Increasing Agricultural Productivity & Enhancing Food Security in Africa

New Challenges & Opportunities

SYNOPSIS

1-3 November 2011
Africa Hall - UNECA
Addis Ababa, Ethiopia

INCREASING AGRICULTURAL PRODUCTIVITY & ENHANCING FOOD SECURITY IN AFRICA

New Challenges & Opportunities

SYNOPSIS OF AN INTERNATIONAL CONFERENCE

Kwadwo Asenso-Okyere and Samson Jemaneh

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
Washington, DC

March 2012

ABOUT IFPRI

The International Food Policy Research Institute (IFPRI) seeks sustainable solutions for reducing poverty and ending hunger and malnutrition. Our mission is to provide policy solutions that ensure all people in developing countries, particularly the poorest people and other marginalized groups, have access to sufficient, safe, nutritious food at all times. We carry out this mission by conducting agricultural research, communicating results to policymakers and stakeholders worldwide, and building capacity within developing countries.

IFPRI was established in 1975 as one of 15 centers supported by the Consultative Group on International Agricultural Research (CGIAR), an alliance of governments, private foundations, and international and regional organizations engaged in research for sustainable development. To contribute to a world free of poverty, hunger, and malnutrition, we conduct research on a wide range of topics, including agricultural productivity, global trade and local markets, maternal and early childhood nutrition, climate change, and individual country development strategies, among others. IFPRI is based in Washington, DC, and has 12 offices worldwide including regional offices in Ethiopia, India, and Senegal.

This synopsis has been prepared as an output of the "Increasing Agricultural Productivity & Enhancing Food Security in Africa" conference and has not been peer reviewed. Any opinions herein are those of the authors and do not necessarily reflect the policies of IFPRI, its partners, or collaborators.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
2033 K Street, NW, Washington, DC 20006-1002 USA
Tel.: +1 202-862-5600 • Skype: ifprihomeoffice
Fax: +1 202-467-4439 • Email: ifpri@cgiar.org

www.ifpri.org

ISBN
10-digit: 0-89629-793-4
13-digit: 978-0-89629-793-7

DOI
http://dx.doi.org/10.2499/9780896297937

CONTENTS

BOXES

PREFACE

Africa has experienced continuous agricultural growth during the last few years. However, much of the growth has emanated from area expansion rather than increases in land productivity. In most countries, future sustainable agricultural growth will require a greater emphasis on productivity growth, as suitable area for new cultivation declines, particularly given growing concerns about deforestation and climate change.

Increasing agricultural productivity in Africa calls for broader policy and strategic frameworks that encompass agro-industrial and agribusiness services along with farming. The agricultural system's transformation will have the most impact when innovators have the explicit perspective that the green revolution and agro-industrial and agribusiness development must go hand-in-hand. This perspective will result in innovations that reduce poverty through broad-based economic growth, which includes enhanced food security, employment creation, and added value and wealth across the economy's farming and non-farming sectors.

The International Food Policy Research Institute (IFPRI), in conjunction with the African Union Commission, the United Nations Economic Commission for Africa (UNECA), and the Forum for Agricultural Research for Africa (FARA), organized an international conference on November 1–3, 2011, titled "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities" at the Africa Hall, UNECA, Addis Ababa, Ethiopia.

Using keynote speeches, moderated panel discussions at plenary sessions, and presentations of papers and posters at parallel sessions, the conference provided a forum for the exchange of ideas, experiences, and innovations on improving agricultural productivity for achieving food security in Africa by: (i) showcasing research results on the trends, determinants, constraints, and opportunities for improving agricultural productivity in Africa within the framework of the Comprehensive Africa Agriculture Development Program (CAADP), national agricultural and rural development strategies, and investment plans; (ii) identifying areas for policy actions, further research, and innovations toward enhancing food security and reducing poverty in the continent; and (iii) encouraging appropriate communication strategies for conveying and implementing research results that improve agricultural productivity, enhance food security, and reduce rural poverty in Africa.

The conference was attended by representatives of regional, national, and international organizations, farmers including farmer and trader organizations, researchers, policymakers, academics, and members of the private sector.

Kwadwo Asenso-Okyere
Director, Eastern and Southern
Africa Regional Office, IFPRI

Samson Jemaneh
Research Officer, Eastern and Southern
Africa Regional Office, IFPRI

ACKNOWLEDGMENTS

The conference organizers are grateful to the following organizations for their financial support: the Alliance for a Green Revolution in Africa (AGRA), the Australian Center for International Agricultural Research (ACIAR), the Food and Agriculture Organization of the United Nations (FAO), the Regional Strategic Analysis and Knowledge Support System(ReSAKSS), the Technical Center for Agricultural and Rural Cooperation (CTA), the United Nations Development Programme (UNDP), the United States Agency for International Development (USAID), and the World Food Programme (WFP).

I. INTRODUCTION

Poverty is largely a rural phenomenon, and most people who live in rural areas work in agriculture. In Africa, about 65 percent of the total labor force is employed in the agricultural sector, which contributes about 32 percent of the continent's gross domestic product (GDP). In many parts of the world's poorest countries, food accounts for more than half of household expenditures, and increased food prices seriously reduce both access to food and the ability to purchase other necessities. Experts estimate that rising food prices have driven about 44 million people into poverty in developing countries since June 2010, as food costs rise to near the levels of 2008. Because the agricultural sector is the largest employer in developing countries, its growth has a large impact on poverty reduction; growth creates income opportunities for the poor in both the farm and nonfarm economy while lowering food prices for both rural and urban poor consumers. When food security is increased, nutrition and health improve, which in turn promotes productivity. At the same time, it decreases a country's dependence on imported food, which often cannot be obtained without sufficient and stable levels of foreign exchange. Therefore, efforts to reduce poverty in Africa must pay particular attention to the agricultural sector. In much of the development literature, agricultural growth has been viewed as a precondition for industrialization, because the sector provides surplus labor to industry, savings for capital investment in nonagricultural activities, and food to meet the increasing demand of a growing nonagricultural labor force, without which labor costs in the industrial sector must rise.

Meeting the demand for food is thus an essential prerequisite for successful economic, social, and political development, and it can be achieved through either domestic production or imports. In Africa, there is insufficient domestic production, and the continent spends about $30 billion to $50 billion a year to import food. This deprives the continent of funds for needed expenditures on infrastructure and social and economic amenities. It is estimated that if continental food supplies do not increase, Africa will spend about $150 billion on food imports by 2030. The recent high global food prices have captured the attention of stakeholders, and the recent milestone reached on October 30, 2011, of a world population of 7 billion has awakened many people to the necessity of increasing food production and productivity in the world. It is expected that the world's population will grow to 9 billion by 2050, at which time Africa's share will be 2.3 billion. In order to satisfy the world's food needs, it is estimated that production will have to grow by 70 percent to 100 percent. It has been demonstrated in many parts of the world that increasing agricultural productivity can increase food availability and access as well as rural incomes. Yet the yield levels of many food commodities produced in Africa are below world average levels.

The large gap between potential and current crop yields in Africa means that increased food production is attainable. Africa's low agricultural productivity has many causes, including scarce and scant knowledge of improved practices, low use of improved seed, low fertilizer use, inadequate irrigation, conflict, absence of strong institutions, ineffective policies, lack of incentives, and prevalence of diseases.

Climate change could substantially reduce yields from rainfed agriculture in some countries. With scarcity of land, water, energy, and other natural resources, meeting the demands for food and fiber will require increases in productivity.

The Comprehensive African Agriculture Development Program (CAADP) and its accompanying Framework for African Agricultural Productivity (FAAP) provide a vision for improving agricultural productivity in Africa through

the enabling and acceleration of innovation. However, many of the African Union's member countries still lag behind CAADP's agreed upon requirement that each country spend at least 10 percent of its budget on agriculture in order to achieve about a 6 percent growth in the sector. Inadequate investment in agriculture, coupled with weaknesses in institutional capacity and ineffective farmer support systems, has hampered any attempt to increase Africa's agricultural productivity. It is notable that as of the end of October 2011, however, 29 countries in Africa had signed their compacts with a well-defined program for agricultural development.

Pro-growth and pro-poor agricultural performance depends on small farms at the front line. Small farms dominate agriculture in many developing countries, and the transformation from traditional to modern agriculture is based on the efficiency of small farms and their transformation from subsistence to market-oriented production. In an increasingly globalized world, however, small farms face new challenges in terms of accessing market opportunities. In Africa, where an agricultural transformation comparable to Asia's or Latin America's has yet to occur, there is skepticism that an agriculture-led strategy in general, and one led by small farms in particular, is a viable approach. Nevertheless, there is little evidence or theory to suggest the superiority of other strategies, such as bypassing agriculture straight to industrialization or encouraging migration to urban areas. Indeed, proponents of such strategies fail to explain how they will tackle the rising food costs and high urban un- and underemployment that would inevitably result in countries with small and insulated industrial sectors.

The danger always exists that when one thinks of agriculture, one will think only of farming. But farming is just a single part of a comprehensive and far-reaching food and agriculture system. This system comprises all the steps taken to get an agricultural product to the consumer: research, technology generation, and diffusion; input production and delivery; farm-level production; commodity processing, conditioning, and handling (including storage); and product transport, marketing, and trade.

Increasing agricultural productivity in Africa thus calls for broad policy and strategic frameworks that encompass agro-industrial and agribusiness services along with farming. The agricultural system's transformation will have the most impact when innovators have the explicit perspective that the green revolution and agro-industrial and agribusiness development must go hand-in-hand. This perspective will result in innovations that reduce poverty through broad-based economic growth, which includes enhanced food security, employment creation, and added value and wealth across the economy's farming and non-farming sectors.

Motivated by its mission to find solutions that reduce poverty and eliminate hunger and malnutrition, the International Food Policy Research Institute (IFPRI), in conjunction with the African Union Commission, the United Nations Economic Commission for Africa, and the Forum for Agricultural Research in Africa, organized the international conference, "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities." This report presents a synopsis of the conference.

2. PROGRESS IN DEVELOPMENT IN AFRICA YET WIDESPREAD HUNGER AND MALNUTRITION

The past two decades have delivered unparalleled progress and improvements in quality of life across the developing world. Poverty has fallen in most developing countries, and the number of low-income countries fell from 60 in 2003 to just 39 in 2009. Countries such as India and China have managed to lift very large numbers of people out of extreme poverty. Progress has not been restricted to increases in income; many developing countries have also dramatically improved their access to vital services, such as education and health.

In the five years before the 2008 financial crisis, Africa grew faster than most other world regions, with more than 40 percent of its countries enjoying an average annual GDP growth rate of 5 percent or more. Agricultural growth in Sub-Saharan Africa (SSA) rose from an annual rate of 2.3 percent in the 1980s to 3.8 percent between 2000 and 2005. During the same period, agricultural productivity rose by 50 percent. Agricultural production increased to 12.3 percent of GDP in 2009. Unfortunately, the continuous agricultural growth that Africa has experienced has largely emanated from area expansion rather than from increases in productivity, although there has been development of rich and diverse innovations from farmers and farmers' groups.

Despite the progress in agricultural growth and the consequent improvement in food security, much remains to be done in SSA. About 73 percent of the population lives on less than US$2 per day, 28 percent consume inadequate calories, and 24 percent of children under the age of five are underweight. The region has the highest prevalence of undernutrition among the world's developing regions. For example, the number of undernourished people rose by 8 percent in Africa between 2007 and 2008, while the number increased only marginally (0.1 percent) in Asia. Furthermore, according to the 2011 Global Hunger Index—a combined measure of the proportion of undernourishment, child malnutrition, and child mortality—SSA is home to 26 countries with "extremely alarming" or "alarming" scores. The recurrence of food-related crises over the past few years has focused international attention on the tragic state of food security in Africa and given rise to a number of supportive initiatives, such as the G8's L'Aquila Food Security Initiative, which was

Box 1. The hungry picture of Africa

According to estimates of the Food and Agriculture Organization of the United Nations, in 2010 there were 925 million hungry people in the world, and 239 million of them were in Sub-Saharan Africa. As a cause of poor health, low levels of energy, and even mental impairment, hunger can lead to even greater poverty by reducing people's ability to work and learn, in turn leading to even greater hunger.

Source: Food and Agriculture Organization, The State of Food Insecurity in the World 2010 (Rome: FAO, 2010), http://www.fao.org/docrep/013/i1683e/i1683e.pdf.

followed by the Global Agriculture and Food Security Program, the World Bank's Global Food Crisis Response Program, and United States Agency for International Development's Feed the Future strategy.

However, global financial problems have led donors to hold back funds for agriculture—of the US$20 billion that was promised at the July 2009 L'Aquila summit, only about one-fifth has been disbursed.

Conference papers on "Progress in Development in Africa yet Widespread Hunger and Malnutrition"

- **Harnessing the Potential of Science and the Numbers,** by Monty Jones
- **Innovations, Policies, and Investments to Promote Smallholder Productivity,** by Shenggen Fan
- **African Agriculture Today: An Inventory,** by Josue Dione
- **Assessment of Food Reserves, Markets, Trade, and Regional Integration Systems in Sub-Saharan Africa (SSA): Are These Effective Pathways to Food Security?** by Abiodun Elijah Obayelu

Conference papers, presentations, and materials may be found at http://addis2011.ifpri.info/.

3. LOW PRODUCTIVITY IN AFRICA'S AGRICULTURE

Improving agricultural productivity in SSA will be an essential factor in tackling the region's food security issues in the future, as water and land resources become increasingly limited. In the past, the region's modest and slowly growing agricultural productivity has been driven largely by efficiency gains (the reallocation of productive factors) rather than technological advancement. Region-specific stress factors, which worsen the situation for the food insecure and vulnerable groups, include weather-related shocks, poor infrastructure, undeveloped markets, and weak governance and institutions.

In the foreseeable future, food security will be increasingly under stress from a complex web of emerging factors, including nonfood policies in energy, trade, and finance; transformation of food supply and demand chains through the "supermarket revolution" and a growing and changing population; and more extreme weather events due to climate change.

These changes will have especially adverse effects on smallholder farmers, who are already challenged by limited resources and insufficient access to inputs, services, and markets.

Poor resource endowments, minimal use of inputs (fertilizer, improved seeds, and irrigation), and adverse policies that continued for a long period have been identified as the major causes of the low and declining performance of the agricultural sector in SSA. Continuing environmental degradation, high population growth, and low levels of investment in agricultural infrastructure also aggravate the resource limitations of agriculture in Africa.

Most soils in SSA are inherently poor. Studies indicate that nearly 60 percent of the total land area in the region is only marginally suitable for cultivation, with soils characterized by limited organic matter and water-retention capacity. Close to 30 percent is considered low to medium potential land, which is very vulnerable to erosion, a decline in organic matter, and infertility when few inputs are applied. About 25 percent of the world's degraded land is located in Africa, and it is estimated that 65 percent of Africa's agricultural land is degraded because of water and soil erosion and/or chemical and physical degradation. In addition, 31 percent of the pasturelands and 19 percent of the forests and woodlands in Africa are classified as degraded. Forest and woodland areas in the continent have decreased by 2 percent in the past 15 years while croplands increased by more than 10 percent.

Low and poorly distributed rainfall is another major barrier to agricultural development in large areas of SSA. Much of Africa is too dry for the new high-yielding crop varieties that have produced well in Asia. Average rainfall in the dry semi-arid areas of SSA is less than 700 millimeters per year, and when the rain does come, the rainy season is very short. The region is also characterized by high temperatures that accelerate the degradation of organic matter, which, in turn, reduces the water-holding capacity of the soils and makes them deficient in nitrogen and phosphorus.

Conference papers on "Low Productivity in Africa's Agriculture"

- **What Are the Challenges of Increasing Agricultural Productivity in Africa and How Can they Be Overcome? Panel Discussion,** by Alemayehu Seyoum Taffesse, Sylvester Oikeh, Thomas Jayne, Stephen Muchiri, and John Dixon
- **Challenges and Opportunities for Maize Seed Sector Development in Eastern Africa,** by Olaf Erenstein, Girma Tesfahun Kassie, and Wilfred Mwangi
- **Future of Wheat Production in Sub-Saharan Africa: Analysis of the Expanding Gap between Supply and Demand and Economic Profitability of Domestic Production,** by Bekele Shiferaw, Asfaw Negassa, Jawoo Koo, Stanley Wood, Kai Sonder, Hans Joachim Braun, and Thomas Payne
- **Grain Reserves, Social Safety-Nets, and Productivity Linkages: Conceptual Framework and Some Empirics from Africa,** by Shahidur Rashid
- **Delivering African Agricultural Productivity and Food Security through a Green Revolution: Prospects and Challenges. Keynote Speech,** by Namanga Ngongi

4. DOING FARMING AS BUSINESS AS UNUSUAL

The challenges that African agriculture faces have to be tackled in innovative way—in a "business as unusual" manner. To be effective, innovative approaches will have to

1. be country-led;
2. incorporate evidence-based planning and policy;
3. include social protection for the vulnerable and disadvantaged that can be applied effectively during external shocks;
4. develop technologies that address the challenges facing agriculture's contribution to food security;
5. establish institutions that improve coordination among smallholders along the supply chain and ensure access to food during food security emergencies; and
6. allow for the dynamic involvement of new players, for example, the private sector.

Smallholder farming must be transformed from a largely subsistence-level activity to a market-oriented production system that will improve national and household food security and, ultimately, reduce poverty. The new type of agriculture requires a holistic approach with a new organizational system, involving a change in internal profile, more private business, a more technological focus, and innovative financing with an investment focus.

4.1. Transforming African agriculture

Despite shortcomings, Africa has abundant arable land and labor that, with sound policies, could be translated into increased production, incomes, and food security. Agriculture has a high multiplier effect, which means that agricultural investment can generate high economic and social returns and enhance economic diversification as well as social development. Strategies for transforming African agriculture have to address such challenges as low investment and productivity, poor infrastructure, lack of funding for agricultural research, inadequate use of yield-enhancing technologies, weak linkages between agriculture and other sectors, unfavorable policy and regulatory environments, and climate change. Challenges to agricultural transformation in Africa are well known and approaches to solving them are well documented.

The challenges facing agricultural transfor-

Box 2. The widening gap between policy and science

"In the past decade, there has been a narrowing of the gap between scientists and farmers, but a widening gap between scientists and policymakers (and policy shapers)."

— James Moseley, US Deputy Secretary, Department of Agriculture, June 2004

Source: Quoted in Monty Jones (executive director, Forum for Agricultural Research in Africa), "Harnessing the Potential of Science and the Numbers (presentation at "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 1–3, 2011), http://addis2011.ifpri.info/.

mation in Africa have persisted despite numerous commitments and interventions by African governments and their development partners. The necessary conditions for successful agricultural transformation include

1. Macro and political stability,
2. Effective technology transfer system,
3. Access to lucrative markets,
4. Profitable agriculture, and
5. Availability of nonagricultural employment (as agriculture becomes profitable, marginal farmers will leave, and they have to find employment).

4.2. Harnessing economies of scale

The emphasis on smallholder agriculture in development strategies has been due to the large number of people involved in it and the potential for benefit to many households. Since many smallholders are poor and food insecure, agricultural growth tends to improve their livelihoods. However, questions remain: How long should farmers remain smallholders? Will the low scale of their operations allow them to create enough wealth so that they never slip back into poverty? Finding ways to help a variety of more dynamic forms of organization to flourish is bound to provide for a more dynamic agricultural sector.

These could include large-scale production operations and contract farming structures as well as the exploitation of economies of scale throughout the value chain. This is not just about the size of producers' landholdings but about the dynamics of private farm and marketing organizations responsive to incentives for growth.

Despite the systematic promotion of the smallholder model, combined with small traders and numerous government support services, the pressures for more dynamic organizational structures are clearly already present in Africa. Globalization has created opportunities for rapid growth in particular export niches, such as in flowers or vegetables, and this growth is taking place on commercial farms, sometimes supplemented with smallholder contract farming, with considerable vertical integration from production to storage and transport. These processes are driven largely by consumer demands for more standardization and certification, leading to innovations in organizational structures and increased use of long-term contracts at various points in the supply chain. Increased economies of scale in retailing are a central part of this transformation affecting Africa internally as well as externally: the emergence of supermarkets throughout Africa is bound to start changing the retail relationship with farmers as they actively seek vertical integration. The real weakness of the current smallholder model is that these more commercial organizations are either looked at with suspicion and caution or treated as "another sector" needing to be kept away from the smallholder sector, thereby minimizing the incentives such orga-

Box 3. Strengthening capacity of producer organizations

"To ensure transformation of small-scale agriculture and commercialization we must approach production through trade. This requires that we strengthen our capacity as producer organizations to be able to organize ourselves more effectively and to be able to negotiate and even partner with states and other actors in defense of our interests, ensure improvement of the economic and social situation of our producers, and fully participate in the formulation and implementation of policies in agriculture and trade compatible with our agriculture and rural development."

Source: Philip Kiriro (president, East Africa Farmers Federation), "Scenarios for the Future of the Small Farm in Africa" (keynote presentation at "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 2, 2011), http://addis2011.ifpri.info/.

Box 4. Resource requirements for a green revolution in Africa

"It is important to note that without increased government investments in agriculture, there is a risk that higher food prices could eradicate five to ten years of poverty reduction efforts. It is sad to note that public spending on agriculture as a share of agricultural GDP in Sub-Saharan Africa is less than half that in other regions and less than half the CAADP target of 10 percent of national budgets. Combined with an innovative financing scheme that improves smallholder access to credit and effective market strategies, AGRA is working to catalyze a uniquely African green revolution critically mindful of the need to respect Africa's biodiversity."

Source: Namanga Ngongi (president, Alliance for a Green Revolution in Africa - AGRA), "Delivering African Agricultural Productivity and Food Security through a Green Revolution: Prospects and Challenges" (keynote presentation at "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 2, 2011), http://addis2011.ifpri.info/2011/11/02/video-%E2%80%93-keynote-namanga-ngongi/.

nizations could have on productivity growth in the smallholder sector.

The development of producer organizations in SSA enables the pooling of resources to afford the economies of scale feasible for optimal on-farm and value added processes. Partnerships can be forged with farmer organizations for the supply of inputs, dissemination of technologies and information, and linkage to markets. They can help farmers understand regional trade and regional integration and identify opportunities.

These organizations could instill commercialization ideas in farmers, establish business clusters, strengthen the position of farmers along the value chain, assist them in increasing their profitability, and lobby for the interest of farmers.

A pragmatic way to achieve significant economies of scale and vertical coordination for African agriculture would be to work at the regional level around a limited number of strategic food and agricultural commodity chains. The strategic qualification of such commodities would relate not only to their relative importance in the African food basket and internal economies but also to their worth in the interface (trade relations) between African economies and the global economy. For such selected strategic commodities, a common African market that transcends national and sub-regional borders would offer an appropriate economic space to allow for private investments at the level of regional economies of scale that would ensure profitability.

4.3 A green revolution in Africa

Reduction of hunger and poverty in Africa cannot happen unless Africa achieves a radical transformation of its agriculture. Africa needs its own green revolution, and to achieve this, appropriate supportive policies must be in place. Asia experienced a green revolution that has enabled it to feed more than 3 billion people, lowered the price of food for the urban and rural poor, created employment, and spurred the rapid economic growth now being witnessed in the region. The Asian countries managed to put in place policies that led to rapidly rising agricultural productivity. These included support for the development and release of high-yielding varieties of rice and wheat; heavy investment in irrigation and expanded investments in extension, research, and development; and access to credit for farmers, all of which more than doubled yields. The major catalyst was access to credit to purchase required inputs. In contrast, African banks do not lend to agriculture because of perceived high risks, poorly coordinated agricultural value chains, and poor infrastructure in the rural areas. To manage the increased production in Asia, price support systems with guaranteed minimum prices were put in place to provide a ready market for the produce. In 1976, China developed hybrid rice seed technology

Box 5. Farming as a business and smallholders as entrepreneurs

"Two things have become increasingly evident. The first is that farming at any scale is a business, and smallholders and producers must be treated as entrepreneurs. The second is that businesses need clear linkages along the value chain, from production to processing, marketing and ultimately to consumption. When these links are in place, wonderful things begin to happen."

Source: Kanayo F. Nwanze, (President of the International Fund for Agricultural Development (IFAD)). "Viewpoint; Smallholders Can Feed the World," Rome, Italy: International Fund for Agricultural Development, 2011. http://www.ifad.org/pub/viewpoint/smallholder.pdf.

and mobilized a large number of seed producers to multiply the seed for distribution. The government supported the rice value chain from seed production to finance and markets. Cultivated area increased from 140,000 hectares in 1976 to more than 15 million hectares in 1990 and reached 19 million hectares in 2008.

Today, Africa has the unfortunate reputation of being the only continent that cannot produce enough food to feed its own citizens, yet it remains the continent with the greatest opportunities to provide solutions to global food insecurity. The continent is blessed with abundant land, including almost 60 percent of the world's uncultivated arable land. Even within existing cultivated land, doubling of cereal yields on the millions of hectares cultivated by smallholder farmers would turn Africa into a major food surplus region.

Given the rising food prices in the global markets, the time has come for Africa to really consider transforming its agriculture and raise productivity. It is conceivable that the food security challenges facing Africa can be effectively addressed if the continent were to experience a uniquely African green revolution that incorporates the opportunities and challenges of the time.

Considering the effect of climate change, accelerated efforts are needed to develop and disseminate heat-tolerant and drought-resistant varieties and efficient-water-use crops. Locally relevant and homegrown policies must be developed to drive a massive transformation of agriculture. Learning from Asia, Africa must build its own local policy institutions to develop policies that better meet the needs of its farmers. Experience

Box 6. Ecological agriculture: The case of the Tigray project in Ethiopia

"Ecological agriculture holds significant promise for increasing the productivity of Africa's smallholder farmers, with consequent positive impacts on food security. This is demonstrated by efforts such as the Tigray Project, now working with over 20,000 farming families in Ethiopia, where crop yields of major cereals and pulses have almost doubled using ecological practices such as composting, water and soil conservation activities, agro forestry, and crop diversification."

Source: Tyhra Caroline Kumasi and Kwadwo Asenso-Okyere, "Responding to Land Degradation in the Highlands of Tigray, Northern Ethiopia," IFPRI Discussion Paper No. 01142, Washington, DC: International Food Policy Research Institute, 2011.

from other regions is useful, but policies have to reflect African realities.

4.4. Incorporating the whole agriculture value chain

Farmers earn a small proportion of the value of the product that goes from the farm to the mouth of consumers. Participation in the value chain would increase the earnings of farmers. Taking a value chain approach to economic development and poverty reduction involves addressing the major constraints and opportunities faced by farmers, producers, processors, traders, and other businesses at multiple levels and points along the path that farm produce follows before it is finally consumed. Taking a value chain approach to agricultural production encompasses the incorporation of a wide range of activities such as providing necessary inputs, strengthening the delivery of business and financial services, enabling the flow of information, facilitating improved market access, and increasing access to higher value markets or value-added products.

4.5. Developing capacity for modernizing agriculture

Application of science and technology is vital for the modernization of agriculture. Human resource capacity building remains as the highest priority area for science and technology development for the advancement of agricultural productivity in Africa. One way to promote modernization of African agriculture through capacity building is to establish centers of excellence in selected African countries for specialized programs.

At the initial stages these centers could foster partnerships with research institutes and universities in developed countries, as has been done with the programs to graduate doctoral students in breeding sciences at two African universities in collaboration with Cornell University.

Such partnerships allow for the acquisition of the relevant theoretical experience from the developed country and practical experience in the African country until such time that both experiences can be adequately obtained from African universities. The breeding programs provide an opportunity to develop capacity in biotechnology and other techniques that have potential to rapidly increase agricultural productivity in Africa. The emphasis in biotechnology should be on tissue culture research, but Africa should not shy away from research on genetically modified organisms due to its productivity-enhancing potential and the low cost of production. It must be noted that currently only South Africa, Burkina Faso, and Kenya have given authorization for field trials of genetically modified organisms.

Box 7. Involvement of African universities in CAADP implementation

"Universities should be more involved in major agricultural development programs, such as CAADP. However, to be more useful, universities should tune their curricula to the needs of the development agenda so that they can produce graduates with the skills and competencies required by Africa's largest and most diverse industry and in particular for the implementation and upscaling of CAADP programs and projects. In this respect, and realizing the importance of good planting materials for transforming African agriculture, AGRA has assisted in establishing two programs at the University of KwaZulu-Natal and University of Ghana in conjunction with Cornell University to train plant breeders at the PhD level for African countries."

Source: B. Y. Abubakar (executive secretary, Agricultural Research Council of Nigeria), "Strengthening Capacity for Agricultural Science and Technology in Africa" (keynote presentation at "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 2, 2011), http://addis2011.ifpri.info/.

Information and communications technology (ICT) also has a great role to play in achieving agricultural modernization and rapid growth. ICT provides platforms for disseminating new technologies and improved practices to users through extension and advisory services. Africa is currently one of the world's fastest growing markets for telecommunications. Mobile phones in combination with computer-based portals and radio are being used to disseminate information and solutions to large numbers of farmers. However, effective development and utilization of ICT in Africa requires the development of capacity. African universities and other educational centers should incorporate ICT in their curricula so that graduates will be technologically literate. ICT helps to increase the outreach of agricultural education through the expansion of distance learning. Technology-mediated distance education has enormous potential for expanding the reach of universities and colleges. Increasing agricultural productivity requires not just the generation and use of knowledge but also an institutional infrastructure that supports agricultural production as well as access to and improved functioning of markets. This will require, among other things, institutional innovations through broad-based partnerships among academia, industry, civil society, and government.

Conference papers on "Doing Farming as Business as Unusual"

- **Delivering African Agricultural Productivity and Food Security through a Green Revolution: Prospects and Challenges: Keynote Speech,** by Namanga Ngongi
- **Delivering African Agricultural Productivity and Food Security through a Green Revolution: Prospects and Challenges: Discussant Remarks,** by Seyfu Ketema
- **Strengthening Capacity for Agricultural Science and Technology in Africa: Keynote Speech,** by Yusuf Abubakar
- **Innovations, Policies, and Investments to Promote Smallholder Productivity: Opening Remarks,** by Shenggen Fan
- **Science, Technology, and Innovation in African Agriculture: Keynote Speech,** by Monty Jones
- **What Are the Challenges of Increasing Agricultural Productivity in Africa and How Can They Be Overcome? Panel Discussion,** by Alemayehu Seyoum Taffesse, Sylvester Oikeh, Thomas Jayne, Stephen Muchiri, and John Dixon
- **Agricultural Transformation in Africa Plenary Session: Country Strategy Support Programs,** IFPRI
- **Strategies for Raising and Sustaining High Agricultural Productivity in Africa,** by Samuel Benin, Zhe Guo, Alejandro Nin Pratt, Joseph Karugia, Mbaye Yde, Emmanuel Mubasa, Claude Bizimana, and Bingxin Yu
- **Scenarios for the Future of the Small Farm in Africa: Keynote Speech,** by Castro Caramda
- **Scenarios for the Future of the Small Farm in Africa: Discussant Remarks,** by Steven Were Omamo
- **Jointly Developing Regional Agricultural Value Chains as Pathway for Increased Agricultural Productivity: A Case for Increasing Productivity of African Local Cereals Sector through Price Stabilization and Risk Management Options,** by Adama Ekberg Coulibaly, Jonas Bayoulou, and Ouattara Daouda

5. CAADP IN GUIDING AFRICA'S DEVELOPMENT

The formulation of the Comprehensive African Agriculture Development Program (CAADP) as Africa's framework and model of economic growth is built around the premise that unless Africa prioritizes and realizes its agricultural development, it can neither successfully develop and transform its overall economy nor achieve its poverty reduction and food security objectives.

CAADP aims to stimulate broad-based agriculture-led growth shaped by a long-term vision for enhanced capacity and systems for sustainable development. With a goal of achieving at least 6 percent annual agriculture growth, CAADP implementation focuses on results and impact in terms of food security, poverty alleviation, and sustainable socio-economic growth. The increased performance in the agriculture sector posited by CAADP should manifest through aligned and accountable systems and institutions for effective and efficient implementation and increased employment opportunities. In terms of long-term thrust, CAADP set out a clear reform agenda, addressing and stimulating fundamental transformation in both institutions and policies driven by the commitment in local systems to see change.

CAADP is built around four broad priorities or pillars:

1. Extending the area under sustainable land management and reliable water control systems
2. Increasing market access through improved rural infrastructure and other trade-related interventions
3. Increasing food supply and reducing hunger across the region by increasing smallholder productivity and improving responses to food emergencies
4. Improving agricultural research and systems to disseminate appropriate new technologies, and increasing the support given to help farmers to adopt them

These priority areas were identified to offer an integrated and comprehensive coverage of the

Box 8. NEPAD-CAADP principles

The principles on which NEPAD-CAADP is based—local ownership and responsibility; inclusiveness, transparency, and accountability; and evidence-based, dialogue, and collective responsibility—are certainly not new or unique to NEPAD-CAADP. What is new and unique is that CAADP provides the first comprehensive and credible effort to address them all in a holistic and integrated process.

Source: Martin Bwalya (CAADP-NEPAD Secretariat), copresenter, "How Comprehensive Is the Comprehensive Africa Agriculture Development Program (CAADP) in Guiding Africa's Agricultural Development?" (keynote speech at the conference "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 2, 2011), http://addis2011.ifpri.info/.

Box 9. CAADP implementation in Uganda

"In the wake of continuing high food prices that led to the rate of inflation rising to 30 percent in October 2011, from a little over 10 percent six months ago, the government of Uganda put more attention on the agricultural sector. The government is now more convinced than ever before about the role of agriculture in helping to stem inflation as well as the depreciating currency. The government of Uganda is now taking a more proactive role and choosing to focus on strategic agricultural commodities that have great potential to create quick impact on food security and export revenue. There is conviction in government that agricultural transformation will only take place when the public sector is able to engage in functional partnerships with the private sector. With funding from USAID, Africa Lead has trained more than 1,000 people in Africa as CAADP champions. In Uganda more than 120 people have received week-long training on CAADP/DSIP and are creating functional networks to continue interacting and sharing experiences from their respective organizations. The trainees were selected from a broad spectrum of stakeholders: farmers and farmer organizations, agribusiness, civil society, local government, universities and research institutions, and central government ministries, departments and agencies. Also the training is targeting ministers and chairpersons of key session committees of parliament."

Source: Godfrey Bahiigwa (director, Ministry of Agriculture, Uganda), copresenter, "How Comprehensive Is the Comprehensive Africa Agriculture Development Program (CAADP) in Guiding Africa's Agricultural Development?" (Keynote speech at the conference "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 2, 2011), http://addis2011.ifpri.info/.

issues in analyzing and developing investment programs. CAADP implementation is essentially a country process, and the CAADP country implementation process is the primary instrument by which the application of CAADP, as a policy framework, is adapted to local needs and circumstances. It is in the country implementation process that CAADP demonstrates in practice its comprehensiveness and integrated approaches.

The outstanding issues with regard to CAADP implementation include linking to the nonagricultural sectors. This requires comprehensive and integrated approaches with sectors that have a fundamental influence on the extent, rate, and quality of improvements in agriculture performance. Examples include infrastructure, communications, environment and natural resource management, and local government. The challenges involved should be pursued at the national policy and development planning levels, and one of the primary challenges in CAADP implementation is the management of intersectoral collaboration and partnerships. In practice, adopting a comprehensive approach calls for maximum synergy and coordination among all components in the partnership. Experience indicates that this is an area that needs deliberate efforts on the part of all parties involved: mutually rewarding partnerships must be designed with clear mechanisms to jointly define, monitor, and report on accountabilities.

When one juxtaposes the CAADP pillars with Africa's agricultural development needs, it is clear that the CAADP framework captures most of the overall challenges. CAADP appears to be as comprehensive as the name suggests and seems to have been well conceived. But if this is the case, why do stakeholders continue to talk about the same issues eight years after CAADP was adopted by African heads of state and government in Maputo in 2003?

The often offered response is the uniform prescription by CAADP for all African countries. The size of agriculture and the constraints are not the same in all African economies, and so spending 10 percent of the national budget on agriculture would mean different outcomes in

different countries. Some countries may require more than 10 percent and others less. The mix of agricultural expenditures has also been a source of debate in many circles.

CAADP's recommended 6 percent growth rate also must be considered in light of the relative importance of agriculture in the economy of the African country. Despite its shortcomings, however, there seems to be some enthusiasm for CAADP by African countries and many donors. As of October 2011, 29 countries out of the 54 in Africa had completed their CAADP compact, which is designed to guide their agricultural developments in the future. The success of CAADP for each country will be determined by an impact evaluation, but as implementation started only recently it is early for such evaluation. It will be useful to have baseline surveys for countries that are just starting implementation of CAADP.

Conference papers on "CAADP in Guiding Africa's Development"

- **How Comprehensive is the Comprehensive Africa Agriculture Development Program (CAADP) in Guiding Africa's Agricultural Development? Keynote Speech,** by Martin Bwalya
- **How Comprehensive is CAADP in Guiding Africa's Investments in Agriculture? Keynote Speech,** by Godfrey Bahiigwa
- **Integrating Livestock in the CAADP Framework: Policy Analysis Using a Dynamic Computable General Equilibrium Model for Ethiopia,** by A. Gelan, E. Engida, A. S. Caria, and J. Karugia

6. THE BIG PICTURE: AGRICULTURE PLUS

Because some of the problems of the agricultural sector originate beyond its bounds and the sector works in the larger economy, the search for solutions should be sought beyond as well as within the sector. In developing agriculture, economywide linkages and regional integration should be harnessed; opportunities from emerging global processes should be captured; emerging issues should be tackled; and key players for change and development should be factored in and captured. This is the concept of Agriculture Plus, or incorporating the big picture in agricultural development.

This is a watershed time for African agriculture, and it requires a change of mindset on what the agricultural transformation agenda should look like. Rather than relying on the traditional model, in which the Ministry of Agriculture is the primary interlocutor, we need to consider broader engagement. Agriculture Plus involves a broad set of actors that includes those in the financial, industrial, energy, telecommunication, logistics, storage, transportation, and social sectors. Agriculture Plus also emphasizes a corporate approach to agriculture, in which agricultural agendas are run like businesses, where concrete and measurable outcomes are used to gauge success. A more private sector mindset needs to be involved, with more of a focus on technology, investment, and holistic innovative financing.

Box 10. Agriculture Plus

Issues of old agriculture

- Water
- Soils
- Seeds
- Fertilizer
- Labor
- Land productivity
- Irrigation
- Extension
- Post-harvest management
- Marketing

Issues of new agriculture (Agriculture Plus)

- All the issues in old agriculture,

Plus:

- Finance
- Logistics
- Storage
- Transportation
- Infrastructure and value chains
- Demand
- Energy
- Information technology
- Health
- Private investment

6.1 Harnessing economywide linkages

The agricultural productivity and food security agenda should be looked at within the framework of economywide linkages. Agricultural growth is instrumental in the development of the nonagricultural sectors. Somewhat missing in the discourse, however, is the impact of nonagricultural growth on agricultural productivity. What does a general improvement in the economy mean for agricultural growth? The resulting increase in per capita income as a result of economic growth may generate demand for processed food, which may not necessarily benefit farmers if they are not involved in value-added processes. If economic growth leads to food price inflation and farmers are net buyers of food, then the growth would rather impoverish them.

6.2. Harnessing regional integration

Africa is spending US$30 billion to $50 billion annually on imports of agricultural products, and in doing so losing huge opportunities, not just in foreign exchange but most importantly in terms of lost jobs. Even half of that figure could transform Africa's agriculture if spent on its own products. Africa trades more with the rest of the world than within itself. Available figures indicate that intra-Africa trade is about 7 percent to 10 percent, compared with about 40 percent within Europe and about 60 percent within North America.

A number of barriers exists that hamper progress in expanding intra-African trade. Foremost among them is deficient state of infrastructure in Africa. Road density in Africa is 2.5 times less than in Latin America and 6.0 times less than in Asia. Only about one-third of Africans living in rural areas are within two kilometers of an all-season road, compared with two-thirds of the population in other developing regions. Obviously, high transport costs are arguably the most important impediment to intra-African trade. According to some estimates, an investment of US$32 billion to upgrade the main intra-African road network would result in trade expansion of about US$250 billion over 15 years.

Clearly, a regional approach is needed to harness the potential that exists in intra-Africa

Box 11. The impact of growth of nonagriculture sectors on the agricultural sector

"Evidence exists indicating that the African service sector and urbanization have been expanding over the past few years. What have been the impacts of such expansions and growth on agricultural productivity? How can the benefit of such an expansion in other sectors be harnessed for agricultural productivity? Similarly, natural resource extraction in Africa's mineral and forest fields has recently gained momentum. How has it been affecting agricultural productivity? And how has the global food price hike been impacting agricultural productivity? Has it benefited the African food producers so as to trigger more income, more savings, and more investment in innovation to enhance agricultural productivity? If not, why not? Let us not forget that high food prices have wider implications for needed economic transformation (by pushing costs of production up and dampening down the competitiveness of the nonagricultural sectors). These are some of the bigger issues that need to be [investigated]."

Source: Abebe Haile Gabriel (director, Department of Rural Economy and Agriculture, African Union Commission), "Food Security in Africa Today: A Synopsis" (keynote speech at "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 4, 2011), http://addis2011.ifpri.info/.

trade and to unlock the benefits of economies of scale and improved competitiveness. Regional economic communities play a pivotal role in facilitating the implementation of regional initiatives to enhance intra-Africa trade in agricultural commodities, including the Program for Infrastructure Development in Africa (PIDA) of the Africa Union Commission.

6.3 Capturing opportunities from emerging global processes

The global high food prices that were experienced in 2007–2008 and again in 2010–2011 offered opportunities for increasing food production and productivity in Africa. The food export bans meant that having money in hand did not guarantee that one could buy food from the world market, and the conditions gave rise to food self-sufficiency goals of producing food at any cost instead of relying on the market. The high food prices also triggered a demand for land in what were seen as land surplus areas in some developing countries, including in Africa, and provided direct foreign investments in land, resulting in rising land prices in these countries. Although foreign direct investments should generally be favorable for economic development, in some cases the circumstances surrounding these land acquisitions appeared questionable, and they were labeled "land grabs" by some social commentators. Currently, China is importing large amounts of maize, and it is expected that in the near future more food grains will be imported by both China and also India to feed their growing populations, increasing demand derived from higher incomes at a time when productivity levels are flattening out. Africa should prepare to take advantage of this opportunity to increase production to satisfy the new demand.

6.4 Agricultural productivity and climate change

Africa is one of the world's regions most vulnerable to climate change and at the same time has the least capacity to cope with climate change's impacts, even though it contributes nearly nothing to the problem (less than 4 percent to the emission of greenhouse gases). Africa's high vulnerability arises from the natural fragility of its ecosystems (degradation and desertification in 67 percent of the surface area), exposure to frequent natural disasters (droughts and floods), and dependence of the livelihoods of a large proportion of the population on agriculture and the sector's relatively high contribution to the economy. The sector is generally rainfed and highly climate sensitive. Due to the high incidence of poverty, Africa has insufficient capacity to cope with extreme events of drought and floods caused by climate variability and climate change, and these may therefore have

Box 12. Climate information for improving health and agriculture in Ethiopia

The potential benefits of getting it right are considerable. Ethiopia, a country particularly vulnerable to the vagaries of climate, provides a promising example of what might be achieved. A new climate database there will draw on more than 600 national meteorological stations merged with 30 years of 10-day satellite data collected for rainfall monitoring. The database will help the development of local, seasonal climate forecasts of unusually wet or dry conditions, and create free-access climate reports tailored to the needs of development sectors such as health, agriculture, and water resources. The database provides an opportunity to establish the value of climate information to improving health and agriculture.

Source: Madeleine C. Thomson, Stephen J. Connor, Stephen E. Zebiak, Michel Jancloes, and Abere Mihretie, "Africa Needs Climate Data to Fight Disease," Nature, vol. 471, March 24, 2011.

devastating effects on the productivity and livelihoods of the people.

The Intergovernmental Panel on Climate Change 2007 report predicts that up to 250 million people in Africa will experience problems in accessing sufficient water by 2020 because of climate change, and that agricultural production could be halved in certain instances during the same period. IFPRI predicts that, without adaptation, the impact of climate change on agriculture and food security will be high, with the number of malnourished children possibly increasing to an extra 10 million to a total of 52 million by 2050. Agricultural productivity and food security in the African context should therefore be linked with resilience of livelihoods and adaptation of production systems to climate variability and climate change. The extent to which African agriculture sufficiently adapts to climate change and climate variability will determine the continent's options for successful agricultural growth and economic transformation. In African agricultural systems, which are primarily rainfed, adaptive capacity is inherently related to the ability to maintain or to buffer ecosystem productivity under climatic stress.

In a more strategic sense, Africa needs to grapple with the "clean development" imperatives and the transformation toward a green economy, and address the issue of agricultural productivity within this framework. The green economy should be pro-poor and should not stifle attempts to improve food security; agriculture has to be more productive while protecting ecosystems.

6.5 The agriculture, nutrition, and health nexus

Agriculture and health are bi-directionally linked. Poor agricultural households tend to be vulnerable to malnutrition and poor health; agricultural systems interact with the environment, and by so doing affect human health; and agriculture produces foods, fibers, and plants with medicinal properties essential for human life and health. Good nutrition contributes to good health, and so agricultural products should not just provide calories but also the nutrients required for healthy living.

Agricultural development may lead to environmental change with adverse health impacts, for example, irrigation dams that create suitable conditions for mosquitoes may lead to increased incidence of malaria locally. The use of agricultural inputs such as pesticides by untrained farm personnel often causes illness. Improper food harvesting and storage practices allow mycotoxins to flourish. Lack of diet diversity can lead to malnutrition. Certain animal diseases (zoonoses) can also infect humans.

Policymakers and program managers need to understand the vicious cycle of low productivity of agriculture leading to an environment that makes individuals vulnerable to infections that in turn reduce their ability to be productive. It is important that consultations are done across the health and agriculture sectors when devising policies and programs that may affect each other so that any adverse effects can be tackled.

Conference papers on "The Big Picture: Agriculture Plus"

- **Towards Interrogating the Bigger Picture: Keynote speech,** by Abebe Haile Gabriel
- **African Agriculture Today; An Inventory: Keynote Speech,** by Josue Dione
- **Agriculture Plus: Discussant Remarks,** by Eleni Gabre-Medhin
- **The Impact of Climate Change In Mozambique's Agriculture,** by Verona Parkinson, Firmino G. Mucavele
- **The Micro-Economics of Climate Change Adaptation in Maize Production: The Case of Murewa District in Zimbabwe,** by Medicine Massiwa
- **Approximating the Cost of Soil Carbon Sequestration on Mt. Kilimanjaro Using Dynamic Optimization Model,** by Francis Mulangu, David Kraybill
- **Targeted Food Security and Carbon Benefits from Soil Fertility Replenishment Agroforestry Technologies,** by Tracy Beedy, Frank M. Place, Jules Bayala, and Antoine Kalinganire
- **Integrated Global Assessment of the Economics of Land Degradation: The Case of Sub-Saharan Africa,** by Ephraim Nkonya, Nicolas Gerber, Philipp Baumgartner, Joachim von Braun, Alex De Pinto, Valerie Graw, Edward Kato, Julia Kloos, and Teresa Walter
- **Climate Change Adaptation Strategies for Maize and Wheat Production in Sub-Saharan Africa: A Quantitative Assessment Using Crop Simulation and Spatial Modeling,** by Sika Gbegbelegbe, Kai Sonder, Jawoo Koo, Zhe Guo, Bekele Shiferaw, and Jonathan Hellin
- **Unraveling Soil Fertility Dilemma by Smallholders In Sub-Saharan Africa: Do Arbuscular Mycorrhiza Fungi Have a Role to Play?** by E. Mugendi, L. Avio, and M. Giovannetti
- **Effects of Drought Tolerance on Maize Yield in Sub-Saharan Africa,** by Nicola Cenacchi, Jawoo Koo, and Mark Rosegrant
- **Comparative Analysis of Maize-Based Livelihoods in Drought Prone Regions of Eastern Africa: Adaptation Lessons for Climate Change,** by Olaf Erenstein, Girma Tesfahun Kassie, and Wilfred Mwangi
- **Food Security in Africa Today; A Synopsis: Discussant Remarks,** by Ayalneh Bogale
- **The Interaction Between Health and Farm Labor Productivity in Africa,** by Kwadwo Asenso-Okyere and Daniel Ayalew Mekonnen
- **A Synergetic Linkage Between Agriculture, Nutrition, and Health,** by Foluso Temitope Agulanna
- **The Impact of HIV/AIDS on the Productivity of Farm Households in Abia State, Nigeria,** by O. R. Iheke , C. A. Okezie, and A. O. Onyekanma
- **Health Shocks and Agricultural Production: Evidence from Ghana,** by Isaac Osei-Akoto, Clement Adamba, and Robert Osei-Darko
- **Determinants of Farm Household Food Expenditure and Implications for Food Security and Nutrition in Rural Kenya,** by Jumba Idalinya, Siegfried Bauer, and Khalid Siddig
- **Forests, Bio-Diversity, and Food Security,** by Terry C. H. Sunderland
- **Understanding the Linkages between Agricultural Productivity and Nutrient Consumption: Evidence from Uganda,** by John Ulimwengu, Saweda Lliverpool-Tasie, Josee Randriamamonjy, and Racha Ramadan
- **Health, Nutrition, and Agricultural Production: Evidence from Rural Households in Burkina Faso,** by Fleur Wouterse

7. HARNESSING THE NONFARM SECTOR

Nonfarm economic activities are important to the livelihoods of rural households and should occupy a central position in policies addressing the developmental problems in Africa. The rural nonfarm sector not only contributes directly to rural households' incomes and creates employment opportunities, but it also provides avenues for input supplies to the farming sector and value-addition opportunities for farm produce. A thriving nonfarm sector should be able to provide employment to marginal farmers who leave agriculture because they can no longer survive in farming. A growing interest in the rural nonfarm sector reflects the increasing realization that rural people's livelihoods are derived from diverse sources and are not as overwhelmingly dependent on agriculture as previously assumed. Moreover, policymakers are looking to the wider rural economy to reduce persistent rural poverty and rural-to-urban migration.

Conference papers on "Harnessing the Nonfarm Sector"

- **The Non-Farm Sector as a Catalyst for Poverty Reduction in the Niger Delta Region, Nigeria,** by Andrew Onwuemele
- **Farm Households' Entry and Exit into and from Non-Farm Enterprises in Rural Ethiopia: Does Clustering Play a Role?** by Merima Ali and Jack Peerlings
- **Non-Farm Income Diversification and Welfare Status of Rural Households in South-West Zone of Nigeria,** by Olabisi Alaba Awoniyi and Kabir Kayode Salma
- **A Polycentric Approach to Rural Poverty Reduction: Case Of Zambian Smallholder Farmers,** by Progress H. Nyanga and Bridget B. Omar

8. PRIORITIES TO IMPROVE AGRICULTURAL PRODUCTIVITY AND ENHANCE FOOD SECURITY

In light of the current and future challenges facing SSA's food security, a new or "business as unusual" approach must be adopted. The already fragile food security situation in SSA is at risk from emerging stress factors. To reduce poverty and hunger in the region, there is an urgent need for global, national, and local actors to pursue innovative approaches to improve agricultural productivity.

Increased focus on better targeted and more productive investments and social protection policies are needed to cushion short-term livelihood shocks and offer long-term opportunities to escape poverty and food insecurity.

The development community should encourage the generation of innovations at the local level, accompanied by a framework for evaluating experiments and a political and legal space to transform the lessons learned into large-scale initiatives to reduce hunger and poverty. Developing countries should lead the fight against hunger with their own strategies that are developed through local experimentation before being scaled up. Effective, efficient, and sustainable policies that are well adapted to the local context can help countries maximize the local impact of the global agenda. Capacity strengthening needs to receive higher priority to enable countries to own and drive their development programs.

Technological innovations need to target productivity increases and be adapted to the emerging challenges facing food production and producers (especially smallholders). The push for location-specific technological innovations should be amplified across the entire agricultural supply chain: from the development of crop varieties that use inputs more efficiently (especially natural resources) and are resistant to droughts, floods, and specific diseases/pests all the way to the reduction of postharvest losses. Other innovations include information communication technologies, which can provide smallholders with access to extension and financial services and market information, and biotechnology, which can increase the productivity and nutritional impact of breeding initiatives. Additionally, the link between climate change and agriculture needs to be exploited through triple-win strategies that improve climate change mitigation and adaptation and agricultural productivity.

New institutional mechanisms are needed to strengthen food security by helping smallholders access markets and technologies and by providing emergency food reserves. The transformation and increased sophistication of supply chains has made it more difficult for many smallholders to access markets due to increased demands in quality and volume, limited market knowledge, and high production and marketing costs. There is thus an urgent need for innovative institutional arrangements that support vertical and horizontal coordination in such forms as group lending, rural marketing cooperatives, and producer associations.

New actors in global development—the private sector, philanthropic organizations, and emerging economies—have important roles to play in reducing hunger in developing countries. Public–private partnerships—such as the West Africa SEED Alliance—can improve smallholder productivity (and hence food security) but need to be supported by a business-

Box 13. Pathways out of continued low agricultural productivity and food insecurity

I. Be serious about agriculture instead of just talking about it;

II. Go beyond technology and the inputs associated with farming;

III. Correct the attitude and mindset programmed for aiming low—cultivate a mindset that is ambitious;

IV. Adopt and sustain incentives for Africa's agricultural producers to consistently produce more;

V. Firmly decide to no longer subcontract to others the responsibility for taking action on making African agriculture productive;

VI. Exercise selectiveness and focus on taking action; and

VII. Create (or strengthen existing) value-chain institutions as the future belongs to the organized.

Source: Mafa Chipeta (former FAO subregional director for Eastern Africa), remarks in the panel discussion, "What Are the Priorities for Taking Action to Increase Agricultural Productivity and Enhancing Food Security in Africa?" at the conference "Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities," Addis Ababa, Ethiopia. November 3, 2011), http://addis2011.ifpri.info/.

friendly environment, including a sound legal and regulatory framework. Emerging countries such as Brazil, China, and India can provide alternative experiences and technologies that may help African smallholders increase their productivity and food security. Information sharing between emerging and developing countries can be supported through the development of databases, information systems, and platforms for collaboration.

Conference papers on "Priorities for Taking Action to Improve Agricultural Productivity and Enhance Food Security"

- **What Are the Priorities for Taking Action to Increase Agricultural Productivity and Enhance Food Security in Africa? Panel Discussion,** by Boaz Keizire Blackie, Isaka Mashauri, Mafa Chipeta, Robson Mutandi, and Achim Fock
- **Towards "All Necessary Measures" for Increasing Agricultural Production in Africa: Notes for Panel Session No. 12,** by Mafa E. Chipeta
- **Innovations, Policies, and Investments to Promote Smallholder Productivity,** by Shenggen Fan
- **Scenarios for the Future of the Small Farm in Africa. Keynote Speech,** by Philip Kiriro

9. THE UNFINISHED AGENDA: NEW AREAS FOR RESEARCH, POLICY, AND CAPACITY STRENGTHENING

There is no other sustainable and feasible option to improve food security in Africa other than raising agricultural productivity. Increasing agricultural productivity increases farm supply so that farm households can increase the amount of food they retain for home consumption and market an increased volume of produce. This in turn can raise household income, which can then be used to improve general household livelihoods. However, many questions remain to be answered in order to achieve the desired sustained increases in productivity. What incentives are required to promote productivity in smallholder agriculture? To what extent and for how long can smallholders be relied upon to supply the food requirements of a growing urban population? How can the food needs of rural people be assured when militating against climate change? How can smallholders adapt effectively to climate change? How can the promotion of green economy be pro-poor so that the food security of the rural people is not adversely affected? What investments are needed to promote agricultural productivity? How can collective action be utilized to support smallholder agriculture? How can rural institutions be strengthened to promote agricultural production and productivity? How can the private and public sectors work together to promote agricultural development and the nexus between health and agriculture? What are the most effective ways of providing knowledge and information to smallholder farmers to increase productivity? What are the impacts of ICT in extension and advisory services on agricultural productivity? How can the capacity of knowledge intermediaries be strengthened to provide extension and advisory services for smallholders?

Conference papers on "The Unfinished Agenda"

- **What Are the Priorities for Taking Action to Increase Agricultural Productivity and Enhance Food Security in Africa? Panel Discussion,** by Boaz Keizire Blackie, Isaka Mashauri, Mafa Chipeta, Robson Mutandi, and Achim Fock
- T**owards Interrogating the Bigger Picture: Keynote Speech,** by Abebe Haile Gabriel
- **Towards "All Necessary Measures" for Increasing Agricultural Production In Africa: Notes for Panel Session No. 12,** by Mafa E. Chipeta

10. CONCLUSION

Rural areas are home to 75 percent of Africa's people, most of whom count agriculture as their major source of income. Fortunately, Africa has experienced continuous agricultural growth during the past few years. However, much of the growth has emanated from area expansion rather than increases in land productivity. In most countries, future sustainable agricultural growth will require a greater emphasis on productivity growth, as suitable area for new cultivation declines, particularly given growing concerns about deforestation and climate change.

As with its overall economy, Africa has made progress in agricultural growth over the past decade, although current productivity still lags behind that of Asia and Latin America. Despite the progress, many African households are food insecure and the continent is the largest receiver of food aid in the world. Sub-Saharan Africa's GHI reduction in the 2010 Global Hunger Index (GHI) was only 14 percent from its 1990 level. GHI measures fell by about 26 percent in South Asia, 33 percent in the Near East and North Africa, and more than 40 percent in Southeast Asia, Latin America, and the Caribbean.

It has been argued that business as usual will not lead to the quantum leap that is needed for agricultural productivity to have the desired impact on poverty reduction and food security in Africa. Doing "business as unusual" requires African agriculture to be transformed from current practices, which rely greatly on indigenous knowledge, to those that make use of scientific knowledge and productivity-enhancing inputs. The capacity of farmers should be strengthened to modernize their operations.

As agricultural output grows, African farmers should become more commercialized and focus on satisfying the demands of consumers so that their enterprises can be remunerative and provide them with decent livelihoods. Due to the smallness of their operations, farmers require effective policies and institutions to support them. Farmer organizations provide the economies of scale that help reduce transaction costs and increase profitability along the food and agriculture value chain.

Good policies provide the protection and assistance needed by smallholder farmers in terms of regulations, laws, credit, investments, markets, infrastructure, and rural development to spur agricultural growth. Protecting the environment, restoring ecosystems, and tackling emerging issues like climate change should be of major concern in policies for sustainable agricultural growth. The nonfarm rural sector should be harnessed for increasing agricultural productivity and improving rural livelihoods. Decisions about agricultural development should take into account the context of the entire economy and not be made in isolation from other sectors.

IFPRI HEADQUARTERS

2033 K Street, NW
Washington, DC 20006-1002 USA
Phone: +1-202-862-5600
Fax: +1-202-467-4439
Email: ifpri@cgiar.org
Skype: ifprihomeoffice

IFPRI ADDIS ABABA

P.O. Box 5689
Addis Ababa, Ethiopia
Phone: +251-11-6172500
Fax: +251-11-6462927
Email: ifpri-addisababa@cgiar.org

www.ifpri.org

http://addis2011.ifpri.info

ISBN 978-0-89629-793-7