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THE GROWING ECONOMY

The current global economic crisis, rising food prices, and the threat of climate change have reinforced the urgency to find lasting solutions to Africa's agricultural challenges. Africa is largely an agricultural economy with the majority of the population deriving their income from farming. Agricultural development is therefore intricately linked to overall economic development in African countries. Most policy interventions have focused on "food security," a term that is used to cover key attributes of food such as sufficiency, reliability, quality, safety, timeliness, and other aspects of food necessary for healthy and thriving populations. This chapter outlines the critical linkages between food security, agricultural development, and economic growth and explains why Africa has lagged behind other regions in agricultural productivity. Improving Africa's agricultural performance will require significant political leadership, investment, and deliberate policy efforts.

The Power of Inspirational Leadership

In a prophetic depiction of the power of inspirational models, Mark Twain famously said: "Few things are harder to put up

with than the annoyance of a good example." Malawi's remarkable efforts to address the challenges of food security were implemented against the rulebook of economic dogma that preaches against agricultural subsidies to farmers. Malawi's President Bingu wa Mutharika defied these teachings and put in place a series of policy measures that addressed agricultural development and overall economic development. He serves as an example for other African leaders of how aggressive agricultural investment (16% of government spending) can yield increased production and results.

His leadership should be viewed against a long history of neglect of the agricultural sector in Africa. The impact of structural adjustment policies on Malawi's agriculture was evident from the late 1980s.[1] Mounting evidence showed that growth in the smallholder sector had stagnated, with far-reaching implications for rural welfare. The focus of dominant policies was to subsidize consumers in urban areas.[2] This policy approach prevailed in most African countries and was associated with the continued decline of the agricultural sector.

In 2005, over half of the population in Malawi lived on less than a dollar a day, a quarter of the population lacked sufficient food daily, and a third lacked access to clean water. This started to change when Malawi's wa Mutharika took on food insecurity, a dominant theme in the history of the country.[3] His leadership helped to revitalize the agricultural sector and provides an inspiring lesson for other figures in the region who wish to enable and empower their people to meet their most basic needs.

In 2005, Malawi's agricultural sector employed 78% of the labor force, over half of whom operated below subsistence. Maize is Malawi's principal crop and source of nutrition, but for decades, low rainfall, nutrient-depleted soil, inadequate investment, failed privatization policies, and deficient technology led to low productivity and high prices.[4] The 2005 season yielded just over half of the maize required domestically, leaving five million Malawians in need of food aid.

The president declared food insecurity his personal priority and set out to achieve self-sufficiency and reduce poverty, declaring, "Enough is enough. I am not going to go on my knees to beg for food. Let us grow the food ourselves."[5] The president took charge of the ministry of agriculture and nutrition and initiated a systematic analysis of the problem and potential solutions. After a rigorous assessment, the government designed a program to import improved seeds and fertilizer for distribution to farmers at subsidized prices through coupons.

This ambitious program required considerable financial, political, and public support. The president engaged in debate and consultation with Malawi's parliament, private sector, and civil society, while countering criticism from influential institutions.[6] For example, the International Monetary Fund and the United States Agency for International Development (USAID) had fundamentally disagreed with the subsidy approach, claiming that it would distort private sector activities. Other organizations such as the South Africa–based Regional Hunger and Vulnerability Programme questioned the ability of the program to benefit resource-poor farmers.[7] On the other hand the UK Department for International Development (DFID) and the European Union, Norway, Ireland, and later the World Bank, supported the program. Additional support came from China, Egypt, and the Grain Traders and Processors Association. The president leveraged this support and several platforms to explain the program and its intended benefits to the public and their role in the system.[8] With support increasing and the ranks of the hungry swelling, the president devoted approximately US$50 million in discretionary funds and some international sources to forge ahead with the program.[9]

The president's strategy attempted to motivate the particularly poor farmers to make a difference not only for their families, but also for their community and their country. Recognizing the benefits of the program, people formally and

informally enforced the coupon system to prevent fraud and corruption. The strategy sought to target smallholder farmers, who face the biggest challenges but whose productivity is essential for improving nutrition and livelihoods.[10]

In 2005–06, the program, coupled with increased rainfall, contributed toward a doubling of maize production, and in 2006–07, the country recorded its highest surplus ever. Prices fell by half, and Malawi began exporting maize to its food insecure neighbors. Learning from experience, the government made a number of adjustments and improvements to the program in its first few years, including stepped-up enforcement of coupon distribution, more effective targeting of subsidies, private sector involvement, training for farmers, irrigation investments, and post-harvest support.

President wa Mutharika's commitment to tackling his nation's most grave problem and development opportunity is a model for channeling power to challenge the *status quo*. Following an integrated approach, the government is devoting 16% of its national budget to agriculture, surpassing the 10% target agreed to in the 2003 Maputo Declaration.[11] His all-too-rare approach to study an issue, develop a solution, and implement it with full force, despite a hostile international environment, demonstrates the difference political will can make. In 2010 he handed over the agriculture portfolio to a line minister.

Linkages Between Agriculture and Economy

Agriculture and economic development are intricately linked. It has been aptly argued that no country has ever sustained rapid economic productivity without first solving the food security challenge.[12] Evidence from industrialized countries as well as countries that are rapidly developing today indicates that agriculture stimulated growth in the nonagricultural sectors and supported overall economic well-being. Economic

growth originating in agriculture can significantly contribute to reductions in poverty and hunger. Increasing employment and incomes in agriculture stimulates demand for nonagricultural goods and services, boosting nonfarm rural incomes as well.[13] While future trends in developing countries are likely to be affected by the forces of globalization, the overall thesis holds for much of Africa.

Much of our understanding of the linkages between agriculture and economic development has tended to use a linear approach. Under this model agriculture is seen as a source of input into other sectors of the economy. Resources, skills, and capital are presumed to flow from agriculture to industry. In fact, this model is a central pillar of the "stages of development" that treat agriculture as a transient stage toward industry phases of the economy.[14] This linear view is being replaced by a more sophisticated outlook that recognizes the role of agriculture in fields such as "income growth, food security and poverty alleviation; gender empowerment; and the supply of environmental services."[15] A systems view of economic evolution suggests continuing interactions between agriculture and other sectors of the economy in ways that are mutually reinforcing.[16] Indeed, the relationship between agriculture and economic development is interactive and associated with uncertainties that defy causal correlation.[17]

The Green Revolution continues to be a subject of considerable debate.[18] However, its impact on agricultural productivity and reductions in consumer prices can hardly be disputed. Much of the debate over the impact of the Green Revolution ignores the issue of what would have happened to agriculture in developing countries without it. On the whole, without international research in developing countries, yields in major crops would have been higher in industrialized countries by up to 4.8%. This is mainly because lower production in the developing world would have pushed up prices and given industrialized country farmers incentives to boost their

production. It is estimated that crop yields in developing countries would have been up to 23.5% lower without the Green Revolution and that equilibrium prices would have been between 35% and 66% higher in 2000. But in reality prices would have remained constant or risen marginally in the absence of international research. This is mainly because real grain prices actually dropped by 40% from 1965 to 2000.[19]

Higher world prices would have led to the expansion of cultivated areas, with dire environmental impacts. Estimates suggest that crop production would have been up to 6.9% higher in industrialized countries and up to 18.6% lower in developing countries. Over the period, developing countries would have had to increase their food imports by nearly 30% to offset the reductions in production. Without international research, caloric intake in developing countries would have dropped by up to 14.4% and the proportion of malnourished children would have increased by nearly 8%. In other words, the Green Revolution helped to raise the health status of up to 42 million preschool children in developing countries.[20]

It is not a surprise that African countries and the international community continue to seek to emulate the Green Revolution or recommend its variants as a way to address current and future challenges.[21] More important, innovation-driven agricultural growth has pervasive economy-wide benefits as demonstrated through India's Green Revolution. Studies on regional growth linkage have shown strong multiplier effects from agricultural growth to the rural nonfarm economy.[22]

It is for this reason that agricultural stagnation is viewed as a threat to prosperity. Over the last 30 years, agricultural yields and the poverty rate have remained stagnant in sub-Saharan Africa. Prioritizing agricultural development could yield significant, interconnected benefits, particularly in achieving food security and reducing hunger; increasing incomes and reducing poverty; advancing the human development agenda in health and education; and reversing environmental damage.

In sub-Saharan Africa, agriculture directly contributes to 34% of GDP and 64% of employment.[23] Growth in agriculture is at least two to four times more effective in reducing poverty than in other sectors.[24] Growth in agriculture also stimulates productivity in other sectors such as food processing. Agricultural products also compose about 20% of Africa's exports. Given these figures it is no surprise that agricultural research and extension services can yield a 35% rate of return, and irrigation projects a 15%–20% return in sub-Saharan Africa.[25]

Even before the global financial and fuel crises hit, hunger was increasing in Africa. In 1990, over 150 million Africans were hungry; as of 2010, the number had increased to nearly 239 million. Starting in 2004, the proportion of undernourished began increasing, reversing several decades of decline, prompting 100 million people to fall into poverty. One-third of people in sub-Saharan Africa are chronically hungry—many of whom are smallholders. High food prices in local markets price out the poorer consumers—forcing them to purchase less food and less nutritious food, as well as divert spending from education and health and sell their assets. This link of hunger and weak agricultural sector is self-perpetuating. As a World Bank study has shown, caloric availability has a positive impact on agricultural productivity.[26]

Half of African countries with the highest levels of hunger also have among the highest gender gaps. Agricultural productivity in sub-Saharan Africa could increase significantly if such gaps were reduced in school and in the control of agricultural resources such as land. In addition to this critical gender dynamic, the rural-urban divide is also a key component of the agricultural and economic pictures.

Over the last 25 years, growth in agricultural gross domestic product (GDP) in Africa has averaged approximately 3%, but there has been significant variation among countries. Growth per capita, a proxy for farm income, was basically zero in the 1970s and negative from the 1980s into the 1990s. Six countries

experienced negative per capita growth. As such, productivity has been basically stagnant over 40 years—despite significant growth in other regions, particularly Asia, thanks to the Green Revolution.[27] Different explanations derive from a lack of political prioritization, underinvestment, and ineffective policies. The financial crisis has exacerbated this underinvestment, as borrowing externally has become more expensive, credit is less accessible, and foreign direct investment has declined.

Only 4% of Africa's crop area is irrigated, compared to 39% in South Asia. Much of rural Africa is without passable roads, translating to high transportation costs and trade barriers. Over 40% of the rural population lives in arid or semi-arid conditions, which have the least agricultural potential. Similarly, about 50 million people in sub-Saharan Africa and 200 million people in North Africa and the Middle East live in areas with absolute water scarcity. Cropland per agricultural population has been decreasing for decades. Soil infertility has occurred due to degradation: nearly 75% of the farmland is affected by excessive extraction of soil nutrients.

One way that farmers try to cope with low soil fertility and yields is to clear other land for cultivation. This practice amounts to deforestation, which accounts for up to 30% of greenhouse gas emissions globally. Another factor leading to increased greenhouse gas emissions is limited access to markets: more than 30% of the rural population in sub-Saharan Africa, the Middle East, and North Africa live more than five hours from a market; another 40% live between two to four hours from a market.

Fertilizer use in Africa is less than 10% of the world average of 100 kilograms per hectare. Just five countries (Ethiopia, Kenya, South Africa, Zimbabwe, and Nigeria) account for about two-thirds of the fertilizer applied in Africa. On the average, sub-Saharan African farmers use 13 kilograms of nutrients per hectare of arable and permanent cropland. The rate in the Middle East and North Africa is 71 kilograms. Part

of the reason that fertilizer usage is so low is the high cost of imports and transportation; fertilizer in Africa is two to six times the average world price. This results in low usage of improved seed; as of 2000, about 24% of the cereal-growing area used improved varieties, compared to 85% in East Asia and the Pacific. As of 2005, 70% of wheat crop area and 40% of maize crop area used improved seeds, a significant improvement.

Africa's farm demonstrations show significantly higher average yields compared to national yields and show great potential for improvement in maize. For example, Ethiopia's maize field demonstrations yield over five tons per hectare compared to the national average of two tons per hectare for a country plagued by chronic food insecurity. This potential will only be realized as Africans access existing technologies and improve them to suit local needs.

China's inspirational success in modernizing its agriculture and transforming its rural economy over the last 30 years provided the basis for rapid growth and a substantial improvement in prosperity. From 1978 to 2008 China's economy grew at an annual average rate of about 9%. Its agricultural GDP rose by about 4.6% per year, and farmers' incomes grew by 7% annually. Today, just 200 million small-scale farmers each working an average of 0.6 hectares of land feed a population of 1.3 billion. In the meantime, China was able to limit population growth at 1.07% per year using a variety of government policies. Even more remarkable has been the rate of poverty reduction. China's poverty incidence fell from 31% in 1978 to 9.5% in 1990 and then to 2.5% in 2008. Food security has been dramatically enhanced by the growth and diversification of food production, which outstripped population growth. Agriculture's role in reducing poverty has been three times higher than that of other sectors. Agriculture has therefore been the main force in China's poverty reduction and food security.[28]

Lessons from China show that detailed and sustained focus on small-scale farmers by unleashing their potential and meeting their needs can lead to growth and poverty reduction, even when the basic agricultural conditions are unfavorable. But a combination of clear public policies and institutional reforms are needed for this to happen. The policies and reforms need to be adjusted in light of changing circumstances to bolster the rural economy (through infrastructure services, research support, and farmer education), stimulate off-farm employment, and promote rural-urban migration as rural productivity rises and urban economies expand.

With population in check, China's grain production soon outstripped direct consumption, and policy attention shifted to agricultural diversification and improvement of rural livelihoods. The process was driven by a strong, competent, and well-informed developmental state that could set clear medium and long-term goals and support their implementation.

Despite the historical, geographic, political, social, educational, and cultural differences between China and Africa, there are still many lessons from China's agricultural transformation that can inspire Africa's efforts to turn around decades of low agricultural investment and misguided policies. An African agricultural revolution is within reach, provided the continent can focus on supporting small-scale farmers to help meet national and regional demand for food, rather than rely on expansion of export crops.

While prospects for Africa's global agricultural commodities markets (including cocoa, tea, and coffee) are likely to be brighter than in recent decades, the African food market will grow from US$50 billion in 2010 to US$150 billion by 2030. Currently, food imports are estimated at US$30 billion, up from US$13 billion in the 1990s. Meeting this market with local production will generate the revenue needed to attract additional foreign investment and help in overall economic diversification. Such a transformation will also help expand

overall economic development through linkages with urban areas.

China and the OECD's Development Assistance Committee are helping to disseminate lessons from China's experience among African policymakers and practitioners. But they can go further by contributing to the implementation of agricultural strategies developed by African leaders through the Regional Economic Communities (RECs) and other political bodies. At the very least, they should support efforts to strengthen Africa's capacity for evidence-based policy-making and implementation. This will help to create national and regional capacity for strategic thinking and implementation of specific agricultural programs.[29]

The State of African Agriculture

Africa has abundant arable land and labor which, with sound policies, could be translated into increased production, incomes, and food security. This has not materialized because of lack of consistent policies and effective implementation strategies arising from the neglect of the sector. Thus, even though agriculture accounts for 64% of the labor force, over 34% of GDP, and over 20% of businesses in most countries, it continues to be given low priority.[30]

Over the past 40 years, there has been remarkable growth in agricultural production, with per capita world food production growing by 17% and aggregate world food production growing by 145%.[31] However, in Africa, food production is 10% lower today than it was in 1960 because of low levels of investment in the sector. The recent advances in aggregate world productivity have therefore not brought reductions in the incidence of hunger in African countries. Of the 800 million people worldwide lacking adequate access to food, a quarter of them are in sub-Saharan Africa. The number of hungry people has in fact increased by 20% since 1990.

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.

The path to productivity growth in sub-Saharan Africa will differ considerably from that in irrigated Asian rice and wheat farming systems. Sub-Saharan African agriculture is 96% rain fed and highly vulnerable to weather shocks. And diverse agroecological conditions produce a wide range of farming systems based on many food staples, livestock, and fisheries.

Most agriculture-based countries are small, making it difficult for them to achieve scale economies in research and training. Unless regional markets are better integrated, markets will also be small. Nearly 40% of Africa's population lives in landlocked countries that face transport costs that, on average, are 50% higher than in the typical coastal country.

Vast distances and low population densities in many countries in sub-Saharan Africa make trade, infrastructure, and service provision costly and slow down the emergence of competitive markets. Conversely, areas of low population density with good agricultural potential represent untapped reserves for agricultural expansion.

More than half the world's conflicts in 1999 occurred in sub-Saharan Africa. Although the number of conflicts has declined in recent years, the negative impacts on growth and poverty are still significant. Reduced conflict offers the scope for rapid agricultural growth as demonstrated by Mozambique's recent experience.[32]

The human capital base of the agriculture profession is aging as a result of the decline in support for training during the past 20 years and the HIV/AIDS epidemic. But major accomplishments in rural primary education are ensuring a future generation of literate and numerate African

smallholders and nonfarm entrepreneurs. Nevertheless, education has been slow to play a key role in the capacity of farmers to diversify into nonfarm activities.[33]

Despite these common features, the diversity across sub-Saharan African countries and across regions within countries is huge in terms of size, agricultural potential, transport links, reliance on natural resources, and state capacity. The policy agenda will have to be carefully tailored to country-specific circumstances.

Many African governments have treated agriculture as a way of life for farmers who in most cases have no voice in lobbying for an adequate share of public expenditure. Following the Maputo Summit, African countries agreed to devote at least 10% of their public expenditure to agriculture. By 2008 only 19% of African countries had allocated more than 10% of their national expenditure to agricultural development. Many countries hardly reached 4% of GDP and have depended on official development assistance for funding agriculture and other sectors.

Sub-Saharan Africa ranks the lowest in the world in terms of yield-enhancing practices and techniques. Yield-enhancing practices include mechanization, use of agro-chemicals (fertilizers and pesticides), and increased use of irrigated land. The use of these practices and technologies is low in Africa even in comparison to other developing regions. This at least partly explains why crop yields in Africa in general are far below average yields in other parts of the world.

Mechanization is very low, with an average of only 13 tractors per 100 square kilometers of arable land, versus the world average of 200 tractors per 100 square kilometers.[34] In the UK, for example, there are 883 tractors per 1,000 farm workers, whereas in sub-Saharan Africa there are now two per 1,000, which is actually a 50% drop from the 1980 level of three.[35] In Africa, tractor plowing and use of other modern inputs are confined to areas with high market demand or large-scale

farms. Therefore, there is considerable variation in the use of these technologies across the continent's RECs. Irrigated land is only 3.6% of total cropland on the continent compared with the world average of 18.4%, while the use of fertilizers is minimal at nine kilograms per hectare compared with the world average of 100 kilograms per hectare. The development of irrigated agriculture is highest in the Common Market for Eastern and Southern Africa (COMESA)—14.4% of arable land—possibly due to the large irrigation projects in Egypt and the Sudan.

Undercapitalization of agriculture as discussed above has given rise to an agricultural sector with a weak knowledge base, resulting in low-input, low-output, and low-value-added agriculture in most cases. Land productivity in Africa is estimated at 42% and 50% of that in Asia and Latin America, respectively. Asia and Latin America have more irrigated land and use more fertilizers and machinery than Africa.

Africa has 733 million hectares of arable land (27.4% of world total) compared with 570 million hectares for Latin America and 628 million hectares for Asia. Only 3.8% of Africa's surface and groundwater is harnessed, while irrigation covers only 7% of cropland (3.6% in sub-Saharan Africa). Clearly, there is considerable scope for both horizontal and vertical expansion in African agriculture.[36]

However, area expansion should not be a priority in view of increased environmental degradation on the continent. Currently, Africa accounts for 27% of the world's land degradation and has 500 million hectares of moderately or severely degraded land. Degradation affects 65% of cropland and 30% of pastureland. Soil degradation is associated with low land productivity. It is mainly caused by loss of vegetation and land exploitation, especially overgrazing and shifting cultivation.

African agriculture is weakly integrated with other sectors such as the manufacturing sector. By promoting greater sectoral linkages, value chain development can greatly enhance job

creation, agricultural transformation, and broad-based growth on the continent. Therefore, Africa should take the necessary measures to confront its challenges in this area.

Trends in Agricultural Renewal

Future trends in African agriculture are going to be greatly influenced by developments in the global economy as well as emerging trends in Africa itself. Despite recent upheavals in the global financial system, Africa continues to register remarkable growth prospects. While African economies currently face serious challenges, such as poverty, diseases, and high rates of infant mortality, Africa's collective GDP (at US$1.6 trillion in 2008) is almost equal to that of Brazil or Russia—two emerging markets.[37]

Furthermore, Africa is among the most rapidly growing economic regions in the world today. Its real GDP grew approximately 4.9% per year from 2000 to 2008, and major booming sectors include telecom, banking, and retail, followed by construction and foreign investment. While each African nation faces a unique growth path, a framework for such development has been created by McKinsey Global Institute to address the opportunities and challenges facing various countries in Africa. From 2002 to 2007, the sector share of real GDP growth was spread out. While the resources consist of 24% of the share of GDP, the rest came from other sectors including wholesale (13%), retail trade (13%), agriculture (12%), transportation (10%), and manufacturing (9%).[38]

As agricultural growth has a huge potential for companies across the value chain, overcoming various barriers to raising productivity (such as a lack of advanced seeds, inadequate infrastructure, trade barriers, unclear land rights, lack of technical assistance, and finance for farmers) is a key to increasing the agricultural output from US$280 billion to a projected US$880 billion by 2030.[39]

The picture is therefore promising though uncertain. Several recent successes demonstrate that the link between farm productivity and income growth for the poor indeed operates in Africa. Several countries have exhibited higher agricultural growth rates per capita over the last 10 years. These recent gains in agriculture can be attributed to a better policy environment, increased usage of technology, and higher commodity prices. There are numerous cases that illustrate the ingenious and innovative ways that Africans are overcoming the constraints identified above to strengthen their agricultural productivity and livelihoods.

For example, Ghana has made consistent progress in reducing poverty and hunger. Between 1991–92 and 2006, Ghana nearly halved its poverty rate from over 51% to 28%. Ghana is also the only African country to reduce its Global Hunger Index by more than 50%. The success can be attributed to a better investment climate, policies, and commodity prices. The agricultural sector's rate of growth was higher than both overall GDP and the service sector between 2001 and 2005. Increased land use and productivity among smallholders and cash crop growers in cocoa and horticulture—particularly pineapples—drove growth and welfare improvement.

With success come challenges and lessons learned: inequality has increased, suggesting that the benefits of this growth have not been evenly distributed and that more attention needs to be paid to the rural north. Also, unsustainable environmental degradation and natural resource usage threatens to reverse progress in agriculture and affect other sectors. But the global financial, food, and fuel crises are negatively impacting the agricultural sector and the poor. Prices of inputs and crops have risen by anywhere from 26% to 51% between 2007 and 2008 in real terms. Although cocoa prices are still high for exporters, shea nut prices have fallen—a major source of income for women in the Savannah region.

Social safety net programs (such as cash transfers, school feeding, and national insurance), though, are providing some buffer against the current crises' effects on income and consumption. Ghana's story helps show the importance of locally owned policies and political commitment to sustain agricultural gains and welfare improvement.

Enabling Policy Environment

Although still hindered by unfair international terms of trade, a more favorable policy and macroeconomic environment has helped spur agricultural development in recent years. Countries that have relaxed constraints (such as over-taxation of the agricultural sector) have been able to increase agricultural productivity. For example, a 10% increase in coffee prices in Uganda has helped reduce the number of people living in poverty by 6%.

For less than a few dollars, land-use certificates can be implemented to reduce encroachment and improve soil conservation. For example, Ethiopia's system for community-driven land certification has been one effective way to improve land practices and a potential step toward the much broader reform of land policy that is needed in many African countries.

Here is how it works: communities learn about the certification process and then elect land-use committees. These voluntary committees settle conflicts and designate unassigned plots through a survey, setting up a system for inheritable rights. In a nationwide survey, approximately 80% felt that this certification process effectively fulfilled those tasks as well as encouraged their personal investment in conservation and women's access to resources. The certificates themselves cost US$1 per plot but increase to less than US$3 with mapping and updating using global position system (GPS). Between 2003 and 2005, six million households were issued certificates,

demonstrating the scalability.[40] Documenting land rights in this participatory and locally owned way can serve as a model for governments ready to take on meaningful reform.

The initiation of the African-led Comprehensive Africa Agriculture Development Programme (CAADP) by the African Union's NEPAD constitutes a significant demonstration of commitment and leadership. Since 2003, CAADP has been working with the RECs and through national roundtables to promote sharing, learning, and coordination to advance agriculture-led development. CAADP focuses on sustainable land management, rural infrastructure and market access, food supply and hunger, and agricultural research and technology. As of June 2010, CAADP had signed "compacts" with 26 countries. The compacts are products of national roundtables at which priorities are set and roadmaps for implementation are developed. The compacts are signed by all the key partners.

In eastern and southern Africa, COMESA coordinates the CAADP planning and implementation processes at country and regional levels. In doing so, it also collaborates with regional policy networks, such as the Food, Agriculture and Natural Resources Policy Analysis Network) and subregional knowledge systems such as the Regional Strategic Analysis and Knowledge Support Systems, and it utilizes analytical capacity provided through various universities in the region, supported by Michigan State University.

In close coordination with national CAADP processes, a regional CAADP compact is being developed. Its aim is to design a Regional Investment Program on Agriculture that will focus on developing key regional value chains and integrating value chain development into corridor development programs. At a national level, the priority programs developed include those in the area of research and dissemination of productivity-enhancing technologies to promote knowledge-based agricultural practices applying the innovation systems approach to

develop and strengthen linkages between generators, users, and intermediaries of technological knowledge.

Regional Imperatives

The facilitation of regional cooperation is emerging as a basis for diversifying economic activities in general, and leveraging international partnerships in particular. Many of Africa's individual states are no longer viable economic entities; their future lies in creating trading partnerships with neighboring countries.

Many African countries are either relatively small or landlocked, thereby lacking the financial resources needed to invest in major infrastructure projects. Their future economic prospects depend on being part of larger regional markets. Increased regional trade in agricultural products can help them stimulate rural development and enhance their technological competence through specialization. Existing RECs offer them the opportunity to benefit from rationalized agricultural activities. They can also benefit from increased harmonization of regional standards and sanitary measures.[41]

African countries have adopted numerous regional cooperation and integration arrangements, many of which are purely ornamental. The roles of bigger markets in stimulating technological innovation, fostering economies of scale arising from infrastructure investments, and the diffusion of technical skills into the wider economy are some of the key gains Africa hopes to derive from economic integration. In effect, science and innovation are central elements of the integration agenda and should be made more explicit.

The continent has more than 20 regional agreements that seek to promote cooperation and economic integration at subregional and continental levels. They range from limited cooperation among neighboring states in narrow political and economic areas to the ambitious creation of an African common

market. They focus on improving efficiency, expanding the regional market, and supporting the continent's integration into the global economy. Many of them are motivated by factors such as the small size of the national economy, a landlocked position, and poor infrastructure. Of all Africa's regional agreements, the African Union (AU) formally recognizes eight RECs. These RECs represent a new economic governance system for Africa and should be strengthened.

The Common Market for Eastern and Southern Africa, in particular, illustrates the importance of regional integration in Africa's economic development and food security. The 19-member free trade area was launched in 2000 and at 420 million people accounts for nearly half of Africa's population. It has a combined GDP of US$450 billion and is the largest and most vibrant free trade area in Africa, with intra-COMESA trade estimated at US$14.3 billion in 2008. COMESA aims to improve economic integration and business growth by standardizing customs procedures, reducing tariffs, encouraging investments, and improving infrastructure. COMESA launched its customs union on June 7, 2009, in Victoria Falls Town and has initiated work on a Common Investment Area to facilitate cross-border and foreign direct investment. COMESA plans to launch its common market in 2015, and in this regard it already has a program for liberalization of trade in services. The program prioritizes liberalization of infrastructure services, namely, communication, transport, and financial services. Other subsectors will be progressively liberalized.

The strength of the RECs lies in their diversity. Their objectives range from cooperation among neighboring states in narrow political and economic areas to the ambitious creation of political federations. Many of them are motivated by factors such as the small size of the national economy, a landlocked position, or poor infrastructure. Those working on security, for example, can learn from the Economic Community of West African States (ECOWAS) which has extensive experience

dealing with conflict in Ivory Coast, Liberia, and Sierra Leone.[42]

Other RECs have more ambitious plans. The EAC, for example, has developed a road map that includes the use of a common currency and creation of single federal state. In July 2010 the EAC launched its Common Market by breaking barriers and allowing the free movement of goods, labor, services, and capital among its member states. The EAC Common Market has a combined GDP of US$73 billion. Through a process that began with the establishment of the EAC Customs Union, the Common Market is the second step in a four-phase roadmap to make the EAC the strongest economic, social, cultural, and political partnership in Africa. EAC's economic influence extends to neighboring countries such as Sudan, Democratic Republic of the Congo, and Somalia. The Common Market will eliminate all tariff and nontariff barriers in the region and set up a common external tax code on foreign goods. It will also enhance macroeconomic policy coordination and harmonization as well as the standardization of trade practices. It is estimated that East Africa's GDP is will grow 6.4% in 2011, making it the fastest growing region in Africa.[43]

The region has already identified agriculture as one of its strategic areas. In 2006 the EAC developed an Agriculture and Rural Development Policy that provides a framework for improving rural life over the next 25 years by increasing productivity output of food and raw materials, improving food security, and providing an enabling environment for regional and international trade. It also covers the provision of social services such as education, health and water, development of support infrastructure, power, and communications. The overall vision of the EAC is to attain a "well developed agricultural sector for sustainable economic growth and equitable development."[44] Its mission is to "support, promote and facilitate the development, production and marketing of agricultural produce and products to ensure food security, poverty eradication and sustainable

economic development."[45] Such institutions, though nascent, represent major innovations in Africa's economic and political governance and deserve the fullest support of the international community.

Conclusion

This chapter has examined the critical linkages between agriculture and economic development in Africa. It opened with a discussion of the importance of inspirational leadership in effecting change. This is particularly important because much of the large body of scientific and technical knowledge needed to promote agricultural innovation in Africa is available. It is widely acknowledged that institutions play an important role in shaping the pace and direction of technological innovation in particular and economic development in general. Much has been written on the need to ensure that the right democratic institutions are in place as prerequisites for agricultural growth.[46] But emerging evidence supports the importance of entrepreneurial leadership in promoting agricultural innovation as a matter of urgency and not waiting until the requisite institutions are in place.[47] This view reinforces the important role that entrepreneurial leadership plays in fostering the co-evolution between technology and institutions.

Fundamentally, "it would seem that one can understand the role of institutions and institutional change in economic growth only if one comes to see how these variables are connected to technological change."[48] This is not to argue that institutions and policies do not matter. To the contrary, they do and should be the focus of leadership. What is important is that the focus should be on innovation. The essence of entrepreneurial leadership of the kind that President wa Mutharika has shown in Malawi points to the urgency of viewing institutions and economic growth as interactive and co-evolutionary. The rest of this book will examine these issues in detail.