



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

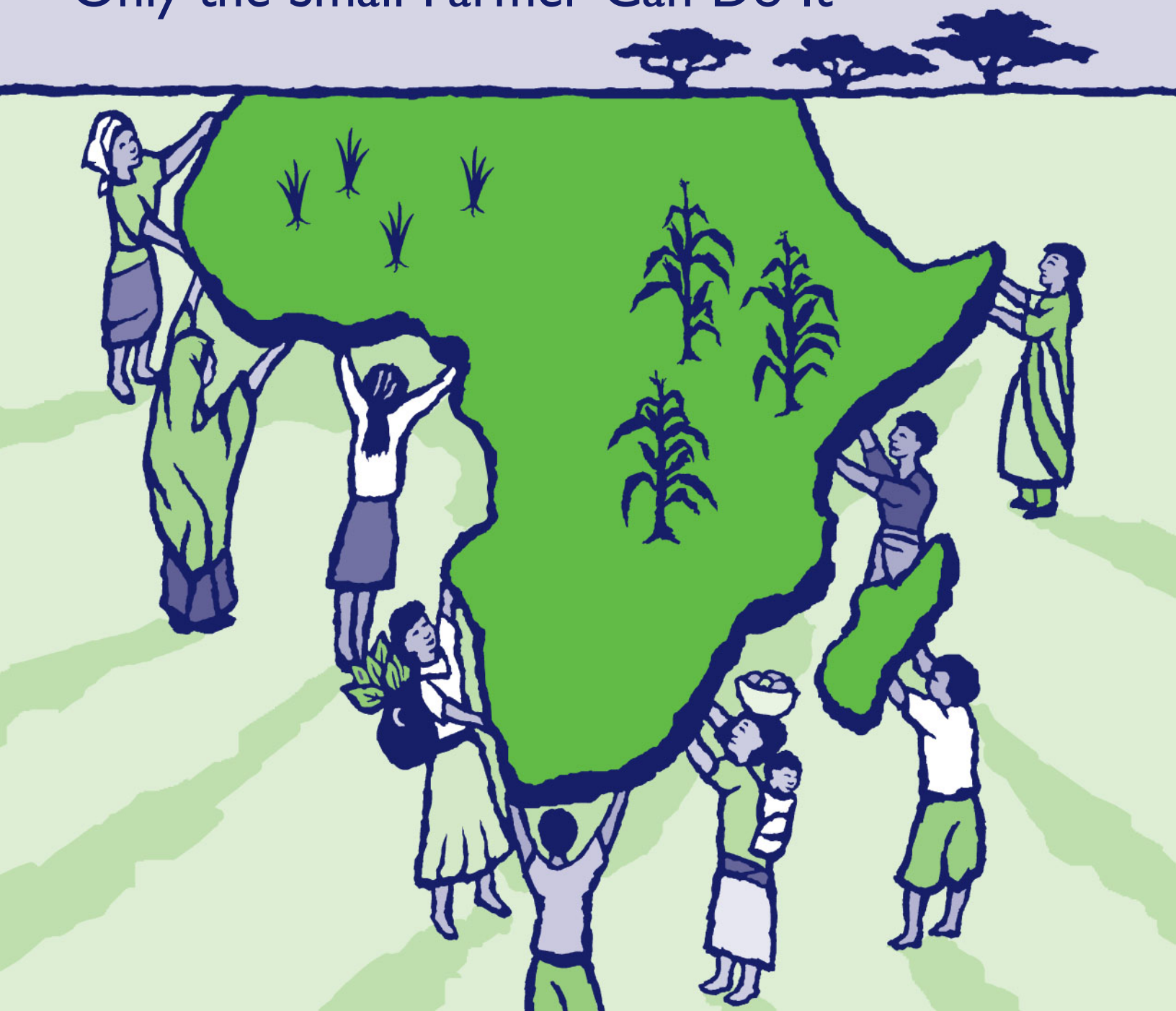


INTERNATIONAL FOOD
POLICY RESEARCH INSTITUTE

sustainable options for ending hunger and poverty

ENDING HUNGER IN AFRICA

Only the Small Farmer Can Do It



In contrast to popular predictions of Africa's worsening economic decline, recent research supports an alternative and more positive vision of Africa's future. New political commitment and African ownership of the development agenda, combined with a renewed focus on and investments in smallholder-led agriculture, have the potential to halt or reverse the current downward spiral of hunger, poverty, environmental degradation, disease, and civil strife. Building on lessons learned from past policy and implementation mistakes, this policy brief argues that now is the time to address key pillars of growth to revitalize the agriculture sector. To ensure success, these efforts must be coordinated through regional and national action plans, such as those recommended in the U.S. Agency for International Development's (USAID's) new Agricultural Initiative to Cut Hunger in Africa (AICHA). The plans must be designed jointly by donors and their African partners, to promote investments in African agriculture that are sensitive to local conditions and buttressed by rigorous analysis, monitoring, and evaluation of program performance, while also encouraging transparency and accountability.

AFRICA'S CURRENT DISTRESS

Inappropriate social and economic policies, natural disasters, and civil strife have all contributed to the deteriorating conditions in Sub-Saharan Africa today. A staggering one-third of the population is malnourished. Childhood mortality rates are among the highest in the developing world. Eighty percent of all Africans live on a daily income of less than US\$2; nearly half struggle to survive on US\$1 a day or less.

Despite the projected increases in mortality resulting from infectious diseases, African population growth rates remain among the highest in the world. Hunger and poverty interact to fuel a vicious downward spiral that limits people's ability to grow or purchase food. These conditions exacerbate environmental degradation, conflict, and the spread of HIV/AIDS and other infectious diseases. Africa is the only continent where hunger and poverty are projected to worsen in the next decade. New and continuing crises appear likely to further disrupt agriculture, create refugees, escalate the need for and costs of emergency relief, and divert investment from the long-term solutions Africa so desperately needs to end its cycle of despair.

THE KEY: IMPROVE AGRICULTURAL PERFORMANCE

Improving the poor performance of Africa's stagnating agricultural sector, in recent decades one of the worst in the world, is the key to solving the problems of hunger and poverty. Agriculture remains the foundation of most African economies and African peoples' livelihoods. But although agriculture accounts for 70 percent of full-time employment in Africa, 33 percent of its total gross domestic product (GDP), and 40 percent of its total export earnings, productivity has stalled. Per capita output of staple foods continues to fall, and the continent is steadily losing its world market shares for major export crops like coffee, tea, and cocoa.

Where African governments have actively supported new investments in agriculture and rural development, these worrisome trends have started to turn around. In Uganda, for example, when political leaders embraced new agricultural programs in the 1990s, they were able to reduce rural poverty from 50 to 35 percent. In the past, development practitioners erroneously believed that small farmers were unwilling to change their traditional farming practices, but many studies now prove that small farmers respond to meaningful incentives.

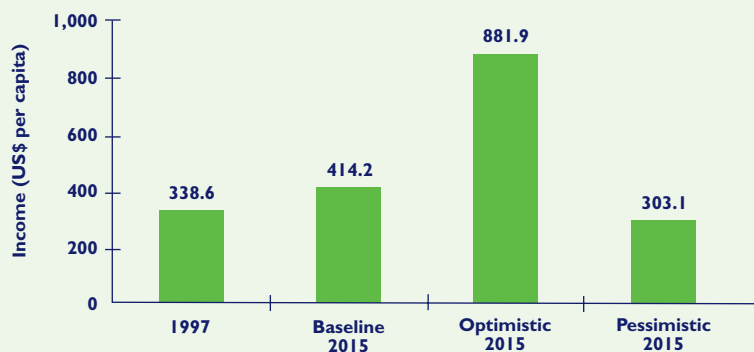
During the 1980s, Zimbabwe experienced a smallholder Green Revolution in maize and sorghum production. Yields more than doubled, with 95 percent of crop area planted with improved varieties. Although the government could not sustain its catalyzing investments in infrastructure and support, the experience demonstrates both the desire and capability of smallholders to adopt new practices to improve yields.

IFPRI's global food model projections to 2015 show that a smallholder-led agricultural transformation of Africa is technically and economically feasible. These projections illustrate three visions of the future: (1) a baseline, "business as usual" scenario; (2) a pessimistic scenario; and (3) an optimistic scenario (see Figures 1, 2, and 3). The baseline scenario assumes that governments and donors would maintain their investments in agriculture at current levels. As a result, Africans' total consumption of staple foods and meat would about double by 2015, with most of the needed increases in food supply coming from domestic African production as farmers improved yields and modestly expanded cropped areas. Per capita incomes would increase by 22 percent, and per capita daily calorie consumption would increase from 2,232 to 2,387 kilocalories. Nevertheless, although the proportion of malnourished children would decrease by 2015, the total number of malnourished children would increase by more than 5 million to 37.9 million.

The pessimistic scenario assumes a modest decline in public investment in agriculture, with corresponding decreases in the growth rates for crop and livestock yields and a 50 percent decline in GDP growth. As population growth outstripped people's ability to pay for staple foods and meat, per capita consumption of calories would fall to 2,167 kilocalories per day. Per capita incomes would also fall by 11 percent, and the number of malnourished children would increase to 45.8 million. Even at these lower consumption levels, Africa would have to import significantly more cereals, roots, and tubers by 2015.

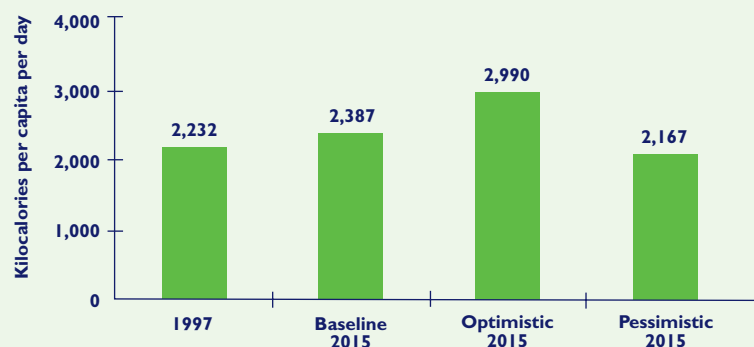
The optimistic scenario, by contrast, assumes that governments and donors modestly increase their investments in agriculture and make a greater commitment to policy reform. Crop and livestock yields would rise between 3 and 4 percent per year, and GDP would grow by 8 percent per year in some subregions. Africans would demand 20 to 30 percent more staple foods than in the baseline, and their meat consumption would increase another 56 percent. Per capita consumption of calories would rise to 2,990 kilocalories per day, and the number of

Figure 1 Per capita income in Sub-Saharan Africa, 1997 and 2015



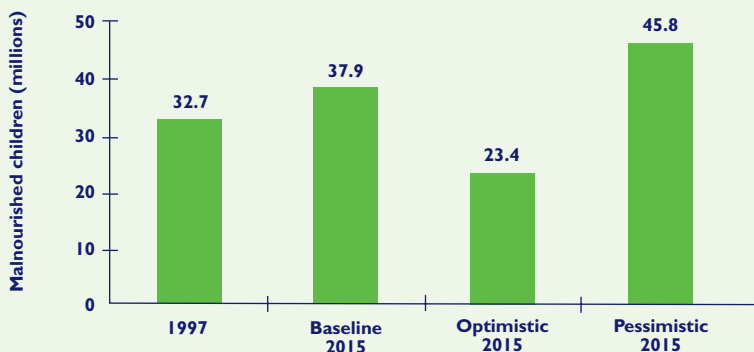
SOURCE: IMPACT simulations, IFPRI, 2002.

Figure 2 Per capita daily caloric demand in Sub-Saharan Africa, 1997 and 2015



SOURCE: IMPACT simulations, IFPRI, 2002.

Figure 3 Numbers of malnourished children in Sub-Saharan Africa, 1997 and 2015



SOURCE: IMPACT simulations, IFPRI, 2002.

malnourished children would drop to 23.4 million (a 40 percent reduction below the baseline projection for 2015). Per capita incomes would rise to almost three times the baseline levels. African production could supply the additional food needed through faster yield growth, and food imports in 2015 would actually total less than under the baseline scenario.

Of course, this transformation would require additional investments in agriculture from the donor community and committed African leadership. The optimistic scenario requires an additional investment in agriculture and rural development (beyond current and projected allocations) of US\$5 billion per year until 2015. These investment levels depart sharply from recent trends. For years, public investment in agriculture has been falling, not rising. World Bank lending for agriculture declined dramatically between 1980 and 2000, from about 31 percent of its total lending portfolio in 1979–81 to less than 10 percent in 1999–2000. Similarly, from fiscal year 1992 to 1997, USAID reduced its funding to agriculture programs from 10 percent of its total obligations to only 5 percent. It cut agricultural investments in Sub-Saharan Africa during that period by 57 percent, to about US\$80 million (USAID Report to Congress on Title XII 1998). By 2000, African agriculture received less U.S. development assistance than any other sector.

NEW OPPORTUNITIES FOR AFRICA

The dramatic political and economic realignments caused by globalization over the past decade have caused many changes in Africa that offer new opportunities for agricultural growth. First, many African countries are more firmly committed to reducing hunger and poverty than at any other time in the past. For the first time since independence, continent-wide and subregional perspectives on development solutions are gaining strength and visibility. This shift toward greater ownership of the development agenda opens the door for more countries to benefit from greater economic integration and to capture spillover benefits from the exchange of technology and information. For example, the New Partnership for Africa's Development (NEPAD) is a promising initiative among African leaders that concretely reflects the continent-wide commitment to ownership of future development priorities. And African countries are negotiating regional trading arrangements that offer new possibilities for exploiting regional dynamics, such as the Southern Africa Development Cooperation (SADC) free trade area, launched in September 2000.

Second, various African governments are experimenting with institutional innovations to improve the efficiency and cost-effectiveness of the public services they finance. For example, in Tanzania, local district governments are jointly managing road maintenance and rehabilitation in partnership with the private sector under a USAID rural roads program. Since 1998 the

project has successfully completed more than 530 miles of rural roads in 23 districts, reducing transportation costs by an average of 40 percent.

Third, governments are increasingly devolving authority to the local level, allowing rural communities to identify both local needs and appropriate solutions. For example, communities are seeking ways to capture the economic benefits of marketing new products developed from local resources or of collecting royalties on indigenous biodiversity materials. The SANProTA marketing initiative organizes 30 rural producer groups from five southern African countries to support the manufacture and sale of environmentally friendly natural products to regional and international markets.

Finally, African countries are committing to more liberal trade and marketing policies, and with donor support governments have begun to create the conditions necessary for a dynamic business and private sector. The dismantling of state agricultural cooperatives, for instance, allows private businesses, nongovernmental organizations (NGOs), and community-based organizations (CBOs) to provide agricultural credit, input, and marketing services.

These policy changes, together with new market opportunities in the global economy, can maximize the benefits to African farmers of increased agricultural productivity. Changes in consumer demand in developed countries are increasing the markets for high-quality niche products such as organic foods, as well as for year-round supplies of fruits and vegetables. Reform of developed-country agricultural protectionism will increase market opportunities even further. In short, with appropriate institutional and policy support, African agriculture is poised to enhance its comparative advantage in its historical export crops and new, higher-value horticultural, aquacultural, floricultural, and specialty products in today's world markets.

THE WAY FORWARD

Historical missteps in past agricultural development efforts have made African policymakers and donors skeptical about achieving ambitious goals and dramatically increasing investments. They need to be convinced of the viability of new approaches. To be successful, Africa now needs a different approach for development—one that builds on an understanding of past mistakes and that addresses in an integrated way the pressing economic, social, and environmental problems facing the continent in the 21st century.

A growing consensus asserts that new approaches must depend less on direct interventions by national governments and more on participatory approaches, civil society, market forces, and key partnerships between stakeholders. Governments, instead of undertaking activities that others might better implement, will

structure the environment in which other agents can efficiently operate, and will provide only those public goods and services that cannot be contracted to others. By establishing conducive legal, governance, and institutional arrangements (including decentralization), national and regional economic policies will provide enabling economic incentives for other stakeholders to operate. NGOs, CBOs, and some private agents and specialized government agencies can then work together to support community and farmer development activities and help disadvantaged groups gain greater access to resources and markets. Analysis of past development efforts points to several common areas for future action.

REVITALIZING THE SMALLHOLDER SECTOR

Smallholder agriculture, which is the predominant source of livelihoods in Africa, has proven to be at least as efficient as larger farms when farmers have received similar support services and inputs (seeds, fertilizer, and credit). Policies to improve marketing and service arrangements can insure that small farmers are not disadvantaged in access to markets, technologies, credit, and inputs. Small farmers need to be better organized to purchase inputs in larger volumes and to gain access to markets for their products. Producer cooperatives and CBOs can play a key role here, as can vertical contracting arrangements within marketing chains organized with large private-sector firms. Agricultural research systems must also give priority to the problems of small farmers.

Raising the output of small farmers would not only increase their incomes and food security, but would also lower national food prices, stimulate the rest of the economy, and reduce poverty. Each 1-percent increase in agricultural productivity in Africa has been shown to reduce poverty by 0.6 percent. Stated differently, a 1-percent increase in yields can help 6 million more people raise their incomes above US\$1 per day. At this rate, a smallholder-led growth strategy could lead to huge cuts in Africa's rural poverty within a couple of decades.

Providing sustainable support to women farmers will be a critical element of any new smallholder-led development effort. Women, who supply more than 70 percent of agricultural labor in Sub-Saharan Africa, have historically been agricultural innovators and the providers of family care and nutrition. Yet agricultural researchers, extension workers, and credit providers have long neglected women's needs. When women obtain the same levels of education, experience, and farm inputs as men, they produce significantly higher yields in a range of farming systems. Designing gender-sensitive agricultural projects is a win-win strategy for reducing hunger in Africa.

SUPPLYING INFRASTRUCTURE AND RURAL SERVICES

Inadequate investments in rural development have taken a severe toll on the provision of infrastructure and services. The road system in Africa today is only a fraction of what India had decades ago and leaves about 70 percent of its farmers poorly



© 1997 IFPRI / Alison Slack

connected to markets. Many farmers can neither procure fertilizers and other inputs at affordable prices nor market their own products effectively. Similarly, poor access to health and education services diminishes agricultural productivity, contributes to the spread of infectious diseases, and locks rural people into a poverty trap.

To avoid constructing expensive infrastructure systems that might be difficult to maintain, current thinking recommends focusing on lower-cost strategies using new technologies, such as satellite and mobile phone communication and wind and solar power. Encouraging greater local ownership of investments through cofinancing arrangements and devolving responsibility for maintenance to local governments and communities would solve many previous problems associated with upkeep.

New communications and information technologies such as mobile telephones and Internet access also offer exciting new opportunities. By facilitating the rapid and timely exchange of knowledge and information, they accelerate the spread of improved technologies within rural communities and help get up-to-date market information to those who need it most—farmers and entrepreneurs.

UNLEASHING MARKETS AND TRADE OPPORTUNITIES

It is widely recognized that the market reforms so far enacted have been necessary but not sufficient to generate greater agricultural production and competitiveness in export markets. Market liberalization removed major distortions but did little to ensure that small-scale farmers, particularly those without easy access to roads and markets, could benefit. Even in areas close to export and domestic markets, incomplete or inconsistent reforms have produced mixed results. If farmers are to benefit from the market reforms, then they will need to see improved access to markets and lower marketing costs. The weakness of rural markets is partly a problem of poor infrastructure, particularly roads and communications systems, but problems with quality standards, timing, market

information, and assured supplies are also penalizing local products in both domestic and international markets. The private sector could play a larger role if it were not also constrained by some of these same factors, as well as by weak legal and financial institutions. These constraints provide a rich and legitimate agenda for the public sector to address, but one using policy to promote private sector activity rather than supplying marketing and input supply services itself. World markets are far more integrated today than ever before, and the volume of world agricultural trade has more than doubled since 1981. Given its natural comparative advantage in producing many export crops, Africa should, with the right mix of domestic market reforms and institutional and infrastructure investments, be able to reclaim larger market shares.

IMPROVING AGRICULTURAL RESEARCH AND EXTENSION

Agricultural yields in Africa are low compared with those in other countries with similar agroclimatic conditions. Neither land nor labor productivity has changed much over the past 30 years. Some on-the-shelf technologies might be more widely adopted if supported by access to credit, inputs, market reforms, and infrastructure. In other cases, sustained productivity will require new technologies supported by higher investments. Currently, African countries spend on average only 0.85 percent of their agricultural GDP on research, a much lower figure than the 2.6 percent averaged by industrialized countries.

Research on crop genetics to improve drought tolerance, utilization of plant nutrients, food nutrient content, and pest and disease resistance has produced favorable returns to investment in the past. Returns to public agricultural research investments in Africa have averaged more than 40 percent, which match levels elsewhere in the world. Sustained growth in productivity will depend upon continued improvements in crop germplasm and improved nutritional value of staple foods (such as vitamin A-fortified rice and iron-fortified maize), as well as crop and livestock disease and pest control. Some of the most promising gains in these areas may come from new biotechnology research for rainfed farming systems.

Researchers are also looking to improved natural resource management practices and small-scale irrigation for major productivity improvements. Natural resource management can improve soil fertility, allowing fertilizers and improved crop varieties to generate higher yields. Small-scale irrigation, including water capture at the micro-watershed level and the sustainable development of some carefully chosen wetland areas, could significantly raise productivity. Building on local knowledge can address the diversity of African environmental microclimatic zones. Improved natural resource management methods are also key to increasing yields in low-external input farming. Conservation tillage and vegetative barriers to harvest water and contain soil erosion are examples of techniques that benefit the many areas with poor access to modern inputs. These measures are available at prices farmers can afford.

Greater gains from research will also depend upon reforming Africa's national agricultural research institutes. These organizations must forge stronger links to other stakeholders, from farmer groups to universities. A related challenge is to link formal research more effectively with grassroots efforts. Other necessary reforms include firming up the scope and level of government support, increasing institutional autonomy including decentralized control of resources, and improving ties to the private sector. Smaller national programs can overcome their size limits by linking with regional and subregional networks of R&D programs to work on common problems.

STRENGTHENING PRODUCER AND COMMUNITY-BASED ORGANIZATIONS

Producer and community-based organizations have partially filled the gap left by the retreat of government agricultural and social services. The private sector is a growing and capable player linking larger-scale commercial farmers with markets, while CBOs are filling an important parallel need for smallholders. These organizations provide the links between farmers and businesses in food processing, manufacturing, trading, and food outlets, and they provide important services such as credit. Effective producer organizations can empower the rural poor and add to the social capital of a community, invigorating natural resource management and stimulating greater participation in local decisionmaking processes. The most effective organizations are voluntary, economically viable, self-sustaining, self-governing, transparent, and responsive to community and producer groups.

DEVELOPING HUMAN CAPITAL AND INSTITUTIONS

Knowledgeable and well-trained people and effective institutions are critical for achieving agricultural growth. Public and private institutions tailored for the new economies will need to manage public policy to support agricultural development; attract and mobilize investments; provide technical services to the agricultural sector (such as research, product certification, and inspections); provide access to agricultural training and education; and enforce contracts, laws, and property rights.

Effective institutions will also require an adequate supply of trained people, including agricultural policy advisers, agricultural researchers, extension workers, business managers, and financial and computer experts. Past training programs increased the supply of these personnel, but retirements, low salaries, poor morale, and HIV/AIDs have contributed to current chronic staffing shortages. New programs should be attentive to including women and other marginalized groups. Encouraging more participatory approaches to development goes hand in hand with stronger local government and community organizations, and a greater willingness on the part of governments to transfer authority and resources to these organizations.

Institutions supporting farmers' secure tenure over land, water, grazing, and forests are essential to farmers' ability to pursue

sustainable livelihoods and make long-term investments in improving and conserving resources. Many indigenous land tenure systems provide reasonable tenure security and can evolve to accommodate changing needs as population and commercialization pressure increase. In these cases, governments may appropriately strengthen or adjust existing systems (perhaps to improve women's access to property rights or their tenure security) rather than seek to impose new systems.

The most successful institutions for managing common properties are likely to be local organizations run by resource users themselves. Governments need to recognize local rights to manage and use common property and need to provide training in property management as necessary, ensuring that poor people are adequately represented.

TARGETING THE VULNERABLE AND ESTABLISHING SAFETY NETS

Broad-based agricultural growth centered on small farms could make deep inroads into poverty and hunger in Africa. But to reach the poorest people, often the landless and near landless, targeted interventions and effective safety nets are also critical. Because the poorest segments of the population have complex livelihood strategies, investments in agriculture alone are not sufficient to improve their conditions. The most important targeted interventions for the poor are those that increase their health and education and their access to assets, especially land. Better health, more education, and tenure security not only empower the poor in their dealings with others, but also reduce their vulnerability and provide safety nets in times of crisis.

PROMOTING ENVIRONMENTALLY SOUND DEVELOPMENT PATHWAYS

Land degradation and the unsustainable use of natural resources are limiting the potential for agricultural development in Sub-Saharan Africa and leading to losses of important environmental services, such as watershed protection and maintenance of biodiversity. Governments, NGOs, CBOs, and the private sector all have roles to play in encouraging farmers to adopt better

strategies for managing natural resources. Farming communities also need support in organizing for collective action on environmental issues. One common solution relies on government regulation of resource management practices, but this is rarely effective. Newer approaches rely on local organizations for collective action and on the use of emerging markets for environmental services (for example, paying for carbon sequestration in forests and farmlands) to reward farmers for environmental protection efforts.

FIGHTING POVERTY THROUGH A MULTIDIMENSIONAL APPROACH

Many donor agencies now understand the multidimensional nature of poverty. They realize that to maximize impact on rural livelihoods and agricultural growth, new investments in agriculture must integrate health care, education, and family assistance. Increasing the participation of communities in designing and implementing such multisectoral approaches can enhance the success of both relief and longer-term development assistance efforts.

BEYOND RHETORIC: BUILDING PLANS FOR ACTION

From analysis of past efforts, we know that in developing African agriculture for the 21st century, no one-size-fits-all strategy will do. The common elements, already described, need to be crafted into national and regional development plans tailored to specific local environmental, political, and cultural conditions.

USAID, for example, has designed a workable program for its own efforts (see box) that may serve as a valuable guide to other donors. To ensure success, these new development

THE USAID AGRICULTURAL INITIATIVE TO CUT HUNGER IN AFRICA (AICHA)

Investments to support agricultural growth are planned for three subregions: East, West, and Southern Africa. Each regional action plan will link to and harmonize with national action plans in selected high-potential countries that are also expected to serve as nodes of agriculture-led growth within their subregions. All action plans will describe the process by which investment priorities and related analytical agendas will be developed, fine-tuned, and acted upon. USAID describes the action plans as documents that will include a 15-year vision of the initiative, specific programmatic thrusts for a five-year planning cycle, and annual work plans and targeted outputs. They are expected to be “rolling” planning documents that will also provide monitoring and evaluation information in accordance with a results framework established in the first action plan. Each plan will assess the likely impacts of the proposed investments on (1) overall economic and agricultural growth, (2) agricultural trade, (3) intraregional trade, (4) spillover effects through intraregional linkages in commodity and factor markets, and (5) regional growth, development, and hunger and poverty reduction.

strategies to support agriculture will reflect a dynamic planning and learning process, strengthening both country and donor capacity for this type of work. They will require rigorous data collection, analysis, and planning; effective monitoring and evaluation systems; and a capacity to revise and adapt plans over time. The evolution of modern information systems, computing power, and scientific methods have opened up whole new opportunities for collecting and using information in intelligent and useful ways. National capacities to undertake this kind of work have also improved. The remaining challenge is to find institutional mechanisms through which this information and knowledge can be better linked to the work of planners within key government and donor agencies.

Why should donors commit to a new initiative to support African agriculture? Investing in diversified, smallholder-led agriculture will reduce the continent's food insecurity, child malnutrition, and severe poverty. It will provide an engine of growth with spillover effects to the most vulnerable and poorest rural populations by lowering the cost of food and creating employment both on and off the farm. Shifting more of the funding for Africa toward promoting trade rather than aid holds the potential to benefit all of the participating economic actors—African smallholders, consumers, and governments as well as donors and consumers in the industrialized world—by offering new markets and greater economic and political stability. Lending wide donor support to programs such as the Agricultural Initiative to Cut Hunger in Africa is an excellent step in the right direction.

The alternative—not investing in African agriculture—would lead to intolerable outcomes within a few years. With business as usual, poverty, food insecurity, and child malnutrition will worsen significantly in Africa. Resources will become more degraded, and land productivity will decline further in many areas. Global climate change will exacerbate local climate variability and increase the frequency and severity of natural disasters among vulnerable populations. Crises and conflicts will increase, leading to escalating costs of relief. Already the cost of disaster assistance is becoming a major financial burden for many governments and donors.

In the early 1960s Africa was the continent of hope and Asia the continent of despair. Asia has shown what can be done. Now Africa must move forward. Creating a more positive future will require not only a realignment of priorities to emphasize agricultural growth by African policymakers, but also a major commitment of new funds to agriculture by the donor community.

SELECTED READINGS AND RESOURCES

This brief, prepared by IFPRI staff Peter Hazell and Michael Johnson, is based on "Cutting Hunger in Africa Through Smallholder-led Agricultural Growth," an IFPRI technical paper in support of USAID's Agricultural Initiative to Cut Hunger in Africa (AICHA), 2002. The paper is available at IFPRI's AICHA webpage <<http://www.ifpri.org/themes/aicha.htm>>. Other suggested readings are listed below.

Alston, J. M., C. Chan-Kang, M. C. Marra, P. G. Pardey, and T.J. Wyatt, *A Meta-Analysis of Rates of Return to Agricultural R&D: Ex Pede Herculem?*, Research Report No. 113 (IFPRI, Washington, DC, 2000).

Bingen, R. J., and D.W. Brinkerhoff, *Agricultural Research in Africa and the Sustainable Financing Initiative: Review, Lessons and Proposed Next Steps*, SD Publication Series, Technical Paper No. 112 (Office of Sustainable Development, USAID Africa Bureau, Washington, DC, 2000).

Kherallah, M., C. Delgado, E. Gabre-Madhin, N. Minot, and M. Johnson, *Reforming Agricultural Markets in Africa* (The Johns Hopkins University Press for IFPRI, Baltimore, Md., USA, 2002).

Kindness, H., and A. Gordon, *Agricultural Marketing in Developing Countries: The Role of NGOs and CBOs*, Policy series No.13 (Social and Economic Development Department, Natural Resources Institute. University of Greenwich, London, UK, 2002).

Mosley, P., *A Painful Ascent: The Green Revolution in Africa* (London: Routledge, forthcoming 2003).

Pretty, J., I. Guijt, I. Scoones, and J. Thompson, *Sustainable Agriculture Impacts on Food Production and Challenges for Food Security*, Gatekeeper Series SA 60 (International Institute for Environment and Development, London, 1992).

Successes in African Agriculture: A Synthesis of Emerging Themes, Criteria, and Determinants of Success, an ongoing IFPRI project. <<http://www.ifpri.org/themes/syn04.htm>>.

Copyright © 2002 International Food Policy Research Institute. All rights reserved. Sections of this document may be reproduced without the express permission of, but with acknowledgment to, the International Food Policy Research Institute.



INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

2033 K Street, NW, Washington, DC 20006-1002 USA

TEL +1-202-862-5600 • FAX +1-202-467-4439

EMAIL ifpri@cgiar.org • WEB www.ifpri.org

IFPRI[®] is a
FUTURE[™]
HARVEST
Center