce essays on the reciprocal relationships among the AIDS epidemic, hunger, and agriculture; synthesized IFPRI research in an issue brief with recommendations on what African nations can do immediately to recover from famine; and published another issue brief delineating guidelines for ending hunger in Africa. A book co-published with



The Johns Hopkins University Press spelled out what market reform in Africa has and has not accomplished and why.

IFPRI published six books in 2002. *Six Billion and Counting: Population and Food Security in the 21st Century*, addresses the population component of ending hunger and malnutrition and argues that modern technologies can buy the world time to reduce population growth and thus improve human lives but cannot expand the world's carrying capacity indefinitely. Action and planning are necessary now to contain population growth.

Food security depends not only on the number of people to be fed but also on whether there is enough water to grow food for them. *World Water*

and Food to 2025: Dealing with Scarcity, a book with highlights published in more accessible formats, argues that if farmers and other water users can get more use out of each unit of water, the amount of water reserved to maintain the environment will increase and agriculture can continue to feed the world. Though these publications deal with different factors in the food security equation, their conclusions concur: Complacency can only lead to catastrophe.

Following the fall of the Taliban, a special issue of *IFPRI Perspectives* highlighted research in other countries that could be applied right away to address the food security and development needs of Afghanistan, and emphasized the need to help women reassume their vital roles in Afghan

society for that nation to recover from decades of war and repression.

The Communications Division designed and tailored strategies to get these and other urgently needed messages and knowledge out using all available avenues. To promote maximum accessibility, the division works with researchers to present their findings to IFPRI's varied audiences. Substantial increases in downloads from IFPRI's website, growing media coverage and consultation with IFPRI experts on topics related to current events, and steadily increasing orders for print publications testify to the success of the division's multifaceted, targeted dissemination strategy as well as to the relevance of the topics IFPRI studies.

IFPRI's library brings state-of-the-art knowledge and information sharing to its external clients and to the desks of research staff. IFPRI's modern knowledge management makes it possible for people all over the world to share IFPRI findings. To balance the long-distance reach of the Internet, IFPRI also brings people together the old fashioned way. Through meetings, conferences, seminars, and workshops, researchers, government officials, representatives from NGOs, and policymakers network to establish the person-to-person connections necessary to reach understanding and get things done. The Training for Capacity Strengthening Program imparts the content and methods of IFPRI research to stakeholders in developing countries. IFPRI takes teaching to eager learners throughout the world. Finally, recognizing that news coverage shapes public opinion and influences policymakers, IFPRI's media campaigns target print, radio, and television journalists in developing and donor countries.

NETWORKING FOR RESULTS

While much of IFPRI's research is global, IFPRI currently invests about half of its regionally focused programmatic budget in Sub-Saharan Africa, 30 percent in Asia, 18 percent in Latin America and the Caribbean, and 3 percent in West Asia and North Africa. The main focus in the coming years will continue to be Sub-Saharan Africa and South Asia, where food insecurity and undernutrition are broadest and deepest. Outside of Sub-Saharan Africa and South Asia, IFPRI will emphasize work in the most food-insecure areas, expand research cooperation in China, Central Asia, and Central America, and work with other CGIAR centers and new partners to strengthen regional networks.

COLLABORATIVE NETWORKS

- Network for East Africa
- Regional Network on AIDS, Rural Livelihoods, and Food Security (RENEWAL)
- South Asia Initiative
- Agricultural Science and Technology Indicators (ASTI)
- Collective Action and Property Rights initiative (CAPRI), a systemwide initiative of the CGIAR
- Mashreq and Maghreb (M&M) Project

Senior researchers at IFPRI cooperate widely with other Future Harvest centers of the CGIAR and in large, effective networks with partners in developing countries and centers of excellence worldwide. IFPRI plans to strengthen incentives for this cross-cutting and collaborative research within and beyond IFPRI. IFPRI proactively works to create and support regional networks in West Asia and North Africa (WANA), South Asia, and Sub-Saharan Africa.

While some networks, such as the Network for East Africa, the Mashreq and Maghreb Project, and the South Asia Initiative, deal with specific regions, others, like RENEWAL, which concentrates on AIDS, and CAPRI, which focuses on collective action and property rights in natural resource management, are dedicated to a single theme or subject area. These networks aim to improve access to policymakers for and through researchers in member countries and to coordinate the work of IFPRI researchers with their counterparts in the field. In the future, as IFPRI decentralizes its operations, these networks will assist outposted IFPRI staff. IFPRI itself is a member of the CGIAR network, and relies heavily on partnerships with sister centers throughout the world, including joint projects and staff appointments with IPGRI, ISNAR, ILRI, IWMI, and ICARDA.

Achieving food security will require unwavering commitment, new approaches, broad political mobilization, and a more effective and sustainable attack on the scourge of hunger. In addition to IFPRI's science-based approach, an explicit emphasis on human rights, including the right to adequate food, is essential. In 2002, IFPRI and the International Project on the Right to Food in Development (IPRFD) held a roundtable to explore how human rights analysis can enrich food and nutrition policy analysis and vice versa. Virtually every country produces between 85 and 100 percent of its food supply. Therefore, national policies that recognize and realize the human right to food must be in place and operational. By providing public goods and services, national governments have the greatest influence on and the primary duty to assure food security within their borders. Nevertheless, the international environment has considerable influence on national policies, making it incumbent upon the World Trade Organization and other global organizations to make the decisions that will lift the floor of poverty so that all might flourish.

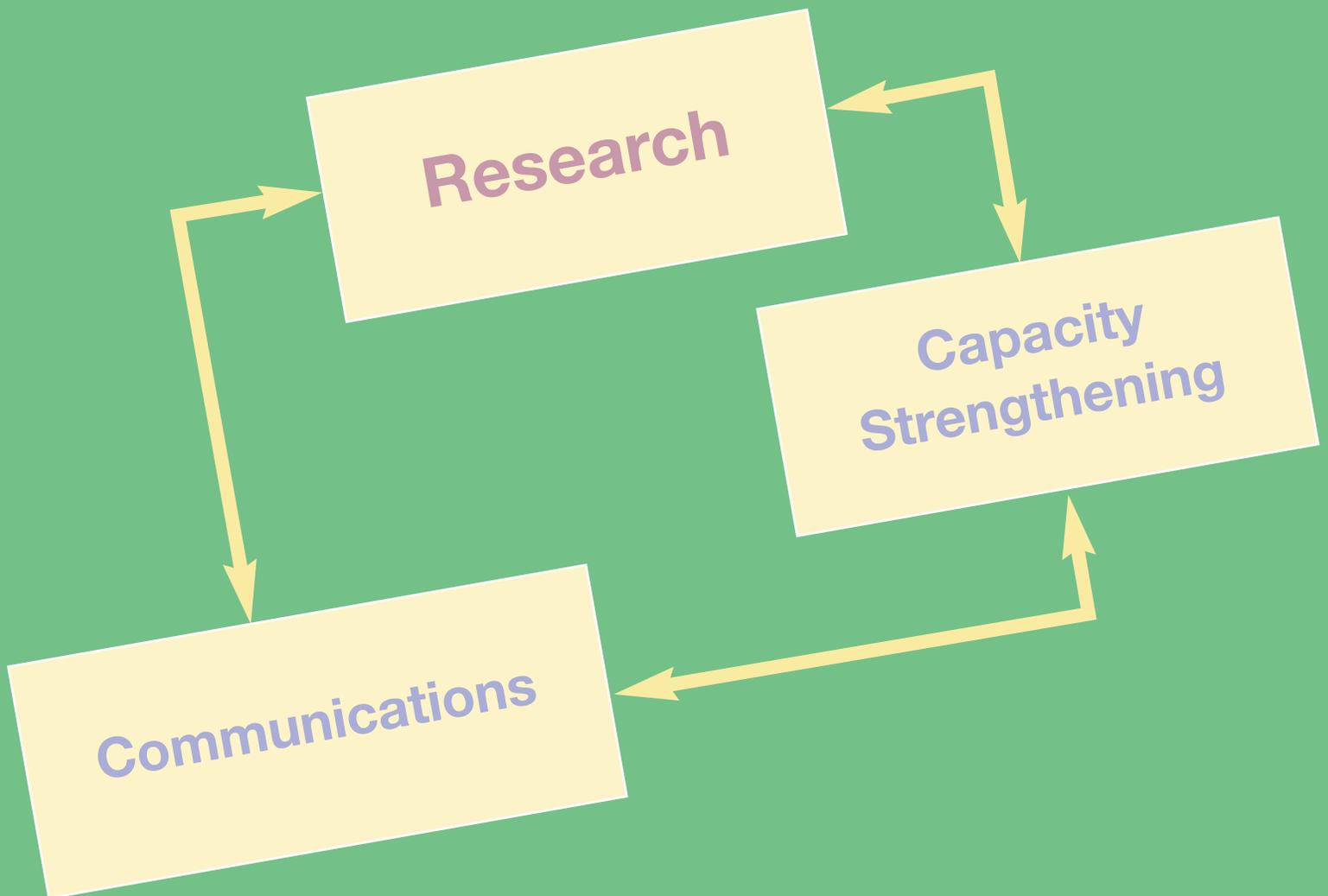
The causes of hunger are complex and include violent conflict, environmental degradation, water scarcity, and climate change. But poverty is at the root of hunger: people are hungry because they cannot afford to buy all the food they need, or they lack the land and other resources to produce food for themselves. The stakes are high: about 800 million people, including 170 million malnourished children under the age of five, go hungry every day in the developing world. Five million children die annually of malnutrition and related diseases. These brutal statistics underscore the violence and injustice of hunger itself.

Might food security be a pathway to peace as well as a result of it? Great thinkers and doers as disparate as Amartya Sen and Franklin D. Roosevelt have recognized the link between hunger, conflict, chaos, and tyranny. In 1980, a United States Presidential Commission on World Hunger reiterated that where the right to adequate food remains unrealized, "the protection of other human rights becomes a mockery." More than 20 years on and numerous international summits later, hunger plagues the poorest people on the planet. The pledge in IFPRI's logo, to find "sustainable solutions for ending hunger and poverty," encapsulates our support of the right to adequate food, understood as the right to have a fair chance to get access to the means to feed oneself and one's family. With explicit attention to vulnerable groups, as influenced by caste, class, religion, ethnicity, and gender, IFPRI pursues activities that benefit people in greatest need. We pledge to boldly and independently communicate findings based on sound analysis, even when controversial. The next section describes IFPRI's work in 2002 and early 2003 in pursuit of these goals. ■

RESEARCH AND OUTREACH

The IFPRI Board of Trustees asked the Institute's management to review its long-term strategic direction and develop an updated strategy document. This was published in April 2003 as IFPRI's Strategy Toward Food and Nutrition Security: Food Policy Research, Capacity Strengthening, and Policy Communication. The following descriptions of IFPRI's work in 2002–2003 are grouped according to categories established in the strategy document.

*Themes involving substantial new work at IFPRI are marked with an asterisk.**



GLOBAL FOOD SYSTEM FUNCTIONING: POLICIES SUPPORTING MORE EFFICIENT FUNCTIONING OF THE GLOBAL FOOD, NUTRITION, AND AGRICULTURE SYSTEM THAT ENHANCE INCLUSION OF LOW-INCOME COUNTRIES AND IMPROVE FOOD AND NUTRITION SECURITY FOR POOR PEOPLE.

GLOBAL FOOD SITUATION AND SCENARIOS OF POLICY RISKS AND OPPORTUNITIES

A 2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT

2002 was an exciting year for the 2020 Vision Initiative, one rich in achievements and recognition. Per Pinstrup-Andersen, former IFPRI director general; Rajul Pandya-Lorch, head of the 2020 Vision Initiative; and Mark W. Rosegrant, senior research fellow and leader of IFPRI's research on the future world food and water situation, were honored by the American Agricultural Economics Association's 2002 Award for Distinguished Policy Contribution.

Since 1993, the 2020 Vision Initiative has worked toward developing a shared vision and consensus on actions for meeting world food needs while reducing poverty and protecting the environment. To this end, the Initiative generates and communicates timely information on relevant topics, with special attention to global food projections and emerging issues, to current and future policymakers, industry leaders, civil society activists, researchers, and educators.

Maintaining the momentum of its extremely successful international conference in September 2001, the 2020 Initiative released its Vision document, *Reaching Sustainable Food Security for All by 2020*, which outlines the driving forces influencing long-term prospects for sustainable food security and the actions needed to attain a food-secure future. The proceedings of this vibrant conference were also published. The 2020 Vision team has initiated preparations for the next 2020 conference, to take place in Africa in April 2004.

2020 Vision's publications and communication activities alert the world to the price of complacency about hunger and call for action now. The highlight of the year was the release of the results of the research on water using IFPRI's state-of-the-art International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT). This integration of water projections into global food projections was published as a book, *World Water and Food to 2025: Dealing with Scarcity*, and a food policy report, *Global Water Outlook to 2025: Averting an Impending Crisis*, jointly by IFPRI and the International Water Management Institute through the 2020 Vision Initiative. Another influential publication was *Governance and Food Security in an Age of Globalization*, which came out as part of the 2020 Discussion Paper series. In addition to supporting the IMPACT model and the new work on the prospects for fish to 2020, the 2020 Vision Initiative has commissioned work on food safety and food security, collective action and property rights, and the future of the small-scale farm, among other topics.

The 2020 Vision Initiative strives to reach key new audiences. In November 2002, it sponsored a Parliamentarians' Forum in Kampala, Uganda, on food security and land degradation. Participants included the Speaker of the House of Parliament and about 20 parliamentarians. The 2020 Vision Initiative also engages in pilot activities in capacity strengthening. With partners in Africa, the Initiative has been facilitating a planning process led by 16 local universities to design a collaborative Masters program in agricultural and applied economics in Eastern, Central, and Southern Africa.

“Unless we change policies and priorities, in 20 years, there won’t be enough water for cities, households, the environment, or growing food. Water is not like oil. There is no substitute. If we continue to take it for granted, much of the earth is going to run short of water or food—or both. But a crisis is not inevitable. The world can both consume less water and reap greater benefits. To achieve sustainable water use, we must act now.”

—Mark Rosegrant, Director, Environment and Production Technology Division

GLOBAL TRENDS IN FOOD SUPPLY AND DEMAND: IMPACT SPECIAL PROJECT

Serious issues in world agriculture challenge its continued ability to realize significant increases in developing-country food availability into the 21st century. To ensure that there is sufficient food to meet world needs, policymakers and international institutions require reliable forecasts of future food availability, malnutrition, and the condition of natural resources in the developing world. To this end, IFPRI is using IMPACT to examine alternative futures for global food supply, demand, trade, prices, and food security.

In coordination with the International Water Management Institute (IWMI), IFPRI has extended IMPACT to include the effects of water availability on

food supply and demand, food prices, food trade, and food security under different policy scenarios. The results, published in 2002, show that if current water policies continue, so will high levels of food insecurity, environmental degradation, and water-related health problems. Further neglect of water issues could produce a genuine water crisis, which in turn could lead to a food crisis. Avoiding these outcomes requires fundamental policy changes in the food and water sectors. For example, higher water prices would indeed save water that could be allocated to environmental uses, although making water use more efficient at the same time is critical to maintaining food production. The ultimate success of water pricing policies depends on targeting subsidies to the urban poor and compensating farmers for reduced water consumption rather than charging exorbitant prices as a means to reduce consumption.

GLOBALIZATION, RETAIL FOOD INDUSTRIES,* AND TRADE NEGOTIATIONS RELATED TO FOOD AND AGRICULTURE

GLOBAL AND REGIONAL TRADE

Who benefits from global and regional trade agreements? Those who believe that liberalization of trade and agricultural policies has not helped developing countries gain food security or prosperity find the influence of the World Trade Organization

(WTO) on trade and developing countries worrisome. On the other hand, protection of food products in a country amounts to a tax on food consumption that has a large negative impact on poor consumers, while the money from that implicit tax goes mostly to big producers. Using a multi-country, multi-sector, dynamic general equilibrium

model of global trade, IFPRI researchers are examining the effects of eliminating domestic support to agriculture and export subsidies, and of improving market access. IFPRI also seeks to determine the extent of distortions in world agricultural prices due to protectionist developed-country policies, the benefits of global tariff reforms, and the multiple short- and long-term effects of agricultural liberalization on developing-country economies.

Eugenio Díaz-Bonilla and colleagues have developed a new typology of countries based on a different set of food-security indicators than the one WTO has used in the past, one more sensitive than the WTO's categories to the level and nature of food insecurity. According to IFPRI's classification, all developed countries are food secure, but developing countries experience many levels of food insecurity. Almost all least developed countries (LDCs) are food insecure, while more than 40 percent of net food importing developing countries (NFIDCs) are not, suggesting that being a net food importer is a weak indicator of food vulnerability. Some WTO members that are neither LDCs nor NFIDCs appear to be food insecure. For WTO negotiations, IFPRI's analysis suggests that the definition of specific rights and obligations for food security purposes needs to be linked to a better classification of countries based on objective indicators of food insecurity.

Compared to other developing-country regions, Latin America and the Caribbean (LAC) are more globally integrated with agricultural trade, both export and import. Yet the ability of LAC governments to deal with macroeconomic instability and volatility is severely constrained by trade distortions and lack of access to capital. In addition to agricultural trade liberalization under the auspices of the WTO, 40 regional and U.S. bilateral trade agreements are in effect. While this expands the exposure of the region's agricultural sector to world markets and raises opportunities, it also entails risks. The North American Free Trade Agreement (NAFTA), for example, may affect small and medium-sized Mexican farmers if it leads to greater competition from subsidized U.S. commercial producers. Currently, the majority of Mexican small producers and rural families are poorly prepared to fully capture globalization's potential benefits.

Global and regional trade agreements such as the South Africa–European Union Free Trade Agreement, the Southern Africa Development Community (SADC), and NAFTA generally create trade and improve welfare within countries. Using Computable General Equilibrium modeling techniques, IFPRI has been working on the effects of agricultural liberalization between the European Union and the southern Mediterranean countries, including Turkey and Morocco. Research focuses on the conditions under which gains for developing countries can be realized and widely distributed.

“If the WTO is to fulfill its responsibilities to developing countries, which comprise the majority of its members, it will need better definitions of food insecurity based on relevant quantitative indicators. WTO’s current classification of countries into developed, developing, least-developed, and net-food-importing developing countries is a starting point but needs to be improved to properly address the issue of food security.”

—Eugenio Díaz-Bonilla, Senior Research Fellow

In a study of the Mexican economy, IFPRI has examined the effectiveness of export-led growth strategy and the impact of that strategy on poverty and income distribution. IFPRI researchers addressed the distributional, employment, and poverty implications of Mexico's shift to greater market openness. In the last 15 years, Mexico clearly changed its development strategy by implementing a wide range of economic reforms. Since 1985, it has reduced its average tariff from 34 percent to 14 percent, reduced barriers to foreign investment, dismantled most price subsidies, privatized state enterprises, and joined NAFTA. These reforms were intended to increase economic growth led by exports, and it appears they have been successful: exports have tripled since 1990, and the export ratio has risen from less than 15 percent in the late 1980s to 35 percent in 1999. Growth overall was not impressive until quite recently, and was interrupted by a severe crisis in 1995. But, thanks in part to NAFTA, per capita income has grown by 4 percent per year from 1995 through 2000, among the highest growth rates in Latin America.

Mexico's greater openness has raised output and employment and reduced poverty. But it has slightly increased inequality and extreme poverty at the same time. Partly that is because the new growth strategy was skill-intensive and caused a widening of wage inequality between skilled and unskilled labor in the urban sector and between agriculture workers and everyone else. IFPRI simulations show that agriculture is hurt by anything that causes an appreciation of the exchange rate. Lower tariffs, increased demand for exports, or bigger inflows of foreign capital, all measures of openness, cause an appreciation of the exchange rate and a movement of capital out of agriculture. This contributes to a fall in the relative wages of agriculture workers and a rise in rural poverty, particularly among the poorest families. As a result, while increased openness reduces the conventional measures of poverty (the headcount ratio and the poverty gap), those at the very bottom of the income distribution in the rural sector are made worse off.

MANAGING NATURAL RESOURCES OF PARTICULAR IMPORTANCE TO FOOD, NUTRITION, AND AGRICULTURE—LAND, WATER, TREES, GENETIC RESOURCES, BIO-DIVERSITY—AND RESPONDING TO CLIMATIC CHANGE*

PROPERTY RIGHTS AND COLLECTIVE ACTION

Rules that govern claims to natural resources (property rights) and the means by which resources are managed by individuals or groups (collective action) shape the productivity and sustainability of the livelihood strategies of the rural poor. Property rights specify the different types of claims a person or group of people has to a resource by stipulating their

entitlement and what they can and cannot do. Property rights determine the long-term incentives to invest in, sustain, and improve resources. Certain types of property rights can serve as collateral to facilitate credit transactions. And, depending on their distribution, property rights shape patterns of equality and inequality with respect to resource access.

The large geographical areas that forests, rangelands, extensive waterways, and irrigation systems



encompass and the technologies available to access natural resources mean that they can be managed more effectively and equitably by groups of people. Because collective action requires voluntary adherence to a common set of rules and coordinated contributions by participants, its success depends on the incentives in place to evoke and sustain cooperation—and the resources themselves.

In the Mashreq and Maghreb (M&M) region that

spans West Asia and North Africa, finding sustainable rangeland production strategies for pastoral communities in dry areas, less favored by reason of water scarcity and resource degradation, can only be accomplished by reconciling different institutional and legal approaches to property rights, mobility, and access to common lands. Technical solutions are not enough to resolve challenges caused by the interaction of less-favored land and human relationships. Low and declining productivity,

“To manage rangelands in low-rainfall areas, both tribal and government participation are essential. The government’s role is to provide a legal framework by which to grant and guarantee secure land tenure. Tribes are a vital force in rangeland areas. They offer social and economic security. They listen to their members’ concerns. So listening to them is crucial.”

—Tidiane Ngaido, Research Fellow (joint appointment with ICARDA)

growing impoverishment and vulnerability of pastoral peoples, and increased conflicts in rangeland areas are due largely to inappropriate land use policies, multiple and contradictory legal systems, and inadequate policy and institutional frameworks. The M&M project has identified and tested technical, institutional, and policy options in Iraq, Jordan, Lebanon, Morocco, Syria, and Tunisia, and prioritized public investments in the dry areas.

Collaborators from IFPRI and the International Center for Agricultural Research in the Dry Areas (ICARDA) found that it was difficult to strike a balance between the rights and roles of traditional pastoral communities and those of the state and its institutions. In most cases, policy and institutional reforms weakened pastoral institutions. Most M&M governments view pastoral resources as state property, while the pastoral communities consider them as their territory. Hence, poorly defined tenure rights lead to conflicts and equity disputes. The success of range management crucially depends on the extent to which pastoral communities are granted full control over access and use of the resources. People invest in properties only when they have assurance of benefiting from improvements.

CGIAR SYSTEMWIDE PROGRAM ON COLLECTIVE ACTION AND PROPERTY RIGHTS (CAPRI)

The Collective Action and Property Rights initiative (CAPRI), housed at IFPRI, fosters research within the CGIAR system on the role of property rights and collective action institutions in shaping efficient, sustainable, and equitable natural resource systems. The program has grown to include all 16 CGIAR centers and researchers and policymakers at over 300 other institutions worldwide. CAPRI won the CGIAR's 2002 Science Award for Outstanding Partnership. In 2002, CAPRI released a book,

Innovation in Natural Resource Management: The Role of Collective Action and Property Rights in Developing Countries; held a workshop on methods for studying collective action; and released a CD with a wide variety of CAPRI publications.

Property rights and collective action can determine whether people will adopt environmentally sustainable methods of managing natural resources. Yet too often policymakers do not pay close attention to the implications of property rights regimes as well as to the importance of collective action for sustainable natural resource management. Researchers at IFPRI and other CGIAR centers are investigating how diverse property rights arrangements can provide security and incentives for long-term investments and sustainable resource management. They are also studying the conditions under which community management is successful and sustainable, developing policies to promote access to resources; and facilitating collective action for the management of common pool resources. Having completed a number of studies of how property rights regimes and collective action impact the management and productivity of rangeland, forestry, agroforestry, water, and cropland, the research team is now focusing on how property rights and collective action can be used to increase access to and control over natural resources by the poor.

These studies seek to recognize the most effective ways of providing secure property rights to natural resource users, whether through customary rights or more formal systems; to determine how policies can create enabling conditions for communities to organize successfully and sustain collective action for natural resource management; to design policies to improve property rights for and collective action among poor and marginalized users; and to design institutional arrangements that promote long-term investment and technology adoption for sustainable natural resource management.

SUSTAINABLE DEVELOPMENT OF LESS-FAVORED LANDS

IFPRI research has shown that sustainable development of less-favored lands makes the most of previously neglected resources. Over 1 billion people live in less-favored areas that are challenged by difficult agro-climatic conditions, poor infrastructure and service support, or both. Past agricultural development strategies emphasized irrigated agriculture and high-potential, rain-fed lands to increase food production and stimulate economic growth. But less-favored lands are major areas of rural poverty, food insecurity, and resource degradation.

How much investment can be justified in less-favored areas and what development strategies are most appropriate? Public investment is a major determinant of agricultural growth and rural poverty reduction. But many developing countries have reduced their investments in rural areas in response to recent macroeconomic policy reforms, a trend that threatens future productivity growth, food supplies, and the natural resource base. To maintain the gains that have been made in many countries in Asia and elsewhere, countries will have to use their public resources more efficiently.

Sustainable development of less-favored lands is an option for increasing food production in Africa, where large numbers of poor farmers live and, increasingly, overexploit natural resources just to survive. The possibilities for sustainable agricultural intensification in less-favored areas, even when soils are degraded, are much greater than previously thought. For example, IFPRI research in northern Ethiopia has identified profitable and sustainable investment opportunities in drought and famine-prone environments, including investments in soil and water conservation structures, tree planting, beekeeping, and improved livestock management. The key is to

focus on the comparative advantages of such regions, relying less on fertilizer and other external inputs that are risky, and more on profitable investments and sustainable land management practices such as reduced tillage and recycling of manure and compost to the soil.

Investments in tree planting and devolution of authority over woodlots are critical to the success of such efforts, because they help to address the scarcity of wood that causes farmers to use manure and other available organic materials as fuel rather than as fertilizer. Using knowledge about how to make less-favored lands more productive can also make them more cost-effective, in turn attracting investment. With investment, agriculture starts to grow, incomes and expenditures of local people increase, and opportunities expand to diversify agricultural and nonagricultural goods and services, including microenterprises and agroprocessing. The key is the right investments in people, technologies, policies, and institutions.

Agriculture is of overwhelming importance in the economies of most countries in Mesoamerica, yet frequent droughts, hurricanes, and flooding make agriculture especially risky. Small farmers and landless rural workers are the most vulnerable. Many reside on the margins of fragile ecosystems. Few have the financial reserves to protect themselves in bad years. Most developing countries have geared their public investments toward agroecologically and socioeconomically more-favored regions. Mesoamerica is no exception. IFPRI research is examining whether returns to public investments in roads, irrigation, electricity, and education in less-favored areas of Mesoamerica exceed those in favored areas. This data could provide the basis for redirecting public funds.

Applying the sustainable livelihoods framework, IFPRI research in Honduras has identified several dominant

livelihood strategies and farm types in hillside areas and the factors promoting or inhibiting sustainable land management, based on a recent survey of nearly 400 households in different parts of the country. The smallest basic-grains farms earned higher incomes than many medium-sized farms as a result of their greater off-farm income, though incomes of all farmers surveyed were quite low. Smaller basic-grains farms are more likely to use conservation measures than larger livestock farms, suggesting where technical assistance on conservation is likely to be successful. Land tenure influenced land management, with little investment in land conservation on leased or communally owned parcels. Thus, efforts to promote private land ownership by smallholders can help to ensure more sustainable land management. Coffee and basic grains production are marginally profitable in many hillside areas, but do not appear to offer a long-term pathway out of poverty. Rather, education is more strongly associated with improved incomes.

No one can control the weather. But creating insurance markets and forward price contracts; providing early weather warning information; diversifying into higher-value fruits, vegetables, and other products; expanding agroprocessing and employment outside the farm sector; applying research on sustainable management of natural resources; improving access to health, education, and technical assistance; and the effective operation of markets for key farm inputs are all steps that could enhance the livelihoods of agriculturalists.

WATER RESOURCE ALLOCATION: PRODUCTIVITY AND ENVIRONMENTAL IMPACTS

Water sustains life, enables development, and supports a healthy environment. But population and economic growth threaten this vital resource. Households, industry, and agriculture are increasing their demand for water, while watersheds and irrigated lands are deteriorating and surface water is becoming more polluted. Water demand has traditionally been met by developing new sources of water. This is no longer possible. Studies of water management provide information that helps policymakers understand how different institutional and policy options for allocating water affect poverty, agricultural growth, and the environment.

Watershed development projects in India in the rain-fed, semi-arid areas that were bypassed by the Green Revolution held out the hope of capturing scarce water resources, improving soil and vegetation management, and creating conditions for higher agricultural productivity. IFPRI's evaluation of watershed projects in less-favored areas of Andhra Pradesh and Maharashtra compares the performance of a range of watershed projects on natural resource conservation, yields, and poverty alleviation. Researchers found that participatory projects managed by nongovernmental organizations were successful in achieving the first two goals, but at the expense of the poorest people. Improving watershed management usually requires restricting access to the natural resources upon which the poor depend. Since many watershed projects fail because those whose interests are harmed do not cooperate, projects must make sure that all affected parties benefit from the net gains generated.



Water rights are more difficult to define than rights to land resources, and have been receiving growing attention as water becomes scarcer. But government attempts to formalize water rights by imposing new laws often ignore the importance of existing local law regarding water rights. From a legal pluralism perspective, IFPRI has worked to identify the various bases for claims on water resources, the bargaining power of different claimants, and how negotiation processes can lead to more equitable access to water, especially in situations where cities and industries are taking more water away from agriculture and rural areas.

At both the river basin and local levels, some water allocation decisions require tradeoffs with winners and losers, but in many instances, other ways of handling water allocation can lead to "win-win" solutions. Identifying these requires careful scientific assessment of consequences of existing transfers based on both modeling and institutional analysis. IFPRI's water team has undertaken river basin studies in collaboration with national partners in the Brantas River Basin in Indonesia, the Dong Nai River Basin in Viet Nam, and the Maipo River Basin in Chile.

In 2002, IFPRI contributed to many water-related activities, including the World Food Prize Symposium

on water, and the Global Water Partnership. Results included *World Water and Food to 2025: Dealing with Scarcity*, and the shorter summary report, *Global Water Outlook to 2025: Averting an Impending Crisis*, described on page 40.

IFPRI is leading the Global and National Water and Food Systems Theme of the CGIAR Challenge Program on Water and Food, which the International Water Management Institute is coordinating.

FOOD SYSTEMS IN DISASTER PREVENTION AND RELIEF, AND REBUILDING AFTER CRISES*

HIV/AIDS AND FOOD SECURITY: RENEWAL

The HIV/AIDS epidemic in eastern and southern Africa is having a major impact on agriculture, the principal source of livelihood for the majority of the region's population. Rural poverty, in part traceable to agricultural development, is also contributing to the further spread of infection. Yet, with some notable exceptions, agricultural institutions in the region have yet to engage significantly to prevent or mitigate the consequences of AIDS.

IFPRI and its partner CGIAR center, ISNAR, are co-facilitating the Regional Network on AIDS, Rural Livelihoods, and Food Security (RENEWAL)—a country-driven, action research/capacity development initiative now successfully underway in Uganda and Malawi. RENEWAL aims to understand how the reciprocal relationship between HIV/AIDS and agricultural systems constrains effective action; to analyze current and planned policies and programs for their impact on prevention or mitigation; and to support experiments to enhance positive and reduce negative policy and program effects.

RENEWAL supports institutional innovations to improve the capacity of regional agricultural R&D

systems to respond to the AIDS challenge. These include emerging national and local learning and action networks, research partnerships between agricultural and public health institutions, collaborative links with NGOs and CBOs working with affected and at-risk groups, new financing mechanisms, and improved information sharing among partners.

During 2002, background reports prepared by network partners in Uganda and Malawi were discussed at stakeholder workshops, leading to consensus on priorities for policy modification and for targeted action research. In August, a call for proposals based on these priority themes yielded 50 responses, from which 10 will be selected and funded from national Action Research Funds. A regional workshop on methods and indicators, held in Uganda in November 2002, helped to strengthen the networks' research and evaluation methodology and highlighted areas where further capacity development is needed. The findings of these studies along with the results of policy reviews and experiments will be discussed in local, national, and regional fora. Current donors to RENEWAL include the international development agencies of the United States, Norway, Canada, and Great Britain and the United Nations World Food Programme. For more information contact s.gillespie@cgiar.org.

FOOD SYSTEM GOVERNANCE: POLICIES IMPROVING GLOBAL AND NATIONAL GOVERNANCE, POLITICAL PARTICIPATION, AND INSTITUTIONS FOR PRO-POOR FOOD, AGRICULTURE, AND NATURAL RESOURCE MANAGEMENT SYSTEMS.

APPROPRIATE ROLES OF STATE, MARKET, AND CIVIL SOCIETY IN FOOD, AGRICULTURE, NUTRITION, AND NATURAL RESOURCE MANAGEMENT POLICY*

NUTRITION POLICY PROCESS

Why do some successful nutrition-relevant programs, such as Mexico's PROGRESA, expand in spite of political shifts, while other beneficial programs are forgotten? And why do some places, like Kerala, India, have a higher commitment to investments in human capital while much wealthier places seem unconcerned? Without knowing answers to these questions, IFPRI's science-based information may not influence the framing of nutrition problems and solutions in a pro-poor way.

When governments ignore policy recommendations based on evidence arrived at through a balanced and rigorous research process, or when interest groups use research results selectively to accomplish their own agendas, countless lives may be at risk. Analyzing the structures and processes that underlie nutrition policy formulation will help improve the competence, fairness, and quality of decisionmaking, and help identify and evaluate alternative mechanisms for eliciting and reconciling different views. Structures and processes will be studied because they capture the values, motivations, and power of national governments, civil society, the private sector, the media, and

international organizations—all actors that shape nutrition-relevant policy. IFPRI researchers hope that in capturing these different perspectives and making the process by which they are reconciled transparent, policy setting and decisionmaking will more fully address issues of malnutrition.

PUBLIC POLICIES FOR RURAL INSTITUTIONS, MARKETS, AND INFRASTRUCTURE DEVELOPMENT

Over the past 20 years, most African governments have carried out economic reforms in agricultural markets as part of larger structural adjustment programs to deregulate markets and reduce the role of state enterprises. These reforms were expected to boost agricultural production and economic growth, and create higher relative prices for agricultural commodities, which should have stimulated farmers to produce and earn more. More open and competitive markets and reduced state intervention were supposed to help functioning markets emerge quickly. But the results have been mixed and disappointing.

Dismantling state agricultural cooperatives should have created conditions for private businesses,

NGOs, and community-based organizations (CBOs) to provide agricultural credit, inputs, and marketing services. In the book *Reforming Agricultural Markets in Africa*, IFPRI researchers synthesized extensive research accumulated by IFPRI and others and compared reform experiences of Sub-Saharan African nations, levels of market improvement or failure, impact on agricultural productivity and input use, and contributions of reforms to smallholder incomes and poverty reduction. IFPRI's analysis found that in many cases, market reforms were only partially implemented and were often reversed.

African countries have been constrained by many factors outside of economic or agricultural policies: wars, civil unrest, droughts, and infectious diseases like AIDS, malaria, and tuberculosis that are killing millions of people in their prime. In addition to dealing with these challenges, expensive, long-term investments and political commitment are necessary to accomplish the privatization, institution building, infrastructure development, and provision of public goods and services essential for markets to develop.

IFPRI research in 2002 clearly demonstrated that rural people in Africa have little chance of improving their livelihoods without well-functioning markets. In the early 1990s, Ethiopia completely privatized its national market, leaving grain distribution in the hands of the private sector. But, as in other African nations that instituted structural adjustment-led reforms, the market environment was very weak and the private sector did not deliver.

In this weak market environment, most private grain traders operate small-scale businesses with very few assets, and trade only with people they know, in cash, over very short distances. Contracts are verbal and there is no legal system of enforcement. Two-thirds of Ethiopian traders cannot get bank loans, only 6 percent own a vehicle, and less than half have a telephone or permanent storage facilities. In addition to weak markets, the transport system is archaic and telecommunications do not exist. Traders lack formal business training and most have not completed high school. Ethiopia lacks national inspection and quality certification standards and a public market information system to notify farmers and traders of grain prices. This situation allows people in one part of the country to go hungry even when there are surpluses.

In contrast to Ethiopia, the agricultural markets in Uganda show some positive signs, however. IFPRI research suggests that compared to the early years of liberalization, the level of competition and the interdependence among market locations have increased. Analyses of the time series data suggest that spatial integration of food markets has improved in recent years, resulting in lower and more stable prices across various regions. However, the results also indicate that the performance of the agricultural sector in the country can be further improved through appropriate policies. In particular, the CGE analysis suggests that reductions in marketing margins could result in major gains to rural farm households, as well as boost most nonagricultural activities due to income effects on demand and release of factor resources from the trade sector.

FOOD AND WATER SAFETY POLICIES*

Projects under this research theme are being developed. IFPRI collaborated with partners on a March 2003 conference in New Delhi, India, on food

safety. IFPRI also held a policy workshop, “Food Safety, Food Security, and Trade: How to Overcome the Conflicts,” in June 2003.

POLICIES ADDRESSING HIDDEN HUNGER, ENHANCED FOOD AND DIET QUALITY FOR POOR PEOPLE, AND THE NUTRITION TRANSITION* IN DEVELOPING COUNTRIES

BIOFORTIFIED CROPS FOR HUMAN NUTRITION: CGIAR CHALLENGE PROGRAM

In 2002, an extraordinary thing happened to the research program formerly known as Agricultural Strategies for Reducing Micronutrient Malnutrition. Under the co-leadership of Centro Internacional de Agricultura Tropical (CIAT) and IFPRI, this effort innovatively addresses hidden hunger by breeding and disseminating staple foods biofortified with minerals and vitamins. The program grew in scope and scale to become one of two pioneer Challenge Programs supported by the full membership of the CGIAR, and in July 2003 received a generous grant from the Bill and Melinda Gates Foundation.

Since 1993, IFPRI has been nurturing the concept of improving human nutrition by raising the micronutrient content of staple foods. IFPRI has tirelessly built support and conducted preliminary research to answer a key question: Can commonly eaten staple food crops be developed that are fortified with the essential minerals and vitamins so sorely lacking in developing-country diets? Research conducted in collaboration with the International Rice Research Institute (IRRI), Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT), and CIAT has proven that it is

agronomically possible to breed for micronutrient density and that breeding for nutrition often benefits the crops as well.

In 2002, with proof-of-concept research complete and a strong partnership with CIAT established, the program matured into a coordinated international research effort meeting all the requirements of a CGIAR Challenge Program. For the CGIAR, whose endorsement confers global recognition of the validity of the research concept and reflects strengthened support by the international donor community, plant breeding for human nutrition introduces a paradigm shift, adding nutritious food to the research agenda. Since its approval in November 2002, the Biofortification Challenge Program has built a unique alliance of plant, nutrition, and food security scientists, from universities, public and private institutions, and governmental and nongovernmental organizations in the developed and developing world. For more information contact b.mcclafferty@cgiar.org.

DIET QUALITY AND DIET CHANGE

Diets in many developing countries may be unhealthy because of insufficient energy and essential nutrients or for reasons more familiar to affluent nations: too much fat, added sugar, and

salt, leading to obesity, cardiovascular illness, cancer, and other health problems common in the industrialized world. This double burden of undernutrition (too little of the right foods) combined with overnutrition (too much of the wrong foods, and too little of the right ones) is increasing rapidly in many developing countries. It is affecting the poor as well as the wealthy, and both urban and rural populations.

With economic development and increasing urbanization, many countries in Asia and Latin America now face the problem of having to deal

with over- and undernutrition simultaneously. As a result, their health care systems are under stress, and food interventions may do as much harm as good. For example, attempts to increase the energy density of children's diets by reducing the price of saturated oils may be detrimental to those whose fat intake is already sufficient or excessive. Food policies must be carefully designed to redirect the trend away from excess intake of poor quality foods, while pursuing efforts to reduce childhood malnutrition. Food policies on the supply and demand side will need to be explored.

POLICIES AND INTERVENTIONS FOR SUSTAINABLE POVERTY REDUCTION AND NUTRITION IMPROVEMENT

IMPACT OF AGRICULTURAL RESEARCH ON POVERTY

Despite dramatic increases in productivity due to agricultural research under the Green Revolution, many question the distribution of those benefits, especially the extent to which agricultural research has helped the poor. IFPRI has been leading a study of the impact of agricultural research on poverty on behalf of the CGIAR's Standing Panel on Impact Assessment. Five case studies using the sustainable livelihoods framework have employed an innovative combination of qualitative and quantitative research to address this question. These studies focus on fishponds and vegetable technologies in Bangladesh, modern maize varieties in Zimbabwe, farmers' adaptations of improved maize in Mexico (in collaboration with CIMMYT), rice research in Bangladesh (in collaboration with IRRI), soil fertility management techniques in Kenya (in collaboration with the World Agroforestry Centre).

Results indicate that large increases in productivity, as in the case of rice in Bangladesh, help the poor through increases in employment and lower food prices. But when employment and price effects are not as great, then attention should be given to who receives the technology. NGO programs disseminating new vegetable varieties to poor women for homestead production in Bangladesh led to significant empowerment effects, whereas fish-pond technologies targeted at those with private ponds tended to reach wealthier farmers and men. For agricultural research to help the poor, more attention should be given to what assets are needed to adopt the technologies, whether the new techniques are adapted to farmers' own environments, and how to go beyond conventional extension approaches, which often bypass the poor.

Urban dwellers account for one-third of India's total poor, and this share is expected to rise in the future. Policymakers cannot afford to be complacent about this trend: Continued investments are needed to

keep food prices low. Increased agricultural research is still the most effective way—among all government policy instruments—to achieve this objective. Agricultural research investments have reduced rural poverty and are reducing urban poverty. Agricultural research investments increase agricultural production, and increased production in turn lowers food prices. The urban poor often benefit proportionately more than the nonpoor since they spend 50 to 80 percent of their income on food. Among all the rural investments considered in this study of urban poverty, agricultural research had the largest impact per additional unit of investment. The results from this study are similar to earlier findings for China.

GENDER AND INTRAHOUSEHOLD ASPECTS OF FOOD POLICY

Food and agricultural policies to eradicate malnutrition must take into account how resources are allocated within the home. Indeed, high-performing policies, programs, and projects work precisely because they take intra-household resource allocation processes into account. After analyzing primary data on gender collected in Bangladesh, Ethiopia, South Africa, Guatemala, Ghana, and Indonesia, IFPRI researchers used findings to draft a toolkit for policymakers and practitioners. Then the researchers tested the toolkit in workshops in Nepal, Guatemala, and Kenya. The researchers deliberately tested the toolkit in countries other than those in

which the research was conducted. They found that practitioners in different countries shared many of the same experiences. Practitioners' comments and nods of recognition helped researchers make the toolkit more relevant for all users.

Groundbreaking IFPRI research has found empirical data to explain high levels of child malnutrition in South Asia, which persist despite other favorable indicators. Researchers analyzed data on 115,000 infants from 36 developing countries to understand the role of gender in malnutrition in South Asia, Sub-Saharan Africa, and Latin America and the Caribbean. The research team constructed an index of women's power relative to men within the household and the community. They found definitive evidence that the low status of women is an underlying cause of child malnutrition in all three regions and that it has a particularly strong effect in South Asia, where women's status is also the lowest.

Half of South Asia's children are malnourished, and half the world's malnourished children are in South Asia. The proportion of malnourished children in the region is 50 percent higher than in Sub-Saharan Africa, despite South Asia's better economic, education, and health indicators. This discrepancy is known as the Asian Enigma. Many child health and nutrition practitioners who have worked in both Sub-Saharan Africa and South Asia have suggested, based on their own observations and experiences, that this shocking difference is due to women's

“The obstacle to sustained progress in improving women's lives is the gap between practice and policy. Practitioners reported that they kept hitting the ‘policy ceiling.’ Project- and NGO-level people were unanimous: All the interventions done in the field are stopgap measures if policies at the national level do not support them.”

—Agnes Quisumbing, Senior Research Fellow



powerlessness, their lack of freedom and education, and the neglect of care for women by both family and society in South Asia. Now IFPRI researchers have substantiated that theory, first expounded in 1996 by famed Indian physician and nutritionist Vulimiri Ramalingaswami and colleagues.

Other studies analyzed different aspects of the gender gap. In Bangladesh and the Philippines, preschoolers are favored in the distribution of food

within the household. Households avoid explicit hunger in less-favored individuals by substituting food staples for preferred nonstaple foods. In Bangladesh but not the Philippines, males are favored in food allocations: Men get favorite nonstaple foods.

Turning to the distribution of resources between men and women, researchers found a reduction in husband–wife gaps in age and schooling in six

“We’ve actually been able to show that the low status of women in many South Asian countries affects babies. Women’s nutrition affects their energy levels and their ability to breastfeed and carry out essential childcare. Care for women, including prenatal and birthing care, is an important pathway through which women’s status affects child nutrition.”

—Lisa Smith, Research Fellow

developing countries, which bodes well for improving the balance of power within the family. But husbands own more assets, which has important implications for household well being and the welfare of future generations. Recent IFPRI research shows that when women's status and their control of assets increase, the entire family benefits. Female use of assets has more favorable effects than men's on a number of human capital outcomes, especially for children.

To model the effects of trade liberalization on women in developing countries, at work and at home, IFPRI designed CGE models and built country social accounting matrices that distinguish female from male labor and include household work and leisure in addition to standard market activities. Researchers used these tools to compare Bangladesh and Zambia, two countries with different resource endowments: Bangladesh has abundant labor, while Zambia has abundant natural resources. Each country also has different labor market institutions and sociocultural norms, with important consequences for gender relations.

Trade liberalization reduces the average price of traded relative to nontraded goods and services. Hence, in Bangladesh and Zambia, market sectors expand and nonmarket (nontraded) sectors contract with liberalization. Because of the different gender and labor composition of the expanding and contracting sectors in the two countries, the simulations showed that increases in female

participation in market labor and female wages were larger in Bangladesh than in Zambia. Trade liberalization raises female employment and wages in a labor-abundant country like Bangladesh, but is not as beneficial for women in a natural resource-abundant country like Zambia. By incorporating social reproduction and leisure, the models address the concern that economic reforms might reduce the time women devote to caring for their families. Macroeconomic analysis that excludes explicit consideration of household work and assumes that women's unpaid labor is infinitely elastic produces a seriously incomplete picture of the impact policy changes have on the welfare of women and their dependents.

INITIATIVE TO END HUNGER IN AFRICA (IEHA)

IFPRI is actively supporting the U.S. Government's Initiative to End Hunger in Africa (IEHA), which is committed to a smallholder-based agricultural growth strategy. IEHA's hypothesis is that a major boost in smallholder agriculture will go a long way to raising rural incomes, and in the process bring about a structural transformation that will stimulate overall economic growth and reduce poverty and hunger in Africa.

The IEHA project is an Institute-wide effort managed through the Development Strategy and Governance Division. IFPRI provides the United States Agency for International Development (USAID) a synthesis of

“What’s new about IEHA is its emphasis on agriculture as the top priority for cutting hunger and its focus on growth as the means to end poverty. The aim is to make the pie bigger with the help of agriculture as well as to share the pie with the poor. Performance will be measured by whether hunger decreases.”

—Peter Hazell, Development Strategy and Governance Division Director

analysis, information, and data in order to highlight key constraints to agricultural growth in Africa, as well as the available investment options to remove them. The project is also helping to develop an analytical framework to monitor and evaluate the Africa-wide impact of selected IEHA investments over time.

IFPRI is currently integrating its support for IEHA into a Strategic Analysis and Knowledge Support System (SAKSS). Eventually, SAKSS is expected to go beyond its support for IEHA and help inform a broader partnership on issues that remain to be addressed as part of a multi-donor effort. Some good examples include poverty reduction strategies, the challenges of globalization for the smallholder agricultural sector, the management of agriculture-environment linkages, institutional and governance issues, and rural infrastructure and services. Consultations with IFPRI's global research partners, workshops, and other outreach and capacity building components comprise IEHA's renewed effort to mobilize support for and guide the process of stimulating an agricultural revolution in Africa.

Achieving an agricultural revolution that will permanently end hunger in Africa remains one of the greatest challenges for African leaders and their donor partners, rivaled only by the immediate need to save millions from starvation. If African countries continue to operate under a business-as-usual environment, IFPRI projections suggest that the number of malnourished children will only worsen, reaching 37.9 million by 2015 across the entire subcontinent. Conditions are already deteriorating in Ethiopia, Lesotho, Malawi, Mozambique, Swaziland, Zambia, and Zimbabwe in the aftermath of recent droughts and floods. The resulting food shortages have been particularly severe because of chronic poverty, corruption, and policy failures.

The news is not all bad, however. Many in Africa and the donor community recognize the seriousness of these trends and have recommitted themselves to reaching the Millennium Development Goal of cutting hunger and poverty in half by 2015. Many also recognize that meeting this goal will require an agricultural strategy of the Green Revolution type, one that is well planned and executed, and backed with sufficient resources. Such a strategy is both technically and economically feasible, according to recent IFPRI projections, and could dramatically reduce child malnutrition.

PATHWAYS FROM POVERTY

Some communities, households, and individuals prosper over the long term, and some don't. What factors account for that? By resurveying individuals and households first studied as long ago as the 1970s in Guatemala, Ethiopia, South Africa, Malawi, and the Philippines, researchers hope to tease out the roles and interplay of policy, agricultural technology, social capital, and other variables in the struggle to live above the poverty line. In Guatemala, researchers are tracing the livelihood and earnings consequences of a 1970s nutrition intervention. In South Africa, IFPRI is resurveying 1,100 households and 60 communities in KwaZulu-Natal to complement a 1993–1998 panel survey. Quantitative and qualitative fieldwork is being used in a complementary fashion. In KwaZulu-Natal, for example, these methods jointly show the value of social capital in mitigating shocks and stresses, and the importance of social relationships and organizations in facilitating or constraining work opportunities.

TARGETED INTERVENTIONS TO REDUCE AND PREVENT POVERTY

Investing resources in building the human capital of the poor and putting social safety nets in place to protect the vulnerable are essential steps in eliminating poverty and malnutrition. But pro-poor development strategies must consider complementarities and trade-offs. Are the long-term interests of the poor best served by continuing to subsidize basic foodstuffs or by allocating funds being spent on subsidies to create employment? This

multi-country program assesses the appropriate balance between interventions that promote growth and those that prevent destitution and malnutrition. By identifying and characterizing poverty, analyzing targeting methods, comparing antipoverty interventions, examining feedback effects, and improving and innovating methodologies, IFPRI helps policymakers design better instruments and criteria for efficient, cost-effective support programs in the public and private sectors, under different socioeconomic circumstances and under budgetary and administrative constraints.

“The target of halving the number of people living in extreme poverty. . .will require us to work towards a green revolution in Africa's agricultural sector, so that Africa may move towards the self-sufficiency that we have seen achieved elsewhere.”

—Kofi Annan, United Nations Secretary General



“The benefits to children and mothers of community daycare programs extend well beyond improved nutrition, especially in terms of socialization. Guatemala City’s poor neighborhoods are rough and often violent, and parents fear for their children’s safety. Many children not in the program are locked in their homes while their mothers work, or cannot go to school because they must care for younger siblings.”

—Marie Ruel, Senior Research Fellow

IFPRI launched two new projects in 2002. A project in Haiti is determining whether targeting all children under 2 is a better strategy than targeting all children under 5 who are already undernourished. In Brazil, IFPRI is evaluating a nationwide nutrition intervention whose design varies considerably from one region to another. IFPRI is helping the administration of President Luis Inácio Lula da Silva, who campaigned on a platform of ending hunger, to design, implement, and evaluate a nationwide nutrition intervention, the *Bolsa Alimentação*. This conditional cash transfer program targets children from birth to 6 years old, pregnant women, and nursing mothers who visit healthcare clinics once a month for childhood screenings and vaccinations, pre- and postnatal care, and training sessions on nutrition. The program operates in all 27 states, with direct cash transfers from the federal government to beneficiaries selected and monitored by municipalities.

Meanwhile, much has been learned from ongoing studies. An evaluation of Bangladesh’s Food for Education (FFE) program found that it was successful in increasing primary school enrollment, promoting attendance, and reducing dropout rates. The enrollment increase was greater for girls than for boys. Follow-up work concerns whether the program actually increases overall educational attainment and whether increased student enrollment undermines the goals of the program by contributing to a decline in the quality of education.

In Guatemala and elsewhere, IFPRI research has shown that programs aimed at women and children make a huge difference in the lives of entire families. In 2002, IFPRI completed an evaluation of the government-sponsored *hogares comunitarios* (community daycare) program. Community daycare is helping young, low-income, single mothers retain steady employment while improving the nutritional status of children. The government provides supplies and equipment, trains and pays mothers to provide care in their homes, and subsidizes caretaker mothers to purchase food for two meals and two snacks a day per child, for which parents pay about US\$5 a month. This program successfully targets and reaches the very poorest women and allows them to work in the formal sector, which offers more stable employment as well as health insurance, social security, and vacation, benefits that simply do not exist in the informal economy. Most important, IFPRI found a positive impact on the quality of the diet of participating children: compared with children being cared for by relatives or in private daycare centers, children participating in the government-run daycare program had higher intakes of calories and essential micronutrients like iron and vitamin A. This program fills a great need for alternative daycare among poor working parents and contributes significantly to the reduction of poverty and food insecurity in urban slums.

Targeted interventions are also working in Mexico, according to IFPRI research. Mexico’s PROGRESA

anti-poverty program has been so successful that in January 2002, the Inter-American Development Bank approved a US\$1 billion loan to expand it. PROGRESA (*Programa Nacional de Educación, Salud y Alimentación*) provides education, health, and nutrition aid to millions of indigent families, demonstrating definitively that anti-poverty interventions can improve lives quickly. In just three years, children in rural families targeted by PROGRESA are attending school longer, eating more diversified diets, and receiving more frequent healthcare. Participation in PROGRESA is contingent on income eligibility, school attendance, and visits to healthcare facilities. PROGRESA distributes benefits directly to mothers in order to improve the welfare of poor rural families and offers a unique package of cash transfers, in-kind health benefits, and nutritional supplements.

PROGRESA has been targeted to localities where poor households are most likely to be found, and has

reached the poorest households within them. The program has been especially effective in reducing school dropout rates during the critical transition from primary to secondary school, when many poor children leave to contribute to family income. PROGRESA's impact on health, household food consumption, and nutrition is striking for both children and adults. Participating children have a 12 percent lower incidence of illness, and sick or disability days among adults decreased 19 percent. Recipients significantly increased visits to clinics for nutrition monitoring, immunizations, and prenatal care. PROGRESA families consistently consumed more calories and ate a varied diet that included more fruits, vegetables, and meat, which are important sources of the essential vitamins and minerals that shape physical and mental development. The results showed a significant reduction in the probability of stunting for children aged 12 to 36 months. PROGRESA has proven effective in helping to break the intergenerational transmission of poverty.

CROSS-CUTTING RESEARCH ON COUNTRY AND REGIONAL FOOD, NUTRITION, AND AGRICULTURAL STRATEGIES*

MACROECONOMIC POLICIES, GROWTH, AND FOOD SECURITY

Can developing countries coordinate domestic policies to achieve both growth and equity in an environment of trade liberalization? Studies in Bangladesh, China, Ethiopia, India, Indonesia, Malawi, Morocco, Mozambique, Tanzania, Thailand, Uganda, Zambia, and Zimbabwe build on more than a decade of research on the impact of trade liberalization and macroeconomic reforms on the agricultural sector. New methodologies trace policy changes at the international and national levels in North, Sub-Saharan, and southern Africa; Latin America; and Asia to ascertain the impact of macroeconomic policies on agricultural output, trade,

employment, and income distribution across households. IFPRI's data systems integrate national, sectoral, and household data and support detailed analyses of the links between macroeconomic policies and household-level effects, including poverty. Preliminary results from different studies indicate that in several developing countries, particularly in Latin America, poverty alleviation may be helped by more open trade regimes, although the relative income distribution may worsen with trade liberalization, at least initially. Complementary policies and investments in infrastructure, human capital, and safety nets are usually necessary to ensure that vulnerable groups and the poor benefit and are not hurt by those policy changes.

PRIORITIES FOR PUBLIC INVESTMENT IN AGRICULTURE AND RURAL AREAS

Priorities for public investment in rural areas should be established, expanded, and fully funded to achieve agricultural growth and reduce rural poverty in most developing countries. Recognizing that public investments in rural areas have fallen in recent years, IFPRI is studying ways to reallocate existing resources. Researchers are examining the conditions necessary to provide public goods and services, including political and institutional systems, and analyzing how different kinds of public rural investments affect growth, poverty, and the environment. IFPRI published a summary of major work comparing returns to public investments in rural China and India. Similar studies are underway in Africa, including new methods that combine

available household survey data with currently incomplete secondary data.

Studies by IFPRI and collaborators in India and China show that different kinds of rural public investment pay a range of dividends. Developing countries can significantly reduce rural poverty, stimulate agricultural growth, and move toward food security in less-favored areas if they recognize that public investments are indispensable for achieving these ends, and if they make the right investments. Government expenditure on agricultural R&D in both India and China increased agricultural growth more than any of the seven investment categories analyzed. But investing in education brought the greatest number of people out of poverty in China, and investing in roads helped the poor most in India. Researchers also found that investments in poverty alleviation schemes, health programs, and irrigation



are not the best routes to achieve poverty reduction and food security goals in these countries. And, in stark contrast to conventional thinking, investments in low-potential lands can bring equal if not greater returns to investments in high-potential lands.

NETWORK FOR EAST AFRICA

The Network for East Africa brings together policymakers, researchers, civil society leaders, and students in Ethiopia, Kenya, Malawi, Mozambique, Tanzania, and Uganda to strengthen capacity for food policy research and communication in the region. The Network's mission is to reduce poverty, improve food security, increase agricultural productivity, and promote sustainable use of natural resources in East Africa through appropriate, informed government action. In each of the six countries covered by the Network, a country team of policymakers and researchers identifies priority areas for research at national and regional levels, reviews research proposals, helps organize capacity-strengthening activities, disseminates information, and serves as the primary point of contact to link policymakers, researchers, civil society, and the media.

Through meetings on topical issues, the Network brings these stakeholders together to share their experiences, dilemmas, challenges, and successes. Researchers present their results for peer review and contribute to finding regional and country-level solutions. The Network generates information through collaborative research; strengthens capacity in country to undertake and communicate policy research and analysis on food, agriculture, the environment, and related topics; improves the dissemination and use of information; and facilitates more informed dialogue and debate by policy- and decisionmakers.

The Network supports students and researchers through two competitive grant programs and

workshops on proposal writing, data analysis, strategic communication of policy research, and agricultural economics. A competitive grants program funds locally oriented research on priority issues, with IFPRI staff providing technical assistance when requested and as needed to participating African researchers. The third round of this grant program began in 2002. For two previous rounds, literature reviews have been performed, questionnaires have been designed and reviewed, fieldwork has been initiated, and some reports are near publication. A comparable pilot program seeks to nurture and support masters-level students of agricultural economics. In 2002, the student affiliation program began supporting two master's degree students from each member country as they undertake thesis research on topics or themes identified by the Network as priorities.

Capacity strengthening for policy research is a major element of the competitive research program. Proposal-writing workshops in each Network country benefited a total of 150 participants; peer review workshops were held in five countries. Both workshop series build local capacity to get funding for research. One-on-one guidance in policy research, data collection, data processing, and data analysis and reporting helps to build the capacity of the researchers involved. In addition, a regional research project in Ethiopia, Kenya, Tanzania, and Uganda is underway to help policymakers identify the types of rural services small farmers need. The first meeting in the policy forum series, *Agriculture, Technology Diffusion, and Price Policy in Ethiopia*, was held in Addis Ababa. This timely forum identified concrete, practical solutions to help Ethiopia deal with the current famine that resulted, in part, from a grain market collapse in 2002.

In addition to its continuing support to researchers and student affiliates, the Network for East Africa launched an exciting new project in 2002: the project

integrates research, capacity building, and outreach efforts to strengthen agricultural markets in East Africa. The Network published three reports and two policy briefs in 2002.

SUCCESSES IN AFRICAN AGRICULTURE

Significant reductions in poverty in Africa will require a turnaround in agriculture, for only agriculture offers the broad potential to raise rural incomes and expand employment while moderating urban food prices. By examining instances in which important advances have occurred in the past, IFPRI researchers hope to identify promising avenues for achieving similar successes in the future. IFPRI asked over 1,000 Africa-based policymakers, scientists, and researchers to name advances in the state of African agriculture. This expert consultation identified cassava, cotton, dairy, horticulture, maize, rice, and sustainable resource management as case study topics.

IFPRI defines success as a measurable improvement in net welfare achieved in an environmentally sustainable manner and distributed broadly and equitably to reduce poverty among the population. IFPRI research documented major commodity-specific breakthroughs in maize breeding, sustained gains in breeding cassava and combating its diseases and pests, control of the rinderpest livestock disease, horticultural and flower exports in East and southern Africa, and increased cotton production and exports in West Africa. These successes can be the basis for stimulating and sustaining broad-based agricultural growth in Africa.

SOUTH ASIA INITIATIVE

Over the past 20 years, South Asian countries have generated economic growth and strengthened their

macroeconomies by implementing production, trade, and investment reforms. Nevertheless, the total contribution of Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka to global trade has remained stagnant at 1 percent. Collectively, these countries generate less than 2 percent of the world's income, yet support 22 percent of the global population and 44 percent of the world's poor.

IFPRI's South Asia Initiative (SAI), launched in 2002, seeks to design program interventions that will help promote higher rates of growth in an efficient and sustainable manner and thus help alleviate poverty in South Asia. The first step was to establish the Policy Analysis and Advisory Network for South Asia (PAANSA). Policymakers, advisors, and analysts from Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka, the six member countries, met several times to identify information gaps and set priorities for research that could be applied immediately to South Asia's food security problems. PAANSA members agreed to support research on trade and market reforms in the context of food security; diversification of agriculture and vertical coordination of the process from farms to firms to fork; problems caused by the shrinking size of land-holdings; the role of the private sector in marketing, stocking, and distributing agricultural inputs and outputs; and institutional and pricing reforms in major agricultural inputs, especially irrigation and power.

Many productive workshops, conferences, and meetings have followed. For example, with four of the six South Asian countries already members of the WTO, in-country policymakers urgently needed to understand the issues, challenges, and constraints facing them, particularly the regulations of the Agreement on Agriculture, sanitary and phytosanitary measures, and intellectual property rights. Therefore, IFPRI joined the Ministry of Agriculture of Bhutan and the World Bank Institute in sponsoring a workshop

entitled “Trade Policy, WTO, and South Asian Agriculture,” where PAANSA delegates could learn from international experts and each other. The workshop also helped those from countries not yet acceded to the WTO to prepare for that process. Two other workshops were also held—“Economic Reforms and Food Security: The Role of Trade and Technology” and “Analysis of Market Reform and Food Security.” Other training events dealt with agricultural diversification, trade policies and WTO, and globalization and challenges for South Asia.

SAI concentrates on connecting policymakers to researchers; building researchers’ policy analysis capacity; and assisting institutions to address food security, poverty, and natural resource degradation in South Asia. Generating momentum for research-based policymaking and showing how key policy changes touch peoples’ lives in a positive way are the main goals of SAI. The number of policy researchers trained and the impact of research on policymaking will be the indicators of success for the program in the next few years.

SPATIAL ANALYSIS RESEARCH GROUP (SPARG)

SPARG maps the geographic patterns of food production, natural resource use, and characteristics of human populations, including vulnerability and well-being. By examining where poor people live and linking that to spatial patterns of rainfall, soil degradation, pests and diseases, roads, markets and so on, researchers seek to identify where investments

can have the greatest impact on eradicating poverty and increasing food security. At the same time, the agricultural community is increasingly being held accountable for the broader, often negative, environmental consequences of agricultural expansion and of more intensive cultivation and grazing to meet growing food needs.

SPARG’s work in Uganda illustrates the process of pinpointing where interventions to combat both poverty and loss of environmental quality are most needed and what measures might work best. For example, researchers identify the location of communities where expanding crop production is most likely to happen, based on population density, suitable climate and terrain, and access to markets. They then assess the potential loss of forests, wildlife and habitat, wetlands, and other environmental services, if agricultural expansion takes place. With such information from spatial analysis, policymakers and local leaders can be alerted to the need for a targeted search for solutions that minimize potential conflicts between local and other stakeholders in the management and use of land, water, and biological resources. SPARG researchers are focusing on building spatial databases and decision support tools for a broad range of investment planning themes and scales within Sub-Saharan Africa, but are also playing an important role in the Millennium Ecosystem Assessment, a major international scientific initiative to evaluate options for improving human well-being through better management of ecosystems—including agroecosystems.

“We can show a wide range of development hotspots in the form of maps. Maps provide a powerful and intuitive way to communicate results from many of the complex types of analyses that IFPRI undertakes.”

—Stanley Wood, Senior Scientist

FOOD SYSTEM INNOVATIONS: POLICIES TO FOSTER SCIENTIFIC AND INSTITUTIONAL INNOVATION AND TECHNOLOGY USE FOR THE BENEFIT OF POOR PEOPLE IN DEVELOPING COUNTRIES, AND DEVELOPMENT OF RELATED COMPREHENSIVE FOOD AND AGRICULTURE STRATEGIES.

FOOD- AND NUTRITION-RELATED SCIENCE AND TECHNOLOGY POLICY (MOLECULAR BIOLOGY, BIOSAFETY, AND INFORMATION AND COMMUNICATIONS) SERVING POOR PEOPLE

AGRICULTURAL SCIENCE AND TECHNOLOGY POLICY

Agricultural research and development (R&D)—the system that produces technological advances in agriculture—is changing rapidly. New ways of financing, managing, and organizing agricultural R&D; changes in the biological sciences; and the proprietary nature of the agricultural sciences are affecting how well national and international R&D systems can meet global food needs. IFPRI monitors these changes with research on public- and private-sector roles in agricultural R&D, the impact of biotechnology advances, the effects of stronger intellectual property rights on agricultural research and gene banks, and ways to measure the impact of agricultural R&D on poverty, agricultural growth, and the environment.

AGRICULTURAL SCIENCE AND TECHNOLOGY INDICATORS (ASTI)

IFPRI and the International Service for National Agricultural Research (ISNAR) jointly lead the ASTI initiative, the most authoritative source of information on the support for and the structure of agricultural research and development worldwide. In 2002, ASTI's data collection in Sub-Saharan Africa involved collaboration with 30 national and regional R&D agencies in 27 countries. ASTI published the first African country briefs and made them available on its website (www.asti.cgiar.org).

Sound science and technology (S&T) policies require access to up-to-date and reliable investment data. Growth in public spending on agricultural R&D in some countries has slowed, for others it has stalled, and for some it has declined. At the same time, private participation in agricultural research has grown in some developed countries. Moreover, the distinction between public and private research is increasingly blurred, as public agencies are being pushed to pursue new sources of funding and develop new organizational structures to manage and allocate public research funds. Yet there is a dearth of information and policy analysis to inform and guide the institutional and policy changes that are underway or contemplated. Research is particularly lacking on public policies that can improve the funding, performance, and impact of public and private agricultural S&T institutions worldwide, including their productivity, and their environmental and poverty consequences. Keeping track of these changes to compare them within and among countries and types of agencies and at different points in time is critical to keep policymakers abreast of agricultural science policy issues.

The ASTI initiative compiles, processes, and makes available data on institutional developments and investments in agricultural R&D and analyzes and reports on these trends. Original and ongoing survey work largely focuses on developing countries, but ASTI also maintains access to data for developed

countries. ASTI has produced numerous national, regional, and global overviews and policy analyses of agricultural R&D investment and institutional trends. The initiative's ongoing activities involve collaborative alliances with many national and regional R&D agencies, as well as international institutions.

GENETIC RESOURCES: BIODIVERSITY, BIOTECHNOLOGY, AND BIOSAFETY

Fundamental changes are occurring in how, for whom, and by whom genetic resources are used. IFPRI's research addresses the economic incentives to use genetic resources efficiently and equitably in biotechnology research and biodiversity conservation; the social and institutional structures that affect the choices of farmers, gene bank managers, biochemists, and scientists; and the implications of their choices for developing countries. Researchers are focusing on how biotechnology could meet the needs of the poor, including where biotechnology may not be necessary, or may even be detrimental.

As the nature of the genetic resources generated by scientific research has changed, so have the rules for conducting research. The rise of proprietary technologies owned by large seed companies is restricting the access of public institutions to the tools they need and raises serious questions about the extent to which new agricultural technologies will contribute to the elimination of hunger and poverty. A few developed countries with strong intellectual property protection supply the key technological developments used in biotechnology, but demand comes from farmers and consumers in many poor countries of Africa and Asia.

Devising policies that encourage transactions between rich right holders and poor right users is critical if the poor are to benefit from proprietary technologies. IFPRI research on technology innovation addresses changing intellectual property markets in developing countries, effects of contractual arrangements on access to

technology, and research partnerships between public and private sectors in developed and developing countries. Other research on biotechnology products is identifying the complementary investments to ensure that benefits from these technologies are realized, including those that address farm-level impediments to adoption, the design of appropriate biosafety regulations, and intellectual property regimes.

IFPRI is also analyzing the impact of attitudes toward and policies on genetically modified (GM) crops on world markets, especially in developing countries. Researchers have reviewed evidence on GM food safety, and are conducting assessments of the likely costs and benefits of crop biotechnology products that hold promise for food-insecure people.

In 2002, IFPRI partnered with the International Plant Genetic Resources Institute (IPGRI) to initiate research on biodiversity conservation emphasizing on-farm conservation of cultivated crops in their places of origin and off-farm conservation in breeders' collections or gene banks. With IPGRI, IFPRI is implementing a set of empirical studies in countries with a range of crops, farming systems, and income levels. Farmers' rights—to save seed from harvests, to claim ownership over varieties as do off-farm plant breeders, and to be rewarded for the use of their plant genetic resources by others—are being analyzed as incentives for conservation.

IFPRI collaborates with ISNAR on the USAID-funded Program for Biosafety Systems, which promotes full involvement of the agricultural sector in making regulatory decisions. This program is based on new models for regional collaboration, biosafety capacity building, and policy roundtables on GM crop safety. The future of smallholder farming depends on efficient and equitable food systems.

THE FUTURE OF SMALLHOLDER FARMING IN EFFICIENT AND EQUITABLE FOOD SYSTEMS

DEVELOPMENT OF POSTHARVEST SYSTEMS AND AGRO-INDUSTRY AS A STRATEGY TO RAISE THE INCOME OF THE RURAL POOR

Post-harvest systems and agro-industry, integral to economic growth and diversification, can benefit smallholders and the rural poor, but only if the right policies and institutional structures are in place. Trends in the global economy—labor surplus in agriculture, rapid urbanization, income growth, increased international trade, and growing concerns over food safety, gender inequities, and the environment—are increasing the potential for post-harvest activities and agro-industry to promote rural development. But globalization is restructuring the agro-food industry and increasing the vulnerability of small firms and smallholders. Research is going beyond the traditional focus on technology to analyze institutional and policy dimensions and is based on three hypotheses: Agro-industry can help foster rural economic growth, connect agriculture to the larger economy, and create productive non-farm employment in rural areas; growth can be equitably distributed if smallholders are included as suppliers to food processors and if small-scale firms are properly promoted; and small farmers and firms can help increase institutional efficiency in the early stages of post-harvest and agro-industrial development.

PROMOTING GROWTH AND DIVERSIFICATION THROUGH MARKETS FOR HIGH-VALUE AGRICULTURAL PRODUCTS

Growth and poverty reduction in rural areas, where most poor people in developing countries live, will require moving masses of smallholder producers into higher-value activities, such as livestock production. Income growth and urbanization in developing countries have raised demand for meat, milk, fish, eggs, fruit, and vegetable products, all traditionally grown on smallholder farms. However, consumers with buying power want cheaper, safer food, with predictable characteristics. Meeting these requirements is difficult for smallholders, who find it hard to compete with increasingly integrated and concentrated high-value food chains.

The displacement of smallholders by such market forces is often cited in critiques of globalization and in demands that globalization be constructed in a pro-poor way. Global studies for livestock with the International Livestock Research Institute (ILRI) and the Food and Agriculture Organization (FAO) of the United Nations began in 1999 and continued in 2002 with outreach and updates. This 2020 Vision project was at the center of the new World Bank Livestock strategy. Fieldwork-based country studies with ILRI, FAO, and national institutions were phased in between 2000 and 2001 in the Philippines, Kenya, Bangladesh, India, Thailand, and Brazil, with results becoming available in 2002 and 2003. In stakeholder workshops in 2002, participants discussed policies that could help smallholders remain involved in the growing livestock industry.

IFPRI is collaborating on large-scale studies of the fish sector with The WorldFish Center, and of the fruit and vegetable sector with the Asian Vegetable Research and Development Center (AVRDC). The 2020 Vision fish study highlights the role of the rise of Chinese aquaculture in world fisheries. Fish are the fastest growing source of food in the developing world, and China is at the forefront. Researchers

have analyzed 10 economic categories of fishery items in 36 countries and geographic regions using IFPRI's International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT). The project places fishery issues into broader national and global debates about food and agriculture while providing consistent, quantitative estimates of future fish supply, demand, and trade.

URBAN-RURAL LINKAGES* AND NONFARM RURAL DEVELOPMENT

URBAN CHALLENGES TO FOOD AND NUTRITION SECURITY

Within the next 20 years, more poor and under-nourished people in developing countries will live in cities than in the countryside. Food insecurity and malnutrition in burgeoning cities will rival that found in rural areas even in Africa and Asia, where urbanization has been relatively slow. Despite the severity and extent of the problem, there was no comprehensive research on or understanding of the factors affecting food insecurity and malnutrition in cities. Launched in 1995, this research on urban hunger aims to fill that information gap. A cross-country examination of data from Nepal, Peru, and Zimbabwe showed that while poverty drives child labor and schooling decisions in rural areas, it does not appear to significantly influence them in urban areas. At the same time, the availability of nonfamilial childcare options appears to lower child labor considerably and creates conditions for higher school attendance rates in urban areas.

Women's employment and their use of formal childcare are interrelated decisions. In both Guatemala and Ghana, lifecycle factors such as the age of children and household factors such as income determine whether mothers work. In Guatemala City, maternal education influences whether a mother uses formal

day care but not whether she works for pay. In Accra, maternal education affects neither the decision to work nor demand for day care.

Peru's community kitchen (*comedor*) program saved many poor, urban families from hunger. Thirty to 80 housewives form a *comedor*, where they pool a government-supplied "basic basket" of rice, soy oil, and dry milk and supplement it with additional food purchases. The members cook the food and sell it for less than it would cost an individual household to make it. In return for her labor, each member receives a number of free or reduced-price meals. The *comedor* program and the other targeted interventions confer many benefits beyond food. Members access credit, earn additional income, acquire management and administrative skills, and learn about nutrition. The women's self-esteem improves along with their ability to make decisions freely, which translates into greater authority within the home. While the focus of the *comedor* is hunger relief, arguably the greatest gain comes from the increased knowledge, managerial capacity, and empowerment of women. Though members come and go according to need, a core group of women stays to provide continuity and exercise leadership. In this way, these safety net programs targeting women build enduring capacity in the community. ■

COLLABORATION 2002

In 2002, IFPRI worked with numerous local, national, regional, and international institutions and many individual researchers. The map below shows the kinds of collaborators IFPRI worked with in each country.





COLLABORATING INSTITUTIONS IN DEVELOPING COUNTRIES

AFRICA

BOTSWANA

Botswana College of Agriculture

BURKINA FASO

Programme Sahel Burkinabé
Institute of the Environment and Agricultural Sciences
University of Ouagadougou

BURUNDI

Institute of Agronomic Sciences of Burundi

CAMEROON

Institute of Agricultural Research for Development

CHAD

Chad Institute of Agricultural Research for Development

CONGO

General Delegation for Scientific and Technical Research

ETHIOPIA

Addis Ababa University
Alemaya University
Bureaus of Agriculture, Planning and Economic Development in the Tigray, Amhara, and Oromia Regions
Ethiopian Agricultural Research Organization
Ethiopian Development Research Institute
Mekelle University
Ministry of Health
Oromia Bureau of Agriculture
Amhara Bureau of Agriculture

GABON

Agronomic and Forestry Research Institute

GAMBIA

National Agricultural Research Institute

GUINEA

Agronomic Research Institute of Guinea

GHANA

University for Development Studies
UNICEF-Ghana
University of Ghana-Legon
Science and Technology Policy Research Institute

KENYA

Egerton University
Institute for Policy Analysis and Research
Jomo Kenyatta University of Agriculture and Technology
Kenya Agricultural Research Institute
Kenya Institute of Public Policy
Moi University
Resource Management and Policy Analysis Institute
University of Nairobi

MADAGASCAR

National Center of Applied Research and Rural Development

MALAWI

Bunda College of Agriculture, University of Malawi
Center for Social Research
Department of Agricultural Research and Technical Services
HIV/AIDS and Agriculture Sector Action Research Network, Malawi
National Statistical Office
Ministry of Agriculture and Irrigation

MALI

Institute for Rural Economy

MAURITANIA

National Center for Livestock and Veterinary Research

MAURITIUS

Food and Agricultural Research Council

MOZAMBIQUE

Ministry of Education
Ministry of Planning and Finance
National Institute of Agronomic Research

NIGER

National Agricultural Research Institute Niger

RWANDA

National University of Rwanda

SENEGAL

Senegal Institute of Agricultural Research

SOUTH AFRICA

Trade and Industrial Policy Strategies
University of Stellenbosch
University of Natal, Durban
University of Pretoria

SUDAN

Agricultural Research Corporation

SWAZILAND

University of Swaziland

TANZANIA

Department of Research and Development
Economic and Social Research Foundation
Ministry of Agriculture and Food Security
National Bureau of Statistics
Planning Commission, the President's Office
Sokoine University of Agriculture
University of Dar es Salaam

TOGO

Togo Institute of Agricultural Research

UGANDA

Center for Development Research
HIV/AIDS and Agriculture Sector Network, Uganda
Livestock Health Research Institute
Makerere University
Ministry of Agriculture, Animal Industry, and Fisheries
Ministry of Finance, Planning, and Economic Development
National Agricultural Research Organization

ZAMBIA

University of Zambia

ZIMBABWE

Central Statistical Office
Ministry of Lands, Agriculture, and Rural Settlement
University of Zimbabwe

ASIA

BANGLADESH

Bangabandhu Sheikh Mujibur Tahman Agricultural University
Bangladesh Agricultural Research Council
Bangladesh Institute of Development Studies
Bangladesh Rice Research Institute
Bangladesh Rural Advancement Committee
CARE-Bangladesh
Ministry of Agriculture
Office of Economic Growth, Food, and Environment
University of Dhaka

BHUTAN

Ministry of Agriculture

CHINA

Association of Deans of Agricultural Economics
Center for Chinese Agricultural Policy, Chinese Academy of Sciences
China National Rice Research Institute
Chinese Academy of Agricultural Sciences and Technology
Nanjing Agricultural University

INDIA

Centre for Economics and Social Studies
Indian Council of Agricultural Research
Indian Council for Research on International Economic Relations
Indian Institute of Management-Ahmedabad
Indira Gandhi Institute of Development Research
Institute for Social and Economic Change
Jawaharlal Nehru University
Madras School of Economics
Ministry of Agriculture
National Centre for Agricultural Economics and Policy Research
National Council of Applied Economic Research
National Institute of Science, Technology and Development Studies

Punjab Agricultural University
Research and Information Systems for Non-
Aligned and other Developing Countries
Sardar Patel Institute of Economic and Social
Research
Tamil Nadu Agricultural University
University of Agricultural Sciences

INDONESIA

Central Research Institute for Food Crops
Centre for Agro-Socio Economic Research
Foundation for Advanced Study on International
Development
Institute for Economic and Social Research,
University of Indonesia
Jasa Tirta I Public Corporation
Research Institute for Food Crops Biotechnology
Research Institute for Rice
Ministry of Public Works and Water Resources
University of Indonesia

NEPAL

Business Information Services
Center for Environmental and Agricultural Policy
Research, Extension, and Development
Institute for Social and Ecological Transition
National Agricultural Research Council
Nepal Agricultural Research Centre
Tribhuvan University

PAKISTAN

Lahore University of Management Sciences
Pakistan Institute of Development Economics

THE PHILIPPINES

Institute of Human Nutrition and Food
Philippine Rice Research Institute
University of the Philippines, Los Baños

SRI LANKA

Associated Development Research Consultants
University of Peradeniya

THAILAND

Thai Development Research Institute

VIET NAM

Cuu Long Delta Rice Research Institute
Hanover University
Ministry of Agriculture and Rural Development
Ministry of Labor, Invalids, and Social Affairs
Ministry of Planning and Investment
Research Institute for Fruits and Vegetables
Southern Fruit Research Institute
Sub-Institute for Water Resource Planning
Sub-Institute for Planning and Projections

LATIN AMERICA AND THE CARIBBEAN

ARGENTINA

Instituto Nacional de Tecnología Agropecuaria
Secretaría de Agricultura, Ganadería, Pesca y
Alimentación

BOLIVIA

Unidad de Análisis de Políticas Sociales y
Económicas

BRAZIL

Empresa Brasileira de Pesquisa Agropecuária
Federal University of Bahia
Federal University of Goiás
Federal University of Para
Federal University of Parana
Federal University of Pelotas
Federal University of Pernambuco
Instituto de Pesquisa Econômica Aplicada
National School of Public Health
University of Brasilia
University of São Paulo

CHILE

Catholic University, Santiago
Ministry of Agriculture
University of Chile

COLOMBIA

Ministry of Agriculture
University of Los Andes

COSTA RICA

Ministry of Agriculture
Ministry of the Environment
University of Costa Rica

ECUADOR

Sistema Integrado de Indicadores Sociales del
Ecuador

EL SALVADOR

Fundación Salvadoreña para el Desarrollo
Económico y Social

HAITI

World Vision-Haiti

HONDURAS

Agricultural University of Honduras
National Program for the Sustainable Rural
Development of Honduras
National Statistical Institute
Programa de Asignación Familiar

JAMAICA

University of the West Indies

MEXICO

Escuela Nacional de Antropología e Historia,
Mexico

NICARAGUA

Ministry of the Presidency
Red de Protección Social, Government of
Nicaragua

PERU

CARE-Peru
Catholic University of Peru
Grupo de Análisis para el Desarrollo
La Molina National Agrarian University

NORTH AFRICA/MIDDLE EAST

ALGERIA

Haut Commissariat pour le Développement de la
Steppe
Institut Technique des Grandes Cultures

EGYPT

Agricultural Research Centre

ERITREA

Department of Agricultural Research and Human
Resource Development

IRAQ

Agricultural Research Center

JORDAN

National Center for Agricultural Research and
Technology Transfer
Jordan University of Science and Technology
University of Jordan
Ministry of Agriculture

LEBANON

Agricultural Research Institute
American University
Lebanese University

LIBYA

Agricultural Research Center

MOROCCO

Institut Agronomique et Vétérinaire Hassan II
Institut National de la Recherche Agronomique

PALESTINE

Palestine Economic Policy Research Institute

SYRIA

Ministry of Agriculture and Agrarian Reform

TUNISIA

National Agronomic Research Institute
Ministry of Agriculture
National School of Agriculture, Mograne

TURKEY

Bilkent University

COLLABORATING INSTITUTIONS IN DEVELOPED COUNTRIES

ASIA/PACIFIC

AUSTRALIA

Australian Centre for International Agricultural Research
Center for the Application of Molecular Biology to International Agriculture
University of Adelaide

JAPAN

Foundation for Advanced Study on International Development

EUROPE

DENMARK

Danish Agricultural University
Danish Research Institute of Food Economics
University of Copenhagen

FRANCE

Département et Laboratoire d'Economie Théorique et Appliquée
Centre de Coopération Internationale en Recherche Agronomique pour le Développement

GERMANY

Centre for Development Research (ZEF),
University of Bonn

HUNGARY

Agrobotany Institute

Institute of Environment Management
St. Steven's University

ITALY

Institute of Economic and Social Studies

THE NETHERLANDS

Free University
Institute of Social Studies
Wageningen University and Research Centre

NORWAY

Agricultural University of Norway
University of Science and Technology

SWEDEN

Swedish International Development Cooperation Agency

UNITED KINGDOM

City University of London
Imperial College
Institute for Development Studies
London School of Economics
Oxford University
Sheffield University
University College London

NORTH AMERICA

UNITED STATES

Agricultural Research Center, U.S. Department of Agriculture

Auburn University
Bread for the World
CARE-U.S.A.
Columbia University
Congressional Hunger Center
Cornell University
Development Associates, Inc.
Emory University
Institute for International Economics
International Food Security Treaty Campaign
Iowa State University
Michigan State University
Oxfam America
Population Council
Purdue University
University of California, Berkeley
University of California, Davis
University of Maryland
University of Minnesota
University of New Hampshire
University of Pennsylvania
University of Wisconsin, Madison
U.S. Agency for International Development
U.S. Department of Agriculture
U.S. Geological Service
U.S. Naval Academy
Utah State-led Global Livestock Collaborative Research Support Program
Virginia Polytechnic Institute
Yale University

COLLABORATING INTERNATIONAL AND REGIONAL ORGANIZATIONS

African Economic Research Consortium
African Highlands Initiative of the CGIAR
Asian Development Bank
Association for Strengthening Agricultural Research in East and Central Africa
Banana Research Network for Eastern and Southern Africa
Centro Agronómico Tropical de Investigación y Enseñanza
Centro de Investigaciones Económicas
Centro Internacional de Agricultura Tropical
Centro Internacional de Mejoramiento de Maíz y Trigo
CGIAR Gender and Diversity Program
East Africa Market Information and Postharvest Network (Foodnet)
East and Central African Maize and Wheat Research Network
Eastern and Central Africa Program for Agricultural Policy Analysis
East Africa Root Research Network
Economic Commission for Africa

European Research Center for Development Economics
European Union Systemwide Genetic Resources Programme
Farming in Tsetse Control Areas for East Africa
Food and Agriculture Organization of the United Nations
ICLARM—The World Fish Centre
Institute for Nutrition in Central America and Panama
Inter-American Development Bank
Interamerican Institute for Cooperation in Agriculture
International Center for Agricultural Research in the Dry Areas
International Center for Research on Women
International Centre for Research in Agroforestry
International Crops Research Institute for the Semi-Arid Tropics
International Development Research Centre
International Fertilizer Development Center
International Institute of Applied Systems Analysis

International Livestock Research Institute
International Network for Improvement of Banana and Plantain
International Plant Genetic Resources Institute
International Rice Research Institute
International Service for National Agricultural Research
International Soil Reference and Information Centre
International Water Management Institute
Millennium Ecosystem Assessment
Office of Studies and Agrarian Policies
Organisation for Economic Co-operation and Development
ProDesarrollo Internacional
Soil and Water Nutrient Management Program of the CGIAR
United Nations Children's Fund
United Nations Development Programme
World Bank
World Resources Institute

COLLABORATION WITH INDIVIDUALS

In some cases, IFPRI collaborates directly with individuals. These collaborations benefit IFPRI as well as the individuals and the institutions with which they are affiliated. In 2002, IFPRI researchers worked with the persons listed below.

Chris Ackello-Ogutu, Resource Management and Policy Analysis Institute, Kenya	Kang'ethe W. Gitu, Gitu Associates, Ltd., Kenya	Stella Nagujja, Makerere University, Uganda
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Margaret Armar-Klimesu, Noguchi Memorial Institute for Medical Research, University of Ghana-Legon	David Muturi Kabiru, Consultant, Kenya	Michael Nyirenda, University of Malawi
Gezahegn Ayele, Ethiopian Agricultural Research Organization	Stephen Njuguna Karingi, Kenya Institute for Public Policy Research and Analysis	David Obong, Ministry of Agriculture, Animal Industry, and Fisheries, Uganda
Gbolagade Ayoola, University of Agriculture Makurdi, Nigeria	Joseph T. Karugia, University of Nairobi, Kenya	Paul Omondi Obunde, Ministry of Agriculture and Rural Development, Kenya
Godfrey Bahigwa, Makerere University, Uganda	Emmanuel Kaunda, Bunda College of Agriculture, University of Malawi	Marios Obwona, Economic Policy Research Centre, Uganda
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Suraiya Begum, Bangladesh	Michael Lipton, University of Sussex, United Kingdom	John Omiti, Institute of Policy Analysis and Research, Kenya
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Sango Danford, Sokoine University of Agriculture, Tanzania	John Uhuru Manyengo, University of Nairobi, Kenya	Dennis Rweyemamu, Economic and Social Research Foundation, Tanzania
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Jeffrey Fine, Consultant, Canada	Joseph Mensah-Homiah, Cornell University and University for Development Studies, Ghana	Dick Sserunkuuma, Makerere University, Uganda
Kithiira Florence, Kenyatta University, Kenya	Ellen Messer, Tufts and Brandeis Universities, United States	Alemayehu Seyoum Taffesse, Economic Commission for Africa, Ethiopia
Hon. Ato Newai Gebre-ab, Ethiopian Development Research Institute	Isaac Minde, Eastern and Central Africa Program for Agricultural Policy Analysis, Uganda	Andrew E. Temu, Sokoine University of Agriculture, Tanzania
Workeneh Gebresilassie, Addis Ababa University, Ethiopia	Paulo N. Mole, Universidade Eduardo Mondlane, Mozambique	Laurian Unnevehr, University of Illinois, Urbana-Champaign, United States
Baye Berihum Getahun, Alemaya University, Ethiopia	Richard Mukasa, Makerere University, Uganda	Samuel M. Wangwe, Economic and Social Research Foundation, Tanzania
	Harris Mule, Top Investment and Management Services, Ltd., Kenya	Juliet Wanjiki, University of Nairobi, Kenya
	Milu Muyanga, Ministry of Finance and Planning, Kenya	Sawadatu Zachariah, Noguchi Memorial Institute for Medical Research, University of Ghana-Legon

PUBLICATIONS 2002

RESEARCH REPORTS

Policy implications of each research report are summarized in the two-page IFPRI Abstract series

Number 130

Agricultural Intensification by Smallholders in the Western Brazilian Amazon: From Deforestation to Sustainable Land Use, by Stephen A. Vosti, Julie Witcover, and Chantal Line Carpentier.

Number 129

Balancing Agricultural Development and Deforestation in the Brazilian Amazon, by Andrea Cattaneo.

Number 128

Macroeconomic Policy Reforms and Agriculture: Towards Equitable Growth in Zimbabwe, by Romeo M. Bautista, Marcelle Thomas, Kay Muir-Leresche, and Hans Lofgren.

Number 127

Watershed Development Projects in India: An Evaluation, by John Kerr, in collaboration with Ganesh Pangare and Vasudha Lokur Pangare.

Number 126

Facing the Development Challenge in Mozambique: An Economywide Perspective, by Finn Tarp, Channing Arndt, Henning Tarp Jensen, Sherman Robinson, and Rasmus Heltberg.

Number 125

Growth, Inequality and Poverty in Rural China: The Role of Public Investments, by Shenggen Fan, Linxiu Zhang, and Xiabo Zhang. (Available in English and Chinese.)

IFPRI/JOHNS HOPKINS UNIVERSITY PRESS BOOKS

Innovation in Natural Resource Management: The Role of Property Rights and Collective Action in Developing Countries, edited by Ruth Meinzen-Dick, Anna Knox, Frank Place, and Brent Swallow.

Reforming Agricultural Markets in Africa, by Mylène Kherallah, Christopher Delgado, Eleni Gabre-Madhin, Nicholas Minot, and Michael Johnson.

The Triangle of Microfinance: Financial Sustainability, Outreach, and Impact, edited by Manfred Zeller and Richard L. Meyer.

OTHER BOOKS AND REPORTS

Endowing Future Harvests: The Long-Term Costs of Conserving Genetic Resources at the CGIAR Centers, by Bonwoo Koo, Philip G. Pardey, and Brian D. Wright. (Report prepared for the CGIAR System-wide Genetic Resources Programme by IFPRI in collaboration with the University of California, Berkeley.)

Chinese translation of *The Future of Food: Biotechnology Markets and Policies in an International Setting*, edited by Philip G. Pardey.

Malawi: An Atlas of Social Statistics, by Todd Benson, with James Kaphuka, Shelton Kanyanda, and Richmond Chinula. (Jointly published by IFPRI and the National Statistical Office, Government of Malawi. Also available on a CD-ROM.)

Six Billion and Counting: Population and Food Security in the 21st Century, by Klaus M. Leisinger, Karin M. Schmitt, and Rajul Pandya-Lorch. (Available in English and Chinese; distributed for IFPRI by The Johns Hopkins University Press.)

Spanish translation of *The Unfinished Agenda: Perspectives on Overcoming Hunger, Poverty, and Environmental Degradation, IFPRI/2020 Vision* book edited by Per Pinstrup-Andersen and Rajul Pandya-Lorch.

MICROCOMPUTERS IN POLICY RESEARCH

Number 5

A Standard Computable General Equilibrium (CGE) Model in GAMS, by Hans Lofgren, Rebecca Lee Harris, and Sherman Robinson, with assistance from Marcelle Thomas and Moataz El-Said. (Includes CD-ROM with relevant software, programs, and databases.)

ESSAYS

AIDS and Food Security, reprint of two essays from IFPRI's 2001-2002 annual report, by Peter Piot and Per Pinstrup-Andersen and by Stuart Gillespie and Lawrence Haddad.

More Research and Better Policies Are Essential for Achieving the World Food Summit Goal, by Per Pinstrup-Andersen. Speech delivered at "World Food Summit—five years later," held in Rome, Italy.

FOOD POLICY STATEMENTS

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The Triangle of Microfinance: Financial Sustainability, Outreach, and Impact, by Manfred Zeller and Richard L. Meyer.

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Six Billion and Counting: Population and Food Security in the 21st Century, by Klaus M. Leisinger, Karin M. Schmitt, and Rajul Pandya-Lorch.

ISSUE BRIEFS

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Wobst, Peter (with P. Wehrheim). Subsistence Agriculture in Russia: Representation of an Informal Sector in a Formal Economic Model. The IRIS Discussion Papers on Institutions and Development No. 02/03. Center for Institutional Reform and the Informal Sector. College Park, Md., U.S.A.: University of Maryland.

Yamauchi, Futoshi. Structural Change in Urban Labor Markets: Returns to Schooling and Experience for Migrants in Financial Crisis, Thailand. *ICSEAD Working Paper 2002–14* (March). Kitakushu, Japan: International Centre for the Study of East Asian Development.

Yamauchi, Futoshi (with Y. Godo). Education, Technology Adoption and Economic Growth. *FASID Discussion Paper Series on International Development Strategies* No. 2001–006 (March). Tokyo: Foundation for Advanced Studies on International Development.

Yamauchi, Futoshi (with S. Tanabe). Neighborhood Effects in Migrants' Employment Probability: Evidence from Bangkok, Thailand. *ICSEAD Working Paper 2002–13* (March). Kitakushu, Japan: International Centre for the Study of East Asian Development.

Zhang, Xiaobo (with S. Fan and X. Cai). The Path of Technological Diffusion: Which Neighbors to Learn from? *Contemporary Economic Policy* 20 (No. 4).

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Zhang, Xiaobo (with K. Zhang). Regional Inequality. In *The Globalization of Chinese Economy*, eds. S. Wei, J. Wen, and H. Zhou. Cheltenham, U.K., and Northampton, U.S.A.: Edward Elgar Publishing.

SPECIAL REPORTS

Agriculture, Poverty Reduction and Smallholder Farmers in Sub-Saharan Africa: Public Investment Priorities and Institutional Challenges. Prepared by Shenggen Fan, Xiaobo Zhang, and Neetha Rao for the World Bank.

Analysis of Market Reforms and Food Security in South Asia. Report on a Methodology Workshop held in Mumbai, India, July 8–9. Prepared by Ashok Gulati, Shikha Jha, Suresh Babu and Valerie Rhoë for the South Asia Initiative.

Appropriate Complementary Feeding of Children 6–23 Months: Proposed Indicators Using the KPC 2000+. Revisions prepared by Mary Arimond and Marie Ruel for the Academy for Educational Development project, *Food and Nutrition Technical Assistance*.

A Qualitative Study of the Patterns of Infant Feeding and Care in the Hinche Area of Plateau Central, Haiti. Prepared by Purnima Menon, Marie Ruel, Gretel Pelto, Yves Francois, Elisabeth Metellus, and Arsène Ferrus for the Academy of Educational Development project, *Food and Nutrition Technical Assistance*.

A Review of the Statistical Definition of Household: For the Malawi Integrated Household Survey and the Malawi Core Welfare Indicators Questionnaire Survey programs. Prepared by Todd Bensen for the Government of Malawi.

Assessment of the Quantitative Models for Trade Negotiations Utilized by the Ministry of Foreign Affairs, Argentina. Prepared by Eugenio Díaz-Bonilla for the Inter-American Development Bank.

A Synthesis of Changes Impacting on Participation of Smallholders in the Growing Meat Market in the Philippines. Prepared by Achilles Costales and Christopher Delgado for the Food and Agricultural Organization of the United Nations.

Challenges to Punjab Agriculture in a Globalizing World: A Presentation to the Chief Minister of Punjab, India. Prepared by Ashok Gulati for the South Asia Initiative.

Constraints to Agricultural Development in Bangladesh: Household Level Analysis of Rural Poverty by Region. Prepared by Carlo del Ninno and Paul Dorosh for the World Bank.

Consumption Insurance and Vulnerability to Poverty: A Synthesis of the Evidence from Bangladesh, Ethiopia, Mali, Mexico, and Russia. Prepared by Emmanuel Skoufias and Agnes Quisumbing for the World Bank.

Consumption Smoothing and Vulnerability in the Zone Lacustre, Mali. Prepared by Sarah Harrower and John Hoddinott for the World Bank.

Consumption Smoothing, Vulnerability, and Poverty in Rural Bangladesh. Prepared by Agnes Quisumbing for the World Bank.

Consumption Smoothing, Vulnerability, and Poverty in Rural Ethiopia. Prepared by Agnes Quisumbing for the World Bank.

Copper Crisis and Agricultural Renaissance in Zambia: An Economywide Analysis. Prepared by Hans Lofgren, Sherman Robinson, and James Thurlow for the World Bank.

Cutting Hunger in Africa Through Smallholder-led Agricultural Growth. Technical Paper prepared by Peter Hazell and Michael Johnson in support of USAID's Agricultural Initiative to Cut Hunger in Africa.

Development of a Behavior Change Communications Program to Prevent Malnutrition in the Central Plateau of Haiti: Results and Challenges from a Formative Research Study. Prepared by Purnima Menon, Cornelia Loechl, Gretel Pelto, and Marie Ruel for the Academy of Educational Development project, *Food and Nutrition Technical Assistance*.

Economic Reforms and Food Security: The Role of Trade and Technology in New Delhi, India. Conference report prepared by Suresh Babu and Ashok Gulati for the South Asia Initiative.

Endowing Future Harvests: The Long-term Costs of Conserving Genetic Resources at the CGIAR Centers. Prepared by Bonwoo Koo, Philip Pardey, and Brian Wright for the International Plant Genetic Resources Institute.

Export-Led Growth in Mexico. Prepared by Samuel Morley and Carolina Díaz-Bonilla for a workshop on export-led growth strategies in Santo Domingo, Dominican Republic, under a United Nations Development Programme–IFPRI project.

FONCODES: Evaluation Results and Issues for the Future. Prepared by Samuel Morley for the Social Division of Region Three of the Inter-American Development Bank.

Fruit and Vegetables in Vietnam: Adding Value from Farmer to Consumer. Prepared by Nicholas Minot for the Ministry of Agriculture and Rural Development.

Household Vulnerability to Risk: Estimates from the PROGRESA Evaluation Sample in Rural Mexico. Prepared by Emmanuel Skoufias for the World Bank.

Globalización y Agricultura en las Américas: Escenarios para el Desarrollo Tecnológico de la Agricultura Hemisférica. Prepared by Eugenio Díaz-Bonilla, C. Espinal, Lucio Reza, Xinshen Diao, and Valerie Piñeiro for the FONTAGRO–IFPRI–IICA project on Globalization Scenarios and Agricultural Technology in Latin America and the Caribbean.

- HIV/AIDS and Labor Markets in Tanzania. Prepared by Channing Arndt and Peter Wobst for the Bureau of International Labor Affairs at the U.S. Department of Labor.*
- Impact of Changing Market Forces and Policies on Structural Change in the Livestock Industries of Selected Fast-Growing Developing Countries. Prepared by Christopher Delgado and Clare Narro for the Food and Agricultural Organization of the United Nations.*
- Impact of International Market Forces, Trade Policies, and Sectoral Liberalization Policies on the Philippines Hogs and Poultry Sector. Prepared by C. Habito for the Food and Agricultural Organization of the United Nations.*
- Income Diversification and Poverty in the Northern Uplands of Vietnam. Prepared by Nicholas Minot, David Roland-Holst, and Michael Epprecht for the Japanese Bank for International Cooperation.*
- Interim report for Income Diversification and Poverty in Vietnam: Patterns, Trends, and Policy Implications. Prepared by Nicholas Minot for the Japanese Bank for International Cooperation.*
- Investing in Poor People in Less-Favoured Areas. Prepared by Peter Hazell with the Wageningen University and Research Center for the International Fund for Agricultural Development.*
- Learning by Exporting and Productivity-Investment Interaction: An Intertemporal General Equilibrium Analysis of the Growth Process in Thailand. Prepared by Xinshen Diao, Jom Rattso, and Hildegunn Stokke for the Norwegian University of Science and Technology.*
- Livestock Industrialization Project: Phase 1. Livestock Industrialization, Trade and Social-Health-Environment Issues for the Indian Poultry Sector. Prepared by R. Mehta, R. Nambiar, S. K. Singh, S. Subrahmanyam, and C. Ravi for Phase I of an IFPRI-FAO project.*
- Mapeamento da pobreza em Moçambique: Desagregação das estimativas da pobreza e desigualdade aos níveis de distrito e posto administrativo. Prepared by Kenneth Simler and Virgílio Nhate for the Mozambique Ministry of Planning and Finance.*
- Mapeamento da Pobreza ao Nível de Distrito em Moçambique: Resumo. Prepared by Kenneth Simler and Virgílio Nhate for the Mozambique Ministry of Planning and Finance.*
- Measuring Household Vulnerability to Risk: Estimates from Russia. Prepared by Emmanuel Skoufias for the World Bank.*
- Mission Report on Capacity Strengthening for Policy Analysis in Agriculture and Rural Development in Vietnam. Prepared by Suresh Babu for the Ministry of Agriculture and Development, Vietnam.*
- Note on Land Tenure in Morocco and Tunisia. Prepared by Tidiane Ngaido for the FAO Investment Centre.*
- Opportunities and Challenges in Agriculture and Garments: A General Equilibrium Analysis of the Bangladesh Economy. Prepared by Channing Arndt, Paul Dorosh, M. Fontana, and S. Zohir, with Moataz El-Said and C. Lungren for the Ministry of Foreign Affairs, the Netherlands, and the Department for International Development, U.K.*
- Policy Dialogue with Policymakers in India and Sri Lanka Under the South Asia Initiative. Prepared by Suresh Babu for the Ford Foundation, New Delhi.*
- Policies for Improved Soil Nutrient Management in Sub-Saharan Africa. Prepared by John Pender for Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (BMZ).*
- Policies for Sustainable Land Management in Mixed Crop-Livestock Systems in the Highlands of East Africa. Prepared by John Pender for the Norwegian Royal Ministry of Foreign Affairs.*
- Policies for Sustainable Land Management in Mixed Crop-Livestock Systems in the Highlands of East Africa. Prepared by John Pender for the Swiss Agency for Development and Cooperation.*
- Poverty Mapping, Malawi: Results of the 4th Iteration of the Analysis. Prepared by Todd Bensen, S. Kanyanda, and R. Chifula for the National Economic Council and the National Statistical Office of the Government of Malawi.*
- Poverty, Population, and Development: An Overview. Prepared by Agnes Quisumbing, Manohar Sharma, Stuart Gillespie, and David Coady for the United Nations Fund for Population Activities.*
- Pobreza e Bem-Estar em Moçambique: Análise de Questionário de Indicadores Básicos de Bem-Estar (QUIBB), 2000-01. Prepared by Kenneth Simler, Sarah Harrower, and Claudio Massingarella for the Mozambique Ministry of Planning and Finance.*
- Public Expenditures in Bangladesh: A Review of Sectoral Allocations, Priorities, and Foreign Aids. Prepared by Raisuddin Ahmed for the Asian Development Bank.*
- Recommended Tabulation Guidelines for Complementary Feeding Data in the Demographic and Health Surveys: MEASURE DHS+ series. Prepared by Mary Arimond and Marie Ruel for the Academy of Educational Development project, Food and Nutrition Technical Assistance.*
- Reform, Macroeconomic Instability and the Distribution of Income in Latin America in the 1990s. Prepared by Samuel Morley for a conference in honor of Professor Albert Berry at the University of Toronto.*
- Report on the First Consultative Meeting of the Indian Members of PAANSA. Prepared by Suresh Babu and Ashok Gulati for the South Asia Initiative.*
- Report on Training Activities. Prepared by Suresh Babu and Valerie Rhoe for the 2020 Vision Network for East Africa Annual Report.*
- Review of Health and Nutrition Education Messages and Delivery System Currently Used in Haiti, and Recommendations for Further Research. Prepared by Purnima Menon, Marie Ruel, Gretel Pelto, and Jean-Pierre Habicht for the Academy of Education and Development project, Food and Nutrition Technical Assistance.*
- Rural Infrastructure Development and Poverty Reduction in Rural Thailand. Prepared by Shenggen Fan, Somchai Jitsuchon, and Nuntaporn Methakunnavut for the Asian Development Bank.*
- Rural Prosperity White Paper: Rules of Trade and Market Access. Prepared by Eugenio Diaz-Bonilla for the USAID as part of the Consortium led by Chemonics on Rural Development Strategies in LAC.*
- Simple Household Poverty Assessment Models for Malawi: Proxy Means Test from the 1997-98 Malawi Integrated Household Survey. Prepared by Ellen Payongayong, Todd Benson, Akhtar Ahmed, S. Kanyanda, C. Chankanza, P. Mwanza, K. Chilopa, N. Banda, and A. Mphonda for the National Statistical Office of the Government of Malawi.*
- Strategic Assessment of Land Use Options for Uganda. Phase I report prepared by Simon Bolwig, Peter Hazell and Stanley Wood for the U.S. Agency for International Development, Uganda.*
- Summary Indicators for Infant and Child Feeding Practices: Example from the Ethiopia Demographic and Health Survey 2000. Prepared by Purnima Menon, Marie Ruel, Gretel Pelto, and Jean-Pierre Habicht for the Academy of Education and Development project, Food and Nutrition Technical Assistance.*
- Technical Change, Market Incentives, and Rural Incomes: A CGE Analysis of Uganda's Agriculture. Prepared by Paul Dorosh, Moataz El-Said, and Hans Lofgren for Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (BMZ).*
- The Economic Determinants of Cereal Diversity on Farms and in Communities of the Northern Ethiopian Highlands. Prepared by Sam Benin, Berhanu Gebremedhin, Melinda Smale, John Pender, and Simeon Ehui for an FAO-ILRI-IFPRI report.*
- The Mashreq-Maghreb Project in West Asia and North Africa: A Model for Community-Based Action. Prepared by Tidiane Ngaido, Mohamed El-Mourid, and Mashreq-Maghreb Project national coordinators for the Annual Meetings of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, titled "Uniting Sciences: Solutions for the Global Community" held in Indianapolis, Indiana, November 10-14.*
- The Textile Industry in Egypt: Opportunities and Challenges. Prepared by A. Tolba and Moataz El-Said for the Middle East Studies Association, 36th Annual Meeting, November 23-26, Washington, D.C.*
- Using ArcView to Analyze Survey Data. Prepared by Michael Epprecht for a training course at the Ministry of Agriculture and Rural Development in Hanoi, Viet Nam.*
- Using Stata for Survey Data Analysis. Prepared by Nicholas Minot for a training course held at the Ministry of Agriculture and Rural Development, Hanoi, Viet Nam, July 12-18.*
- Workshop Report on Communicating Food Policy Research. Prepared by Suresh Babu and Valerie Rhoe for the 2020 Vision Network for East Africa.*
- Workshop Report on Proposal Writing for Policy Research. Prepared by Suresh Babu and Valerie Rhoe for the 2020 Vision Network for East Africa.*

FINANCIAL STATEMENTS 2001-2002

Presented here is a summary of financial information for the years ended December 31, 2002 and 2001. The full financial statements and the independent auditors' report are available from IFPRI on request.

Balance Sheets

December 31, 2002 and 2001 (US\$ thousands)

Assets		2002	2001
Current assets	Cash and cash equivalents	\$ 4,682	\$ 3,694
	Investments	2,648	1,755
	CGIAR grants receivable	761	697
	Restricted projects receivable (net)	4,870	2,762
	Other receivables	342	265
	Other current assets	231	314
	Total current assets	13,534	9,487
Other assets	Investments—long term	7,895	9,246
	Property and equipment, net	481	518
Total assets		\$ 21,910	\$ 19,251
Liabilities and net assets			
Current liabilities	Accounts payable and accrued expenses	\$ 1,508	\$ 760
	Accrued vacation	821	740
	Advance payment of CGIAR grant funds	975	387
	Unexpended restricted project funds	7,160	7,945
	Amount held for Challenge Program	1,500	—
	Other liabilities	—	18
	Total current liabilities	11,964	9,850
Noncurrent liabilities	Deferred rent	858	949
	Accrued post-retirement benefits	662	597
	Total noncurrent liabilities	1,520	1,546
Total liabilities		13,484	11,396
Net assets—unrestricted	Operating reserves	5,389	4,693
	Reserves allocated for subsequent year expenditure	2,556	2,644
	Net investment in property and equipment	481	518
	Total net assets	8,426	7,855
	Total liabilities and net assets	\$ 21,910	\$ 19,251

Statements of Revenue, Expenses, and Changes in Operating Reserves

For the Years Ended December 31, 2002 and 2001 (US\$ thousands)

<i>Revenue</i>		<i>2002</i>	<i>2001</i>
Grant and contract income			
	Unrestricted	\$ 7,692	\$ 8,019
	Restricted	15,712	14,346
Investment income		397	737
Foreign exchange gain		227	—
	Total revenue	24,028	23,102
<i>Expenses</i>			
Program services	Direct research and outreach	20,402	19,533
Other services		100	253
Management and general		2,954	3,269
	Total expenses	23,456	23,055
	Excess of revenue over expenses	572	47
Transfer from reserves allocated for subsequent year expenditure		161	685
Transfer to net investment in property and equipment		(37)	(40)
	Increase in working capital fund	696	692
Operating reserves, beginning of year		4,693	4,001
Operating reserves, end of year		\$ 5,389	\$ 4,693

Schedule of Expenses by Type

(US\$ thousands)

<i>Expenses</i>	<i>2002</i>	<i>2001</i>
Personnel	\$ 7,366	\$ 6,789
Fringe benefits	4,117	3,979
Collaboration/field expenses	4,425	4,504
Travel	1,868	1,603
Computer	277	450
External publications	458	495
Trustees' expenses (nontravel)	95	289
Office operations	4,528	3,859
Foreign exchange loss (gain)	—	756
Depreciation/amortization	322	331
Total	\$ 23,456	\$ 23,055

PERSONNEL 2002

This list reflects personnel employed by IFPRI in 2002 including part-time staff members.
* indicates staff who departed in 2002; ** indicates staff who commenced in 2002. Country indicates citizenship of staff member.

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(until August 2002)
Joachim von Braun, Germany**
(from September 2002)

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Xiaobo Zhang, China (joint appointment with TMD)

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Nienke Beintema, Netherlands (joint appointment with ISNAR)

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Rosa Gutierrez, U.S.A.

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Jiun Heng, Malaysia
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Chief Accountant
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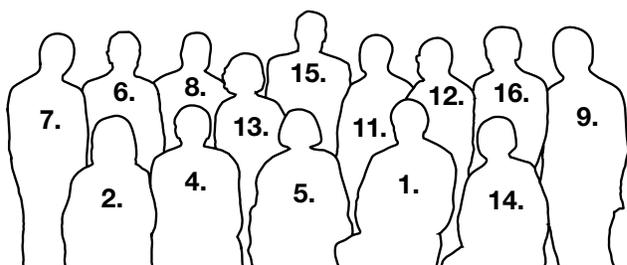
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Paulina Manalansan, Philippines
Orlan Wilson, U.S.A.

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Senior Human Resource Generalist
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Joachim von Braun

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