
Transforming African Agriculture: Challenges, Opportunities and the Way Forward in the Twenty-first Century

Ntangsi Max Memfih

Introduction

Africa remains the continent with the greatest unexploited agricultural potential and yet is home to the highest proportion of hungry and malnourished people. Statistics from various sources show that, of the 900 million people suffering from chronic malnutrition in the world, about 240 million are from Africa, constituting more than 25 per cent of the continent's population. About 35 million children go to sleep malnourished and hungry every night. Africa is one of the poorest and least developed regions of the world. There is widespread concern at the continuing and indeed deepening poverty situation particularly in the sub-Saharan region. To compound this, there is the lack of rapid and broad-based economic growth to combat the situation despite many international discussions on the issue. This is largely an outcome of a neglected agricultural sector even though statistics reveal that this sector constitutes the mainstay of sub-Saharan economies. It contributes about 40 per cent of GDP and provides employment to about 70 per cent of the labour force. The sector equally provides about 35 per cent of export earnings. In addition, it supplies food to meet the ever-increasing population, savings and capital accumulation and finances the development of other sectors through tax revenues. The average growth rate of agricultural production stands at less than 1.8 per cent since 1960 as against more than 2.5 per cent growth in population. This reflects a decline in per capita terms.

Why has the agricultural sector performed so poorly in Africa compared to other developing regions of the world? What are the opportunities particularly in this era of globalisation that Africa can tap to transform its agriculture in a sustainable manner? How can the best of science and technology be harnessed to help Africa increase its agricultural productivity, profitability and sustainability, thereby contributing to improved food security for all? How, precisely, can we produce higher crop yields and more nutritious foods from thinning soils, making food both affordable and accessible to increasing numbers of people? What are the larger socio-economic and political conditions necessary for the effective use of science and technology in both the public and private sectors?

This chapter is conceived accordingly and is structured to provide answers to the above research questions. Specifically, it examines constraints to agricultural development in Africa since independence on both domestic and external fronts, assesses the potentials and opportunities that are inherent in the Twenty-first century global arena and speculates on what needs to be done to target agriculture for the continent's development in order to achieve the much cherished Millennium Development Goals, as time is running out. The main premise of the chapter is that agriculture constitutes the foundation for an industrial revolution in Africa. In order to achieve the above objectives, a descriptive approach is used with information drawn from secondary sources particularly from the FAO, IITA, IFPRI, CAADP, AGRA, CGIAR and World Bank databases.

Background

Agricultural transformation means a situation where a substantial number of rural households (1) have incomes exceeding the poverty level, (2) operate farms commercially (selling a substantial portion of the value of their output), (3) specialise in production at the farm level, (4) invest more heavily in the farm, (5) purchase commercial inputs, including hired labour, in significant quantities, and (6) adopt new technologies on a regular basis. At this point a dynamic growth process can be said to be in place, with the agricultural sector modernising, continuing to produce food cheaply, and releasing labour to the non-agricultural economy.

Agriculture provides food for the ever-increasing population, revenues from foreign exchange and taxes that finance both agricultural and other sectors, raw materials for industries, and most importantly, employment for a majority of the people. The average growth rate of agricultural production has stood at about 1.7 to 1.9 per cent per annum since 1960. Population growth on the other hand has increased from 2.5 per cent per annum during the period 1960-1980 to about 2.7 per cent since 1980 due to marginal improvements in health care services. This reflects a decline in per capita agricultural output, which in turn is mirrored in a decline in per capita food production of about 6 per cent between 1980 and 2002. The results have been low food intake per capita in Africa which is estimated at below 75 per cent

of required levels since the 1980s. To this deplorable agricultural and food situation there is additionally substantial evidence of environmental degradation including rapid deforestation and loss of soil fertility. In these circumstances, domestic policies combined with international concerns have fared badly in Africa. Current development problems of food insecurity and increasing poverty at all levels remain in the continent.

Africa has abundant arable land and labour which, with sound policies, could be translated into increased production, incomes and food security. This has not materialised because of lack of consistent policies and/or effective implementation strategies. Thus, despite agriculture accounting for 70 per cent of the labour force, over 25 per cent of GDP and 20 per cent of agribusinesses in most countries, it continues to be given low priority. Agriculture also 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 need 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, unfavourable policy and regulatory environments, and climate change.

African agriculture has a unique set of features that make it very different from Asia, where the Green Revolution has had a pervasive impact. These include among others:

- lack of a dominant farming system on which food security largely depends;
- predominance of rain fed agriculture as opposed to irrigated agriculture;
- heterogeneity and diversity of farming systems and the importance of livestock;
- key roles of women in agriculture and in ensuring household food security;
- lack of functioning competitive markets; under-investment in agricultural research and development, and infrastructure;
- lack of conducive economic and political enabling environments;
- large and growing impact of human health on agriculture;
- low and stagnant labour productivity and minimal mechanisation;
- predominance of customary land tenure.

A combination of factors has led to this deplorable situation which range from external shocks to internal policy weaknesses. Externally, agricultural support through subsidies and tariffs in developed countries has led to drastic falls in prices and makes products from Africa uncompetitive. The constant depreciation of the US dollar also made things more difficult for African agriculture. On the domestic front, inadequate attention is given to the sector as most governments continue to allocate less than 10 per cent of total expenditure to agricultural development. Following the Maputo Summit, African countries agreed to devote at least 10 per cent of

their public expenditure to agriculture (AU 2003). But according to a validation workshop organised by NEPAD in December 2008, only 19 per cent of African countries were allocating more than 10 per cent of their national expenditure to agricultural development. Many countries hardly reach 4 per cent of GDP and have depended on overseas development aid for funding agriculture and other sectors.

This has led to low technology, poor infrastructure and above all low productivity. There is clearly a need for governments to increase agricultural investment in order to enhance food production and accelerate economic transformation, given the strong multiplier effect of agriculture.

The traditional land tenure system limits women's access to land contrary to the fact that they play significant roles in food production decisions. The fiscal systems do not encourage agricultural development. The vagaries of climate have not been helpful. Above all the poor governance that characterises the region sets a mediocre pace. Given the direct relationship that exists between agricultural performance and economic growth, it is of paramount importance that the performance of the sector be improved.

As a result of these difficult economic realities, several initiatives launched to develop African agriculture have failed. The dilemma for scholars, policy makers and development specialists now is how to isolate and explain Africa's economic dislocation and disarticulation so as to bridge the gap with other societies. It is in this light that the New Partnership for Africa's Development (NEPAD) was created in July 2001 in recognition of Africa's responsibility to create the conditions for economic recovery in the continent. NEPAD recognised the challenges of agricultural development and food security and proposed measures to revamp the sector. It focused on increasing investments in the three mutually reinforcing pillars of agricultural development in Africa, which include extending the area under sustainable land management and reliable water control systems, improving rural infrastructure and trade related capacities for improved market access, and increasing food supply and reducing hunger. In addition to the three pillars, NEPAD proposed measures to ensure peace and security, technological and infrastructural developments, human resource development, good governance, and other measures which all have relevance to agricultural development. Ten years have passed since NEPAD introduced such good ideas.

Performance of the Agricultural Sector

Agricultural Production

The overall picture of the agricultural sector shows that its performance between the 1960s and the first decade of the Twenty-first century fell below expectations even though there has been some recorded progress in the volume of production, trade, value added and diversification. Per capita output has recorded serious

declines. The situation has been particularly bad for sub-Saharan countries. The total volume of agricultural production grew at an annual rate of 0.8 per cent during the 1960s; -0.9 per cent during the 1970s; 1 per cent during the 1980s; -1 per cent during most of the 1990s; and 0.8 per cent during the period 2000 to 2009. Between 1960 and 2009, agricultural production recorded a 0.1 per cent growth rate. For North Africa, agricultural performance was better. During the 1960s, these countries recorded agricultural production growth of about 1.2 per cent, dropping to 1 per cent during the 1970s, and then rising by 2.7 per cent during the 1980s and 1990s. During the period 1960 to 2009, these countries recorded average growth of 2.1 per cent.

In per capita terms, marked declines occurred in both food and non-food production. During the 1960–1965 period, per capita output declined by 0.9 and 1.1 per cent for agricultural and food production respectively. These negative per capita values persisted throughout the period 1960–2001. However, in a handful of countries, including Cameroon in West Central Africa, Côte d'Ivoire in West Africa, Mauritius in the Indian Ocean area, Egypt and Morocco in North Africa, and Malawi in southern Africa, per capita agricultural and food production indexes recorded slight improvements during this period. In sharp contrast, large countries such as Kenya, Tanzania, Sudan, DRC, Ethiopia and Nigeria recorded substantial declines.

Agricultural Trade

In view of the heavy reliance on exports of primary products, the performance of African agriculture has significant implications for the countries' foreign exchange earnings, as the trend in export volume and market share of Africa's major export crops indicates. There were substantial declines in the growth rates in the volume of virtually all agricultural exports particularly during the 1970s and early 1980s. During the late 1980s, the 1990s and the first decade of the 21st century, export performance improved particularly due to the structural adjustment measures of the 1980s and 1990s. Because of this poor performance, Africa recorded significant losses in market shares. Particularly noticeable were the losses for cocoa (from 80 % to 60 % market share), groundnuts oils (54 % to 26 %), shelled groundnuts (85.5 % to 18 %), oilseed cake (10 % to 2 %), palm kernel oil (55 % to 21 %), palm oil (55 % to 6 %) and bananas (11 % to 5 %). In the few cases where gains were achieved, such as coffee, tea and sugar, these were marginal.

African economies remain largely tied to a narrow range of exports crops. In the mid-1980s, African countries derived 75 per cent of their agricultural export earnings from only six commodities: coffee, cocoa, cotton, sugar, tobacco and tea. Coffee and cocoa accounted for more than half of the total earnings. World market trends for the traditional export crops, on which the region depends, have

not been favourable since the early 1970s. Among Africa's leading commodity exports, the growth rate of imports in industrial countries over the period 1970–1990 was negative for two commodities (sugar and cotton) and less than 0.5 per cent for two others (tea and tobacco). Much of the expansion in import demand for these commodities came from developing countries, to which Africa directs only a small proportion of its exports. During the 1980s, the real prices of five of the traditional export crops fell by an annual average of 4 to 9.7 per cent, while their yearly prices exhibited high coefficients of variations (about 15.9 to 52.5 %). Market prospects for this narrow range of crops are unlikely to improve.

Africa's agricultural growth record worsened in the 1980s and the region's food self-sufficiency declined. The incremental demand for food had to be met increasingly by commercial imports and food aid. As far back as the 1960s, Africa's imports of food and other agricultural products had grown rapidly in both volume and value. Between 1960 and 1965, agricultural imports into the continent grew at the rate of 9.4 per cent, increased to 11.9 per cent during 1975 to 1980 and reduced to 5 per cent during the 1980s. In the 1990s and the first decade of the 21st century, the growth of agricultural imports further reduced to 2.5 per cent. On aggregate, between 1960 and 2009, agricultural imports grew at the rate of 6.8 per cent.

At a regional level, agricultural and food imports growth was highest for countries in the southern African region, recording a rate of above 10 per cent between 1960 and 2001. By contrast, the Central African region experienced the lowest growth of about 3.3 per cent during the same period. The West African region recorded a remarkable drop from about 19 per cent during the period 1975–1980 to less than one per cent between 1990 and 2001. To finance these imports over the period, countries had to set aside between 10 to 40 per cent of their export earnings.

Although agricultural imports (particularly food) doubled in volume between 1960 and 2009, African countries also received substantial amounts of food aid over the same period. The growth rate of food aid into Africa between 1960 and 2009 stood at above 15 per cent. At a regional level, food aid grew at about 30 per cent in the southern region and less than five per cent in the west and northern regions. The trend of food imports and food aid in Africa shows that the continent depends significantly on an external supply of food. This is dangerous for poor countries with already precarious food security situations.

Agricultural Diversification

There have been few cases of export diversification into high-value products such as fish, meat and horticultural products. In domestic food markets, government food security strategies in most countries have focused on increasing maize and rice production with other cereals, legumes, roots and tubers being relatively

neglected in terms of official support services and marketing. Many African countries have potential comparative advantages in the production of fresh and processed horticultural products as a result of their agro-ecological conditions, location and relatively low labour costs. Very few countries, notably Kenya, Côte d'Ivoire and South Africa, have effectively translated these resource advantages into competitive and profitable trade in horticultural trade with the outside world.

The traditional export crops including coffee, cocoa, cotton, sugar, tobacco rubber and tea have another weakness, and this is of inflexibility. With the exceptions of sugar and cotton which can be transformed into several other products using relatively small scale equipment, other crops are low value bulk goods that offer few processing possibilities, provide limited scope for new product development and have severely limited local or regional markets. The beverage crops have another element of inflexibility being a long gestation period for production, which increases market risks and financing problems. With the exception of coffee, each of the other commodities requires lumpy investments in large processing facilities to produce derivative products that meet international quality standards.

Another major issue of agricultural diversification is trade. Africa continues to depend on colonial ties and therefore still focuses on trade with former colonial powers. This therefore limits markets for agricultural products from Africa as well as for cheap imports from the non-ex-colonial powers. This situation has worked against intra-African trade. Over the past four decades, official trade among African countries has stagnated. Recorded African imports from the region increased in nominal terms from about US\$ 2.15 billion in 1980 to US\$ 2.71 billion in 1995, representing a decline in real terms. In 1990, only 7.4 per cent of imports to Africa originated from other African countries. A majority of African countries conducted less than 10 per cent of their external trade within the continent. Up to an additional estimated US\$ 5 billion of Africa's current imports from the rest of the world could be supplied by African countries already exporting similar products outside the region. Only 2 per cent of Africa's beverage crop exports (e.g. coffee, tea and cocoa) were traded within the region. The major exports, of which 10 per cent or more was traded within the region, were live animals (59 %), tobacco (21 %), sugar (17 %), and fruits and vegetables (11 %).

Value Added in Agriculture

One major component of agricultural performance that current literature neglects concerns the value added in agriculture. This indicator translates the structural transformations or changes that have taken place in the sector. Agricultural value added during the period 1960–2009 grew on average at 1.4 per cent for all of Africa. However, during the period 1985–1995, this growth was about 3 per

cent whereas it was 0.5 per cent during the period 1960–65. On a regional basis, agricultural value added grew at 2 per cent and above in Central and North Africa during the period 1960–2001. During the same period it grew at 0.3 per cent in the southern region (excluding South Africa), 1.5 per cent for East Africa and 1.3 per cent for West Africa. The low growth rate of value added in African agriculture indicates that there has been less vertical and horizontal integration, which translates as low structural transformation of agriculture. Agricultural exports remain largely unprocessed primary products. A majority of countries are therefore natural resource based economies.

Agricultural Performance and Food Security

Food security can be defined as the abilities of countries, regions or households to meet their required levels of food consumption at all times. Although the agricultural sector provides the bulk of food in Africa, the overall food security situation in the continent has not been encouraging. According to recent FAO estimates, the total number of people around the world suffering from severe malnutrition was between 800 and 900 million over the last twenty years but is declining gradually. Africa, particularly the sub-Saharan region, has been a notable exception in this world-wide trend. There has rather been an increase in malnutrition over the same period, with the number of malnourished increasing from about 100 million to more than 200 million. About 35 million children go to sleep malnourished and hungry every day.

Agricultural production in Africa will remain the most important element of addressing food security and poverty in the continent since most of the poor and the food insecure are rural people. Essentially, food security can be analyzed from the point of view of physical supply and economic access. These two aspects constitute supply and demand and are the two main factors that affect food security. Supply side factors are concerned with food availability, which involves the natural resource endowments of a society, available technology and its dissemination (for food production, storage and preservation), prices, market opportunities and the ability to augment one's own production with external supplies. Demand side factors on the other hand determine the degree of access to available food. These include household incomes, assets, prices, demographic factors such as numbers, age, composition of households and gender; and socio-cultural factors like health, educational level, cultural norms and food consumption habits. Food security can therefore be regarded as an income problem. In Africa, food security and agricultural development are two sides of the same coin. Both concepts centre on increasing agricultural productivity and incomes of a large majority of the population, which remains poor and derives its income from agriculture and related activities.

Constraints to Agricultural Development in Africa

Constraints on the External Front

External factors that have contributed to the dismal performance of the agricultural sector in Africa concern principally the falling prices of agricultural products on the world market and the depreciation of the US dollar. The prices of Africa's major agricultural exports have exhibited a generally downward trend in real terms since the early 1970s, meaning a substantial loss in terms of trade. There was a sustained decline in world market prices from 1980 to 1991. These prices fell to the lowest level in 50 years during the early 1980s. Between 1980 and 1982 alone, this loss was estimated at 1.2 per cent of GDP for all sub-Saharan countries.

The main cause of the sustained declines in international prices is the heavy subsidisation of agriculture by developed countries. Each year, over US\$300 billion is given in support to agricultural producers, roughly six times the amount they spend on aid. To put this figure in context, it is more than the total income of the 1.2 billion people in the world living on less than a dollar a day. The EU and US are the 'subsidy super powers', accounting for over 60 per cent of developed countries' agricultural support spending. Europe spends more in absolute terms but the US spends more per farmer. They justify agricultural support by reference to social objectives. High levels of agricultural support translate into increased output, fewer imports, and more exports than would otherwise be the case. In most situations, subsidised export dumping is practised. This is very damaging to agricultural development in Africa.

The US dollar, a major currency against which commodities are traded on world markets, recorded the highest depreciation rate in recent times (more than 40 %) during the early 1980s. The depreciation of the dollar reflects an automatic fall in producer prices for the various exports measured in domestic currencies. This therefore had the same effect as falls in world market prices. The combined effects of the depreciating dollar and falling world market prices had markedly negative repercussions on the performance of the agricultural sector during the 1980s in countries within Africa.

There is an irony, too, that the peoples who have done the least to cause climate change are the ones who are worst affected by its impact. It is Africa, not the large carbon emitters like America, Europe, and now China, which experts forecast will be hit hardest. We are already seeing this impact in Africa as rains fail and previously fertile land turns into desert. Climate change will further increase pressure on water resources and degrade bio-diversity. But while this must be the start of our discussion, it is only half the story for there is also considerable potential within Africa for agricultural growth.

Constraints on the Domestic Front

Although African leaders attribute the dismal performance of agriculture to harsh international environments, internal policies have played a leading role. When comparisons are made with other developing areas particularly in Asia and Latin America, it is clear that African governments do not give adequate attention in terms of needed assistance to the agricultural sector. Even though the sector contributes more than 25 per cent to GDP, most African governments still allocate less than 10 per cent of total expenditure to the development of agriculture. African governments allocated on average only about 7.7 per cent of total expenditure to the agricultural sector between 1960 and 2009. Only countries in the East African region consistently allocated about 10 per cent on average to agricultural development during the period 1960–2009. Governments in the Central and West African regions allocated on average only about 6.4 per cent of total expenditure to agricultural development. This explains the low level of agricultural infrastructure prevalent in most countries.

A review of the existing literature on domestic constraints to agricultural development in Africa reveals that the sector has been heavily taxed. The various ambitious industrial development plans launched during the 1970s and early 1980s were constructed on the assumption that funds for their financing would be generated from agricultural surpluses. In addition, many countries depend heavily on taxes from trade as a source of government revenue. Since agricultural exports account for such a large proportion of total export earnings, it is inevitable that agriculture would bear a heavy tax burden. For these and other related reasons, governments in most African countries are playing a leading role in determining producer prices for all major crops through the use of para-statal commodity marketing boards. As export taxes increased through the 1970s and early 1980s, marketing boards' margins also widened whereas producer prices fell far below international levels.

Oyejide (1993) using nominal protection coefficients (NPC) for some categories of crops showed that between 1969 and 1989, farmers did not receive up to 75 per cent of the border prices for their products in sub-Saharan Africa. Similar results are obtained for the period 1990–2009. These NPC estimates used by Oyejide (ibid.) show that sectoral pricing, marketing and trade policies are generally unfavourable to agriculture. The NPC for all crops remained below one throughout the whole period. This shows that government's sectoral policies towards agriculture during the period 1969 to 2001 did not provide incentives for more agricultural production.

The rate of relevant technological innovation has been slow, providing only limited technology, which African farmers can adopt. This is caused by weak agricultural research and extension. Irrigated areas, which are excellent users of new agricultural technologies in Asia and Latin America, have not been developed significantly in Africa; and where they have been developed are nearly universally poorly managed. Inherent soil and water constraints to expanded agricultural production using imported technology are not sufficiently considered.

There is inadequate transport infrastructure. African countries recognised the importance of transport infrastructure in general and regional transport infrastructure networks in particular to their development prospects as far back as the 1960s just after most of them attained independence. As a result, several transport infrastructure development initiatives have emerged over the years. One of the most ambitious of these initiatives is the Trans African Highways (TAH) network, conceived in the early 1970s. However, several years after its conception, missing links still exist in the network, especially at border areas. An analysis of 103 cross-border TAH links (TAH sections leading to border posts) shows that 33 per cent are unpaved roads in various conditions – good, fair and poor; 16 per cent are paved roads in poor condition; and 38 per cent are paved roads in good or fair condition. This clearly illustrates the poor state of physical integration between African countries. Generally, using the missing TAH links as a measure of road integration, the ECA (2004) has shown that there is a disparity in the level of physical integration across the continent. Overall, the road sub-sector in Africa is in a deplorable state. The total length of roads in the region is 2,064,613 kilometres out of which only 29.7 per cent is paved, the remaining portion being either earth or gravel roads. In addition to its low density, distribution, and the fact that a large proportion is unpaved, a sizeable chunk of Africa's road network is in a state of disrepair. For instance, 34 per cent of paved roads and 55 per cent of unpaved roads in CEMAC were in poor condition in 2005. Similarly 34 per cent of paved roads and 68 per cent of unpaved roads in COMESA were in poor condition in the same period. The poor state of roads, telecommunications and ports throughout sub-Saharan Africa has created high transport costs.

Inadequate provision of social amenities like rural health care centres, rural water, family planning units and educational establishments have resulted in a high incidence of unhealthy, poorly educated people in rural areas. Most of these persons cannot therefore understand the need for the application of modern farming practices and improved varieties of crops. An increasing number of youths leave for urban areas in order to attend schools or to look for jobs. The overall consequence has been the depletion of human capital for agriculture in rural areas. This is generally characterised by schools without teachers or structures, and health centres without personnel, equipment and medicines.

Ill-conceived public agricultural projects have contributed to the stagnation of the sector. Even well-conceived projects are badly implemented. This explains the high rate of abandoned or uncompleted agricultural projects after heavy capital commitments. The inefficient management of para-statal has led to frequent heavy budgetary deficits in most African countries. Autonomous farmers' organisations and cooperatives and farmer participation in the management of agricultural development have not been encouraged.

Traditional African land tenure systems provide considerable security of tenure on land brought into farming through customary rules of community land ownership. Considerable migration (rural-rural, rural-urban, urban-urban) has occurred within and between countries. Migrants often come with conflicting traditions of land allocation. In addition, many governments have nationalised land. Some of this land is distributed for other uses such as plantations owned by the state or by private enterprises and farms owned by elites. Both these phenomena have reduced the traditional security of land tenure. Farmers who are unsure that the land they farm will belong to them or can be used by them in future are less likely to invest in or conserve it. This accelerates environmental problems. A more severe problem manifests itself in the form of a majority of the agricultural population not having access to land, thereby being forced to rent it out or work under landlords; and some work on marginal lands. Primitive farming practices also contribute to degrading farmlands.

Another major constraint to agricultural development in Africa involves the role of women in society. African women traditionally bear most of the responsibilities for food production, fuel wood gathering, water collection and other household related activities. In traditional societies, this works well but with increasing population pressures in townships; access to land by women has become very difficult. The role of women particularly in areas dominated by Islamic tradition is not facilitated due to a number of socio-economic restrictions. Increased work burdens on women make it difficult for them to apply the labour needed to intensify agriculture. Research in African agriculture has paid little attention to the gender element in farming and many extension systems appear to neglect women altogether.

The problem of poor governance exacerbates agricultural development constraints in Africa. The lack of will and commitment by government officials and agents is mired by the prevalence of poor governance. This has created a bureaucracy that holds back everything. Private sector participation in agriculture has not been facilitated by these delays. Studies undertaken in a number of countries (e.g. Cameroon, Côte d'Ivoire) show that an investor takes about two years to get authorisation from the government to undertake an investment activity. This therefore discourages mechanised agriculture. Industrial Free Zones established during the early 1990s are yet to have any impact on agricultural production since most of the investors are still to get authorisations after so many years.

Over-dependence on rain fed agriculture has proven dangerous for agricultural development. During the last twenty years, rainfall has considerably declined and the duration of rainfall has significantly reduced in many areas, making rain-fed agriculture highly risky. Frequent locust attacks have been recorded in the continent particularly in the West and Central African regions during the 1980s. Worse still, only 7 per cent of arable land is irrigated (and barely 3.7 % in

sub-Saharan Africa) while the corresponding percentages for South Africa, East and South-East Asia, and South Asia are 10 per cent, 29 per cent and 41 per cent respectively. Furthermore, in Africa 16 per cent of all soils are classified as having low nutrient reserves while in Asia the equivalent figure is only 4 per cent; moreover, fertiliser productivity (expressed in terms of maize yield response) is estimated at some 36 per cent lower in Africa than in Asia and 92 per cent lower than in developed countries.

Conflicts and wars were a major threat to agricultural production and food security in the continent during the 1980s and 1990s. These ranged from inter-ethnic wars within countries to boundary problems between countries. A majority of these are politically motivated. Even where there is no outright war, conflict has made it impossible for farmers to achieve anything like full production potential.

Fiscal and monetary policies have not always been helpful to farmers and agricultural development in general. Most governments in the continent have lacked strict discipline in relation to money supply. The volume of money in circulation is usually increased at rates that have proved harmful to the economy. The supply of money has contributed significantly to the observed level of inflation, which encourages consumption over savings. This restricts the abilities of various economies to mobilise investments, which are prerequisites to agricultural development. Credit policies have not been helpful to farmers. The available evidence about credit provision to different economic activities in Africa shows that the smallholder sub-sector has been marginalised, even when credit projects have been relatively successful (Tshibaka 1994; 1998).

Opportunities to Transform African Agriculture

The greatest opportunity for transforming African agriculture is the recognition by African leaders of the need for concerted action. This has resulted in a number of initiatives being taken during the first decade of the Twenty-first century. These include the CAADP Process, FARA, and AGRA. The Comprehensive Africa Agriculture Development Program (CAADP) was adopted at the AU Assembly of Heads of State and Government in Maputo in 2003 as a framework to spearhead and accelerate agricultural and rural development in Africa. AU heads of state and governments have continued to reaffirm their political commitment to CAADP as demonstrated by the adoption of relevant decisions and declarations, including most notably, the Sirte Declaration on the Challenges of Implementing Integrated and Sustainable Development on Agriculture and Water (adopted in 2004) and more recently, the Sirte Declaration on Investing in Agriculture for Economic Growth and Food Security (adopted in July 2009).

While CAADP implementation is driven primarily by country level stakeholders – government, private sector, civil society and development partners

– regional and continental institutions also play an important role in supporting the process. CAADP support institutions help implement core CAADP objectives such as:

- leveraging African institutions for advocacy;
- technical backstopping and capturing regional and continental spillovers;
- ensuring mutual responsibility and accountability through joint analysis, ownership and peer review;
- and promoting alignment of government, development partners and private sector around agreed national agendas.

AUC works with all other CAADP support institutions – NEPAD agencies, RECs and pillar or other technical institutions – in order to facilitate their role in CAADP processes.

The process for establishing FARA was started in 1997 and ratified in 2001 with the first General Assembly meeting in July 2002 in Maputo. Main objectives are:

- to promote pan-African agricultural research for development through enhanced support by national governments, development partners, and private sector;
- to facilitate the exchange of agricultural technologies, knowledge and experience by building mutual partnerships between various institutions, the private sector, farmers and producers in Africa;
- to support relevant and cost-effective African regional research programmes;
- and to catalyse the process of agricultural technology dissemination and knowledge dissemination relevant and appropriate for Africa.

These are to be achieved through:

- advocacy of the role of agricultural research;
- promotion of functional partnerships and strategic alliances;
- accelerating sharing and exchange of knowledge;
- stimulating the development and dissemination of new technologies and methodologies in natural resource management, genetic resource management and biotechnology;
- and stimulating policy and market development.

The Alliance for a Green Revolution in Africa (AGRA), created in 2006, works to achieve a food-secure and prosperous Africa through the promotion of rapid, sustainable agricultural growth based on smallholder farmers. AGRA aims to ensure that smallholders have what they need to succeed: good seeds and healthy soils; access to markets, information, financing, storage and transport; and policies that provide them with comprehensive support. Through developing Africa's high-potential breadbasket areas, while also boosting farm productivity across more challenging environments, AGRA works to transform smallholder

agriculture into a highly productive, efficient, sustainable and competitive system, and concurrently protect the environment.

Advances in science and technology constitute a huge opportunity for Africa to transform its agricultural base. Science and technology has contributed to Africa's agricultural development in at least four areas: direct agriculture, transport and communication, energy, human and animal health, education and the environment. African agriculture has witnessed considerable transformation in several respects. Crops that were formally alien to the continent such as wheat, barley, rice, maize, tomatoes and apples have been successfully introduced and adapted to different countries in Africa. Many research results from agricultural research institutions on the continent have been successfully disseminated to farmers. This dissemination has transformed plant breeding, agronomy, physiology and horticulture. The impact of these results has been manifested in higher yields, the introduction of disease- and pest-resistant varieties and the production of crops of higher nutritional value. However, much more needs to be done in this domain.

The continent is blessed with abundant land and natural resources. Africa's population is growing rapidly. But in comparison with India, for example, it has twelve times the land area and less than two-thirds of its people. Working with Africa's army of small-holder farmers, the continent can transform its rich agricultural resources to grow enough food to meet its own needs, and produce a surplus to meet the growing demands across the globe. Consistent increases in food prices during the first decade of the twenty-first century offer Africa prospects for agricultural development. Huge global demand for bio-fuels constitutes leading opportunities for agricultural development in Africa.

ICT hold some level of promise. The role of ICT is recognised in Millennium Development Goal 8 (MDG8), which emphasises the benefits of new technologies, especially information and communications technologies in the fight against poverty. This has created a new generation of services aimed to boost to agricultural development in Africa. Mobile phone technologies are presenting Africa's smallholder farmers with an unprecedented opportunity to run their operations more productively and to increase their own income levels. One of the largest challenges traditionally experienced by Africa's smallholder farmers has been lack of transparent information about market prices of crops. A number of new mobile phone-based services are however addressing this problem by giving farmers access to market prices, enabling them to negotiate better deals with traders and improve the timing of getting their crops to market. These services typically include a function whereby farmers can send a SMS text message to a specific number which then gives them wholesale and retail prices of crops.

Another aspect of the new generation of services includes access to insurance. Mobile phones are also being used to distribute agricultural insurance products

to farmers, most of whom cannot afford conventional insurance. A product called Kilimo Salama, Swahili for 'safe agriculture', enables smallholder farmers in Kenya to insure their agricultural inputs against adverse weather conditions, such as drought or too much rain. Developed by UAP Insurance, the Syngenta Foundation for Sustainable Agriculture and mobile operator Safaricom, Kilimo Salama allows smallholder farmers to insure as little as one kilogramme of maize, seed or fertiliser. To be covered under the scheme, farmers only need to pay an extra 5 per cent for a bag of seed, fertiliser or other inputs.

The rising concern over global food price volatility has put agriculture at the centre of international diplomacy. But unlike in the 1950s when food aid became a major tool in international relations, modern interactions among states are being defined by trade and knowledge transfer. A new field – agricultural diplomacy (Agro Diplomacy) – is emerging as countries learn more about their shared ecological experiences and agricultural trade interests. The prospects for building such relations are evident in the rise in cooperation between Africa and Latin America. This constitutes another dimension of opportunity for agricultural development in Africa.

The increasing interest is shown by the G20 in improving agricultural productivity of smallholders. In June 2011, the G20 agriculture ministers promised to give 'special attention' to improving the productivity of smallholder farmers who provide 80 per cent of the food in the developing world. These farmers, who typically own fewer than 2 hectares of land and maybe a cow or two, must be kept at the centre of the G20 agenda. FARA, together with the GFAR platform, is advocating that by listening to the farmers and recognising their needs, the barriers that prevent the use of required innovative technologies can be overcome and opportunities in agribusiness expanded.

Conclusions and Recommendations

A number of conclusions are discernable. Firstly, agricultural development efforts in Africa have not been at all rosy. The performance of the sector has deteriorated significantly from pre-1980 standards. Various countries' and the international community's intensification of effort at improving productivity has resulted in negligible progress because of a lack of real commitment and political will. Paper rhetoric alone cannot overcome scarcity and institutional constraints. Secondly, agricultural development in Africa continues to face the same problems as in the past with falling prices, a mounting debt burden, conflict, insecurity, poor governance and weak institutions, with poor infrastructure topping the list. Thirdly, African leaders are largely to blame for the poor state of agriculture and food security in the continent. However, a collection of ideas provides the basis of hope for the African people. Most important are agricultural productivity, peace and security, infrastructure, trade and investment, and the expansion of information technology.

Fourthly, although various initiatives have been well received within the governing elite community, they lack foresight in many respects.

Governments need to increase capacity to support farmer productivity. They should review their national research and extension systems and implement the reforms required to improve national research capacity and efficiency. Extensive reviews and analyses of national agricultural research systems in Africa over the past twenty years indicate that funding for agricultural research will need to double in the next ten years from the current allocation of US\$1 billion annually. Additional funding is required to train scientists, rehabilitate and restructure research institutions, strengthen extension services and subsidise agricultural inputs.

Establishing a strong partnership between public and private sectors for increased investment, promoting the collaboration between the public and private sectors in post-harvest management, storage, distribution, processing and marketing, should all be given serious support and emphasis by various governments. Public and private sectors should be encouraged to share costs and risks to assist smallholders in the adoption of new technology through poverty reduction programmes and debt relief. Increased attention should be given to national food security programmes during discussions regarding poverty reduction and debt relief. Provision of farm tools at subsidised rates should constitute a fundamental aspect of partnership between the public and private sectors.

There is an urgent need to invest significantly in both physical and social infrastructure with emphasis on rural areas so as to stimulate the smallholder sub-sector. Various governments need to increase the efficiency and use of water supply for agriculture. Establishing small-scale irrigation facilities, improving local water management, and increasing the exchange of information and technical knowledge with other countries in the region could achieve this.

The security of land tenure for traditional and modern farming needs should be improved. This requires in particular that land ownership by women and the poor should be guaranteed through reviewing existing land laws.

There is a need to enhance agricultural credits and financial schemes. This can be achieved through improvements in credit access by small-scale farmers and in some cases women. Governments could also open agricultural development banks to assist these vulnerable groups as used to be the case in the past.

Continental Level

In order to strengthen the enabling environment for agricultural development and food security at the continental level, a number of issues need to be addressed. In the domain of infrastructural development, the institution of regional support programmes for regional infrastructure can facilitate overall infrastructure breakthrough in the continent. These should target particularly agriculture and communication.

To strengthen economic recovery at the level of economic groupings, there should be provision for some consistency between national economic reform programmes and regional policy objectives. The duplication of membership of countries in many economic groupings and the proliferation of RECs in Africa contradicts reality. It is often suggested that the integration process would be more effective if there were fewer RECs and if member states were limited to membership in only one.

Apart from wringing their hands, endorsing development goals and promising more aid, governments in developed countries should get serious about reforming farming policies. They should reduce the rate at which they are subsidising agriculture to meet WTO standards. In addition, efforts must be made to develop new partnership to address donor fatigue for individual high profile agricultural projects; to promote co-operation with developed countries carrying out and developing research and development capabilities in agriculture; and to promote access to international markets by improving the quality of African produce and agricultural products, particularly processed products, to meet the standards required by those markets; support African networking with external partners in the areas of agricultural technology and know-how, extension services and rural infrastructure; support investment in research in the area of high yielding crops and durable preservation and storage methods; and provide support for building national and regional capacity for multilateral trade negotiation including food sanitation and other agricultural trade regulations.

References

- African Development Bank Group, 2010, *Small Holder Agriculture in East Africa: Trends, Constraints and Opportunities*, Tunis: ADB Working Paper Series No. 105.
- African Development Bank (ADB), 2002, *Selected Statistics on African Countries*, Tunis: ADB Statistics Division.
- FAO, 2008, *State of Food and Agriculture: World Food and Agriculture in Review*, Rome: Food and Agriculture Statistics, <www.fostat.org>
- NEPAD, 2004, *Implementing the Comprehensive African Agriculture Development Programme and Restoring Food Security in Africa: The Roadmap*, Addis Ababa: African Union.
- Oyejide, Ademola, 1993, 'Effects of Trade and Macroeconomic Policies on African Agriculture', in Romeo M. Bautista and Alberto Valdes, eds, *The Bias Against Agriculture: Trade and Macroeconomic Policies in Developing Countries*. San Francisco: ICS Press.
- Tshibaka, B.T., 1994, 'Policy Imperatives for Agricultural Development in Africa', in IITA, *Sustainable Food Production in Sub-Saharan Africa: Constraints and Opportunities*, Ibadan: IITA.
- Tshibaka, B.T., 1998, *Structural Adjustment and Agriculture in West Africa*, Dakar: CODESRIA.