



Environment and Production Technology

Agriculture is vitally important to the world's hungry people, the majority of whom live in rural areas and depend on the land for their food and livelihoods. Yet the increasing fragility of the natural resource base, compounded by global shifts such as population growth, climate change, and energy scarcity, adds to the vulnerability of the world's 800 million food-insecure people. Emerging food and agricultural technologies offer significant promise for advances, but only if they are supported by appropriate policies and institutions.

The International Food Policy Research Institute (IFPRI) identifies solutions to these challenges by focusing its research agenda on reducing poverty, hunger, and malnutrition in a sustainable way. IFPRI's Environment and Production Technology Division (EPTD) supports this overall strategy with collaborative research and outreach programs that build local capacity and identify policies to increase agricultural production, conserve natural resources, promote yield-enhancing technologies, and facilitate adaptation to global change, while reducing hunger and poverty, improving rural livelihoods, and increasing incomes.



RESEARCH THEMES

Outlooks and Global Change

Helping the Rural Poor Adapt to Global Change

Over the coming decades, global changes—especially climate change—will continue to affect food and water security in developing countries. Increased production of crop-based biofuels to satisfy growing energy needs will also lead to changes in the global food economy. But the ability of most developing countries to adapt, especially to climate change, is limited. IFPRI uses scenarios of long-term change coupled with analytical tools, such as its International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), to examine the effects of crop-based bioenergy demand, water availability, and climate change on the food situation of the future and its impact on nutrition, food security, and natural resources. IFPRI's research tools serve as a means of evaluating options for adapting to change and assessing the tradeoffs of environmental policies as they affect the complex relationship among agriculture, energy, and food security. Policymakers and development agencies can use this

information to enhance global food, water, and energy security while reducing poverty.

Improving Crop Performance to Boost Rural Incomes

In substantial parts of the developing world, rural households have not shared the poverty-reducing economic growth that has occurred elsewhere. Insufficient investment in developing and commercializing technologies, as well as in improving rural infrastructure and human capacity, are key causes of this stagnation. HarvestChoice—a collaborative project led by IFPRI and the University of Minnesota—is helping to improve strategic investment and policy decisions to enhance the performance of the crops most likely to generate benefits for the poor. Research focuses on generating new information on the location of food-insecure people in relation to major crop production systems; the dependence of the poor on specific crops and products; and the frequency and severity of drought, disease, and other production impediments. For more information, see www.harvestchoice.org/index.html.

Natural Resource Policies

Managing Water Resources Effectively for the Poor

Water demand in developing countries for household, industrial, agricultural, and environmental uses is increasing due to population and economic growth. Meanwhile, watersheds and irrigated lands are deteriorating and ground and surface water pollution is increasing. IFPRI's water policy research emphasizes water rights, economic incentives, and institutional change. Under the Challenge Program on Water and Food, an initiative of the Consultative Group on International Agricultural Research (CGIAR), IFPRI undertakes collaborative research on global, national, and sectoral policies influencing water resources. IFPRI is working with policymakers to improve the efficiency and equity of irrigation and water-supply systems and to make them more conducive to environmental and human health. Efforts also include enhancing national capacity to analyze prospective water policies and developing tools to support water-planning agencies.

Reducing Poverty by Using Land Resources Sustainably

Land is a critical asset for poor people in developing countries. IFPRI's research aims to identify ways to use land resources more productively, equitably, and sustainably to reduce poverty. Research assesses the ability of interventions to promote the sustainable management of cropland, grazing land, and forests; the ways in which resource governance and regulations affect land management; and the role of incentive-based approaches in promoting conservation. Along with increasing understanding of how land-based resources are linked to local livelihoods, IFPRI's research supports the development of policy options to integrate sustainable land management into poverty reduction strategies.

Strengthening Collective Action and Property Rights Institutions for the Poor

Property rights and collective action are key factors in promoting agricultural productivity and food security, achieving equitable access to critical natural resources, and sustaining the natural resource base. The CGIAR's Collective Action and Property Rights initiative (CAPRI) examines the formation and effectiveness of voluntary community organizations and property institutions and their impact on the adoption of innovation, management of natural resources, and reduction of poverty. CAPRI identifies policy instruments that enable the creation, improved functioning, and resilience of user organizations and property institutions to assure optimal resource use. Activities focus on water resource

allocation, land resource management, and women's assets. For more information, see www.capri.cgiar.org.

Strengthening Women's Control of Assets for Better Development Outcomes

Despite evidence that strengthening women's control of assets is critical to reducing poverty, a substantial gender gap remains in asset ownership. IFPRI's research in this area, undertaken jointly by EPTD and the Institute's Food Consumption and Nutrition Division, aims to identify policy interventions to increase women's control over resources and to determine what combination of assets and support services will reduce poverty, malnutrition, and food insecurity. Analysis—incorporating natural and physical capital, as well as human, social, and political capital—addresses how trends such as migration, rural–urban linkages, and the changing landscape of financial services affect women's abilities to acquire and derive benefits from assets.

Science and Technology Policy

Managing Genetic Resources to Benefit Rural Areas

Sustainable use and management of crop biodiversity and genetic resources is fundamental to agricultural productivity and rural livelihoods. IFPRI's research seeks to strengthen local seed systems, including analyzing rural seed markets and the role of social networks in enhancing farmers' access to seed and information. Research also examines the costs and benefits of crop biotechnologies designed to enhance food security. As part of the CGIAR's global genetic resources program, IFPRI is developing methods and tools to support cost-effective approaches to conserving seed outside its natural habitat.

Minimizing Risks through Biosafety Systems

The Program for Biosafety Systems (PBS) is a collaborative initiative led by IFPRI that works with developing countries to establish transparent regulatory regimes to minimize adverse environmental and human health consequences that may result from the planting of genetically modified crops. Through policy development, research, and capacity building, PBS has helped to lay the groundwork for local decisionmaking systems, thereby paving the way for agricultural biotechnologies to be tested. Systems are being established by local researchers, regulators, and government officials, some of whom have been trained by PBS, who can support public policy development and regulatory decisionmaking.



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