

IFPRI 1998

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE



ESSAYS

FOOD POLICY RESEARCH FOR DEVELOPING COUNTRIES:
EMERGING ISSUES AND UNFINISHED BUSINESS

GLOBALIZATION, TRADE REFORM,
AND THE DEVELOPING COUNTRIES

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**GLOBALIZATION, TRADE REFORM,
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CONTENTS

- 4 Board of Trustees**
- 5 Message from the Chair**
Martin Piñeiro
- 7 Director General's Introduction**
Per Pinstrup-Andersen
- 11 Essay: Food Policy Research for Developing Countries:
Emerging Issues and Unfinished Business**
Per Pinstrup-Andersen
- 21 Essay: Globalization, Trade Reform, and the Developing Countries**
Eugenio Díaz-Bonilla and Sherman Robinson
- 31 A 2020 Vision for Food, Agriculture, and the Environment**
- 35 Research and Outreach**
- Environment and Production Technology Division
 - Markets and Structural Studies Division
 - Food Consumption and Nutrition Division
 - Trade and Macroeconomics Division
 - Outreach Division
- 53 Collaboration**
- 61 1998 Publications**
- 79 Personnel**
- 85 Financial Statements**
- 88 1998 Donors**

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MESSAGE FROM THE CHAIR

Changes in the world economy were the backdrop for developments at IFPRI in 1998. Globalization and trade liberalization have had important effects on world agriculture. Some outcomes, such as modernization, productivity increases, and trade expansion in a number of countries, have been promising. The Asian crisis, however, with its negative impact on the world financial environment and on a number of developing countries like Brazil, has lowered world food demand and forced a downward turn in commodity prices.

These new market conditions will raise difficult challenges for a number of countries, both developed and developing, and may create a negative environment for long-term agricultural policy reforms. These



Martin Piñeiro

conditions, together with the advances in biotechnology and its application to agriculture, increasing concerns about environmental conservation, and a growing concern about rural poverty and its relation to regional conflicts, define a new and challenging environment for economic research. In this context, it is timely to reflect upon the future of world agriculture, the emerging research issues, and IFPRI's role in international agricultural policy research. During 1998 IFPRI organized a wide process of consultation with stakeholders to assess the future research direction of the institute. The results of this systematic analysis will help IFPRI position itself in the challenging years ahead.

A second important development in 1998 was the third systemwide external review of the Consultative Group on International Agricultural Research (CGIAR), of which IFPRI is a part. The distinguished panel, led by Maurice Strong of Canada, produced a number of major recommendations concerning the CGIAR's mandate

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and governance. These are being scrutinized by the stakeholders, who will make decisions on them during Centers Week 1999. The panel stated from the very beginning, “Investment in the CGIAR has been the single most effective use of official development assistance, bar none.” In particular, the panel recommended that the CGIAR allocate more resources to policy research and institutional strengthening—the essence of IFPRI’s mandate.

During 1998, IFPRI’s board and management followed up on the recommendations of IFPRI’s 1997 external review report. The board carefully reviewed the recommendations, including those directly related to its own functioning, and as a result is in the process of implementing more systematic self-assessment efforts and deeper participation in long-run strategic planning. For example, the board

was fully engaged in developing IFPRI’s Medium-Term Plan for the years 2000–2002. I am grateful to my fellow board members for their insights and generous participation in this process.

During 1998, we gave our farewells and thanks to Gordon Conway, Nora Lustig, and Hiroya Sano, who completed their service on the board. We also welcomed three new trustees, Rebeca Grynspan, Arie Kuyvenhoven, and Susumu Matsuoka, who will serve during the period 1998–2001. All three have had distinguished careers in the food policy field.

We look forward to another productive year in 1999, as IFPRI gears up to celebrate its 25th anniversary at the dawning of the new millennium. ■

Martin Piñeiro

Girls harvesting peanuts, Egypt (Richard Adams)



DIRECTOR GENERAL'S INTRODUCTION

IFPRI continually faces the challenge of predicting what kinds of information developing-country policymakers will need to make sound policies related to food and agriculture. In 1998, the Institute undertook a full year of consultations on emerging issues that are likely to be important in coming decades. What issues will be challenging policymakers and shaping the globe as we enter a new millennium? These issues will likely define IFPRI's future work.

We sought to get the views of a wide range of people. IFPRI's Board of Trustees held an additional meeting to discuss these issues. Our findings are discussed in more detail in the

essay in this report entitled "Food Policy Research for Developing Countries: Emerging Issues and Unfinished Business."

The results of these consultations mean that IFPRI will need to continue its work in some areas, shift its focus in others, and explore entirely new areas.

IFPRI made headway on a number of important research topics in 1998. IFPRI's work on microfinance showed that the success of rural financial services depends heavily on access to other factors such as agricultural land, irrigation, and well-functioning markets. Research also found that institutional models cannot be replicated from one area or region to another; they must be developed to meet the needs of a particular community.

In 1998 researchers completed a three-year study of the effects of land tenure institutions on natural resource management in Ghana, Indonesia, Malawi, Nepal, Uganda, and Viet Nam. The study showed that state ownership does not protect forests. When only minor forest products are extracted, common property management seems to work best. When forest products are valuable and depend on intensive management, as timber does, then private tenure systems are more efficient. When there are many users, a combination of collective protection of



Per Pinstrup-Andersen

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the forest and individualized management of trees is most efficient.

IFPRI's four-year research project on the forest margins of Brazil was completed and yielded valuable results for policy. If new technologies and policies were introduced in the future at the same pace as they are today, small farmers would see their incomes rise slightly, but forests held in private hands would disappear. If no new technologies or policies were made available to farmers, deforestation would slow, but farmer

incomes would plummet. The results show that a complex mix of technology and policy interventions is needed to slow deforestation rates while maintaining or increasing farmer incomes.

In 1998, IFPRI asked James G. Ryan to study the impact of IFPRI's policy research and advice on rice marketing in Viet Nam. IFPRI's research there showed that relaxing rice export quotas and internal trade restrictions would not worsen food insecurity or harm farmers and poor people. As a result, the government of Viet Nam



Timber harvest in Côte d'Ivoire (Philippe Berry)



liberalized both domestic and international rice trade, bringing substantial economic gains to the country. Ryan, former director general of the International Crops Research Institute for the Semi-Arid Tropics, found that Viet Nam's policy-makers made their decision as soon as they did because of their confidence in IFPRI's research, which they regarded as high-quality, independent, and timely.

IFPRI researchers also embarked on many new research projects. For example, the government of Mexico invited IFPRI to join it in assessing Progresá, an antipoverty program. During this two-year project IFPRI and Progresá staff will work to assess the impact of the program, which serves about 400,000 rural poor and is aimed at improving the provision of health, nutrition, and education services. Another new initiative is assessing the reasons that child malnutrition persists in South Asia at a higher rate than in Sub-Saharan Africa, while

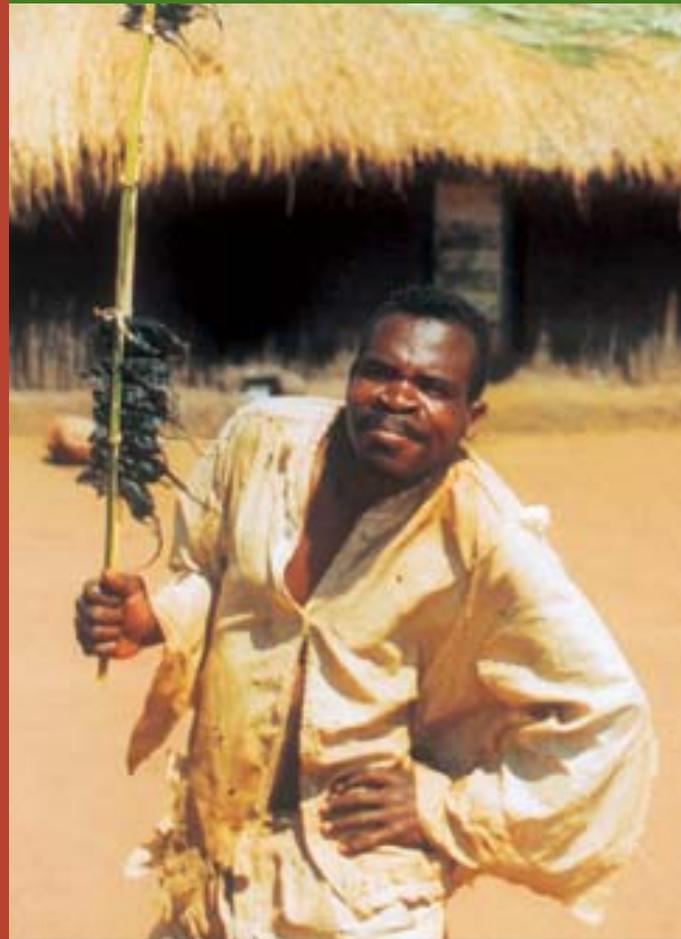
South Asia appears to be doing better than Sub-Saharan Africa for many of the long-accepted causes of child malnutrition.

Of course, one key to improving policy is communicating the results of policy research. To this end, IFPRI is integrating the outreach effort within its research work to strengthen its communications. IFPRI has expanded its interactions with the news media as a way of reaching both new and traditional audiences for its work.

IFPRI's work involves shedding light on complex and changing conditions in areas where research can be particularly challenging. It is especially important, then, that IFPRI be dynamic and flexible, setting new priorities while keeping sight on many old ones. As new challenges related to food security and agriculture arise, IFPRI stands ready to meet these needs. ■

Per Pinstруп-Andersen

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*The key question for
developing countries
and for poor people
in those countries is not
whether globalization
occurs but what
form it takes.*
”



Street market in Cambodia (Claudia Ringler)



FOOD POLICY RESEARCH FOR DEVELOPING COUNTRIES

Emerging Issues and Unfinished Business

Per Pinstrup-Andersen

To develop and implement successful policies, policymakers need a clear picture of the options at their disposal and the likely results of their choices. Generating this information can take considerable time, particularly when researchers must collect primary data and develop models. Thus, researchers must look ahead to predict what kinds of information policymakers are likely to need several years into the future. In this period of rapid technological development and changing economic and social conditions, making accurate predictions can be difficult, but failure to do so may result in research that addresses yesterday's needs and studies that languish unopened on the shelf.

In 1998 IFPRI undertook a yearlong effort to identify the emerging issues and unfinished business relevant for food policy for developing countries in coming decades. We collected viewpoints from a broad constituency, including the various groups with a stake in IFPRI's work, using correspondence and meetings both at IFPRI and around the world. We consulted with food policy researchers, advisers, policymakers, and donor representatives. Participants included economists, sociologists, nutritionists, agricultural scientists, politicians, and individuals with other disciplinary and occupational backgrounds. In addition, we solicited the views of IFPRI's staff, management, and Board of Trustees.

These consultations revealed a number of emerging research issues for IFPRI's consideration. Setting priorities for food policy research in today's dynamic environment is an ongoing activity that benefits from debate. The issues described here are important elements in the continuing debate on how IFPRI and the broader community of food policy researchers and advisers can be most effective as we enter the new millennium.

EMERGING ISSUES

Increasing Globalization

International trade liberalization, the opening up of economies in both developed and developing countries, more integrated international capital markets, and a freer flow of labor, information, and technology are all part of a trend toward increasing globalization that is likely to continue and may even accelerate. The key question for developing countries and for poor people in those countries is not whether globalization occurs but what form it takes. Research is needed to show how globalization can be designed and guided to reduce poverty, improve the food security of low-income people, and promote sustainable productivity increases in developing-country agriculture. Research must also identify domestic policy changes that developing and developed countries can undertake to avoid the negative and maximize the positive effects of globalization for

developing countries in general and poor people in particular.

The Technological Revolution

Rapid technological developments in molecular biology, information, communication, and energy are changing how food is grown, processed, and marketed, particularly in developed countries. Food policy research is needed to determine how developing countries can best use the new opportunities to benefit the poor and to sustainably manage natural resources, while also managing new risks and uncertainties.

The new technologies raise many questions: What biosafety and food safety regulations are necessary to minimize the risks posed by new technologies? What kind of biological research and development would do most to solve the critical problems facing small farmers and poor consumers? How can satellite-based cell phones and solar panel-based generation of energy be used to improve rural infrastructure in

low-income countries and remote regions? How can more exclusive patents for biological technology be used to improve the food security of the poor? Can traditional knowledge, plant materials, and experience be protected from exclusive patenting through, for example, farmers' rights legislation?

Food Safety

In developed countries concerns about food safety are on the rise, influencing public perceptions and policies regarding the production, processing, transportation, storage, international trade, and preparation of food products. In developing countries, however, where food- and waterborne health risks are a major cause of illness and death, particularly among infants and children, food safety concerns have garnered little attention. Nonetheless, developed-country attitudes are likely to affect developing countries in two major ways. First, exports of food commodities from developing countries will be exposed to more demanding food safety standards. Thus, food safety requirements may hinder developing countries from achieving the potential benefits of export trade, either because they cannot meet reasonable standards or because importing countries may use food safety regulations as trade barriers. Second, changing attitudes and new legislation in developed countries will spill over into developing countries.

What policies and institutions are needed to meet new standards for food production, processing, and distribution in a cost-effective way? Will these policies and institutions be appropriate for the domestic food supply, or should developing countries maintain different standards? Is there a widening gap in food safety standards between developed and developing countries or between



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IFPRI staff and visitor discuss emerging food policy issues *(Herman Farrer)*

poor and nonpoor population groups because of differences in subjectively acceptable risk levels? What would be the consequences of enhanced food safety standards for food security among low-income producers and consumers?

The Role of the State and Good Governance

Many developing countries have undertaken policy and market reforms in recent years, changing the roles of the state, the market, private voluntary organizations, and the private sector. These reforms, however, have produced disappointing results in many countries. One major reason is the lack of knowledge about the proper role of each of these agents in new socioeconomic and political environments.

The role of the public sector appears to be shrinking in many areas related to food security, while civil society, the private sector, and private voluntary organizations are taking on increasing importance. While such a shift may be appropriate, it can be taken too far. An effective public sector is crucial to develop and maintain rural infrastructure, health care, education, a legal system, agricultural research focused on small farmers, and public goods in general. As market

liberalization and globalization take place, effective government is needed to facilitate privatization and guide the transformation of the agricultural sector in a direction that is beneficial for the poor. Research can generate the information required to assure success in these transformations.

The study of how governance (including democracy, adherence to human rights principles, the rule of law, and empowerment of civil society) affects transaction costs, the efficiency of food systems, and poor people's access to food should take high priority, and efforts should be made to identify appropriate governance structures.

Rapid Urbanization

Between 2000 and 2025, the urban population of the developing countries is projected to double from approximately 2 to 4 billion people, while the rural population is expected to increase by only 2.7 percent. With business as usual, it appears that the number of poor as well as the number of food insecure and malnourished will increase rapidly in urban areas. Consequently, there will be a significant shift in poverty, food insecurity, and child malnutrition from rural to urban areas, even though the prevalence of these conditions will continue to be high in rural areas.

Past food policy research in low-income developing countries has appropriately focused on rural areas. Now, the challenge to food policy is to provide an empirically sound basis for policy and



Debating research priorities *(Herman Farrer)*

program formulation in urban areas, particularly as it relates to low-income people's ability to acquire food, health care and other basic necessities. Policy research will also be needed to guide policies to ensure an efficient future food supply for the rapidly increasing urban populations.

Rural Industrialization

The processing, storage, and distribution of agricultural commodities adds value to the commodities produced while generating employment for the rural poor. But in many developing countries, particularly the poorer ones in Sub-Saharan Africa, the agricultural processing industry is underdeveloped. As trade liberalization proceeds, failure to develop an effective and efficient postharvest sector may relegate low-income countries to being mere

suppliers of cheap agricultural raw materials, thus eliminating opportunities for greater income and more jobs.

The development of an efficient postharvest sector in rural areas of poor countries is complex and knowledge intensive. Choosing appropriate policies and institutions is critical, and more information is needed to support such choices. Policy research must explain why the postharvest sector is vibrant in some developing countries and stagnant or virtually nonexistent in others.

Armed Conflict and Food Security

Conflicts in countries such as Burundi and Rwanda are frequently characterized as the results of tribal or political issues, when, in fact, the underlying causes are natural resource degradation, extreme poverty, and widespread food



Village children in Malawi (Meyra Mendoza)

insecurity. Such conflicts in turn breed further food insecurity, poverty, and natural resource degradation, continuing a vicious circle of hunger and instability. Technologies and policies capable of improving food security will decrease the probability of conflict. The interaction between conflict, food security, natural resource management, and agricultural research deserves more attention from the food policy research community.

Risk Management and Coping Strategies

Globalization and increasing climatic fluctuations are likely to introduce new risks and uncertainties in the food and agricultural sector. Economies will be more interconnected, resulting in new risk factors such as dependence on external food supplies, and individual producing and consuming agents as well as sectors will be less protected by government as liberalization and globalization proceed and subsidies are reduced.

Fortunately, new and innovative approaches to risk management in food production, distribution, and consumption, including new instruments for controlling financial risk such as futures trading, are beginning to surface. Better climatic forecasting and data from geographic information systems are also becoming available. Results from recent work on coping strategies, including social or food security safety nets, add to the arsenal of approaches for managing risks that particularly threaten the poor. However, the application of these new tools is lagging, and appropriate private and public institutions have yet to develop. The challenge to food policy research is to provide the information needed to design effective

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insurance schemes and coping strategies and to help identify appropriate private and public sector institutions.

Growing Water Scarcity

Unless properly managed, fresh water may well emerge as the most important constraint to global food production. While supplies of water are adequate in the aggregate to meet demand for the foreseeable future, water is poorly distributed across countries, within countries, and between seasons.

The costs of developing new sources of water are high and rising, and nontraditional sources such as desalination, reuse of wastewater, and water harvesting are unlikely to add much to global water availability in the near future, although they may be important in some local

or regional ecosystems. So how can the rapid increases in water demand stemming from population and income growth be met? The rapidly growing domestic and industrial demand for water will have to be met with reduced use in the agriculture sector, by far the largest water user. Required policy reforms include establishing secure water rights for users; decentralizing and privatizing water management; and setting incentives for water conservation. Research is needed to guide policymaking and institutional changes that will improve water use efficiency and allocation of water among competing uses.

Declining Soil Fertility

Improved soil fertility is a critical component of low-income countries' drive to increase sustainable agricultural production. Although locally available organic materials can meet some of the need, such materials are insufficient by themselves. Nitrogen-fixing legumes and research to

develop nitrogen-fixing cereals offer new opportunities, but inorganic fertilizer will continue to be an important source of plant nutrients. Yet the use of chemical fertilizers has decreased worldwide during the last few years, particularly in the developed countries and in parts of Asia. Reduced use of fertilizers is warranted in some locations because of negative environmental effects, but in countries where soil fertility is low and a large share of the population is food insecure, fertilizer use must be expanded.

In many low-income countries, a cost-effective fertilizer sector and policies providing incentives for farmers and communities to implement soil fertility programs are needed. Food policy research must generate the information needed to help policymakers solve the soil fertility problem in a way that is compatible with fiscally sound public investments, improved food security, and environmental sustainability.

Social Capital

Social capital has many definitions, but its main components are the depth and breadth of an individual's network of friends and family, level of civic participation (for example, voting activity), and level of participation in community and other groups such as church groups, credit and savings groups, and social groups. Strong communities made up of actively involved individuals and groups provide the basis for a thriving process of exchange for mutual gain in times of plenty and hardship—an important system for mitigating the negative impacts of shocks.

Recent studies of social capital may herald an exciting research and action agenda related to the roles of government and civil society, but they also raise questions. For example, does social capital lead to higher consumption or vice versa?

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Do women produce social capital that is used to prevent households from falling into poverty? Is men's social capital more effective in improving upward mobility in income? How can government stimulate the accumulation of social capital? Would even well-meaning attempts to create social capital simply crowd out the existing networks?

UNFINISHED BUSINESS

The kinds of knowledge policymakers will need in the future depend not only on emerging issues but also on issues that have been on the agenda for a while and about which more information is still needed. In my interpretation of the results from the consultations, eight such areas of unfinished business emerged.

Increasing Poverty

Although the percentage of the population in developing countries considered poor is falling, the number of people whose income falls below US\$1 a day is currently in excess of 1.3 billion and rising. The deterioration is particularly severe in Sub-Saharan Africa, which is projected to contain an increasing share of the world's poor over the foreseeable future. Clearly, without a reversal of the poverty trends, improvements in food security will be very limited if not illusory.

Food Insecurity and Malnutrition

According to the United Nations Food and Agriculture Organization, more than 800 million people are food insecure. Micronutrient deficiencies are even more prevalent, affecting more than 2 billion people. With business as usual, neither the World Food Summit goal of reducing the number of food-insecure people to 400 million by 2015 nor the 2020 Vision of eliminating food insecurity and malnutrition by 2020 will materialize. In fact, IFPRI



projections show only a moderate decrease in the number of malnourished children by 2020. It is now apparent that lack of political will and competing priorities are major reasons why progress toward the elimination of food insecurity and malnutrition has been so slow. However, lack of political will and competing priorities are themselves researchable topics. The challenge to food policy research is to improve the understanding of the political economy of food security, with an emphasis on the decisionmaking processes related to the allocation of fiscal resources among competing demands.

Gender-Specific

Aspects of Food Policy

Women's status continues to be low relative to men's, particularly in South Asia, West Asia, and North Africa. The costs of gender inequities are difficult to estimate, but data show that they substantially lower agricultural productivity, reduce household food security, and worsen child growth.

Men's income and women's income (or credit or assets) have different marginal effects on the welfare of households and individuals, according to recent studies. The implications for the design of transfer programs are clear: interventions should be targeted to women when the benefits of doing so outweigh the costs. In the longer run, if such gender-differentiated interventions improve the status of women in the household, they can lead to increased agricultural productivity, fertility reduction, food purchases, nutrition, and improved educational attainment to name a few. More research, however, is required to guide future policy design and implementation to capture the benefits from gender specificity of such policies.

Pressure on Less-Favored Lands

In coming years the world's farmers will need to produce more food on existing agricultural land to keep up with population increases, income growth, and dietary changes. Past efforts to raise agricultural productivity in developing countries have focused on irrigated and high-potential rainfed lands, but population growth has put increasing pressure on lands less suitable for farming. Poverty, food insecurity, and natural

resource degradation are becoming extremely serious problems in these areas. The challenge to food policy is to help alleviate the knowledge gaps facing policymakers and communities about the most appropriate action and to draw attention to the risks and opportunities associated with alternative approaches to development of these less-favored lands, with emphasis on the impact on poverty, food insecurity, and management of natural resources.

Inappropriate Property Rights to Land and Other Natural Resources

Property rights are important determinants of household income and food security, agricultural productivity, and natural resource management. Population growth and increased commercialization in rural areas lead to greater competition over natural resources and thus greater pressure on existing property rights institutions. Traditional communal ownership systems in many areas are evolving toward increasing privatization or open access. Policy research is needed to analyze the impact of alternative property rights institutions on poverty, food insecurity, and natural resource management and the role of collective action and national policies.

Poorly Functioning Rural Capital and Labor Markets

How well rural producers adjust to an increasingly global economy will depend partly on how well rural capital and labor markets work. Microcredit is now widely available to the poor in many developing countries, but farmers, traders, and processors in rural areas still have little access to institutional credit. Because of the new global forces, efforts to develop rural banks are more likely to be successful now



Villagers in the market, Egypt
(Richard Adams)

than in the past, and the task is more urgent than ever.

Rural labor markets are undergoing rapid change: they are more monetized than in the past, participation of women is increasing, and labor is becoming more mobile. Rural labor markets are crucial not only to enable rural landless workers to generate income, but also to allow farmers and small enterprises in rural areas to produce goods and services in increasingly commercial environments. Because the forces in rural areas are changing so quickly, adjustments in labor markets often fail to keep pace. Research on labor market issues and problems has therefore become critical.

Needed Reforms of Agricultural

Input and Output Markets

Progress toward efficient, effective, and competitive private markets for agricultural inputs and outputs has been slow in many developing countries.

Countries must find the proper balance between facilitating private sector participation and state intervention to reduce transaction costs, shape an appropriate legal environment, promote effective competition, and ease the transition for low-income producers and consumers. Policy research on the operation of local markets, the behavior of private traders, and the effects of alternative policies and institutions is needed to guide government action.

The Impact of HIV/AIDS on Food Security

The devastating effects of HIV/AIDS on the well-being of millions of people and the grim prospects for rapid expansion, particularly among low-income people who cannot afford the new drugs, have serious implications for future food security. Today 21 million Africans are infected, and about 95 percent live in abject poverty. In

addition to the direct health effects on the individuals, HIV/AIDS affects food security by reducing earning opportunities for unhealthy adults, by leaving children with no parents (about 8 million children in Sub-Saharan Africa have been orphaned by AIDS), and by placing increasing demands on scarce public resources for health.

Policy research is required to address the access that poor rural and urban households have to AIDS prevention programs and related health care and the impact of HIV/AIDS on agricultural productivity, income earnings, and child nutrition. Researchers should identify feasible policy options to mitigate the negative food security and nutrition effects.

BROADENING IFPRI'S RESEARCH AGENDA

The results of IFPRI's consultations on emerging issues and unfinished business will not revolutionize IFPRI's work, for the institute is already conducting research on a number of the topics raised. The exercise did, however, suggest ways in which IFPRI might modify some of its research activities to meet anticipated needs and offer several new topics for consideration. Our decisions about how to respond to these emerging issues and unfinished business will be shaped partly by IFPRI's unique food policy niche. IFPRI recognizes that it alone cannot tackle all of the food policy research issues required to make a difference and that it will take the concerted efforts of many committed organizations, individuals, and governments to find solutions to these global problems. But for the issues that IFPRI is particularly well suited to study, the consultations offered a wealth of information that will help guide our research and outreach as we enter the new century. ■

Per Pinstrup-Andersen is director general of IFPRI.



Sifting maize, Malawi (Meyra Mendoza)

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This growing developing-country involvement in the WTO, as well as in regional trading blocs and other trade arrangements, represents a distinct break with the past.
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Bargaining in the market, Cambodia (Claudia Ringler)

GLOBALIZATION, TRADE REFORM, AND THE DEVELOPING COUNTRIES

Eugenio Díaz-Bonilla and Sherman Robinson

Late in 1999, trade ministers from all member countries of the new World Trade Organization (WTO) will meet in Seattle, Washington, U.S.A., to decide whether to launch a new round of trade negotiations that some have dubbed the Millennium Round. Since the first round of trade negotiations under the General Agreement on Tariffs and Trade (GATT) after World War II, multilateral trade liberalization has progressed at a fairly steady pace, mostly among the developed countries. But the Millennium Round, if it proceeds, will look somewhat different. Of the 134 members of the WTO in February 1999, some 70 percent are developing countries. This growing developing-country involvement in the WTO, as well as in regional trading blocs and other trade arrangements, represents a distinct break with the past.

While there were relatively few developing-country members of GATT, they did take a more active role in the Uruguay Round of negotiations (which were completed in 1993) than they had in earlier rounds. This round saw some substantive progress toward adoption of issues of importance to developing countries. One such area was agriculture, where the Uruguay Round established a new framework for international trade rules encompassing export subsidies, domestic subsidies, and market access, while related agreements covered other issues of importance for agricultural production such as sanitary and phytosanitary measures.

Still, recognizing that the new rules agreed upon were only the beginning of the reform process, the participating countries decided to resume the negotiations in the year 1999. Therefore, with or without a Millennium Round, agricultural negotiations will recommence sometime at the end of this year.

This essay looks at the evolution of agricultural markets leading to the Uruguay Round negotiations and places them in the context of an increasingly global world economy, focusing on developing countries. The essay then considers, also from the perspective of the developing countries, several issues that are likely to arise in the coming negotiations.

MOVING TOWARD A GLOBAL ECONOMY

The Forces of Globalization

Globalization refers mainly to the recent trends toward stronger economic, political, and cultural ties among many of the world's nations. One of its most important manifestations is the expansion of international trade, but it also encompasses increased international flows of capital, technology, and labor around the world, along with tendencies toward universal application of some institutional, legal, political, and cultural practices.

Within that context, some developing countries have had a strong growth performance, while others have fallen behind, both relative to other countries and, in some unfortunate cases,



Irrigated vegetable production, Ethiopia (John Pender)

in absolute terms. Increased participation by countries in global markets has also been uneven. The expansion of trade has been driven by a number of forces that have affected developed and developing countries in different ways. An important factor has been the progressive dismantling of trade barriers for goods and services between countries through both successive rounds of GATT negotiations and unilateral liberalization in many countries.

A separate influence has been rapid technological change. Investment in transportation, communications, and information processing systems has skyrocketed. Major changes in production technology in many sectors, combined with improved transportation and communications, have allowed producers to separate stages of the production process geographically, sending raw materials far away from where they are grown to be processed and packaged. Producers can also pursue economies of scale and specialize by making large quantities of a single item to be

sold throughout the world. Within manufacturing, the process of specialization has accelerated trade in the components that go into finished products. While these trends have been most evident in developed countries, a number of semi-industrial countries have participated and benefited from growth based on increased trade in manufactures. The early pioneers, such as the Asian “gang of four” (Hong Kong, Korea, Singapore, and Taiwan), achieved spectacular growth during the 1970s and 1980s. Following the lead of the Asian countries, many developing countries have shifted from inward-looking to outward-oriented development strategies, deepening their links to world markets.

Yet globalization involves more than just commodity markets. Increasing integration of world capital markets has greatly expanded international flows of both short-term and long-term private financial capital, with important effects on investment and growth. However, the poorest countries, with undeveloped capital markets and high

risk premiums, have largely been left out of this growing international financial market. Also, some countries, as a consequence of global economic developments beyond their control as well as inappropriate domestic policies, have faced damaging episodes of macroeconomic instability, requiring “structural adjustment” to restore growth and stability.

Globalization of world financial markets has also led to problems. The recent Asian financial crisis revealed weaknesses in both the international financial system and the financial systems of a number of developing countries. Many developing countries are simply unable to absorb or efficiently manage the kinds of large short-term capital flows that have become more common.

Globalization, particularly trade expansion and capital flows, offers new opportunities but also raises new challenges for developing countries. As they approach the Millennium Round, these countries should evaluate their current development strategies and domestic macroeconomic policies, as well as their stance at the negotiating table, in order to gain the greatest benefits from the new global economy.

Changing Agricultural Markets

In addition to the obvious influences of population, weather, and wars, growth in world agricultural production and trade in the postwar era has been affected by changes in three main areas: macroeconomic policies, trade and agricultural policies, and technology.

At the macroeconomic level, expansionary monetary and fiscal policies during the 1960s and 1970s led to faster economic growth, but also eventually to higher inflation and negative real interest rates, which hurt growth. The

macroeconomic environment changed radically during the 1980s, when tight monetary policies lowered real growth and inflation rates and turned real interest rates strongly positive for the entire decade. By the second half of the 1990s, inflation had fallen to levels similar to the 1960s. What has been labeled the “rise and fall of inflation” had an important impact on agriculture. In the 1970s high real commodity prices combined with negative real interest rates led farmers to expand their productive capacity, but prices fell steeply in the 1980s when macroeconomic policies were changed and farmers faced weak demand for their expanded supplies of agricultural goods.

Second, trade and agricultural policies in different countries and regions have gone through dramatic changes in recent decades. The Soviet Union went from being an important component

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of world demand in agricultural markets since the mid-1970s to collapsing as a political entity by the end of the 1980s. China sizably increased its agricultural production thanks to sweeping policy changes instituted at the end of the 1970s that emphasized decentralization and price incentives for farmers. The European Union (EU), driven by large production and export subsidies under the Common Agricultural Policy (CAP), moved from being a net importer of grains, meat, and sugar in the 1960s and 1970s to becoming a net exporter. Also, the United States pursued farm support policies that led to large surpluses in production and increased exports, some of which were sold with subsidies in world markets starting in the mid-1980s.

A variety of developing and emerging economies have shifted from inward-oriented

development strategies in the 1960s and 1970s to greater reliance on free markets and international trade, particularly since the late 1980s. These new strategies have led policymakers to undertake major domestic agricultural policy reforms. In the past, IFPRI research found that a combination of overvalued exchange rates, protection of domestic industry, and explicit taxation of agricultural exports led to economic biases against agriculture, especially in very poor countries in Africa. After the policy changes of recent years, research at IFPRI and elsewhere suggests that such reforms have greatly reduced and in some cases eliminated the bias against agriculture in many developing countries. Although further improvements in domestic trade and macroeconomic policies are still needed in various developing countries, the reforms already undertaken provide a better framework for traditional investment policies and projects in the agricultural sector, focusing on human capital, land, water, property rights, management, technology, and infrastructure. These agricultural policies had been largely abandoned during the period when redirection of the overall macroeconomic and trade framework appeared central.

Third, changes in agricultural technology, such as mechanization, use of chemicals, and improvements in biology, have been continuous, as the Green Revolution emerged and spread in developing countries. The development of new seeds and more recent advances in genetic engineering have already provided dramatic productivity increases and will likely be the basis for continuing growth in the next century. Likewise, existing technologies disseminated from the developed to the developing countries provide a major impetus to their agricultural growth and are expected to do so for some time.

All in all, these macroeconomic, trade, and technological factors contributed to a phase of high growth in world agricultural production during the 1970s and later to a period of weaker demand and growth in the 1980s and early 1990s. By the end of the 1980s, the high and rising fiscal costs of the EU and U.S. policies were becoming politically unsupportable. These policies also led to instability in world markets, causing concern among other agricultural producers. For a few developed countries with large agricultural sectors (such as Australia, Canada, and New Zealand) and for a few developing countries (such as Argentina, Brazil, and Thailand), agricultural exports have always been extremely important. The major agricultural exporters outside the European Union and the United States organized themselves into a negotiating bloc called the Cairns Group, which effectively represented their interests in the Uruguay Round negotiations. After much effort, the combination of concerns about distorted world

markets, fiscal constraints in the United States and the European Union, and diplomatic pressure from agricultural exporting countries, led to the successful conclusion of the Uruguay Round negotiations in 1994. The result was probably less reform than was hoped for when the negotiations began but more than was expected by the end. There is still much to do.

Agricultural producers in all countries now operate in less distorted domestic and international environments where they are subject to more market discipline and where international trade plays a greater role. Policymakers must adjust their domestic policies to the new conditions and have a stake in shaping that environment through trade negotiations. This is particularly important for developing countries that have already made significant domestic policy changes but still have to contend with developed-country agricultural policies that have negative welfare effects for the whole world.



Shepherd boy with cattle, Benin (Philippe Berry)



Pumping water in rural India (Will Reidhead)

GETTING READY FOR NEW TRADE NEGOTIATIONS

Bringing agricultural policies under international scrutiny was an important accomplishment of the Uruguay Round, but the reform process has not finished. Agricultural negotiations, alone or as part of a new round, will resume during 1999.

The world economy and the trade policy environment have changed substantially since the completion of the Uruguay Round negotiations. The European Union is expanding its membership and is considering further reforms to its Common Agricultural Policy to accommodate new members. The North American Free Trade Agreement (NAFTA) and the Southern Cone Common Market (MERCOSUR) are up and running, and regional institutions such as the Asia-Pacific Economic Cooperation (APEC) forum and the Free Trade Area of the Americas (FTAA), which were embryonic at the time of the Uruguay Round, have become more prominent. Subregional trade agreements

in Africa, Asia, and Latin America are expanding and consolidating.

New problems have also appeared. Asia, the largest source of net demand for world agricultural products, has seen income and demand fall, as the countries cut their trade deficits in the wake of the Asian financial crisis. Partly resulting from that crisis, the U.S. trade deficit has already started to increase dramatically, leading to renewed protectionist pressures. Low world agricultural prices and fiscal surpluses have led to increased demands to abandon the market-oriented reforms of the 1995 Farm Bill. President Clinton has yet to secure “fast-track” negotiating authority, considered necessary for serious trade negotiations. In Europe recent changes in agricultural policy do not appear enough to restrain growing agricultural surpluses that hurt agricultural producers in other countries.

The international financial crisis points to the complexity of international financial transactions and could pose a long-run threat to greater

market openness. Therefore, coordinating macro-economic policies and designing more resilient international financial architecture may be at least as important as WTO negotiations for expanding international trade.

Completing the Unfinished Agenda of the Uruguay Round

While many developing countries have significantly reduced distortionary domestic agricultural policies, the benefits these countries and the world can enjoy are thwarted by the subsidies of developed countries. In future negotiations developing countries should seek to eliminate developed-country export subsidies, strengthen surveillance of state trading enterprises, and establish an integrated framework for food aid and export credits. As for domestic subsidies, developing countries should seek further limits on developed countries' trade-distorting payments to farmers. Least developed and developing countries are allowed "special and differential" treatment on these issues, which is desirable if they use their flexibility wisely, smoothing rather than fighting needed adjustment and structural change.

If the developing countries are to succeed in diversifying their agricultural sectors, they must have expanded access to markets in developed countries. The developed countries must increase the volume of imports allowed under the current regime of tariffs and quotas, make the administration of tariffs and quotas more transparent and equitable, further reduce high tariffs on some key products, and complete the process of tariffication where exemptions were granted. Also, eliminating or at least reducing tariff escalation in nonagricultural products is important for developing countries. Rising tariffs undermine

the production and export of processed goods that use agricultural inputs.

Considering the Needs of the Most Vulnerable

Upon completion of the Uruguay Round, participating trade ministers agreed on a declaration recognizing the special concerns of the least-developed and net-food-importing countries. These concerns include the preservation of adequate food aid, the provision of technical assistance and financial support to develop agriculture in those countries, and the expansion of financial facilities to help with structural adjustment and short-term difficulties in financing food imports. If prices in world markets become more volatile or if agricultural policies in the developed countries are not further reformed, these poorer countries may lose secure access to food supplies at reasonable prices. Because world grain stocks have been declining as a share of consumption, officials must monitor volatility in agricultural prices carefully. Negotiating countries should also work on improving mechanisms to

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give early warning of potential food shortages, lowering food transportation and storage costs, and providing better-targeted food aid programs and financial facilities for emergencies.

The impact of changes in trade and agricultural policy on poorer consumers and producers is a matter of debate. Certainly the goals of development and poverty alleviation will not be served by trade-distorting interventions that operate as taxes on food consumers (with the greater burden falling on the poor) or by subsidies that allocate scarce fiscal revenues to wasteful programs. Under the agreements reached in the Uruguay Round, unfair competition that hurts poor farmers, such as subsidized (or dumped) agricultural exports, are being disciplined. At the same time, the agreement allows developing countries to continue most agricultural and social policies linked to poverty alleviation and agricultural development.

Other Trade-related Issues

Genetically modified agricultural products present a special challenge. The public may block the development of important new technologies to feed the world in coming decades if policymakers do not handle the issues surrounding genetically altered food sensitively, particularly through rigorous analysis of the risks to human health and biodiversity.

Debates over links between trade, labor, and the environment will continue to require scrutiny of the different claims regarding the impact of low wages and environmental standards on agricultural trade.

New WTO Members

Although the issue of WTO accession of new members is not part of the upcoming agricultural

negotiations—those discussions proceed on different tracks—the way it is handled can have important consequences for world agricultural markets. Particularly important is China, the world's largest agricultural producer, representing about 20 percent of world production. The list of eventual members of WTO also includes countries such as Russia, Taiwan, Ukraine, and Viet Nam, all important players on both the supply and demand sides of world agricultural markets.

The Political Economy of Trade Negotiations

During the Uruguay Round agriculture was part of a wider negotiation that allowed negotiators to consider trade-offs between agricultural and nonagricultural interest groups within countries. The United States and the European Union were under pressure to reduce the fiscal cost of agricultural support; world agricultural markets were badly distorted; and the U.S.-EU subsidy war was disrupting world markets. Now negotiators face different issues. The fiscal position of the United States has improved significantly, and the European Union has reduced its fiscal deficits, although the cost of EU support for agriculture remains high. Some of the distortions in world agricultural markets have been reduced, and export subsidies for several products have declined below the levels required by the Uruguay Round agreement. Also, if the negotiations on agriculture are conducted apart from other issues, the leverage of countries interested in further reforms will be reduced. In any case, as in the past, the new WTO agricultural negotiations may well be defined by the pace and shape of the reform of the EU's Common Agricultural Policy, currently under discussion.

THE ROLE OF DEVELOPING COUNTRIES IN NEW TRADE TALKS

Results from the IMPACT global projection model developed at IFPRI show that past trends in agricultural growth will continue into the next century, with world trade in agricultural goods becoming more important. The projections also indicate that countries that pursue comparative advantage will benefit from increasing specialization in agricultural production. In that context, developing countries, as small players in the global arena, should be active participants in designing and implementing international rules that limit larger countries' ability to resort to power politics and unilateral action. Developing countries may overcome some of the constraints to participation by resorting to collective action. For instance, they could consider creating alliances based on shared policy concerns, like the Cairns Group. This approach could reduce the fixed costs of negotiations by spreading them over groups of countries, allow better use of

scarce technical expertise, and improve their bargaining position.

It is clearly in the interest of the developing countries to be active and informed participants in general trade and financial talks, as well as in agricultural trade negotiations. IFPRI's research on global trade and macroeconomic issues will continue to produce data and policy analysis to try to clarify the different commercial and financial scenarios and analyze their likely effects on developing nations, looking particularly at low-income countries and the poorer producers and consumers within them. In the final analysis, the developing countries as a group have much to gain from continued progress toward a transparent, rule-based trading system in agriculture as an integral part of a more solid and balanced world trade and financial system. ■

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A bumper rice crop, India (Ruth Meinzen-Dick)



A 2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT

One of IFPRI's most visible activities is its 2020 Vision for Food, Agriculture, and the Environment initiative. Launched in 1993, the initiative looks ahead to the issues that are likely to play key roles in sustainably feeding the world through the year 2020. Its mission is to generate information and encourage dialogue and debate in pursuit of a world where every person has access to sufficient food to sustain a healthy and productive life, and where food originates from efficient, effective, and low-cost food systems that are compatible with the sustainable use of natural resources.

Research supported by the 2020 Vision initiative in 1998 was wide-ranging and thought-provoking. For example:

- One important tool of 2020 Vision research is an economic model used to project global food supply, demand, and trade to the year 2020. The model, developed at IFPRI, covers 18 commodities and 37 countries and regions, which account for nearly all world food production and consumption. In 1998, researchers began work to incorporate water issues into the model, deepened the analysis of livestock demand, and analyzed likely developments in the roots and tubers sector. They also added an analysis of the implications of the Asian financial crisis for global food security and agricultural trade.

- A 2020 Vision study found that if policy-makers are to develop the best strategies for managing pests, they will require more information on crop losses due to pests—currently some reports put losses at up to 50 percent of production, while others estimate losses at 10–15 percent. Integrated pest management offers the most promise for successful pest management, the study reports, but nonchemical technologies are likely to be accompanied by judicious use of some pesticides. This study also considered the roles of biotechnology and the private sector in future pest management.

- 2020 Vision research examined the many complex links between conflict and hunger, showing that conflict is both a cause and an effect of food insecurity and poverty. This study found that countries in conflict produced an average of 12.4 percent less food per capita during war years than during peace. Comparison of wartime and “peace-adjusted” trends revealed that since 1980 peace would have added 2 to 5 percent to Africa’s food production per person per year.

- Other research spelled out the actions developing countries must take to adjust to the rapidly changing global marketplace in a way that will revitalize agricultural and rural development. In this complex and interconnected new environment, both developing

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As part of the country-level phase of the initiative, IFPRI and its collaborators in Africa established two regional 2020 Vision networks in 1998, one for East Africa and one for West Africa.
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and developed countries must increase their support for agriculture in the developing world, for agriculture helps generate incomes and jobs for the poor, facilitates improved land and natural resource practices, and provides broad social benefits in a decentralized political environment.

To communicate the results of 2020 Vision research, IFPRI published 2 books or booklets, 4 discussion papers, 8 policy briefs, and 1 synthesis. Three issues of the newsletter *News & Views* focused on the implications of El Niño for agriculture and food security, the Asian economic crisis, and the future of food aid. Many of these publications reached new audiences through translation. Beginning in 1998, all 2020 Vision briefs and newsletters were translated into French and Spanish, and one discussion paper was produced only in Spanish. An increasingly important communication tool, the 2020 Vision

web site was redesigned and now offers full-text versions of most publications.

Other information sharing took place through a new series of 2020 Vision policy seminars and panel discussions held at IFPRI headquarters. Meetings featuring speakers from academia, industry, government, and nongovernmental organizations were held on pest management, conflict and hunger, and U.S. benefits from international agricultural research. The panels attracted dozens of people from within and outside IFPRI to participate in lively exchanges of ideas.

As part of the country-level phase of the initiative, IFPRI and its collaborators in Africa established two regional 2020 Vision networks in 1998, one for East Africa and one for West Africa. Unlike most research-based entities, these networks include not only researchers, but also policymakers and leaders from civil society. Through research, publications, training, and dialog between decisionmakers and researchers, the networks aim to generate information that policymakers can use to promote sustainable growth and poverty alleviation and to build African countries' capacity to formulate appropriate policies and strategies. The East Africa network comprises Kenya, Malawi, Mozambique, Tanzania, and Uganda, with Ethiopia participating as an observer. To assure that the network remains sustainable and relevant, IFPRI has become partners with the Association for Strengthening Agricultural Research in Eastern and Central Africa. The West Africa network comprises Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Senegal, and Togo, with Niger participating as an observer. In West Africa, IFPRI's partner is Sécurité Alimentaire Durable en Afrique de l'Ouest Centrale.

In October 1998, both networks held priority-setting workshops at which participants identified national and regional research priorities and outreach activities. These workshops, held in Entebbe for East Africa and Accra for West Africa, received attention from high-level policymakers, including, for example, Uganda's vice president and minister of agriculture, Speciosa Wandira Kazibwe, and Benin's minister of industry, John Igue. Participants finalized country- and region-level priority themes and research topics needed for effective policy formulation. Each country now has a team ready to undertake high-priority applied policy research aimed at the most important information gaps identified in that country.

In June 1998 the 2020 Vision for South Asia was the subject of a workshop attended by about 40 scholars and policymakers from 5 South Asian countries. The participants gathered in

Colombo, Sri Lanka, to discuss strategies and policies that would enable the countries of South Asia to eradicate food insecurity, malnutrition, and poverty. They also considered key areas of regional cooperation for realizing these goals.

As it undertakes its network programs, publications, and other activities, the 2020 Vision initiative benefits from the advice and perspective of an International Advisory Committee. In spring 1998 this committee, chaired by President Yoweri K. Museveni of Uganda, was reconstituted with the addition of about 15 new members. The committee meets occasionally to consider plans for the initiative and offer guidance.

Finally, in an effort to understand where the initiative is succeeding in its efforts and where more attention is needed, IFPRI commissioned an independent assessment of the impact of the 2020 Vision initiative by an expert from outside IFPRI. The final report will be available in 1999. ■



Food market in Ecuador (Nienke Beintema)

Returning from collecting firewood, Cambodia (Claudia Ringler)



Peeling cassava in Côte d'Ivoire (Philippe Berry)



RESEARCH AND OUTREACH

At the heart of IFPRI's work is research on the issues related to achieving food security for the world's poor and hungry. This research occurs in four research divisions and an outreach division. Because the problems facing low-income countries are complex, much of the work crosses divisions and involves collaboration with outside institutions. The results of IFPRI's research are communicated to policymakers in developing countries and decisionmakers and researchers around the

world. IFPRI's main research findings in 1998 are presented here.

ENVIRONMENT AND PRODUCTION

TECHNOLOGY DIVISION

Pressure on the earth's agricultural land is rapidly mounting, as farmers are pressed to feed ever more people without degrading land, water, and other natural resources. In the Environment and Production Technology Division, researchers study how developing countries can choose the policies, institu-

THE MASHREQ/MAGHREB PROJECT IN WEST ASIA AND NORTH AFRICA

In the Mashreq (West Asia) and Maghreb (North Africa) regions, rainfall is low and erratic, and traditional farming systems were developed based on extensive livestock production and herding over large areas of open steppe. But with increasing population pressure, the number of sheep and goats has risen sharply, and barley cultivation for feed purposes has encroached into many traditional grazing areas. Greater competition for resources has also accentuated weak property rights systems, and land is increasingly being privatized with associated increases in land disputes and loss of grazing access and mobility. Government policies have inadvertently exacerbated many of these problems. Trade protection for sheep meat and subsidies on cereals, fuel, farm machinery, and animal feed have encouraged farmers to expand cultivation on the steppe and to keep more livestock. Now many farmers cannot survive without the subsidies. These changes have also led to widespread degradation of the steppe, with loss of pasture productivity and biodiversity, worsening soil erosion, and an increased vulnerability to drought.

In January 1995, IFPRI and the International Center for Agricultural Research in the Dry Areas (ICARDA) initiated the Mashreq/Maghreb (M&M) project to promote the development of integrated crop and livestock production in the low-rainfall areas. The project has two major components: the development and transfer of new agricultural technologies (building on earlier ICARDA work), and research and outreach on policy and property rights issues.

Undertaken in close collaboration with the agricultural research systems in the eight M&M countries (Algeria, Iraq, Jordan, Lebanon, Libya, Morocco, Syria, and Tunisia), this project demonstrates an innovative approach to integrating research, capacity building, and policy impact. ►

The role of the project has been to provide leadership in setting a research and outreach agenda focused on issues of relevance to many of the participating countries, to cofinance some of the direct costs of the research and outreach efforts, to provide technical support and training as needed, and to promote synergies and interactions across country teams to exploit economies of scale and spillover benefits. The project has provided a particularly effective mechanism for sharing experiences across countries. In addition to sharing technologies (for example, through the project Iraq has transferred methods for making feed blocks for sheep to other countries), countries have learned from each other about the effects of market liberalization policies on the low-rainfall areas, alternative approaches to redressing property rights problems (especially privatization of rangeland), and approaches to rangeland rehabilitation.

As the project matures, the national coordinators are increasingly taking over its leadership and management, working together through a project steering committee that meets on a regular basis. The support role provided by international staff is also being taken over by regional scientists. It is envisaged that the project will evolve into a regional research and training network that will be maintained and financed by the member countries.

tions, and technologies that will allow farmers to produce more food on the same amount of land sustainably.

Arresting Deforestation in the Humid Tropics

Tropical forests are under great pressure from both present inhabitants and new migrants seeking land for agriculture and other purposes. Research at IFPRI focuses on identifying technologies, institutional forms, and policies that can slow deforestation while also improving the welfare of poor people on the forest margins.

As part of the CGIAR's initiative on alternatives to slash-and-burn agriculture, IFPRI researchers conducted research in the Brazilian Amazon. In 1998, they finalized a model showing how changes in policies and technology affect deforestation, the use of cleared land, and farmers' incomes over time. In the absence of policy and technological changes, the model shows that forests held in private hands will

disappear altogether, and small-scale farmers in the area will see their incomes rise. If policy were changed to allow sustainable timber extraction, deforestation rates would fall but not to zero. Farmers who practiced sustainable timber extraction would earn increased incomes, but these gains would not ensure the long-term maintenance of forests on small farms. If farmers' were constrained to using only the most basic technologies for deforestation, ranching, extractive activities, and annual crop production, deforestation would slow, at least for a while, and crop production would rise, but farmers' income would plummet.

Water Resources

In the next decade or two, many developing countries will approach water crises in which they will simply not have enough water to meet all their needs for all or part of the year. These crises will result largely from rapidly growing demand for water for agricultural, industrial, and

household purposes, as well as from the diminishing potential for expanding water supplies. Water shortages will be aggravated by worsening environmental problems related to deteriorating water quality, degradation of irrigated land, insufficient levels of river flow for environmental and navigation purposes, upstream land degradation, and seasonal flooding.

To deal with these problems and to avert water scarcities that could depress agricultural production, cause rationing of water to households and industry, damage the environment, and escalate water-related health problems, new strategies for water allocation and management are urgently needed. The most significant reforms will involve creating an institutional and legal environment in which water users are empowered to make their own decisions regarding use of the resource, while providing correct signals regarding the real scarcity value of water. Such reforms will require more holistic management at the river basin level.

In 1998 IFPRI continued to develop analytical methods that can help policymakers evaluate alternative water policies in terms of their social, economic, and environmental outcomes at the river basin level. An initial river basin modeling study of the Maipo River basin in Chile neared completion. Researchers also approached completion of a study of innovative water policy reforms in Rajasthan and Karnataka in India, showing how devolution to water user associations and a switch to financially autonomous public irrigation agencies can improve water management in agriculture. Work began on incorporating future water constraints into IFPRI's global food projections model IMPACT to show how alternative policy reforms and investments in water and irrigation management and

development will affect the future availability of water for agriculture, food production and demand, and food security. The analysis will be undertaken globally and by regions and countries.

Property Rights and Collective Action

Many steps to improve the management of natural resources require long-term investments, and farmers will make these investments only if they have sufficiently secure and long-term rights to their land to ensure that they will reap the benefits of their investments. Improved natural resource management also often requires that users work together more effectively in managing collectively owned resources (such as rangeland,



IFPRI staff visit a rural commune outside Hanoi, Viet Nam (Marc Cohen)



Cranking water from the well, Benin (Philippe Berry)

forests, or fisheries) or in coordinating their activities (such as integrated pest management, watershed development, or soil conservation) across privately owned land. IFPRI leads a CGIAR systemwide program on property rights and collective action and also conducts its own research on this topic. IFPRI's work in this area considers how important property rights and collective action are for the adoption of sustainable natural resource management practices, the most effective ways of providing secure property rights to farmers, the conditions under which common property resources should be privatized or not, and the policies that can best promote the development of efficient markets for natural resources.

IFPRI undertakes a broad spectrum of work on property rights and collective action. In 1998, research on land tenure and the management of forest resources showed that customary land tenure institutions are efficient in the establishment and management of agroforestry (growing tree crops such as cocoa, rubber, coffee, and cin-

namon). Community management of forests under common property is relatively efficient if major forest resources are nontimber products, such as firewood and fodder, whereas more individualized management is more efficient if the major forest product is timber. In the low-rainfall areas of North Africa and West Asia, research provided strong evidence that property rights play an important role in farmers' management and investment behavior and in their household livelihood strategies. However, in the four focus countries (Jordan, Morocco, Syria, and Tunisia) existing property rights systems in rangelands are failing to provide the right balance between individual and social interests. Local communities are often excluded from the control and management of their common pastures, and tribal institutions are unable to respond to the growing demands of their members.

Other work concerned the links between property rights, risk, and the development of livestock production in drought-prone areas of

Sub-Saharan Africa. Grazing mobility is known to be an important risk management tool for herders, and research is identifying the circumstances under which mobility should be supported legally, institutionally, and economically and when it should be abandoned in favor of more settled forms of agriculture. Key considerations include the symmetry of reciprocal access rights between herder groups, the spatial diversity and variability of rainfall, alternative risk management options available to herders, potential returns to increased crop production, and the relative importance of livestock in household incomes. Where legal reforms to property rights systems are required, research has shown that they should be based on procedural rather than substantive law and that institutions for conflict management must be either created or, where they exist, given credible authority.

Agricultural Science and Technology Policy

Agricultural research and development, which has generated astounding increases in food production in the twentieth century, is vital to assuring food security for the burgeoning global population in coming decades. IFPRI researchers study issues related to the financing of agricultural R&D, policies on agricultural genetic resources (especially the impacts of changing intellectual property regimes on the agricultural innovation process), and the links between productivity, environment, and poverty, and they develop improved methods for evaluating the impacts of agricultural R&D. In 1998, the team completed a comprehensive meta-review of the literature on rates of return to agricultural R&D, finding that the rates of return have not declined over time, that rates of return varied by problem

focus (for example, commodities with longer production cycles exhibited lower rates of return), and that the reported rates of return were sensitive to the details of the evaluation methods used to estimate the impacts of research. A major study of the investment and institutional changes in agricultural R&D worldwide showed that growth in public investment in agricultural R&D slowed substantially in the 1980s compared with the 1970s. In the developed world private R&D has become more important, and the funding sources and institutional structures pertaining to public R&D have changed radically in the past decade. These developments are having a profound effect on the funding and conduct of R&D throughout the developing world, the subject of ongoing and in-depth analysis at IFPRI.

Sustainable Development of Fragile Lands

Less-favored lands—that is, lands with low or erratic rainfall, soils and climate that are less than desirable for agriculture, poor access to markets, or some combination of these conditions—have received relatively little investment or policy attention. Yet these lands are home to hundreds of millions of people who suffer from poverty, food insecurity, and environmental degradation. To learn more about the potential for sustainable development of these lands, IFPRI is conducting research in the Central American hillsides, the East African highlands, rainfed areas in India, and low-rainfall areas of North Africa and West Asia. Researchers are examining the effects of past public investments in these lands on economic growth and poverty alleviation; strategies for sustainably intensifying agriculture and promoting the rural nonfarm economy; the effects of broad macroeconomic, trade, and agriculture

policy reforms on less-favored lands; and cost-effective systems for tracking changes in the condition of natural resources and guiding corrective decisions at all levels.

Work in the hillsides of Central America has shown that although communities are diverse, they typically follow a small number of alternative development pathways, based on prevailing agroclimatic and locational features. These alternative pathways range from subsistence-oriented communities growing maize and beans with low-input farming methods to high-input, horticultural or coffee-growing communities. Some communities also develop along nonagricultural lines, while yet others tend to specialize in forestry or livestock production. Appropriate development strategies should be tailored to different pathways—there are few “one-size-fits-all” approaches—as well as to the stage of develop-

ment along a pathway. For example, communities with high population densities are likely to respond differently to many interventions than communities with low population densities, regardless of the type of pathway on which they are on. Opportunities sometimes exist for helping a community switch from one type of development pathway to another (for example, through the construction of a new road or the opening of new markets), but the types of pathways that can be attained are limited.

Research on India has shown that since the Green Revolution, public investments in many rainfed areas have yielded higher agricultural growth and helped raise more people above the poverty line than similar investments in irrigated areas. Moreover, investments in some low-potential rainfed areas have even outperformed investments in many high-potential rainfed areas. Investments in rural roads have been particularly effective, followed by agricultural research and extension and rural education. The results highlight the importance of increasing investment in India’s rainfed areas, though not necessarily at the expense of the irrigated areas.

Research on watershed development in rainfed areas in India has shown that most projects undertaken in a nonparticipatory manner do not lead to any higher gains in agricultural productivity or natural resource management than those observed in control villages. On the other hand, participatory watershed projects involving non-governmental organizations have made a significant contribution. New guidelines developed by the government now stress the need for more localized approaches developed and managed with local people, but the capacity to do this effectively is still limited.

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Work in the hillsides of Central America has shown that although communities are diverse, they typically follow a small number of alternative development pathways, based on prevailing agroclimatic and locational features.

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MARKETS AND STRUCTURAL STUDIES DIVISION

As a rural subsistence economy is transformed into a commercial economy, changes occur in product mix, sources of income, the structure of employment, and labor productivity.

Therefore, this transformation has important implications for overall production growth, poverty alleviation, and food security. Effective and efficient markets, accompanied by the necessary infrastructure and institutions, are essential for this transformation. The Markets and Structural Studies Division studies how

this transformation can be guided through appropriate public policies, so that the pace of transformation can be accelerated, poverty alleviated, food security for the poor assured, and the overall quality of life improved.

Input Market Reform and Development

An important aspect of market reform is improving the efficiency of the distribution and sale of the agricultural inputs farmers need to be more productive, such as fertilizer, seeds, agricultural equipment, and pesticides. IFPRI research focuses on four problems: how to reduce distribution

VIET NAM: PROMOTING REFORM IN A TRANSITION ECONOMY

Rice is at the crux of Viet Nam's economy and society. It makes up 78 percent of annual cropland and 90 percent of staple food production. It contributes 75 percent of the calories consumed by Vietnamese households and accounts for almost 30 percent of the value of their spending. After replacing collective farms with contracts with individual farming households in the 1980s, Viet Nam experienced an increase in rice production of 5 percent a year between 1985 and 1995. Throughout this period, rice continued to be the only commodity subject to export quotas, in part because of a widespread belief that high rice exports would hurt the poor, particularly in the north.

In 1995, the government asked IFPRI to study the rice market in Viet Nam as the country continued its effort to make the transition to a market economy. IFPRI's findings showed that, far from harming the poor, eliminating export quotas and liberalizing the rice trade within Viet Nam were likely to increase the income of farmers and poor rural people. In response, the government liberalized trade restrictions on rice in 1996. Since then, rice production has increased at about 4 percent annually without erosion of price incentives, and the poor in the north have found a steady supply of rice without any rise in prices.

In 1998 IFPRI commissioned a study to evaluate the impact of its work in Viet Nam. The study, by James G. Ryan, former director of the International Crops Research Institute for the Semi-Arid Tropics, found that IFPRI's research and outreach work helped to generate highly credible policy options, to build consensus among disparate policy groups, and to give policymakers confidence that relaxing trade restrictions would be in Viet Nam's national interest. The policy changes, this study estimated, were worth about \$61 million to Viet Nam's economy from 1995 to 1997. ►

The initial study led to further IFPRI work to provide Vietnamese policymakers with information as they pursued more economic reforms. In 1998, one study provided an overview of food processing in Viet Nam, focusing on rice, coffee, seafood, and fruits and vegetables. It examined how trade liberalization instigated by the ASEAN Free Trade Agreement (AFTA) would be likely to affect the food-processing sector and what the government could do to ease the adjustment. Other work showed the high potential of the starch industry to stimulate strong economic growth, reduce poverty, and diversify people's incomes through the development of small and medium-sized rural enterprises. IFPRI also began a project to assist the Ministry of Planning and Investment in preparing a development strategy for Central Viet Nam, the poorest region in the country, aimed at promoting sustainable growth, reducing poverty, and containing rural-urban income differences.

costs, how to establish incentives for private sector development, how to improve the effects of reform on farmers and agricultural production, and how to identify the appropriate sequences of reforms. Field work in Madagascar found that few farmers have adopted improved rice varieties, suggesting that under local conditions these varieties may not improve yields enough to justify the additional costs and risks. Government investment in developing congenial conditions for using improved varieties is therefore warranted. Also in 1998, IFPRI published results from a workshop on plant nutrient management, food security, and sustainable agriculture. This study asserted that agricultural intensification can be sustainable without degrading the environment. Farmers in Sub-Saharan Africa and parts of Asia must return nutrients to the soil, as well as adopt more effective and efficient crop, pest, soil, and water management techniques, with the help of government. Effective operation of markets for distributing these inputs is, therefore, crucial.

Output Market Reform and Development

In many developing countries, particularly in Africa, progress on reforming markets for agri-

cultural products has been slow, and the number of successful cases is very limited. To help promote the development of well-functioning markets, IFPRI researchers study the operation and performance of local agricultural markets, the policies and regulations surrounding market reform, and the behavior of private traders and small farmers in response to market reform. Work in Madagascar showed that market reforms had led to increased participation by private traders in the distribution system and more competitive input and output markets, but poor households and communities are no better off. Still needed are the provision of more roads and ports to strengthen markets, rural financial institutions, increased investment in agricultural research and extension, and safety nets for the poor. A study of rice markets in Côte d'Ivoire showed that liberalization has promoted development of private sector hullers and small mills, but the rice delivery system fails to supply millers with the rice they need, especially medium to large millers. Another study finds that the liberalization of wheat markets in Egypt has been limited because of existing subsidies for bread and wheat flour for all consumers. To ensure that the poor have access to affordable bread and flour, research showed, the government should target the subsidy

specifically to the poor without constraining the development of competitive wheat markets.

Agricultural Commercialization, Diversification, and Export Promotion

Macroeconomic reforms, changing needs and preferences of consumers, and changes in world markets can require developing countries to diversify their agricultural output and produce more for export markets. Making such changes can be difficult, given poor access to information and high costs of getting goods to markets in many developing countries. Work at IFPRI seeks to identify major trends in world markets that might suggest emerging opportunities for small farmers in developing countries, examine the costs of doing business that can prevent small farmers from taking advantage of such opportunities, and reveal policies that can promote small farmer participation.

In a study of the long-term effects of livestock on world food availability, IFPRI researchers analyzed 61 countries over 25 years, showing that the growth of demand for meat products is driven largely by population growth, increased urbanization, and rising incomes. Accordingly, demand is likely to continue to rise regardless of government policy. Policy can, however, play an important role in promoting the competitiveness of the livestock sector, alleviating poverty, and minimizing the environmental and public health risks of increased livestock production.

Together with the International Livestock Research Institute, IFPRI studies how countries in Sub-Saharan Africa can best promote increased dairying by small farmers. Research has found that the costs of getting milk to markets are high. The key to reducing these costs is collective action



Gully reclamation in Ethiopia (John Pender)

among farmers who are far from markets. Governments can help facilitate the development of grassroots producer organizations.

FOOD CONSUMPTION AND NUTRITION DIVISION

If poor countries are to eliminate malnutrition, policymakers must design and implement policies and programs that will help poor individuals get access to food and use that food for good nutrition. The Food Consumption and Nutrition Division studies the behavior of communities, households, individuals, and institutions to provide policymakers with information on how best to achieve this goal.

Rural Finance

Many poor people in developing countries have little or no access to credit and savings institutions that can help them increase their incomes, preserve their assets in times of hardship, and buy food during lean periods. IFPRI conducts research on innovative rural credit programs that offer promise for poor people in rural areas. In 1998, the research team found that how well access to financial markets improves rural incomes and food expenditures depends heavily on infrastructure and access to other goods and services. Comparisons between countries showed that institutional arrangements for rural credit programs cannot simply be replicated from one location to another. Financial programs need to be

PROMOTING COST-EFFECTIVE REFORM WITHOUT JEOPARDIZING FOOD SECURITY IN EGYPT

Beginning in the late 1980s, the Government of Egypt began a series of agricultural reforms designed to convert the state-dominated agricultural sector into a more dynamic and efficient market-oriented engine of economic growth. At the same time, however, the government was concerned about how such reforms would affect the food security of the poor. To help address this concern, the U.S. Agency for International Development began funding a major IFPRI research project on how Egypt can ensure that its most vulnerable people are not left behind as reforms proceed. The project has three goals: to identify cost-effective alternatives to the food subsidy system that protects vulnerable households, to specify the characteristics and determinants of poverty and unemployment, and to spell out policy options for liberalizing wheat markets.

In 1998, IFPRI researchers completed a comprehensive study of the Egyptian food subsidy system, in which they systematically evaluated key performance indicators of the system. A number of policy options emerged from this study, including reforms to reduce leakage of subsidized foods before they reach consumers, to better target subsidies to the poor, and to improve the cost-effectiveness of the system. IFPRI research indicates that the current food subsidy system has generally succeeded in providing food security for the poor, but much of the subsidized food is also leaked to people who are relatively well-off. Tighter targeting of subsidized bread, sugar, and cooking oil to poor consumers would make the system more efficient. IFPRI devised a scientific

yet administratively simple method—the proxy means test—to identify the poor and nonpoor. The Government of Egypt will use this method to target rationed food subsidies to the poor and may apply it to other types of targeted antipoverty interventions.

Regarding poverty, the project addresses three main questions. First, what is the extent of absolute poverty in Egypt? Second, what are the determinants of rural and urban poverty? Third, what are the most serious constraints for microentrepreneurs? Research revealed several factors that could help reduce poverty: increase the average years of schooling and mothers' education in particular, promote an economic strategy favoring trade and services, and invest in infrastructure such as market centers and health facilities.

IFPRI's research on wheat market liberalization in Egypt has two main objectives: to identify policy options that would minimize the cost of liberalization for wheat producers and marketers, and to explore the economywide effects of policy changes in three areas critical to wheat policy—consumer subsidies on bread and flour, producer subsidies to raise self-sufficiency, and responses of the domestic economy to changes in international wheat prices. The agricultural and economywide reforms have had a significant impact on liberalizing the wheat sector in Egypt. However, some restrictions remain. IFPRI research indicates that changes can be made in three areas: decontrol of prices, further deregulation of markets, and productive investment.

designed to harness a community's particular strengths—its local resources, agroecological characteristics, historical and cultural experiences, and occupational patterns—in order to reduce the costs of screening participants, monitoring financial activity, and enforcing contractual obligations. Given that the private sector still has little involvement in rural finance, institutional innovation is likely to depend on public sector support.

Urban Food Insecurity and Malnutrition

IFPRI's work on urban food insecurity and malnutrition shows that poverty and undernutrition in urban areas are large and growing problems. In most of the developing world, rural areas still contain the majority of undernourished children, but the gap is closing. IFPRI's research team seeks to docu-

ment the trends in urban poverty, food insecurity, and malnutrition and to uncover their causes, to analyze successful responses by communities, nongovernmental organizations, and local governments to the threat of urban food insecurity, and to examine policies related to these issues.

IFPRI's review of data on malnutrition from the World Health Organization found that in 9 out of 13 countries studied, the absolute number of underweight children in urban areas is increasing. In 8 of those 9, the urban share of the total increased as well. In China, along with an increase in population, the percentage of urban children who are underweight rose from 6.5 percent in 1992 to 10.0 percent in 1995, and the urban share of underweight children increased from 8 percent to 15 percent.

Research in Accra, Ghana, showed that under-nutrition in Accra worsened between 1993 and 1997, reaching the levels found in 1989, and food insecurity, as measured by calorie availability, remains a threat. Child care practices crucial for the good nutrition of children tend to improve as the level of education reached by mothers increases, but good child care practices by themselves can improve child nutrition even among children of poorer and less educated mothers. The results imply that specific educational messages on how to improve child care directed to poor and less-educated mothers could greatly reduce child malnutrition in Accra.

Studies in Bangladesh and Tanzania found that the vulnerability of households to food insecurity varied by season. Food prices, income-earning opportunities, and exposure to waterborne diseases varied with the rains. In Tanzania, as communities become poorer, they

suffer increasingly from a lack of social cohesion that makes it difficult for households to band together to address the needs of all, such as the declining quality and availability of public services.

Gender and Intrahousehold

Distribution Issues

The effects of food and agricultural policies on individuals often depends on how resources—such as food, money, and time—are allocated within households. IFPRI researchers are working to understand how these allocation processes work in order to help make policies as effective as possible.

A study in Bangladesh revealed that preschoolers, particularly preschool boys, are favored in the household distribution of animal and fish products, the most expensive sources of energy, and adult women tend to receive disproportionately lower shares of preferred foods. At the sites studied, 50–60 percent of adult women were iron-deficiency anemic, as were 40–50 percent preschoolers. To achieve a significant reduction in anemia, women and preschoolers would need to eat substantially more calories of animal and fish products, suggesting that in the short term, iron supplements and fortification may be the answer.

Targeted Poverty Programs

Policies designed to help the poor can both generate tradeoffs and complement one another. IFPRI researchers are conducting current research as well as drawing on past IFPRI work on food subsidies, labor markets, and famine prevention in order to help policymakers assess the appropriate policies for reducing poverty and preventing destitution.

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In 1998 plant breeders
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International Rice Research
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about twice the iron
content of presently used
commercial varieties.
”**

Work in Egypt and Mozambique showed that investing in education, especially primary education and education for girls, can substantially reduce poverty. Improving education also leads to gains in child health and nutrition. Research in Mozambique also revealed that informal support networks offering mutual assistance are common in both rural areas and cities. As part of their traditional practices of mutual assistance, many of the poor exchange goods and labor with one another, but because these exchange relationships often require physical labor or time to perform work, they are of limited use for the most vulnerable members of the community, such as the elderly, invalids, or mothers with small children.

A study in the aftermath of the 1994/95 drought in Zimbabwe found that to be most effective emergency relief should greatly broaden its goals. Donors should meet emergency requirements by supplementing development aid budgets, not transferring funds from development to relief. They should design emergency relief not just to keep people alive, but to provide the tools people need to enhance their livelihoods, such as skills and education, equipment, and seeds and other agricultural materials.

Micronutrient Malnutrition

Only recently have nutritionists working in developing countries assembled evidence showing that many more children and adults, particularly women in their childbearing years, are affected by a lack of essential vitamins and minerals in their diets than by a lack of calories. IFPRI leads a CGIAR-wide program that examines whether this “hidden hunger” might be alleviated by breeding new varieties of staple food plants that contain high levels of micronutrients. The program seeks to assemble a package of

tools that plant breeders can use to produce such varieties. The target micronutrients are iron, zinc, vitamin A, and iodine, and the target crops are rice, wheat, maize, cassava, and beans.

In 1998 plant breeders identified a high-iron, high-yield, aromatic rice variety among those already being developed at the International Rice Research Institute. This strain has nearly twice the iron content of presently used commercial varieties. This variety has good tolerance to rice tungro virus and has a short growing period. Human studies are currently being planned.

TRADE AND MACROECONOMICS DIVISION

Research in the Trade and Macroeconomics Division focuses on how agriculture in developing countries responds to macroeconomic policy reforms and structural adjustment programs and to regional integration and reforms in the world trading system.

Macroeconomic Policy

Poor agricultural performance has gone hand in hand with poor economic performance in many developing countries in recent decades. Although external factors may be partly to blame, inappropriate domestic policies are the major culprits, and in response many countries have adopted major programs of macroeconomic policy reforms. IFPRI researchers study how such policy reforms affect agricultural and rural performance, income distribution, overall growth, and the environment.

IFPRI is conducting in-depth studies of macroeconomic reforms in several Southern African countries. Analysis of conditions in Zimbabwe showed that a development strategy emphasizing production of food crops on small

farms would yield the largest increase in overall income. To be equitable, this strategy would need to be accompanied by policies that raise the incomes of workers on large-scale commercial farms.

A study of Mozambique showed that the macroeconomic situation is dire. Poverty is

widespread, savings and investment are low, infrastructure is poor, and marketing costs are enormous. Agricultural development is the only way to provide a livelihood to the majority of the population and raise the very low savings rate in rural areas. Such progress is indispensable

MACROECONOMIC REFORMS AND REGIONAL INTEGRATION IN SOUTHERN AFRICA

Many of the countries of Southern Africa have suffered from slow growth both in agriculture and in their overall economy. Some of these countries have adopted macroeconomic reforms—shifts in economywide policies on, for example, exchange rates and government spending—that are designed to make their economies more efficient and stimulate growth. As governments cut back, however, it is easy for the poor and most vulnerable people to be left behind. IFPRI's research on macroeconomic reforms and trade integration in Southern Africa seeks to identify policy options that can help countries achieve both economic growth and equity.

IFPRI's work has focused on Mozambique, Tanzania, Zambia, Zimbabwe, and, more recently, Malawi. Because agriculture accounts for a large share of economic activity in these countries, and because poverty is overwhelmingly rural, researchers are modeling these economies to help explain the links between agriculture and the rest of the economy. The research team then simulates the effects of various policy scenarios on growth and equity.

In 1998, research on Zimbabwe showed that although trade liberalization alone can increase the total income received by all households, communal farm households, who make up four-fifths of the country's poor, benefit least from opening up the economy. Moreover, reducing import taxes leads to a substantial loss in tax revenue. In addition, trade policies and other domestic policies can interact in ways that are complex and difficult to predict—sometimes economically beneficial and sometimes detrimental. Failure to adopt complementary policies may explain why trade liberalization efforts in many African countries have not contributed significantly to egalitarian growth.

A study of Mozambique found that agriculture accounts for an unusually low share of the economy, reflecting geography, poor infrastructure, and Mozambique's role as a provider of services to its neighbors. The cost of marketing agricultural goods can be as high as four times the price the farmer receives. Nonetheless, agricultural development is the only way of providing a livelihood for the vast majority of the population and is also an effective way of increasing the savings of rural people. Strategies to increase growth and reduce poverty, therefore, must focus on the agricultural sector.

if the government is to reduce its heavy dependence on revenues from import taxes and tariffs. Because of the high cost of storing goods and transporting them to markets, many peasants consume most of their agricultural production. In the long run marketing costs must be brought down through better roads and other infrastructure, but in the short run home consumption is unlikely to fall significantly.

Other work in 1998 included analysis of the effects of economic policies in Brazil on economic growth, poverty alleviation, deforestation, and land degradation, development of a model assessing the effects of a recent Indonesian currency devaluation on the regional economy of the island of Sumatra, and analysis of the effects of policies liberalizing Morocco's agricultural trade on the country's economy.

Global and Regional Trade

In 1998 research continued on how regional trade arrangements, global trade reform, and the Asian financial crisis are affecting agriculture, the rural economy, and poverty alleviation in developing countries.

Many countries are looking at regional trade agreements as key to stimulating trade. IFPRI researchers analyzed the effects of the North American Free Trade Agreement and the Southern Cone Common Market (MERCOSUR) on member economies. In addition, initial work on regional trade in Southern Africa was designed to answer several questions: Will regional trade integration help or hinder the region's efforts to increase its participation in the world economy? How would more liberalized regional trade affect economic welfare and regional food security? Would the inclusion of South Africa in a regional trade arrangement provide new economic opportu-

nities for smaller, poorer countries, or would South Africa overwhelm its neighbors?

The Trade and Macroeconomics Division also commissioned a series of brief papers on trade issues facing developing countries as the next round of global trade negotiations gets underway. For Latin America, for example, an important issue is how to coordinate different levels of trade negotiations. Global negotiations begin in 1999, while talks on a Free Trade Area of the Americas are getting started, and several sub-regional agreements, such as NAFTA and MERCOSUR, must be maintained.

Research on the Asian financial crisis found that the Asian "miracle" was real. The Asian economies performed well in the past and should do so again. The financial sectors of these economies, however, had major structural weaknesses that would have caused major problems at some point. Asian financial institutions were not capable of effectively and



Boy carrying fruit from the garden, Uzbekistan
(Suresh Babu)

productively handling the extremely high flow of foreign investment. Changes in trade balances due to the crisis will reverberate across the globe. Increased trade deficits in the United States and Europe will raise trade tensions with Asia and may stimulate formal trade actions against these countries.

OUTREACH DIVISION

Using publications, print and broadcast media, seminars, and conferences, the Outreach Division gets the results of IFPRI's research into the hands of those who influence policy on food, agriculture, and the environment. It also strengthens the capacity of developing countries to conduct their own food and

agricultural policy through training and collaboration.

Publications and Information

IFPRI produced and disseminated a broad array of research, general information, and 2020 Vision publications in 1998. Publications directed to the policy research community include research reports, books, working papers, lectures, and reprints of articles published externally by IFPRI staff. Less-technical publications include abstracts of research reports, food policy reports, and food policy statements. General information appears in the annual report, brochures, briefs, and newsletters. As part of its 2020 Vision on Food, Agriculture, and the Environment initiative, IFPRI publishes discussion papers, briefs, and a newsletter. The 2020 Vision briefs and newsletter are now published in French and Spanish, as well as English. In 1998, IFPRI filled about 5,300 requests for some 20,000 publications. A list of 1998 publications begins on page 61.

The World Wide Web is an increasingly important dissemination tool for IFPRI's research. As in the past, IFPRI's web site offers a wide variety of information such as publication lists, staff bios, and full-text versions of shorter publications, but a number of longer publications are now downloadable as well. Sections of the site are now available in French and Spanish. In addition, an increasing number of publications are requested electronically through the web site or e-mail.

Seminars, Workshops, and Conferences

IFPRI continued to communicate with its research partners and the food policy research community through seminars, workshops, and conferences organized by the Policy Seminar Program.



Measuring a wriggling toddler, Guatemala
(*Bénédicte de la Brière*)

Workshop on the Strategy and Action Project for Chinese and Global Food Security, February 18–19, Washington, D.C., U.S.A.

Workshop on Strengthening Development Policy through Gender Analysis, March 9–10, Washington, D.C., U.S.A.

Workshop on Strategies for Stimulating Growth of the Rural Nonfarm Economy in Developing Countries, May 17–21, Airlie, Virginia, U.S.A.

2020 Vision Workshop on Food, Nutrition, Agriculture, and the Environment in South Asia, June 29–30, Colombo, Sri Lanka

Workshop on Land Tenure and the Management of Land and Trees: Community and Household Case Studies from Asia and Africa, July 1–3, Tokyo, Japan

Workshop on Strengthening Development Policy through Gender Analysis, September 17–18, Washington, D.C., U.S.A.

2020 Vision Priority-Setting Workshop for East Africa, October 12–14, Entebbe, Uganda

2020 Vision Priority-Setting Workshop for West Africa, October 19–21, Washington, D.C., U.S.A.

IFPRI Policy Seminar Series

IFPRI's policy seminars, held at IFPRI's headquarters, present the results of recent research on topics of interest to IFPRI and Washington-area policymakers. In 1998 a new series called 2020 Vision policy seminars was launched, based on results of research generated by the 2020 Vision for Food, Agriculture, and the Environment initiative.

Will China Increase Feedgrain Imports? An Assessment of China's Meat Production and Consumption Statistics, Funing Zhong, Nanjing Agricultural University, Nanjing, China, January 29

Global Food Security from a Swedish Point of View, Annika Ahnberg, Minister of Agriculture, Food, and Fisheries, Sweden, February 5

Food and Nutrition Security in Urban Areas of Latin America, Maria Inés Sánchez-Griñán, Ministry of Health, Lima, Peru, April 2

Africa: Seeds of Hope, David Beckman, Bread for the World, Silver Spring, Maryland, USA, June 4

Food from Peace: Breaking the Links between Conflict and Hunger, Ellen Messer, Watson Institute for International Studies, Brown University, Providence, Rhode Island, USA, and Marc Cohen, IFPRI, June 11

Poverty and Environment, Kirit Parikh, Indira Gandhi Institute of Development Research, Bombay, India, June 18

Property Rights: Collective Action and Technology Adoption: A Conceptual Framework, Ruth Meinzen-Dick and Anna Knox-McCulloch, IFPRI, July 16

Land Tenure and the Management of Land and Trees: Community and Household Case Studies from Asia and Africa, Keijiro Otsuka, IFPRI, September 3

2020 Vision Panel Discussion on Pest Management Issues toward 2020, Montague Yudelman, World Wildlife Fund, Washington, D.C., U.S.A.; Klaus Leisinger, Novartis Foundation for Sustainable Development, Basel, Switzerland; and David Pimentel, Cornell University, Ithaca, New York, U.S.A., September 24

What Does Aid to Africa Finance? Shantayanan Devarajan, World Bank, October 1

Fostering Global Well-Being: A New Paradigm to Revitalize Agricultural and Rural Development, David Bathrick, Winrock International, Lima, Peru, December 3

A 2020 Panel Discussion on Aid to Developing Country Agriculture: Investment in U.S. Exports and Employment, August Schumacher, Jr., U.S. Department of Agriculture, Washington, D.C., U.S.A.; Jack Eberspacher, National Association of Wheat Growers, Washington, D.C., U.S.A.; and Per Pinstrup-Andersen, IFPRI, December 16

IFPRI Lecture Series

Moise C. Mensah, former minister of finance of Benin, delivered the sixth lecture in IFPRI's annual lecture series on November 30. The series provides a forum for speakers at the forefront of current thinking and fosters an exchange of ideas on controversial issues related to food, agricultural, and environmental policies and the alleviation of hunger and poverty. In his lecture "Feeding More People and Better: A 2020 Challenge to West Africa, the Case of Benin," Mensah examined how Benin might take steps to meet the challenges posed by a growing population, slow economic growth, and a fragile natural resource base.

Training and Capacity Strengthening

To help developing countries establish their own capacity for conducting research on food and agricultural policies, IFPRI undertook a number of training and capacity-strengthening activities in 1998.

Long-term collaboration continued at the University of Ghana and at Eduardo Mondlane University and the Ministry of Planning and Finance in Mozambique. IFPRI staff undertook an assessment of the need for training and capacity strengthening in food policy analysis in Bangladesh. This assessment was an essential element in a larger IFPRI research project on food management and research support in Bangladesh.

In September, IFPRI and the University of Maryland jointly conducted a short course on "Food, Agriculture, and Natural Resource Policy Analysis: Food Security in Drought-Prone Environments" for nine participants, mostly from Africa. Workshops and courses were also offered to policy researchers and decisionmakers from Bangladesh, the Central Asian republics, China, Ghana, and India.

The Outreach Division hosted two graduate students at IFPRI, allowing them to gain practical experience by collaborating with researchers on their thesis research. The division also hosted one visiting researcher who worked closely with IFPRI research staff. ■

COLLABORATION

IFPRI's collaboration with institutions around the world, particularly in developing countries, offers two important benefits. Through collaboration, IFPRI researchers help to strengthen the capacity for policy research and analysis in developing countries. At the same time, collaborators help inform IFPRI's research, making it relevant to the needs of developing countries. In 1998, IFPRI collaborated with more than 160 institutions in the developing world and posted 12 IFPRI staff members to developing countries as part of collaborative projects with institutions in those countries.

IFPRI also collaborates with other international agricultural research centers and with multilateral and developed-country institutions through shared staff appointments, joint projects, consulting arrangements, and conferences and seminars.

IFPRI continues to pursue long-term collaborative arrangements with several developing-country institutions conducting policy research and analysis to help strengthen their research and teaching capacity. Working with the Center for Social Policy Studies at the University of Ghana and with Eduardo Mondlane University in Mozambique, IFPRI's regional coordinators for East and West Africa undertook a wide range of activities to increase the institutional and human capacity for policy research and implementation in those countries. IFPRI also collaborated with institutions in Bangladesh, China, India, Turkey, Uganda, and Zimbabwe to provide training and capacity-strengthening support.

In 1998, IFPRI established two networks—one for East Africa and one for West

Africa—to help realize the 2020 Vision by devising regional strategies for development of food and agriculture, while promoting the sustainable use of natural resources. Kenya, Malawi, Mozambique, Tanzania, and Uganda compose the East Africa network, with Ethiopia participating as an observer. Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Senegal, and Togo compose the West Africa network, with Niger participating as an observer. Country team members identified areas where gaps exist in knowledge crucial for policy formulation. Priority-setting workshops were conducted in both regions in 1998. Two collaborating regional institutions that have been instrumental in establishing the networks are the Association for Strengthening Agricultural Research in Eastern and Central Africa for East Africa, and *Securité Alimentaire Durable en Afrique de l'Ouest Centrale* (SADAOC) in West Africa.

COLLABORATING INSTITUTIONS IN DEVELOPING COUNTRIES

AFRICA

Benin

Laboratoire de Recherches et d'Expertise Sociales, Université Nationale du Benin

Cameroon

Cameroon Cooperative Credit Union League

Côte d'Ivoire

Centre Ivoirien de Recherches Economiques et Sociales



Hillside cultivation in Indonesia *(Nu Nu San)*

Ethiopia

Department of Economics, Addis Ababa University
Makelle University College
Ministry of Agriculture

Ghana

Institute of Economic Affairs
Ministry of Finance
Ministry of Food and Agriculture
Ministry of Health
National Development Planning Commission
National Poverty Reduction Program
Sécurité Alimentaire Durable en Afrique de
l'Ouest Centrale
University for Development Studies, Tamale
University of Ghana

- Centre for Social Policy Studies
- Institute of Statistical, Social, and
Economic Research
- Noguchi Institute of Medical Research

University of Science and Technology, Kumasi

Kenya

Tropical Soil Biology and Fertility Programme
University of Nairobi

Madagascar

Centre National de Recherches Appliquées au
Développement Rural (FOFIFA)
Ministry of Agriculture
Ministry of Research and Development

Malawi

Malawi Rural Finance Company
Ministry of Women, Children, Community
Development, and Social Welfare
National Economic Council
National Statistical Office
University of Malawi, Lilongwe

- Agricultural Policy Research Unit, Bunda
College of Agriculture
- Bunda College of Agriculture
- Center for Social Research, Chancellor College

Mali

Ministère du Développement Rural
et de l'Environnement

Mozambique

CARE-Mozambique
Conselho de Administração,
Banco International de Moçambique
Department of Population and Social
Development, Ministry of Planning and Finance
Directorate of Planning, Ministry of Education
Eduardo Mondlane University
Ministry of Planning and Finance
National Institute of Statistics
Nutrition Division, Ministry of Health

South Africa

Data Research Africa
Department of Agriculture, University of Pretoria
Development Bank of Southern Africa
Land and Agriculture Policy Centre
Policy and Praxis
Southern Africa Labor and Development
Research Unit, University of Cape Town
University of Natal, Durban
University of The North
University of Stellenbosch
Urbanisation and Health Research Programme,
Medical Research Council

Tanzania

CARE International–Tanzania
Planning Commission, The President's Office

Uganda

Forestry Research Institute
Kawanda Agricultural Research Institute
Makerere University Economic Policy
Research Institute

Ministry of Agriculture
National Agricultural Research Organization

Zambia

Institute for Social and Economic Research
University of Zambia

Zimbabwe

EcoNomics Africa
Ministry of Lands, Agriculture,
and Rural Resettlement
University of Zimbabwe

ASIA**Bangladesh**

Association for Social Advancement
Bangladesh Institute for Nutrition and
Food Science, University of Dhaka
Bangladesh Institute of Development Studies
Bangladesh Rural Advancement Committee
CARE International–Bangladesh
Data Analysis and Technical Assistance
Ministry of Agriculture
Ministry of Commerce
Ministry of Food
Population Council, Dhaka Field Office
Rangpur-Dinajpur Rural Services
University of Dhaka

China

Center for Chinese Agricultural Policy
Chinese Academy of Agricultural Sciences
Chinese Academy of Social Sciences
Ministry of Agriculture
State Planning and Development Commission

India

Banker's Institute of Rural Development
Government of Rajasthan

Indian Council for Agricultural Research
Institute for Economic Growth
Institute for Social and Economic Change
Jawaharlal Nehru University
National Bank for Agriculture and
Rural Development
National Centre for Agricultural Policy
National Council for Applied Economic Research
Tamil Nadu Agricultural University

Indonesia

Agency for Agricultural Research
and Development
Center for Agro-Socioeconomic Research
Lembaga Demografi (Center for Demographic
Research), University of Indonesia
Ministry of Agriculture
University of Indonesia
University of Jambi

Nepal

Gorkha Development Project
Institute of Forestry

Pakistan

Ministry of Food
Pakistan Institute of Development Economics

Philippines

Philippine Institute of Development Studies
School of Economics,
University of the Philippines
Research Institute for Mindanao Culture,
Xavier University

Sri Lanka

Marga Institute
System-wide Initiative on Water Management

Uzbekistan

Ministry of Agriculture and Water Resources
Tashkent State Agrarian University

Viet Nam

Animal Husbandry Research Institute
Fruits and Vegetables Research Institute
Ministry of Agriculture and Rural Development
Ministry of Planning and Investment
National Institute of Agricultural Planning
and Projects
National Institute of Soils and Fertilizer
Postharvest Technology Research Institute
Viet Nam Agricultural Science Institute

LATIN AMERICA AND THE CARIBBEAN

Argentina

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

Bolivia

Lic. Reynaldo Espejo Vargas

Brazil

Empresa Brasileira de Pesquisa Agropecuária
Federal University of Acre
Federal University of Brasília
Federal University of Paraná
Federal University of Rondônia
Instituto de Pesquisa Econômica Aplicada
Instituto de Planejamento Econômico e Social
Municipal Housing Secretariat, Rio de Janeiro
State Planning Commission, State of Acre
State Planning Commission, State of Rondônia
State Secretary of Health, State of Acre
State Secretary of Health, State of Rondônia

Chile

Catholic University of Chile

Costa Rica

Centro para la Integración y Desarrollo
Empresarial, Instituto Interamericano de
Cooperación para la Agricultura

Ecuador

Center for Population Studies
Instituto Nacional de Investigaciones
Agropecuarias

Guatemala

Community Day Care Program,
First Lady of Guatemala
Institute of Nutrition of Central America
and Panama
Secretariat of Social Works of the First Lady

Honduras

CARE-Honduras
Escuela Agrícola Panamericana
Programa de Asignaciones Familiares,
Government of Honduras
Unidad de Planificación en el Sector Agrícola,
Ministerio de Agricultura y Ganadería

Mexico

Colegio de México
Instituto Nacional de Investigaciones Forestales,
Agrícolas y Pecuarias
Programa Nacional de Educación, Salud y
Alimentación
Secretaría de Agricultura, Ganadería y
Desarrollo Rural

Paraguay

Dirección de Investigación Agrícola

Peru

Conservation International–Peru

Uruguay

Instituto Nacional de Investigación Agropecuaria

Venezuela

Ing. Fernando Ajmad Coraspe,
Fundación POLAR
Ministerio de Agricultura y Cría

NORTH AFRICA/MIDDLE EAST**Algeria**

Haute Commission de Développement
de la Steppe

Wash day in rural Guatemala (Kelly Hallman)





Latex harvesting in Indonesia *(Nu Nu San)*

Egypt

Ain Shams University
American University of Cairo
Assuit University
Cairo University
Economic Research Forum for the Arab
Countries, Iran, and Turkey
El-Azhar University
Ministry of Agriculture and Land Reclamation
Ministry of Trade and Supply
Zagazig University

Iraq

IPA Agricultural Research Center

Jordan

Ministry of Agriculture
National Center for Agricultural Research and
Technology Transfer

Kuwait

Arab Planning Institute

Lebanon

Agricultural Research Institute
American University of Beirut
Lebanese American University School of Business
Ministry of Agriculture

Libya

Agricultural Research Center

Morocco

Centre Regional de Recherche Agricole
Institut Agronomique et Veterinaire, Hassan II
Institut National de la Recherche Agronomique

Syria

Ministry of Agriculture and Agrarian Reform
Research Directorate
Steppe Directorate of Aleppo

Steppe Directorate of Palmyra

Tunisia

Ecole Nationale d'Agriculture de Mograne

Institut d'Economie Quantitative

Institut National Agronomique de Tunis

Institut National de la Recherche

Agronomique de Tunisie

Ministry of Agriculture

Turkey

Agro-economic Research Center

Ministry of Agriculture

COLLABORATING CGIAR INSTITUTIONS

Center for International Forestry Research

Centro Internacional de Agricultura Tropical

Centro Internacional de la Papa

Centro Internacional de Mejoramiento

de Maíz y Trigo

International Center for Agricultural Research in
the Dry Areas

International Center for Living Aquatic
Resources Management

International Centre for Research in Agroforestry

International Crops Research Institute for the
Semi-Arid Tropics

International Institute of Tropical Agriculture

International Livestock Research Institute

International Plant Genetic Resources Institute

International Rice Research Institute

International Service for National
Agricultural Research

International Water Management Institute

West Africa Rice Development Association

INTERNATIONAL AGENCIES AND COLLABORATING INSTITUTIONS IN DEVELOPED COUNTRIES

Administrative Committee on Coordination–

Sub-Committee on Nutrition, United Nations

Asian Development Bank, Philippines

Asian Productivity Organization, Japan

Asian Vegetable Research and Development
Center, Bangladesh

Association for Strengthening Agricultural

Research in East and Central Africa

CARE-U.S.A.

Caribbean Agricultural Research and

Development Institute, Trinidad and Tobago

Center for Research in Water Resources,

University of Texas, Austin, U.S.A.

Center for the Study of African Economies,

Oxford University, United Kingdom

Columbia University, U.S.A.

Conservation International, Brazil and Peru

Cornell University, U.S.A.

Deutsche Stiftung für Internationale
Entwicklung, Germany

Economic Research Service,

U.S. Department of Agriculture

European Commission, Belgium

Eastern and Central African Agricultural

Policy Analysis Program, Uganda

Food and Agriculture Organization of the
United Nations, Italy

Free University, Amsterdam, the Netherlands

German Agency for Technical Cooperation,
Germany

Institute of Development Studies,

University of Sussex, United Kingdom

Institute for Fisheries Management and Coastal
Community Development, Denmark

Institute for International Economics, U.S.A.

Inter-American Development Bank, U.S.A.
 Inter-American Institute for Cooperation in
 Agriculture, Costa Rica
 International Center for Research on Women,
 U.S.A.
 International Centre of Insect Physiology and
 Ecology, Kenya
 International Fertilizer Development Center,
 U.S.A.
 International Fund for Agricultural Development,
 Italy
 International Science and Technology Institute,
 U.S.A.
 Katholieke Universiteit Leuven, Belgium
 Kenyon College, U.S.A.
 Laboratory for Global Remote Sensing Studies,
 University of Maryland, U.S.A.
 Land Tenure Center,
 University of Wisconsin-Madison, U.S.A.
 Lincoln University, New Zealand
 Michigan State University, U.S.A.
 Ministry of Agriculture, Norway
 Montana State University, U.S.A.
 National Center for Atmospheric Research,
 U.S.A.
 Northwestern University, U.S.A.
 Ohio State University, U.S.A.
 Overseas Development Institute,
 United Kingdom
 Plant, Soil, and Nutrition Laboratory, U.S.
 Department of Agriculture, U.S.A.
 Purdue University, U.S.A.
 RAND Corporation, U.S.A.
 Royal Veterinary and Agricultural College,
 Denmark
 Save the Children, U.S.A.
 Southern African Development Community,
 Zimbabwe
 Stanford University, U.S.A.
 Tropical Soil, Biology, and Fertility
 Programme, Kenya
 United Nations Industrial Development
 Organization, Austria
 United States Agency for International
 Development, U.S.A.
 United States Department of Agriculture
 United States Naval Academy, U.S.A.
 University of Bonn, Germany
 University of California, Berkeley, U.S.A.
 University of California, Davis, U.S.A.
 University of California, Los Angeles, U.S.A.
 University of Copenhagen, Denmark
 University of Florida, U.S.A.
 University of Giessen, Germany
 University of Göttingen, Germany
 University of Hannover, Germany
 University of Hohenheim, Germany
 University of Illinois, U.S.A.
 University of Kiel, Germany
 University of Marburg, Germany
 University of Maryland, U.S.A.
 University of Minnesota, U.S.A.
 University of Sheffield, United Kingdom
 Wageningen Agricultural University,
 the Netherlands
 Waite Agricultural Research Institute,
 University of Adelaide, Australia
 Western Human Nutrition Research Center,
 U.S. Department of Agriculture, U.S.A.
 Winrock International, U.S.A.
 World Bank, U.S.A.
 World Food Programme, Italy
 World Resources Institute, U.S.A.

1998 PUBLICATIONS

RESEARCH REPORTS

Number 107

Agricultural Growth Linkages in Sub-Saharan Africa, by Christopher L. Delgado, Jane Hopkins, Valerie Kelly, with Peter Hazell, Anna A. McKenna, Peter Gruhn, Behjat Hojjati, Jayashree Sil, and Claude Courbois.

Number 108

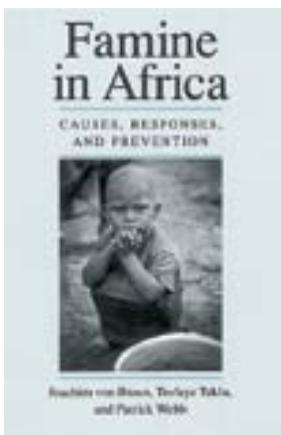
Gender Equality and Investments in Adolescents in the Rural Philippines, by Howarth E. Bouis, Marilou Palabrica-Costello, Orville Solon, Daniel Westbrook, and Azucena B. Limbo.

Policy implications of each research report are summarized in a four-page *IFPRI Abstract*, which is published in English, French, and Spanish.

IFPRI/JOHNS HOPKINS UNIVERSITY

PRESS BOOKS

Famine in Africa: Causes, Responses, and Prevention, by Joachim von Braun, Tesfaye Teklu, and Patrick Webb.



Though famine has affected many parts of the world in the 20th century, the conditions that produce famine—extreme poverty, armed conflict, economic and political turmoil, and climate shocks—are now most prevalent in Africa. *Famine in Africa*, published in 1998

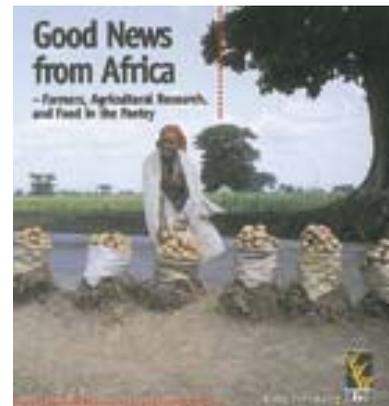
by IFPRI and the Johns Hopkins University Press, explains the complex causes of famine and assesses efforts to mitigate and prevent these catastrophic events. Authors Joachim von Braun, Tesfaye Teklu, and Patrick Webb draw on field work and other research from many parts of Africa to examine how famines affect households and markets and to broaden current theories and models of development for conquering famine.

OTHER BOOKS

Good News from Africa: Farmers, Agricultural Research, and Food in the Pantry, by Ebbe Schiøler.

In *Good News from Africa* Ebbe Schiøler illustrates how international agricultural research has affected the everyday fare of African villages.

Based on the author's visits to 12 communities in 5 countries, the book tells the stories of individual farmers, showing how years of laboratory and field research lead to breakthroughs that help these poor farmers get more from their land to feed their families. Originally written in Danish and published by the Royal Danish Ministry of Foreign Affairs, the book was published in an English edition by IFPRI in collaboration with other centers of the Consultative Group on International Agricultural Research.



FOOD POLICY REPORTS

Rural Finance and Poverty Alleviation, by Manfred Zeller and Manohar Sharma.

FOOD POLICY STATEMENTS

Number 27

Rural Finance and Poverty Alleviation, by Manfred Zeller and Manohar Sharma.

IFPRI REPORT

Volume 20, Numbers 1, 2, and 3 (in English, Spanish, and French).

A 2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT

News & Views (newsletter), February, June, and November.

Discussion Papers

Number 23 (Spanish only)

Seguridad Alimentaria y Estrategias Sociales: Su Contribución a la Seguridad Nutricional en Areas Urbanas de América Latina, by Maria Inés Sanchez-Griñán.

Number 24

Food for Peace: Breaking the Links between Conflict and Hunger, by Ellen Messer, Marc J. Cohen, and Jashinta D'Costa.

Number 25

Pest Management and Food Production: Looking to the Future, by Montague Yudelman, Annu Ratta, and David Nygaard.

Number 26

Fostering Global Well-Being: A New Paradigm to Revitalize Agricultural and Rural Development, by David D. Bathrick.

Briefs

Number 48

Challenges to the 2020 Vision for Latin America: Food and Agriculture since 1970, by James L. Garrett.

Number 49

Nutrition Security in Urban Areas of Latin America, by Maria Inés Sanchez-Griñán.

Number 50

Food for Peace: Breaking the Links Between Conflict and Hunger, by Ellen Messer, Marc J. Cohen, and Jashinta D'Costa.

Number 51

Technological Opportunities for Sustaining Wheat Productivity Growth Toward 2020, by Prabhu L. Pingali and Sanjaya Rajaram.

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Pest Management and Food Production: Looking to the Future, by Montague Yudelman, Annu Ratta, and David Nygaard.

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Population Growth and Policy Options in the Developing World, by John Bongaarts and Judith Bruce.

Number 54

Fostering Global Well-Being: A New Paradigm to Revitalize Agricultural and Rural Development, by David D. Bathrick.

Number 55

The Potential of Agroecology to Combat Hunger in the Developing World, by Miguel A. Altieri, Peter Rosset, and Lori Ann Thrupp.

Number 56

Aid to Developing-Country Agriculture: Investing in Poverty Reduction and New Export Opportunities, by Per Pinstруп-Andersen and Marc J. Cohen.

Number 57

Economic Crisis in Asia: A Future of Diminishing Growth and Increasing Poverty?, by Mark W. Rosegrant and Claudia Ringler.

Synthesis

The 2020 Vision for Food, Agriculture, and the Environment in South Asia: Continuing the Dialogue, by Godfrey Gunatilleke.

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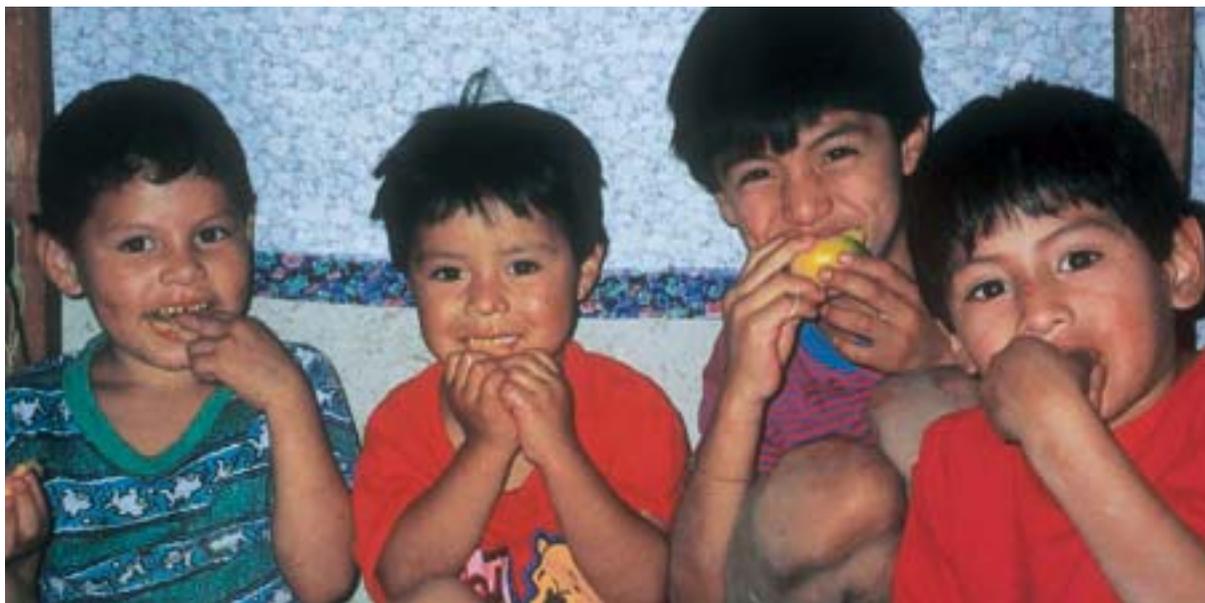
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Guatemalan boys snack on fruit (Bénédicte de la Brière)

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Badiane, Ousmane (with G. Shively). Spatial Integration, Transport Costs, and the Response of Local Prices to Policy Changes in Ghana. *Journal of Development Economics* 56, no. 2.

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Brother and sister eating maize, Benin
(Philippe Berry)

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Outdoor flower market in Guatemala
(Kelly Hallman)

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Agricultural Wages and Food Prices in Egypt: A Governorate-level Analysis. Prepared by Gaurav Datt and J. Olmsted for the U.S. Agency for International Development–Cairo.

Analysis of Policy Options for Income Growth and Poverty Alleviation in Madagascar. Prepared by Francesco Goletti and Karl Rich for the U.S. Agency for International Development, Madagascar.

Brief Description of the Socioeconomic Situation of Rural Households and Changes in Welfare Indicators during 1992–1997 in Madagascar. Prepared by Bart Minten, Manfred Zeller, and Cecile Lapenu for the U.S. Agency for International Development, Madagascar.

Can Social Security Programs Do More with Less? Prepared by Lawrence Haddad and Manfred Zeller for the U.S. Agency for International Development–Cairo.

The Commercial Agricultural Surplus of Rural Households in Madagascar. Prepared by Bart Minten, J. C. Randrianarisoa, Manfred Zeller, and Ousmane Badiane for the U.S. Agency for International Development, Madagascar.

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Determinants of Agricultural Productivity in Madagascar. Prepared by Jean Claude Randrianarisoa, Bart Minten, Francesco Goletti, and Manfred Zeller for the U.S. Agency for International Development, Madagascar.

Determinants of Food and Non-food Consumption Expenditures of Rural Households. Prepared by Bart Minten, Manfred Zeller, and J.C. Randrianarisoa for the U.S. Agency for International Development, Madagascar.

Determinants of Income Generation and Welfare of Rural Households in Madagascar and Implications for Policy. Prepared by a team from the Markets

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The Egyptian Food Subsidy System: Impact on the Poor and an Evaluation of Alternatives for Policy Reform. Prepared by Howarth Bouis and Akhter Ahmed for the U.S. Agency for International Development–Cairo.

Gender and Forest Resource Management: A Comparative Study of Selected Areas of Asia and Africa. Prepared by Keijiro Otsuka and Agnes R. Quisumbing for the United Kingdom Department for International Development.

Geographic Distribution of Poverty in Viet Nam. Prepared by Nicholas Minot for Lincoln International and the United Nations Development Program.

A Household-Level Analysis of Credit Transactions in Egypt. Prepared by Manohar Sharma and Manfred Zeller for the U.S. Agency for International Development–Cairo.

How Good are Rice Seeds in Madagascar? The Structure and Performance of the Seed Sector. Prepared by Francesco Goletti, J. C. Randrianarisoa, and Karl Rich for the U.S. Agency for International Development, Madagascar.

Performance of the Egyptian Food Subsidy System: Distribution, Use, Leakage, Targeting, and Cost-Effectiveness. Prepared by Akhter Ahmed, Howarth Bouis, and Sonia M. Ali for the U.S. Agency for International Development–Cairo.

Policy Simulation for Agricultural Diversification. Prepared by Francesco Goletti and Karl Rich for Lincoln International and the United Nations Development Program.

Rice Markets in the 1997–98 Aman Season: A Rapid Appraisal Analysis. Prepared by Paul Dorosh and Q. Shahabuddin for the Bangladesh Ministry of Food.

Starch Industry Development as a Strategy for Agro-food Based Rural Industrialization. Prepared by Francesco Goletti, C. Wheatley, and Karl Rich for the Small Growth Fund of the Collaborative Network on Postharvest Research.

Strategies for the Sustainable Development of Less-Favored Lands in Sub-Saharan Africa. Prepared by Peter B. R. Hazell for the European Commission.

Trade Distortions and Incentives in Agricultural Trade: The Case of Rice, Sugar, Fertilizer, and Livestock-Meat-Feed Subsectors in Viet Nam. Prepared by Francesco Goletti for the World Bank.



Livestock in Ethiopia (John Pender)

The Wheat Milling Sector in Egypt: Structure, Performance and Future Prospects. Prepared by Mylene Kherallah, Peter Gruhn, and A. Abdel-Latif for the U.S. Agency for International Development–Cairo.

PAPERS PRESENTED BY IFPRI STAFF

In addition to the publications listed here, in 1998 IFPRI staff presented more than 150 papers in various forums sponsored by organizations other than IFPRI. Presentations were made at seminars, workshops, and conferences in institutional settings that included universities and academic society conferences, nationally and internationally organized research colloquia, and bilateral and multilateral advisory group meetings.

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All IFPRI research publications undergo external review. Manuscripts submitted for publication as IFPRI research reports, food policy reviews, and IFPRI/Johns Hopkins University Press books undergo external review through the IFPRI Publications Review Committee. The committee oversees these reviews and makes recommendations for publication. The committee comprises seven research fellows and the director of the Information Program.

IFPRI is grateful for the efforts of the following external referees who reviewed manuscripts for the research report series and for IFPRI/Johns Hopkins books during 1997 and 1998.

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Some 180 visitors spent time at IFPRI in 1998. Those listed here spent about a month or more at IFPRI.

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Bagging the rice harvest, the Philippines (*Ruth Meinzen-Dick*)

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Martin Van Weerdenburg, Australia

Senior Administrative Coordinator

Bernadette Cordero, Philippines

Administrative Services

Travel Coordinator

Luisa Gaskell, Philippines

Facilities Coordinator

Anthony Thomas, U.S.A.

Photocopy/Facilities Assistant

Glen Briscoe, U.S.A.

Receptionist

Yolanda Palis, Philippines

Facilities Assistant

Melvin Suggs, U.S.A.

Computer Services

Head

Nancy Walczak, U.S.A.

Senior Programmer

Luan Nguyen, Viet Nam

Programmer

Kang Chiu, Hong Kong

Network Engineer

Yin Leong, Malaysia

Microcomputer Assistant

Aamir Qureshi, Pakistan

Finance

Chief Financial Officer

Celeste Regan, U.S.A.

Chief Accountant

German Gavino, Philippines

Staff Accountants

Howard Lee, China

Paulina Manalansan, Philippines

Peter Townsend, U.S.A.

Contracts and Grants Administrator

Robert McCarthy, U.S.A.

Budget Administrator

Christopher Schneck, U.S.A.

Budget and Contracts Assistant

Yvette Smith, U.S.A.

Human Resources Services

Head

I'dafney Green, U.S.A.

Human Resource Specialist

Sandra Freeman, U.S.A.

Human Resource Assistant

Alexis Howard, U.S.A.

FINANCIAL STATEMENTS

Presented here is a summary of financial information for the years ended December 31, 1998 and 1997. The full financial statements and the independent auditors' report are available from IFPRI on request.

BALANCE SHEETS

December 31, 1998 and 1997
(US\$ thousands)

Assets		1998	1997
Current assets	Cash and cash equivalents	\$ 4,055	\$2,635
	Investments	4,913	1,928
	CGIAR grants receivable	554	771
	Restricted projects receivable (net)	1,284	2,536
	Other receivables	498	600
	Other current assets	94	84
	Total current assets	11,398	8,554
Other assets	Property and equipment, net	698	632
	Total assets	\$ 12,096	\$9,186
Liabilities and net assets			
Current liabilities	Accounts payable	\$ 979	\$707
	Accrued vacation	583	597
	Advance payment of CGIAR grant funds	160	439
	Deferred rent (current portion)	—	400
	Unexpended restricted project funds	3,859	2,929
	Other liabilities	61	17
	Total current liabilities	\$ 5,642	\$5,089
Noncurrent liabilities	Deferred rent	577	—
	Accrued post-retirement benefits	453	396
	Total noncurrent liabilities	1,030	396
	Total liabilities	6,672	5,485
Net assets—unrestricted	Operating reserves	2,971	2,415
	Reserves allocated for subsequent year expenditure	1,755	654
	Net investment in property and equipment	698	632
	Total net assets	5,424	3,701
	Total liabilities and net assets	\$ 12,096	\$9,186

STATEMENTS OF REVENUE, EXPENSES, AND CHANGES IN OPERATING RESERVES

For the Years Ended December 31, 1998 and 1997

(US\$ thousands)

Revenue		1998	1997
Grant and contract income	Unrestricted	\$ 9,304	\$ 9,391
	Restricted	10,660	8,808
Investment income		311	235
	Total revenue	\$ 20,275	\$18,434
Expenses			
Program services	Direct research and outreach	\$ 16,314	\$16,282
Other services		211	45
Management and general		2,027	1,764
	Total expenses	\$ 18,552	\$18,091
	Excess of revenue over expenses	\$ 1,723	\$ 343
Transfer (to) from reserves allocated for subsequent year expenditure		(1,101)	(26)
Transfer (to) from net investment in property and equipment		(66)	52
	Increase (decrease) in working capital fund	\$ 556	\$ 369
Operating reserves, beginning of year		2,415	2,046
Operating reserves, end of year		\$ 2,971	\$ 2,415

SCHEDULE OF EXPENSES BY TYPE

(US\$ thousands)

Expenses	1998	1997
Personnel	\$ 6,868	\$ 6,703
Fringe benefits	2,165	2,024
Collaboration/field expenses	3,840	3,195
Travel	1,350	1,431
Computer	122	129
External publications	358	404
Trustees' expenses (nontravel)	78	59
Office operations	3,685	3,465
Foreign exchange loss (gain)	(145)	441
Depreciation/amortization	231	240
Total	\$ 18,552	\$ 18,091



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