

# Global food and financial crises: lessons and imperatives for accelerating food production in Africa

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## Abstract

*This paper critically reviews the effects of the global food and financial crises on developing countries, with specific focus on Africa. While assessments of the intertwined effects of the crises have often focused on short-term transitory causal factors, this paper takes the view that the causes of the food crises in Africa are long term and fundamentally structural. Policy measures to address the food crises therefore should focus on resolving the long-term structural impediments to accelerated agricultural growth. The paper argues that market fundamentalist policy prescriptions have failed in Africa and are at the root of the high poverty and food insecurity being experienced by African countries. Externally imposed policy prescriptions of one size fits all are inimical to the growth of African agriculture, and to self-reliance in food production, given the increasing unreliability of global markets for accessing food. Africa needs to take bold steps to accelerate food production using home-based policies that are better aligned with its state of economic growth and development, as well as level of poverty. Policy recommendations to accelerate food production include greater investments to raise the productivity of staple food crops; ‘growth enhancement support’ (GES) to unlock poverty traps by combining public farm support for farmers with risk sharing instruments that will unlock financing for farmers and agribusinesses, and speed up the process of commercialization of smallholder agriculture; policies to promote expanded use of fertilisers; seed policies to expand the use of improved seeds and the growth of the private sector seed industry; leveraging commercial bank financing into agriculture through risk-sharing instruments; focusing investments within the breadbasket areas of African countries, where the rate of returns on investments will be high; policies to improve climate change adaptation; and a greater strategic role for the state in correcting for market failures, making investments in public goods, supporting farmers, and guiding the market systems to accelerate food production.*

**Keywords:** food crisis; financial crisis; food production; Africa; policies; food security

“But while they prate of economic laws, men and women are starving. We must lay hold of the fact that economic laws are not made by nature. They are made by human beings” – Franklin D. Roosevelt (<http://www.brainyquote.com/quotes/quotes/f/franklind401986.html>)

## 1. Introduction

The world witnessed a dramatic increase in global food prices from 2007 to 2008, the largest increase in several decades. The FAO index of food prices showed an upward trend, increasing by 9% in 2006, 23% in 2007 and 54% in 2008. The total food import bill globally in 2008, estimated at

\$1 035 billion, exceeded that of 2007 by approximately \$215 billion (FAO 2008a). The total number of people living on less than \$1.25 per day rose by an additional 75 million in 2008. The impacts of the global food prices depended on the extent of domestic price transmission, which is influenced by transportation costs, domestic policies, market structure, marketing margins and the extent of infrastructure (Von Braun 2008). Developing countries experienced fiscal and macroeconomic imbalances from the food and financial crises. The negative impact on the poor was high in Africa, as the majority of the poor, especially the urban poor, spend about 70% of their incomes buying food. Measures taken by the poor to adjust to the rising food prices included reducing caloric intake, shifting to lower cost foods that are less nutritious, and food rationing, including skipping meals. Across Africa, the rising price of basic foods led to food riots.

Compounding the food crisis was the global financial crisis that started in September 2008. The financial crisis led to a rise in unemployment, a decline in wages and reduced flow of remittances from abroad, all of which constrained consumption expenditures for food. Furthermore, as developed countries grappled with the impacts of the financial crisis on their economies, they reduced outlays for official development assistance to developing countries. Within Africa, reduced foreign exchange earnings arising from the contraction in global demand for exports from Africa led to a reduction in government budget spending for much-needed agricultural investments and social protection, which worsened vulnerability for the poor.

The high food prices offered opportunities for domestic import substitution. Many developing countries introduced producer support measures to address the food crisis. In Asia, this included the support of the Indian government for a wide range of measures such as subsidies for fertilisers, irrigation and power, as well as higher guaranteed minimum prices for food grains. It cancelled the debt of poor farmers, estimated at \$15 billion (International Herald Tribune, 2008). Bangladesh, Indonesia, Madagascar and the Dominican Republic introduced input vouchers and expanded access to credit for farmers. In 2008, China provided a 30% increase in the central government budget to agriculture and farmer support (Demeke *et al.* 2009). With renewed production support for farmers in Asia, it is likely the region will experience its second green revolution before Africa achieves its first green revolution, unless Africa makes a major shift in terms of production support for farmers.

Net food-importing developing countries have to reassess production support for food production in the aftermath of the food and financial crises. The key questions are: Should countries continue to rely on thin and increasingly volatile global markets to assure their citizens of food? Given that the food crisis has caused such wide-ranging social, fiscal, economic and political problems in Africa, what should African governments do to assure national food security? How should Africa address some of the underlying structural challenges facing its ability to feed itself? What kinds of production support should be provided and how? The high food prices should be an incentive to producers domestically. Why is it that Africa has not responded to take advantage of the opportunity in the crisis?

This paper addresses these issues for the case of Africa and draws policy directions to allow African countries to accelerate food production and achieve food self-sufficiency – a critical issue in the context of the global food crisis. The paper examines this within the perspective of long-term structural factors that have inhibited accelerated agricultural growth. The paper argues for a greater role for the public sector to steer market incentives in the direction of accelerated food production.

The rest of the paper is divided into the following sections. Section 2 discusses short-term causal factors behind the food crisis. Section 3 discusses the long-term structural factors underlying the food crisis. Section 4 examines how the long-term impediments to agricultural growth in Africa can

be solved. Section 5 discusses home-grown policies that can be used to rapidly accelerate agricultural productivity growth for food crops, drawing on the lessons from past experience. The paper concludes in Section 6 with key policy and strategic recommendations for accelerating food production in Africa.

## **2. Short-term Transitory Causal Factors Affecting the Food Crisis in Africa**

Evidence suggests that a number of factors affect food prices in Africa, key among them the rising global demand for grains for food and feed, high energy prices and rising demand for bio-energy. Rising incomes, urbanisation and the demand for food in newly industrialising countries, and a shift in consumption patterns to dairy and livestock products (which have a heavy demand for feed grains) have been blamed for the rise in food prices. India and China especially have witnessed rapid growth in incomes and population, and both have expanded food imports. However, recent analyses of the food import trends of China and India do not suggest that they have shifted sufficiently to have caused the food crisis. Sub-Saharan Africa also experienced 6% GDP growth between 2004 and 2006, while in Asia the GDP growth rate was 9%, which fuelled demand for food. Equally important is the influence that the globalisation of food consumption has had, especially the shift towards wheat-based products (Pingali 2006).

Rising energy prices contributed to the rise in food prices, affecting the cost of production, shipping, marketing and distribution of food. Oil prices went up from \$30 per barrel to \$140 between 2003 and June 2008 (IMF 2008). According to the FAO (2008b), the average cost of shipping between the US and Europe went up by 300%. As energy prices increased, the price for fertilisers also increased, raising the cost of production of food because fertilisers constitute about 50% of the growth in global food production.

The rising demand for bio-energy also contributed to the rising food prices. This was largely driven by policies that support bio-fuel production, especially those relying on feed stocks (grains, oilseeds). Biofuel subsidies in the OECD countries are estimated to be \$11 billion per year and are estimated to increase to \$25 billion per year from 2013 to 2017 (Organization for Economic Cooperation and Development (OECD) 2008). The US is the largest user of maize for the production of ethanol: it used 30 million tons, or an estimated 12% of global production, for ethanol in 2007 (FAO 2008b; Schmidhuber & Maruschke 2010). The use of rapeseed in the EU for the production of bio-diesel consumed an estimated 70% of the total trade in the commodity in 2007, 25% of total global production and 60% of the total production in the EU (Schmidhuber & Maruschke 2010). Without these subsidies for the production of biodiesel and ethanol, international prices for maize and vegetable oils would be much lower than witnessed during the global food crisis.

It is unlikely that commodity prices will return to their pre-food crisis levels. The OECD and FAO Agricultural Outlook predicts that the nominal prices of cereals, rice and oilseeds would increase by 35 to 60% above the levels of the last decade (OECD 2008), driven mainly by increasing demand for bio-fuel for feedstock, and increasing demand for grains, dairy and meat products with urbanisation and income growth in the newly developed economies. The increased challenges from climate change, for example the devastating floods in China and Pakistan, are expected to put upward pressure on commodity prices. The low global stock levels and the experiences arising from the food crises will push countries towards looking for alternative ways to meet their food demand, given the thinness and volatility of the global commodity markets. The imposition of export restrictions and price controls during the food crisis has negatively affected confidence in the global food trade system. Countries are more likely to move away from relying on trade for food security towards national food self-sufficiency goals. Nevertheless, these factors are pushing several oil-rich

countries to make investments outside their countries in large-scale food production via increased foreign direct investment and land acquisitions.

The factors that drove the financial crisis were fundamentally different from those that caused the food crisis. The subprime lending and collapse of the mortgage market sent panic through the financial system, leading to the worst financial crisis since World War II. The collapse of financial institutions due to toxic assets and the low returns on investments in stocks and bonds led to speculative demand for investments in agriculture. As brokers invested in futures markets for agricultural commodities, commodity prices rose. Furthermore, the price of land also increased, as demand for agricultural land rose to take advantage of high food prices. The concomitant increase in commodity prices due to the food crisis and the rising price of land due to increased returns on food, livestock and feed production, led investors to diversify into the trading of commodities. The International Monetary Fund (IMF, 2006) noted that the derived demand for investments in this commodity asset class was due to the rising food prices and the performance of the futures markets for commodities. The financial crisis therefore reinforced the food crisis. The direction of causality is unclear, however, as it is uncertain whether speculation drove higher commodity prices, or whether investors simply shifted asset classes to take advantage of futures commodity markets.

Methods used by countries to address the food crisis were mainly trade policy and domestic support policies, with the approaches used varying depending on whether the country was a food exporting or importing country. Food exporting countries that experienced shocks put in place export restrictions, export taxes, and even export bans. Food importing countries, concerned about the negative effects of rising food prices on consumers, put in place a range of policies, including reducing tariffs and subsidies on food imports. The FAO (2008c) found that over 50% of countries surveyed had put in place reduced import tariffs, while 25% had in place export restriction policies.

These measures in some cases worsened the food price instability, which had disproportionately negative impacts on developing countries and fundamentally changed how policy makers look at food self-sufficiency. Schmidhuber and Maruschke (2010) summarise the situation succinctly: “the 2007-2008 food crisis powerfully demonstrated that food security is at the heart of national security in many developing countries ... These large swings in international food prices undermined the ability of developing countries to feed themselves.”

While the food crisis has been associated with some of the aforementioned short-term demand factors and the competition of biofuels with food, some of the reasons are long term and structural. The next section of the paper reviews some of these structural factors.

### **3. Long-term Structural Factors Affecting the Food Crisis in Africa**

Below is a discussion of the long-term structural factors that have systematically perpetuated the food crisis in Africa.

#### **3.1 Decline in total factor productivity of agriculture**

The total factor productivity of agriculture (ratio of total output growth to total input growth) has been low and is declining in some developing regions of the world (Table 1). Overall growth in productivity averaged 2.1% for all developing regions. East Asia and Latin America have experienced higher growth rates in agricultural productivity, averaging 2.7% from 1997 to 2003. However, South Asia and sub-Saharan Africa witnessed low growth rates in agricultural productivity. There are regional variations, with East Africa experiencing only 0.4% growth, while West and Southern Africa averaged 1.6% and 1.3% respectively. These rates do not keep up with the rate of population growth and calls for greater investments to raise agricultural productivity.

Apathy from the era of surplus food production led to massive reduction in public expenditure on research, extension and infrastructure investments, especially for roads, energy and human capacity developments. Fan, Gulati and Thorat's (2007, cited in Adesina 2010) analysis shows that the rate of return on these investments has declined since the 1960s (Table 2). Doubling investments in research and development, with a focus on South Asia and sub-Saharan Africa, will likely have the greatest impacts, lifting an estimated 268 million people out of poverty (Table 3) – 144 million of them from sub-Saharan Africa. The global food crisis offers opportunities for Africa.

**Table 1: Total factor productivity growth in developing country regions, 1992 to 2003**

Region	1992-1994	1995-1997	1998-2000	2001-2003	1992-2003
East Asia	5.0	4.5	-1.1	2.5	2.7
South Asia	0.7	-0.2	1.2	1.4	1.0
East Africa	-1.7	2.0	0.2	1.3	0.4
West Africa	1.8	2.5	2.4	-0.1	1.6
South Africa	0.4	3.3	3.6	-0.6	1.3
Latin America	1.8	2.0	2.9	4.3	2.7
North Africa and West Asia	-0.1	1.9	1.5	2.8	1.4
All regions	2.8	2.7	0.6	2.5	2.1

Sources: Von Braun (2008); Fan *et al.* (2007, cited in Adesina 2010)

**Table 2: Returns on agricultural growth and poverty reduction from investments in public goods and subsidies in different phases of the Asian Green Revolution**

Returns on agricultural GDP (rupees per rupee spent)	1960s	1970s	1980s	1990s
Road investment	8.79	3.8	3.03	3.17
Education investment	5.97	7.8	3.88	1.53
Irrigation investment	2.65	2.1	3.61	1.41
Irrigation subsidies	2.24	1.22	2.38	NS
Fertiliser subsidies	2.41	3.03	0.88	0.53
Power subsidies	1.18	0.95	1.66	0.58
Credit subsidies	3.86	1.68	5.2	0.89
Agricultural R&D	3.12	5.9	6.95	6.93
Decrease in the number of poor people per million rupees spent				
Road investment	1272	1346	295	335
Education investment	411	469	447	109
Irrigation investment	182	125	197	67
Irrigation subsidies	149	68	113	NS
Fertiliser subsidies	166	181	48	24
Power subsidies	79	52	83	27
Credit subsidies	257	93	259	42
Agricultural R&D	207	326	345	323

Source: Fan *et al.* (2007, cited in Adesina 2010)

**Table 3: Impact of doubling R&D investment on poverty and output growth under poverty minimisation**

Region	R&D allocation (millions of 2005 USD)		Change in number of poor (millions)	Agricultural output growth (percentage points)
	2008	2013		
Sub-Saharan Africa	608	2,913	-143.8	2.75
South Asia	908	3,111	-124.6	2.40
Southeast/East Asia	1,956	2,323	-13.4	0.69
West Asia and North Africa	546	614	-0.2	0.23
Latin America	957	990	-0.2	0.07
Total	4,975	9,951	-282.1	1.11

Source: Von Braun (2008)

### 3.2 Decline in official development assistance

A reduction in official development assistance (ODA) to agriculture contributed to apathy on a global level regarding the need to push out the production possibility frontiers in agriculture. For example, aid to agriculture declined in real terms by 58% between 1984 and 2004, from \$8 billion to only \$3.4 billion. According to the OECD (2008) the share of agriculture in ODA declined from 17% in 1980 to 3% by 2006. International development organisations and multilateral development banks, including the World Bank and the African Development Bank, shifted their focus away from agriculture to the social sectors, such as education, water, sanitation and health (Table 4). Between 1980 and 2002, expenditure on agriculture as a share of the GDP, as well as expenditure shares in total government spending, declined in Africa and Latin America. Asia is the only region where there was an increase. These trends mask variability across countries (Table 5). In Uganda, the share of agricultural spending as a share of government spending declined from 32.6% in 1980 to 4.2% by 2002, while in Zambia it declined from 23% to 5.9% in the same period. Ghana's share declined from 12.2% to 1.0%. The greater share of the expenditure was allocated to recurrent budgets for salaries, with little left to support research and development and rural infrastructure.

**Table 4: Trends in public spending in agriculture, 1980 to 2002**

Country	Percentage of GDP				Percentage of state spending		
	1980	1990	2000	2002	1980	1990	2002
Africa (17)	7.4	5.4	5.7	6.7	6.4	5.2	4.5
Asia (11)	9.4	8.5	9.5	10.6	14.8	12.2	8.6
Latin America/Caribbean (16)	19.5	6.8	11.1	11.6	8.0	2.0	2.5
Total developing countries	10.8	8.0	9.3	10.3	11.3	7.9	6.7

Source: Fan and Saurkar (2006)

**Table 5: Agriculture as a percentage of GDP and government spend in case study countries, 1980 to 2002**

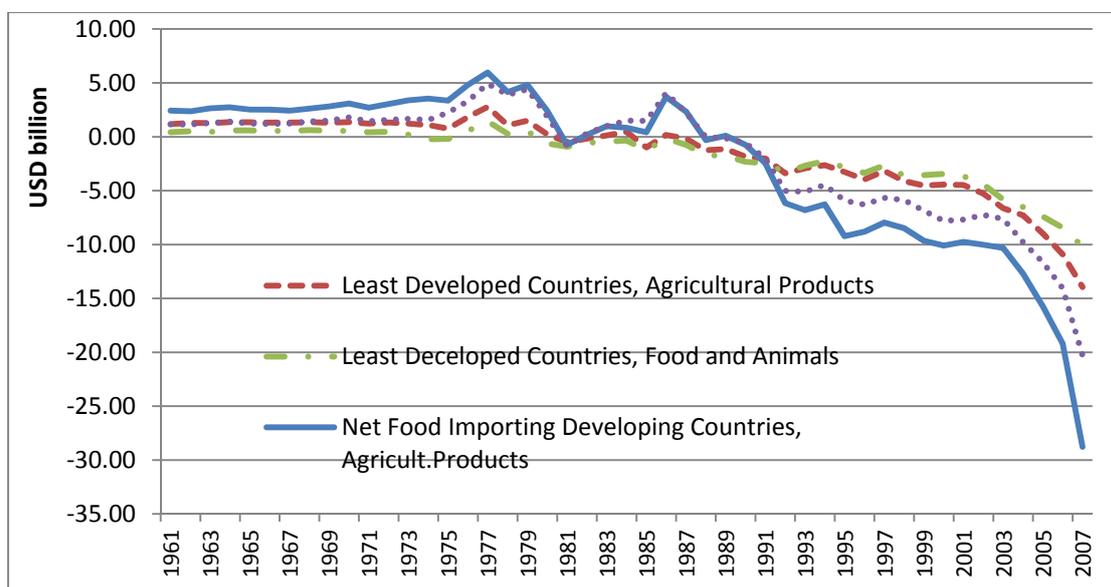
Region	Percentage of GDP			Percentage of government spending		
	1980	1990	2002	1980	1990	2002
Ghana	57.9	44.8	36.0	12.2	4.1	1.0
Kenya	32.6	29.5	28.3	8.4	6.0	4.6
Uganda	72.0	56.6	31.0	32.6	3.9	4.2
Zambia	15.1	20.6	22.2	23.0	2.9	5.9
Argentina	6.4	8.1	10.8	7.9	0.8	0.7
Vietnam	NA	38.7	23.0	NA	NA	5.5

Source: World Bank indicators online, Fan and Saurkar (2006)

### 3.3 Developed countries' domestic policies

Domestic production and export subsidies provided to farmers in the developed countries for decades, especially in the OECD countries, led to overproduction and depressed prices for food commodities. While this has benefited net food importing countries, it created disincentives for farmers in developing countries, weakening supply response. Cheap food encouraged developing countries to pay little attention to promoting domestic food production. As a result, depressed domestic prices reduced the profitability of agriculture and reduced investments, while fuelling dependence on food imports (Schmidhuber & Maruschke, 2010). Food imports into developing countries have continued to increase, exposing them to greater volatility in global commodity prices. While developing countries were net exporters of food from the 1960s to the mid-1970s, they moved into a net food import position in the late 1970s. As shown in Figure 1, the value of net trade in agricultural products and food and animal products has been declining over the past 30 years, from a trade surplus position to a precipitously low and declining negative net food trading position. The net food trading position of net food importing developing countries declined from a

surplus of over \$5 billion in 1976 to a negative balance of about \$30 billion by 2007. The situation has continued to worsen since the food crisis of 2008. The FAO (2004) projected that food import dependency would worsen for developing countries, with a projected net trade deficit of \$50 billion (at constant 1977 to 1999 US \$ prices) by 2030 (FAO, 2004).



**Figure 1: Value of net trade in agriculture, net food importing developing and least developed countries, 1961 to 2007**

### 3.4 Decline in global food stocks

Technical changes in the 1960s and 1970s arising from the green revolution in Asia led to rapid growth in agricultural productivity. The food surplus from the expansion of wheat and rice production reduced the upward pressure on food prices from rising populations. The world was able to feed itself, and avoided the Malthusian curse. As high-yielding crop varieties spread across Asia and Latin America, spurred by high public expenditure on research and development of improved crop varieties, the expanded use of fertilisers, irrigation and price support programmes helped to swell global food reserves. The ratio of global food stocks to use for wheat, rice and vegetable oils were at their all-time high. This trend continued in the 1990s, when the global food stocks-to-use ratio for wheat was about 45% in 1998/1999, and that for maize at about 35%. Since then, global stock levels have declined, reaching all-time lows in 2007/2008 and 2008/2009, and they are projected to decline further (Jones & Elasri 2010).

Several factors explain this decline in global stocks, including greater reliance on less costly risk management instruments instead of holding stocks, demand for biofuels, better information and improved transport systems, which reduce the need to hold large stocks, and changes in domestic policies in the US and the EU, with reduced reliance on interventionist public procurement programmes (Schmidhuber & Maruschke 2010).

### 3.5 Climate change

Climate change will change the food supply situation in the world in fundamental ways. Yields of crops are expected to decline due to higher temperatures. Water availability will become more of a limiting factor as the availability and reliability of irrigation water becomes more challenging. Irrigated crops such as wheat and rice are likely to be affected the most. Adverse weather conditions have affected major exporting countries such as Canada and Australia, which experienced a yield

decline of 20% in the period 2005 to 2007. Wheat production in the European Union, Canada and the US declined by 32 million metric tons, or about 14%. Sub-Saharan Africa will suffer the most in terms of decline in crop yields. Yields of rice, wheat and maize are projected to decline by 15%, 34% and 10% respectively. However, the negative impacts for drought-tolerant crops, such as millet and sorghum, are limited, with estimated yield declines of 2 to 3% and 7 to 8% respectively. The impacts of climate change will be mostly positive for developed countries due to increased precipitation and CO<sub>2</sub> fertilisation effects. The reduction in irrigation water availability will affect the production of grains for exports, which will translate into higher grain prices on the world markets. Nelson *et al.* (2009) estimated that, by 2050, under a no-climate-change scenario, world food prices would increase significantly: rice by 62%, maize by 63%, wheat by 39%, and soybeans by 72%. Under climate change scenarios, the price of rice would increase by an additional 32 to 37%, maize by 55 to 59%, wheat by 94 to 111%, and soybeans by 11 to 15%. Wheat prices in the European Union, Canada and the USA went up from \$200 per metric ton to over \$300 per metric ton in 2007 (Jones & Elasri 2010). Prices for meat products will also increase. These increases in prices will worsen food availability, access and affordability and will have more negative effects on the poor urban and rural consumers in food-importing developing countries. Malnutrition is projected to rise as caloric availability declines.

Climate change was again having an impact on food prices in 2010. The recent ban on the export of wheat from Russia as a result of the severe drought that wiped out 25% of its wheat production led to deadly food riots in Mozambique, where bread prices rose by 30%. The floods that hit Pakistan drastically affected rice production for exports. The FAO has called for a renewed effort to address what is emerging as a second round of food crises. Africa needs to learn from these trends of food supply instability. The continent needs to deal with the structural impediments that limit its food production and move more speedily to becoming food self-sufficient through an accelerated programme to raise agricultural productivity for the millions of its smallholder farmers.

#### **4. Solving the Long-term Structural Impediments to Agricultural Growth in Africa**

While global attention has been given to the food crisis recently, Africa has been experiencing a food crisis for the past three decades. To address Africa's food crisis it is necessary to separate transitory food insecurity from long-term, structurally conditioned food insecurity. The solution to Africa's food crisis will not come from addressing the causes of transitory food insecurity, but rather the long-term structural food insecurity, linked to the low and declining per capita productivity of agriculture on the continent. The next sections of this paper review some of the causes of these long-term trends, followed by a discussion of the policy imperatives needed to accelerate agricultural growth to solve the food crisis in Africa through accelerated food production.

##### **4.1 Technologies exist to solve Africa's structural food crisis**

Although African agriculture has not performed well enough to keep up with growing populations and food needs, not all has been gloom and doom. Africa has had "spurts" of agricultural productivity growth (Holmen 2005), but they have not been on a sufficient scale or sustained, as was the case in Asia. Some of these successes have been quite remarkable and, while they have received little attention, they can provide useful lessons. Some of them are discussed briefly below.

###### **4.1.1 Maize**

Starting in the colonial period in Kenya and Zimbabwe, years of investment in research led to the development of high-yielding hybrid maize varieties. Kenya experienced three phases of green revolution for maize. Large-scale farmers rapidly adopted maize hybrids, followed by widespread uptake by smallholder farmers in the high-potential highland zones. The adoption of maize hybrids

with fertilisers also accelerated in the low-potential lowland areas (Hassan & Karanja 1997). The development of streak-resistant maize varieties led to rapid increases in maize yield and expansion of maize cultivated areas and production in the northern guinea savannahs of Nigeria (Smith *et al.* 1997). As a result, maize, which used to be a subsistence crop, became a cash crop. Adoption by farmers was facilitated through the use of subsidies, credit, public extension and import substitution policies, which created price incentives for farmers. Gains have also been made in the development of new drought-tolerant maize for southern Africa. The new drought-tolerant and low-nitrogen responsive varieties give a 25 to 30% increase in yields, and are now being cultivated on more than one million hectares in southern Africa. The smallholder-led maize revolution in East and Southern Africa (especially in Malawi, Zimbabwe, Zambia and Kenya) in the 1980s demonstrated that smallholder farmers, when properly supported, can help achieve major growth in food production. So impressive was the growth in maize production in these countries that some authors called it the 'emerging maize revolution' (Byerlee & Eicher 1997).

The maize revolution was busted by the structural adjustment programmes (discussed later), which eliminated support for smallholders, leading to a revisionist view of this "success" (Smale & Jayne 2010). The revisionist view criticised the role of the state as "fiscally non-sustainable" in terms of support to poor smallholder African farmers, but argued that the subsidies provided to settler farmers during the pre-independence period, which came largely from taxing African consumers and farmers, were "fiscally sustainable". Revisionist perspectives have for too long been used to support biases against smallholder farmer-focused farm support policies in Africa. This paper will return to this issue of the asymmetry of policies of support for the rich, and market fundamentalist-driven policies of abandonment of poor smallholder farmers in Africa in a later section.

#### **4.1.2 Cassava**

Researchers at the International Institute of Tropical Agriculture (IITA) solved a series of challenges facing cassava production. Cassava, the major food security crop of West Africa, witnessed a green revolution in the 1970s and 1980s. At the time, cassava mealy bugs devastated millions of hectares of cassava, threatening widespread hunger. Through biological control, a parasitic wasp and natural enemy of the pest was introduced from Latin America. Over a decade, the wasp spread rapidly and destroyed the mealy bugs, saving hundreds of millions of people from starvation and food insecurity.

The rate of return on investment in this biological control was remarkable. Plant breeders also developed new varieties with resistance to pests and diseases. The new varieties produced 40% higher yields than traditional varieties and, because they also had shorter periods of maturity, they quickly gained interest among farmers. To reduce labour costs, especially for women in processing, new mechanised graters and pressers were introduced, which reduced labour costs by 50%. It was estimated that more than 10 million tons of cassava was produced as a result of the higher yielding varieties, with benefits of more than \$3 billion accruing to farmers in 1988, making cassava 'Africa's best kept secret' (Nweke *et al.* 2002).

#### **4.1.3 Rice**

Africa is witnessing a mini-revolution in rice, a crop that has become the most important staple food crop for many Africans, especially because of urbanisation and its ease of preparation compared to other staple food crops. Africa's imports of rice have risen dramatically, increasing from 8.6 million tons in 1980 to 126 million tons in 2005, at an annual cost of \$1.5 billion. Local production has been low due to the lack of well-adapted rice varieties, drought, and a host of pests and diseases. Researchers at the West Africa Rice Research Centre (WARDA), now Africa Rice Centre, achieved a technical breakthrough by successfully crossing the Asian rice (*Oryza sativa*) and the traditional African rice (*Oryza glaberima*), resulting in the new rice for Africa (NERICA). NERICA has

several unique advantages: it produces 50% higher yields than existing varieties with no application of fertilisers; it produces 200% higher yields with the application of fertilisers; it has a much shorter maturity period; and it has good resistance to weeds, drought and pests and diseases. Between 1980 and 2000, more than 100 new rice varieties were released, with estimated annual incomes from genetic improvement in the order of \$375 to \$850 million (CGIAR 2006).

Despite these successes, together they have not been enough to achieve the scale of small-farm-led growth that is needed to solve Africa's food and poverty problems. The critical question remains: why has the growth in agricultural productivity arisen in spurts, without any drive to assure sustained productivity growth? Five factors have been especially important: negative effects of the structural adjustment programmes, asymmetry in support for African farmers compared to the rest of the world, decline in ODA support to agriculture in Africa, poorly developed markets and lack of political will.

## **4.2 Obstacles to accelerated agricultural growth in Africa**

### **4.2.1 Negative effects of structural adjustment in Africa**

Initiated in the 1980s by the World Bank and the IMF, structural adjustment was designed to reduce the role of government in agriculture, cut back on public sector expenditure, improve the balance of payments, reduce government deficits, enhance macroeconomic performance and help African countries to achieve higher economic growth rates. The key elements of the policy reform included macroeconomic reforms, privatisation of government agencies, liberalisation of markets, removal of the government from agricultural markets, and elimination of subsidies. The effects of these market-led approaches continue to be a source of much debate. Because the policy reforms removed overvalued exchange rates, reduced taxation on agriculture and raised producer prices (Kherallah *et al.* 2002), it is widely believed that this generated significant positive benefits for farmers selling traditional export crops such as coffee and cocoa. But for smallholder farmers producing staple foods for domestic markets, the net effect of the structural adjustment has been largely negative. Less costly food imports, reduced access to credit at affordable rates and the removal of input subsidies have led to a dramatic reduction in the adoption of modern crop varieties and fertilisers. As noted by Nobel laureate Norman Borlaug, "The high cost of fertilizers has been especially pernicious" (Hesser 2006). In several cases, farmers who had earlier adopted modern varieties discontinued the use of modern varieties and chemical fertilisers. Despite the claim that the use of fertilisers has increased in Kenya (Ariga *et al.* 2006), evidence from across Africa shows that this cannot be generalised. Fertiliser use by smallholder farmers in Kenya has declined significantly with the high fertiliser prices arising from the global food crisis. The World Bank recently accepted that, "During the 1990s, fertilizer use per hectare actually declined in about one-half of all African countries ... and the average fertilizer use intensity in Africa remains low" (Morris *et al.* 2007). According to Kosura and Karugia (2005), "[the] decline of fertilizer use on food crops appear to be the most dramatic effect of the SAP [structural adjustment programs] and poses a threat to the long-term ability of the sub-continent to feed its growing population". Poverty and food insecurity have increased since structural adjustment, as farmers are unable to afford seeds and fertilisers.

The removal of the government from agricultural markets has led to the entry of the private sector, but the markets for staple crops are still poorly organised, remain uncoordinated, have excessive transaction costs and risks, and are subject to price volatility, which negatively affects net buyers of food. African smallholder farmers are today abandoned and left to the vagaries of nature and market forces. This is not the case in any other major region of the world.

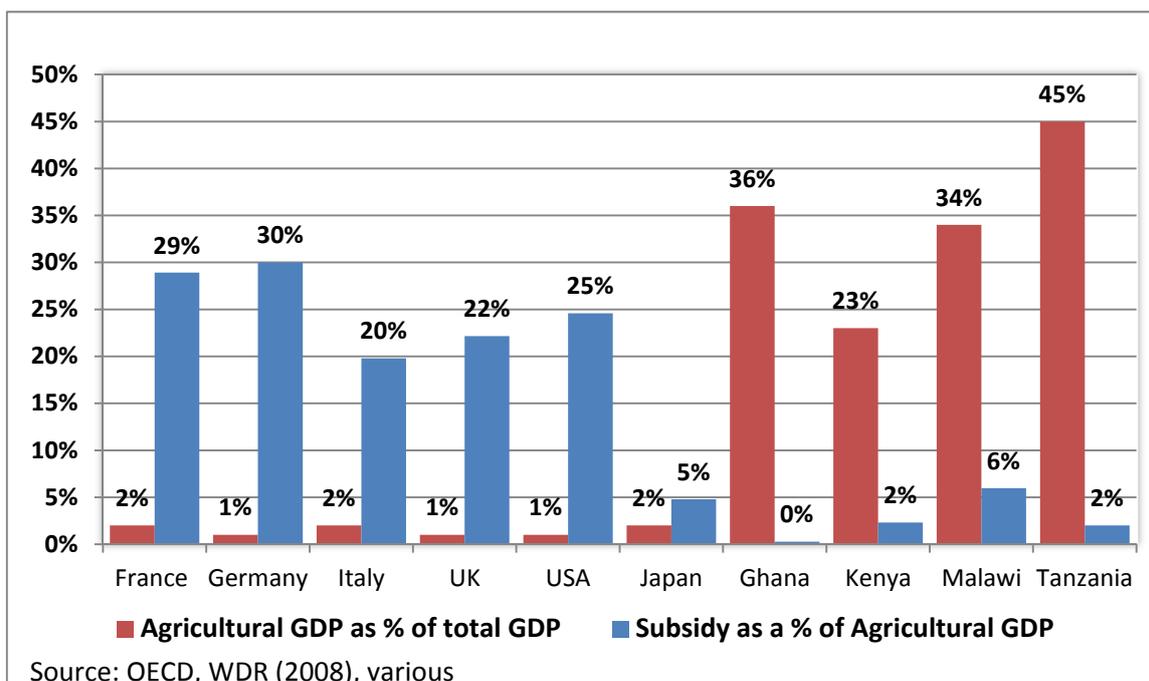
#### **4.2.2 Policy asymmetry in support of agriculture and bias against Africa**

The inability of African farmers to achieve a supply response to take advantage of the high commodity prices from the food crisis reflects a mix of underlying challenges: binding capital constraints, deep poverty, lack of access to new technologies and poor infrastructure, which continue to limit the production response capacity of farmers. At the heart of this is the lack of provision of support to smallholder farmers. While farmers in the rich countries continue to receive subsidies, poor farmers in Africa continue to languish as a result of a lack of comprehensive support packages that would help unlock them from productivity and poverty traps.

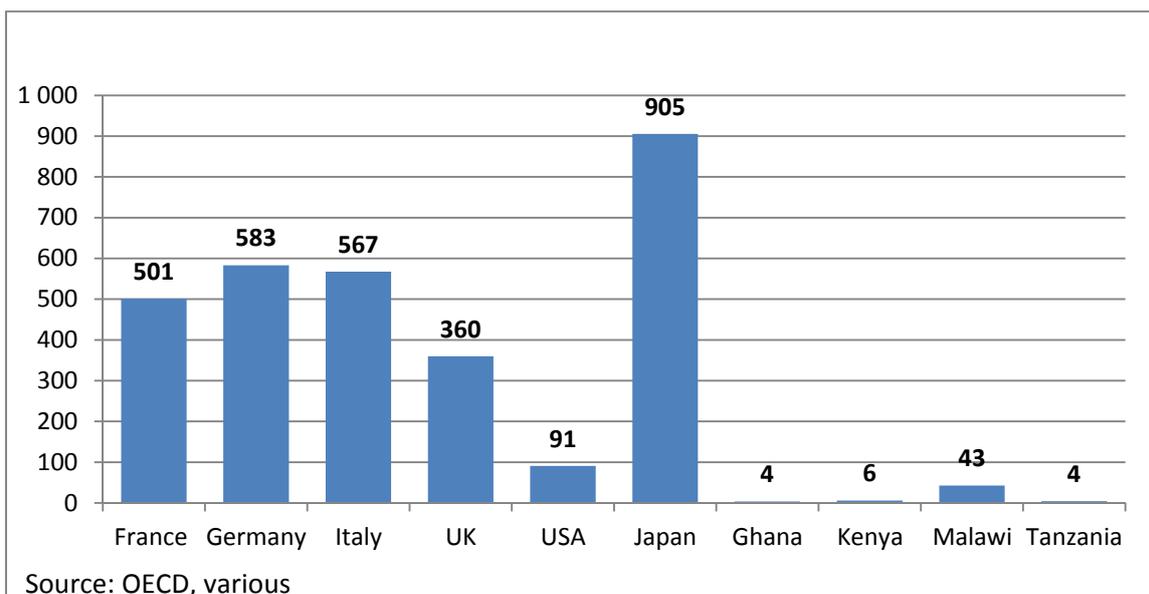
The global landscape of agricultural policy perpetuates income inequality. Farmers in developed nations (where agriculture is a miniscule share of their GDP) receive the highest levels of support, but poor African countries (where agriculture accounts for high shares of GDP) receive no support. For example, the share of agriculture in the GDP is extremely low in many of the OECD countries, ranging from 1% in the USA, UK and Germany, to 2% in Japan, Italy and France. However, farmers in these countries receive the highest level of subsidies, in some cases as high as 62% of gross farm receipts. Estimates of agricultural subsidies as shares of agricultural GDP are high: USA (25%), UK (22%), Italy (20%), Germany (30%) and France (29%) (Figure 2).

The inequalities become even starker when one examines the extent of agricultural subsidies per hectare of cultivated land (Figure 3). Developed economies have the highest levels of subsidies per hectare: Japan (\$905), UK (\$360), Italy (\$567), Germany (\$583) and France (\$501). The picture is different in sub-Saharan Africa: Ghana (\$4), Kenya (\$6) and Tanzania (\$4). Malawi, where most of the recent debate on subsidies in Africa focuses, provides only \$43 per hectare. The continued high support for rich farmers in the developed economies, while denying poor farmers in Africa much-needed support, perpetuates poverty in Africa.

The issue now is no longer whether farmers in Africa need subsidies. A recent study by Sanchez (2009) shows it is much cheaper to support poor farmers to produce food than either importing the food or delivering it through food aid. The study indicates that it costs \$135 per ton to produce maize when farmers are supported to produce the food locally; \$320 per ton if the food is to be purchased locally from another African country and distributed where needed; and \$812 to buy, ship and distribute a ton of US maize in Africa.



**Figure 2: The role of agriculture in the economy and agricultural subsidy in selected OECD and SSA countries**



**Figure 3: Agricultural subsidy per hectare in selected OECD and SSA countries**

**4.2.3 Decline in global support for investment in agriculture**

Until recent new pledges at the G8 in 2009, donor support for agriculture in Africa declined for decades. The low and declining investment in African agriculture has short-changed already low levels of rural infrastructure, stifled agricultural research and the generation of new technologies for African farmers, and reduced public services in rural areas to the point where there has been widespread migration to low-paying jobs in the cities. Low investment has also eroded civil service salaries, and anaemic recurrent budgets have immobilised extension and research staff, diminished staff incentives, and fuelled an exodus of senior scientists from public research institutions (Pardey *et al.* 1997; InterAcademy Council 2004). These disconcerting trends place Africa’s natural, human

and institutional capital under pressure and threaten Africa's capacity to sustain agricultural productivity growth in the future.

#### 4.2.4 Poorly developed markets and low prices for agricultural products

Investment in agricultural technologies is driven by incentives. Output prices play a significant role, as well as the ratio between output and input prices. Unfortunately, because of poorly developed markets and high transport costs, output prices have remained low and variable, with a more rapid increase in prices for agricultural inputs. Poorly developed rural input markets raise transaction costs for farmers and make it difficult to access improved seeds, fertilisers and other agricultural inputs. High tariff and non-tariff barriers reduce intraregional trade flows, leading to greater price volatility. More open intra-regional trade between African countries offers important opportunities to exploit differences in comparative advantages, achieving greater scale economies in marketing, and to help stabilise food supplies in the face of adverse weather events at country levels.

Expanding regional markets can serve as a vent for surpluses, which can help reduce the thinness of domestic markets and the likelihood of price collapse from raising agricultural productivity in the absence of wider markets. A recent IFPRI study shows that, if Africa were to double its cereals production over the next five years, average farm gate prices would fall by 40% if current intra-regional trade barriers and transport costs prevail, but only by 10% if regional trade were fully liberalised and investments in infrastructure were made to bring transport costs down (Diao *et al.* 2008). This translates into very different outcomes for farmers; farm incomes increase when prices fall by 10% because their unit production costs fall by more than 10%, but they are net losers if prices fall by 40%.

As shown in Table 6, the size of the intra-regional trade in East and Central Africa is still small, estimated at \$300 million or 1.5% of the total value of trade. Several factors limit intra-regional trade in food staples. One is poor infrastructure and high transport costs, which require long-term investments. Another factor is the bulky nature and perishability of many of Africa's staple food crops. Processing and value addition will be needed to transform several of these crops into a wider range of products for which there is relatively high demand (e.g. processed cereals, processed foods targeted at growing ethnic food markets, livestock feed, etc.) in local, regional and international markets. However, the greatest scope lies with regional markets.

**Table 6: Value, destination and composition of agricultural trade, 1996 to 2000, East and Central Africa (ECA)**

Traded items and destination	Value (\$billions)	Share (%)
<i>Domestic market for food staples</i>	15.9	78.7
Traditional exports to non-ECA countries	2.4	11.9
Non-traditional exports to non-ECA countries	1.3	6.4
Other exports to non-ECA countries	0.3	1.5
<i>Cross-border trade with the ECA</i>	0.3	1.5
Total	20.2	100

Source: Omamo *et al.* (2006)

#### 4.2.5 Lack of political will

Underlying these negative factors has been a lack of political will amongst Africa's senior policy makers and donors regarding agricultural development. This may be changing. Africa's heads of state have committed to doubling their spending on agriculture under the Comprehensive African Agriculture Development Programme (Maputo 2003), and the G8 have pledged matching funds (Gleneagles 2006). While many of these pledges have yet to be realised, some individual countries nevertheless have moved ahead and made substantial increases to their spending on agriculture (e.g.

Ethiopia, Malawi and Uganda). The world food crisis may also serve as a pivotal event in changing attitudes at high levels.

The impact of these four factors has been to leave the vast majority of Africa's small farmers saddled with low-productivity technologies, poor transport and market access, limited and costly access to modern inputs, and considerable exposure to the vagaries of weather and market shocks. At the same time, market liberalisation and repeated national food emergencies have opened up their markets to intense competition from low-cost, often subsidised food imports from abroad. Large numbers of Africa's small farmers are now trapped in poverty, and breaking out of these poverty traps will require a package of investments and policy changes that can fundamentally restructure the technological and economic landscape in which farmers operate.

The rest of this paper will review some of the policies for unlocking agricultural productivity in Africa and addressing the underlying structural root causes of the food crisis.

## **5. Lessons and policies for solving the food crisis in Africa**

The global food and financial crisis has important lessons for African economies. First, the notion of depending on the global markets for food is a risky one. In September 2010, the recent bans on the export of wheat by Russia for a year, due to the loss of 25% of its supply to drought, led to deadly riots on the streets of Maputo in Mozambique as bread prices increased by 30%.

Second, it is clear that climate change will significantly affect future food supplies and exports from exporting countries, which will impact on developing countries. Food production in Africa should therefore be given a top priority as a matter of national security.

Third, the rallying efforts of governments around the world in support of their farmers to produce food, and even to invest in other countries to produce food for exports back to them, suggests that African countries need to critically re-examine their domestic policies in support of food production.

Finally, the rising demand for food globally has opened new opportunities for African countries to supply these markets. Taking advantage of the markets and using the opportunity in the crisis requires a sharp focus on accelerating food production.

The measures that have been used to address the food crisis in Africa have largely been short-term measures directed at reducing the negative effects of the higher prices on consumers through consumption subsidies and lowering tariffs on food imports. The food crisis caught Africa by surprise, but this would not have been the case if policy makers had been examining the trend of low and declining productivity in the staple food crops sector over the past three decades. Despite recent improvements in agricultural growth, the uptake of new agricultural technologies and "successes in African agriculture", hunger and poverty are still widespread on the continent.

What is needed is to focus on policies that will address the underlying structural reasons for the perennial food crisis that many African countries face. Such policies must necessarily prioritise areas that will increase total productivity: greater investments in agricultural research and extension, accelerated use of improved crop varieties and fertilisers; expansion of irrigation areas to reduce reliance on rain-fed agriculture; expansion of rural infrastructure, especially roads to help lower transaction costs for market participation by farmers; provision of market information to improve price transmission in domestic markets; expanding access to finance to reduce binding capital constraints that limit uptake of agricultural technologies; and domestic policy support programmes

to reduce the high costs of agricultural inputs for farmers. This section of the paper reviews these policy measures in detail and offers guidance for priority actions for policy makers.

### 5.1 Accelerate the growth in productivity of staple food crops

Prior efforts in the early 1960s and 1970s focused on the development of export-oriented cash crops in Africa, which contributed significantly to export earnings. Investment in the staple food crop sector was low and was not prioritised. Cash crops are grown by a small share of the population, thus the employment and growth multiplier effects are low. Recent analysis by the International Food Policy Research Institute (Omamo *et al.* 2006) shows that investing in raising the productivity of staple food crops will have the highest impacts on GDP growth (Table 7). A one per cent increase in productivity growth for staple food crops will lead to an estimated \$1.7 billion in GDP growth, compared to \$1 billion for livestock and \$600 million for vegetables and fruit, \$100 million for traditional exports such as coffee, and \$75 million for pulses. The quality of these public investments is important. The investments in productivity growth also need to be complemented simultaneously by investments in processing, value addition to the staple crops and processing facilities. With rising urban population, high opportunity costs of processing food, and the high income elasticity of demand for processed foods, the impacts on farmers' income will be high. Labour-saving technologies will be especially beneficial to female farmers (Nweke *et al.* 2002). Due to the bulky nature of some of the staple crops (e.g. cassava, bananas, etc.), new forms of fiscal, infrastructure and investment policies should be directed at creating incentives for value addition. Fiscal incentives that reduce taxes on the importation of processing equipment can be combined with tax incentives for firms that invest in forward linkages in food processing in local economies. Governments can establish staple crop-processing zones that are facilitated by infrastructure investments, fiscal incentives and access to low-cost financing to promote agro-processing by large agribusinesses in rural areas, for local, regional and international markets (Adesina 2010).

**Table 7: Cumulative gross domestic product (GDP) gains to 2015 from 1% additional growth in selected commodity group sectors (US\$ million) in Eastern and Central Africa**

Commodity	Cumulative GDP gain
Staples	1700
Livestock	1100
Vegetables and fruit	600
Hot beverages	100
Pulses	75

Source: Adapted from Omamo *et al.* (2006)

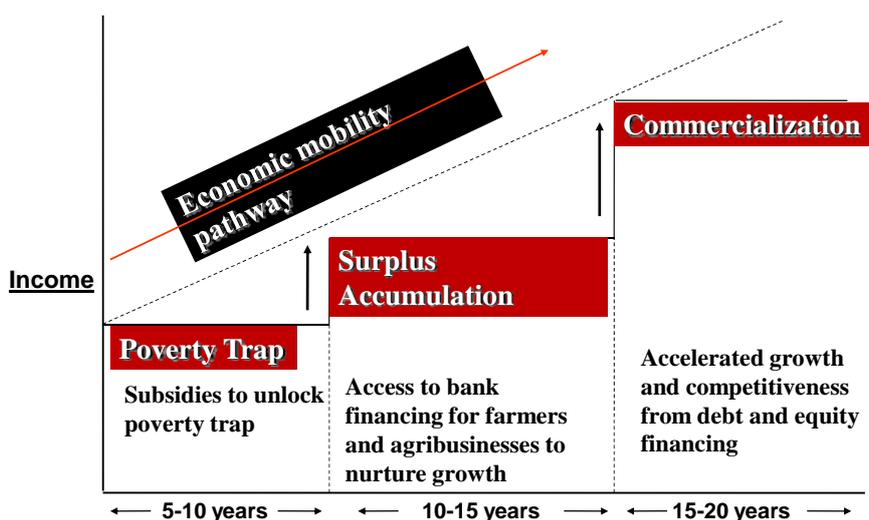
### 5.2 Growth enhancement support for farmers

African farmers need to be provided with comprehensive support systems to allow them to get out of poverty traps. In deciding on the issue of subsidies one need only look at the evidence from Asia, where subsidies, especially for improved seeds, fertilisers, irrigation, extension, farm credit support etc., fuelled the green revolution. While much has been written to deride the subsidies in Asia as leading to the overuse of fertilisers and pesticides, what is forgotten is that without these subsidies, over a billion people would probably have died of hunger. Yet Asia is no exception. The USA has had massive public support for agriculture in place since the late 1800s. This includes research and development, state-led agricultural extension support, and laws supporting marketing research on and development of new uses under the Research and Marketing Act of 1946 (Alston *et al.* 1999). The case of the negative impacts of the cotton subsidies in the US on African cotton growers is well documented (Minot & Daniels 2005; Alston *et al.* 2007). US Land Grant Universities are heavily supported through massive state subventions that are well oiled to support a research and

development and extension system to maintain an edge in global agricultural markets. The EU does the same, providing over \$267 billion per year in farm support for its farmers.

While market fundamentalists have argued that the Malawi government used 47% of its agricultural budget to provide subsidies, what they fail to point out is that the EU spends 47% of its entire budget (not agricultural budget) on subsidies for the rich farmers of Europe, including even royalties. Agricultural economists who analyse the pros and cons of subsidies have always focused on the issue of benefit cost assessments. These assessments are not appropriate tools. Subsidies for farmers in Africa are directed at addressing issues of food insecurity and malnutrition. How does one measure the cost of the life of a child that is malnourished but for whom the mother can produce the food if she can afford the farm inputs? How does one measure the benefit of a child being able to attend school due to higher food production of the parents? What are the benefits of a child whose performance in school improves due to better nutrition? And how does one measure the benefit of self-confidence and pride of a community and nation able to feed itself? While the developed countries focus on subsidising the rich, Africa is focused on subsidising the poor. The economics of subsidising the rich and not the poor is purely immoral economics. With some 300 million people living on less than one dollar per day in Africa, the public sector needs to accelerate support for farmers to access farm inputs and all other complementary inputs needed for them to raise food production.

What is needed in Africa is for “Growth Enhancement Support” (GES) to be used to unlock millions from poverty and put them on a trajectory to income growth. The key elements of the GES are (a) targeted public support for farmers delivered through agro-dealers and agribusinesses; and (b) accelerated use of risk-sharing instruments to reduce the risk of lending that faces commercial banks so that they can expand lending to farmers, agro-dealers and agribusinesses all along the value chain to create the needed pull of farmers out of poverty traps into the economic growth pathway (Figure 4).



**Figure 4: Growth enhancement support (GES) to unlock poverty traps**

The GES combines public support with a private sector-driven mechanism through which farmers who have had access to subsidised inputs over time are connected to financial markets to help them make the leap onto higher income growth pathways.

Why growth enhancement support? Most smallholder farmers in Africa are living below the poverty line. What is needed first is to unlock them from this poverty trap. For the first phase of growth enhancement support (subsidies to unlock farmers from poverty traps), national governments should put in place clear and consistent budget earmarks for the subsidies to farmers, without having to rely on donors whose objectives are not always in congruence with those of governments. The provision of the subsidies should be done through the private sector (agro-dealers) to help stimulate private sector growth. Once this has been achieved, farmers have to be connected to financial markets to provide them with access to affordable credit to allow them to further intensify and generate marketable surpluses and savings. As they generate surpluses, they will diversify and specialise in other high-value commodities that will allow them to move towards the phase of competitiveness, where they need additional financing for agro-processing, quality enhancement and certification to meet stringent market regulations for trade. The phases and time lines for the components of GES do not have to be sequential and depend on the specificities of the country, especially the level of poverty and the extent of development of the financial markets. What is clear, however, is that the first stage has to be done in a consistent manner for at least five to 10 years. While this is being done, the development of financial market instruments (discussed in a later section) to connect farmers to the next phase of GES (surplus accumulation) should be kick-started.

A few countries have started to put in place growth enhancement support. Below we briefly review the experiences of Kenya and Tanzania. The first step in establishing growth enhancement support for Kenya started with the design of the National Accelerated Agricultural Input Access Programme (NAAIAP) in 2006, with support from the Rockefeller Foundation. NAAIAP was launched to scale up access to farm inputs, especially improved seeds, fertilisers, small livestock and small-scale irrigation for smallholder farmers. The programme targeted subsidised farm inputs (Kilimo Plus or Kilimo Bora) to poor farmers, consisting of 10 kg of improved seed, 50 kg of basal fertilisers and 50 kg of topdressing fertiliser – enough to plant one acre or 0.4 ha. The donors in Kenya stiffly resisted the programme, with the usual complaints of ‘subsidies distorting markets’. This was a misconception due to the conventional resistance to support for African farmers. On the contrary, the programme did not distort markets, but targeted the subsidised inputs through the private sector agro-dealers in rural areas. The programme rapidly extended to 100 districts. After three years, the World Bank, which had earlier opposed the programme, joined in to help reach an additional 150 000 farmers and also provided support to expand access to orphan crops (sorghum, millet, sweet potatoes, etc.) to 500 000 farmers.

The second step in growth enhancement support was the design by AGRA of the Kilimo Biashara programme, which was co-funded by AGRA and IFAD and leveraged \$50 million from the Equity Bank to support smallholder farmers and the agricultural value chains that support them. To date, \$19 million has been lent, with over 75% of this going to smallholder farmers. In 2010, the World Bank joined the Kilimo Biashara programme with additional support of \$10 million.

In Tanzania, growth enhancement support was put in place with the initial establishment of agro-dealers in several districts, with support from the Rockefeller Foundation and later AGRA, to ensure that farmers get access to technologies. The first step in unlocking poverty traps was put in place with the provision of subsidies to farmers for seeds and fertilisers, using vouchers and delivered through the rural agro-dealers. The private sector participated actively, including fertiliser and seed companies. This was a major departure from the prior government system of subsidising the transport of fertilisers from ports to regional warehouses, where farmers had to come to purchase. The provision of vouchers allowed farmers to express effective demand and turned around fertiliser use levels, which had dropped since structural adjustment, from 142 676 MT in

1991/1992 to 77 557 MT in 2001/2003. With the first step of growth enhancement support, fertiliser use expanded to 260 000 MT by 2005/2006.

The second step of growth enhancement support was initiated in 2008. AGRA used a loan guarantee of \$1 million to leverage \$5 million from the National Microfinance Bank for lending to farmers and agro-dealers. So successful was the programme that it has grown to \$10 million, with additional guaranteed support from the Financial Sector Deepening Trust. Currently, an additional \$25 million has been leveraged by AGRA with Standard Bank for Tanzania. The Government of Tanzania now expects to reach 2.5 million farmers with the combined elements of growth enhancement support. The World Bank has recognised the power of this model and has agreed to put in an additional \$160 million to help scale up this innovative support model.

Combining public subsidies for farmers with a market-based system for rapidly expanding access to financing for farmers and agricultural value chains is the fastest way to get many people out of poverty traps and onto a sustained pathway to economic growth. By focusing on growth enhancement support, governments will be able to unlock poverty traps, move farmers to higher growth pathways, build private sector linkages, create systemic changes in the alignment of financial markets to support farmers, and achieve a sustainable system for simultaneously meeting food security and income growth objectives. Growth enhancement support is what is needed across African countries to generate the domestic financing needed to spur more rapid growth of the agricultural sector.

### **5.3 Policies to promote the use of fertilisers**

One of the factors limiting the productivity growth of agriculture in Africa is the low levels of use of fertilisers. Africa uses less than 10 kg/ha, compared to the global average of over 100 kg/ha. However, wide variability exists across countries, with South Africa, Egypt and Morocco having much higher levels. The reasons for the low level of use of fertilisers are many, including demand, supply, technical and economic/policy factors.

Demand is affected by the type of crop, the profitability of the crop, the value-to-cost ratio of the use of fertilisers, the availability of small packs, the availability of rural agro-dealer shops that sell farm inputs and distance to these farm input shops, risk aversion, which is high, especially in rain-fed agriculture compared to irrigated crops, the level of knowledge of farmers on appropriate and efficient use of fertilisers, high costs, and high levels of poverty, which make the use of fertilisers out of the reach of millions of poor farmers.

Supply-side factors include poorly developed fertiliser value chains, domination of fertiliser imports by governments, which use tenders to import, the high costs of import, high transport costs, and low level of domestic production and blending in Africa.

Limiting technical factors include high variability in fertiliser response rates, reliance on outdated fertiliser response functions to determine optimal levels of use, which do not take into consideration on-farm constraints and income constraints of farmers, low demand for high-yielding crop varieties that are fertiliser responsive, low extension-farmer ratio, which limits extension services regarding the efficient use of fertilisers, and low knowledge among farmers on the use of integrated soil fertility management practices that incorporate organic and inorganic fertilisers to optimise yield performance.

Fiscal policies and poor infrastructure have also constrained fertiliser use. High taxes on fertiliser imports are common, especially for transshipment of fertilisers from the countries with ports to

landlocked countries. The poor state of rail systems (lack of wagons, unreliability of schedules, theft and lack of covered wagons, which exposes fertilisers to damage, etc.) adds additional costs to moving fertilisers from ports to where they are needed. As a result, most fertiliser suppliers rely on trucks, which increase unit transport costs and final farm-gate prices. Because over 50% of the countries import less than 10 000 metric tons, there are few scale economies in the import and transport of fertilisers. Fragmented markets limit market competition. Inland transport costs in Africa are estimated to be at least 30% of the final farm-gate price. The cost of inland transport of a ton of fertilisers from Mombasa, Kenya to Kampala in Uganda is \$80 to \$90, compared to \$50 for shipping a ton of fertilisers from the US to the port of Mombasa, Kenya (Morris *et al.* 2007).

Policy measures are needed urgently to accelerate the use of fertilisers by farmers. Subsidies for fertilisers can allow farmers, especially poor farmers, to have access to fertilisers. Vouchers can be used to target farmers, allowing them to express effective demand through reduced prices for fertilisers or from the additional income effect from the transfer, which can relax binding capital constraints for investing in other, complementary farm inputs. It is recognised that fertiliser subsidies have been abused in the past and are often hampered by corruption and inefficiencies. Nonetheless, without the ability to afford fertilisers in addition to high-yielding crop varieties, millions of African farmers will not be able to raise their productivity levels and will be locked in poverty traps.

The Malawi fertiliser subsidy programme has helped the country to move from a food deficit to a net food surplus nation for four straight years. Malawi now ranks high in Africa in terms of effectiveness of domestic policies to accelerate productivity growth for smallholder farmers (Denning *et al.*, 2009). Fertiliser supply in Tanzania is done exclusively through the private sector and the vouchers are redeemed through the National Microfinance Bank of Tanzania. There has been strong participation of the private sector in the programme, including 31 fertiliser companies, 25 seed companies and over 3000 agro-dealers. Nigeria and Ghana also launched voucher-based subsidy programmes (in 2008), although on a smaller scale. While Malawi succeeded with its programme, the private sector has not participated much and there has been some displacement of commercial sales. In Ghana, farmers can redeem their vouchers from fertiliser importers, but fertiliser dealers have not participated.

The general lessons from these experiences are as follows: the use of vouchers can prevent many of the challenges that faced the general state fertiliser subsidies that predominated across Africa in the 1970s and 1980s. First, it is possible to target the beneficiaries, although this does not exclude the possibility of resale of fertilisers, or of the development of a secondary market for vouchers. Second, vouchers allow the private sector to participate, as experience has shown in Tanzania. This helps to build private markets and promote the evolution of the private sector to meet the farm input supply needs of farmers in the medium and long term. Third, vouchers introduce flexibility and allow farmers to exercise effective demand for fertilisers, and to determine which types and sizes they purchase, based on their needs instead of being prescribed by governments.

To promote the use of fertilisers, subsidies should also target the full fertiliser value chain to reduce risks and transaction costs. The provision of public funds for the development of fertiliser warehouses and strategic storage facilities can help to reduce the frequent problem of late delivery, since many private sector suppliers do not have the financial capacity to store a seasonal input for a long time, as they are unable to predict demand and market prices. The provision of fertiliser market information to support the private sector and farmers to determine demand and adjust their stocks will reduce uncertainties and inform more optimal import and storage decisions. An improved regulatory environment is needed, especially to assure the quality of fertilisers, and the availability of low-cost fertiliser testing facilities will further assist farmers. Also needed is the promotion of

more appropriate fertiliser types, especially those with micronutrients that are often limiting in African soils. As agreed by 40 countries at the 2006 Abuja Fertilizer Summit, taxes on fertilisers should be eliminated, including taxes on the transshipment of fertilisers across borders. Fertiliser market development should be accelerated.

The success of the agro-dealers is one of the best success stories of African agriculture. In Kenya, as a result of investments made by the Rockefeller Foundation to expand agro-dealer networks, the distances that farmers travel to find seeds and fertilisers have declined from 10 kilometres to three to four kilometres. AGRA is currently deepening the network of agro-dealers in many countries, including Tanzania, Zambia, Rwanda, Ghana, Uganda, Kenya, Nigeria and Mali. The success of the efforts initiated by the Rockefeller Foundation and AGRA in providing financial linkages between agro-dealers and commercial banks, through loan guarantees, has been associated with the remarkable volumes, range and timeliness of the supply of fertilisers and seeds in rural areas. The increasing density of agro-dealers now provides a unique opportunity for African governments to launch smart subsidy programmes, using agro-dealers to deliver the inputs to farmers. Governments across Africa should accelerate support for the training, development, registration and certification of agro-dealers. Subsidy programmes should be designed and implemented through vouchers and other market-driven approaches that use the private sector to deliver subsidies. This will reduce any potential displacement of the private sector and strengthen the development of public and private partnerships to accelerate the access of farmers to farm inputs across Africa.

#### **5.4 Seed policies to accelerate growth of seed sector**

The issue of biotechnology has featured in the debate on seeds in Africa. The Consultative Group on International Agricultural Research is supporting the development of GMOs for food crops, especially water-efficient maize for Africa and maize varieties that are resistant to Striga. The use of GMOs is extremely low in Africa outside of South Africa, and is mainly in cotton. Some have argued that genetically modified crops have a role to play in addressing global hunger and nutritional insecurity (Eicher *et al.* 2006; Raney & Pingali 2007). However, conventional plant breeding has much greater scope for addressing food challenges, since it is not associated with the controversies around GMOs, especially around environmental and food safety, gene flows, etc. This section of the paper therefore will focus on policies to promote the use of improved seeds that have been produced through conventional plant breeding. Policies for GMOs are outside the scope of this paper.

The level of improved seed is very low in Africa (Langyintuo 2010). Good statistics on adoption rates for most crops grown in Africa are scanty, but those available for maize, the most important cereal crop in most of Africa, suggest that less than 30% of the cultivated area is under improved varieties (Langyintuo *et al.* 2010). This is especially disconcerting, given that several improved varieties have been released in Africa over the past three decades, ranging from improved varieties of maize, cassava, rice, yams, sweet potatoes and beans to grain legumes. Overall seed use by farmers in Africa is below the level needed to accelerate a green revolution. The limiting factors can be categorised as (a) seed demand; (b) seed supply and (c) policies.

Seed demand is low because of a lack of awareness among farmers of the benefits of using improved seed, limited extension services, high cost of seed, high levels of poverty, which lower effective demand, high search costs for finding seeds due to low density of seed stockists, especially in low-potential areas, and poor quality of seed due to the preponderance of fake seeds, especially from seed relief activities.

In terms of seed supply, while the seed industry used to be highly regulated and biased towards national seed companies, much progress has been made in liberalising the seed industry and there is increasing participation by private local, regional and multinational seed companies. Despite the criticisms of multinational seed companies, their share of the local seed industry is low, estimated at 19% for east and southern Africa (Langyintuo 2010), compared to 45% for regional seed companies and 36% for national seed companies. The commercialisation of improved seed is hampered by the lack of access of seed companies to foundation seed from the public sector, lengthy varietal release procedures, and a lack of co-ordinated and harmonised variety release systems, which would allow for simultaneous release of varieties across countries to allow for the regional spill-over of benefits across countries. Seed companies also lack much needed capital for financing seed processing equipment, lack access to sufficient land and irrigation capacity to multiply seeds, tend to rely mostly on large farmers to multiply seeds, as most smallholder farmers do not have sufficient land for commercial seed multiplication, and weak management capacity. While several countries have signed on to harmonised seed laws and regulations, these are rarely implemented at the country level. Several countries also do not have plant variety protection laws that would assure seed companies of control of their intellectual property rights over released varieties, especially for open pollinated crops and hybrid maize (Tripp & Rohrbach 2001; Langyintuo 2010).

Several policy interventions are needed to accelerate the use of improved seeds by farmers. First, governments should support farmer access to improved seeds, especially through wider extension systems and demonstrations of the benefits. Second, affordability of improved seeds should be supported through subsidies for seed as part of national growth enhancement support. Subsidising fertilisers without subsidising improved seed will not lead to any significant growth in productivity. Third, measures are needed to ensure that farmers have access to good quality seed through the enforcement of seed quality and certification of seed growers. Fourth, varietal release systems should be overhauled to shorten the period needed for testing and certifying the release of varieties. Urgent steps should be taken to implement the harmonised seed laws in the regional economic communities to permit simultaneous release of varieties across national borders so as to allow for increased economies of scale in seed production, marketing and trade.

Fifth, seed companies should be provided with access to credit. High investment cost is the leading constraint facing seed companies, especially small and medium-sized seed companies. Seed companies need access to both equity and debt capital to finance their operations. Commercial banks need to better understand the specific needs of seed companies and provide affordable financing, especially term financing that will allow the companies to invest in infrastructure such as irrigation, land improvements, acquisition of seed-processing equipment and mechanised harvesters, etc. Equity funds that target seed companies should be promoted. For example, the recent establishment of the West Africa Agricultural Investment Fund to focus on access to venture capital for seed companies, as well as the African Agricultural Investment Fund, which has a special window for equity financing for seed companies, are innovative models.

Finally, foundation seed policies need to be changed to allow private seed companies access to foundation seed for the production of commercial seed. The provision of the publicly bred varieties under exclusive licence to serious seed companies will make it much easier for seed companies to commercialise seeds. However, measures are also needed for non-commercial seeds. Farmers should be encouraged to form their own certified community-based seed multiplication groups to improve their participation in the seed market, encourage farmer-to-farmer sharing of seeds, and provide wider options for farmers to have access to improved seeds.

## 5.5 Leverage commercial bank financing into agriculture

Lack of access to finance is a major constraint to unlocking the potential of agriculture in Africa. Despite the positive economic growth witnessed by many countries in the last decade, averaging over 5% annually, the agricultural sector continues to lag behind. While the commercial finance sector has been growing rapidly, the agricultural sector continues to receive less than a fair share of total lending. For example, less than 1% of the total commercial lending in Tanzania goes to agriculture and, in Kenya, the share of total lending to agriculture has declined from 5% to 3% over the past few years. In the West Africa Monetary and Economic Union, less than 3% of total commercial bank lending goes to agriculture – yet in many of these countries and regions agriculture accounts for between 50 and 70% of the GDP. While increased official development assistance will continue to be needed to meet the development financing gap to achieve a green revolution in Africa, huge opportunities exist to leverage a significant share of this amount from local financial markets.

While there is significant excess financial liquidity in local financial institutions, commercial banks do not lend to agriculture for several reasons. These include the high dispersion of farmers that increases lending and collection costs; high level of covariate risks, as farmers in a given location are often subject to the same sets of risks – both climatic and price; lack of acceptable collateral by applicants; seasonality and low profitability of smallholder agriculture; lack of risk-mitigating instruments to lower the risk of lending to poor farmers; and high costs of borrowing on capital markets, which leads to higher interest rate charges for farmers.

One alternative for accessing finance for farmers is to rely on microfinance institutions. Despite the spread of microfinance institutions in Africa they do not lend much to agriculture. Interest rates charged by microfinance institutions are extremely high – in Uganda and Tanzania this can be as high as 35 to 48% annually – well beyond the reach of poor farmers. They also lend small amounts, which often are not appropriate for the needs of agriculture. Repayment schedules do not synchronise well with the seasonal nature of agriculture. Loan durations are also too short (six to eight months) to be useful for farmers. While microfinance institutions experienced rapid growth rates in the rural space in the 1990s, many have become increasingly like commercial banks, emphasising short-term loans and deposits, but yet to develop appropriate lending products for farmers.

The severe commercial bank financing constraint is pushing some countries to consider reactivating national agricultural banks (e.g. Uganda, Nigeria and Tanzania). Such state-led development banks have a poor history in Africa. New institutional innovations and policies are needed to leverage commercial financing into smallholder agriculture. These should include (a) reducing the high perceived risks of lending to agriculture, especially through the use of loan guarantees; (b) encouraging banks to develop commercial lending operations in the rural space to mobilise savings and provide credit; (c) developing more appropriate loan products that can serve the needs of farmers and the entire agricultural value chain; (d) improving credit policies that synchronise credit needs with the seasonal nature of agriculture, especially disbursements and repayment schedules; and (e) providing financial literacy to farmers in managing farming as a business, as well as credit management. Recent use of loan guarantees being spearheaded by AGRA is beginning to show successes in leveraging commercial banks to lend to agriculture in East Africa. With the use of \$16 million in loan guarantees for commercial banks, AGRA has been able to leverage \$170 million in market-based and affordable loans for smallholder farmers and the agricultural value chains that support them in Tanzania, Uganda, Kenya, Mozambique and Ghana. The Nigerian Central Bank decided in August 2010 to establish the Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL), with \$500 million to be used to leverage \$3 billion from commercial banks for

agriculture. This is the largest such effort ever by a central bank to inject incentive-based instruments to stimulate lending by banks to agriculture. It marks a departure from the role of central banks in Africa, as such approaches will allow latent excess liquidity to be leveraged from commercial banks to agriculture, Africa's largest real sector.

Africa-wide financial platforms are now needed to scale up commercial bank lending through the development of markets for risk-sharing instruments. By reducing part of the risk of lending by banks, it will be possible to leverage substantial flows of funds in support of agriculture across the value chain and allow African farmers to secure the financing they need to participate more effectively in meeting national, regional and global food needs. An Impact Investing Fund for African Agriculture is being developed by AGRA and several partners to leverage an additional \$2.5 billion from commercial banks for agriculture. The fund will provide funding to share risks with banks, build the capacity of the banks to better understand agriculture, and develop appropriate products and lending platforms to get funds to farmers in rural areas. In addition, an agricultural bank incentive mechanism will be developed to incentivise banks that lend to agriculture, as well as an agricultural bank rating scheme that will be used to rate banks based on their lending to agriculture and the effectiveness and impact of lending.

### **5.6 Invest in breadbasket areas**

The model for guiding agricultural investments in Africa needs to change. Prior models focussed on the dispersion of investments across regions, based more on political expediency and donor interests. The dispersion of resources, including in areas with low agricultural potential, has partly contributed to the low returns on agricultural investments. To stimulate more rapid agricultural growth, a new paradigm is needed to guide agricultural investments. Studies from the International Food Policy Research Institute have shown that combining population density, market access and infrastructure can help to better guide where to focus agricultural investments (Omamo *et al.* 2006). What is needed is to concentrate investments in areas that have high potential, what can be termed the breadbaskets of African countries. These breadbasket areas are those zones with better endowed agro-ecological environments to support highly productive agriculture, where there is relatively good infrastructure and where population densities are high enough to support market demand pull for agricultural production and reduced cost for agricultural innovation to reach farmers.

Several reasons can be adduced for such a shift in focus of investments. First, due to the sparse population in many parts of Africa, the cost of reaching farmers with extension and agricultural technologies is high. The agricultural extension-to-farmer ratio therefore is very low, which reduces the uptake of agricultural technologies. Focusing on specific zones with high potential will allow the optimisation of the limited agricultural extension resources. Second, investing in infrastructure is expensive, especially putting in roads, irrigation etc. The cost of those investments will be much lower when concentrated around areas in a region where spill-over effects can be high. Third, highly productive areas will help to reduce the price of food and, if there are complementary investments in rural transport infrastructure, will allow for movement of food to lower potential areas, lowering the price of food for the rural poor in those areas. But such approaches need to recognise the inequality in rural poverty and ensure that appropriate institutional arrangements are in place to ensure effective participation by the poor, who have a lower asset base.

The transformation of the breadbasket areas can learn from territorial approaches to development (De Janvry & Sadoulet 2007). Focusing on them will require massive development of infrastructure, and development of administrative capacity to manage agricultural production and agricultural value chains for greater benefits within and outside the region. It will also require greater reliance on strong public-private partnerships to crowd investments into these areas, the

development and orientation of financial institutions to target investments to these areas, entrepreneurship development of farmers and agribusinesses, building the capacity of farmers' organisations to improve their ability to leverage higher returns from these investments, and investments in public goods that will create spill-over benefits between these areas and the less endowed areas. The breadbasket areas will also allow for labour migration from less endowed areas, reduce pressure on fragile lands and create a dynamic linkage between production and consumption growth centres.

To ensure that the breadbasket areas are developed, it is important to connect three critical pieces. First, farmers within the zones have to be organised carefully into producer groups, out-grower schemes or contract farming, which will allow them to be linked effectively to buyers of their produce. Second, to ensure that farmers within the zones have access to improved technologies, it will be important to rapidly scale up the distribution and density of agro-dealers. Third, financial institutions should be encouraged to lend through farmer groups that are connected to the agribusinesses within the breadbasket areas.

The development of institutional models that harness these investments, while ensuring that smallholders and communities benefit and that their land rights, especially secondary rights to land, are protected, must be given priority attention. These models could include joint ventures, contract farming, out-grower schemes, management contracts, land leases, management contracts and share cropping (Vermeulen & Cotula 2010). Principles of prior consent, consultation, community empowerment and joint profit sharing arrangements should be followed. Equally necessary is the need to provide legal support for farmers to allow them to deal with the intricacies of land deals and to ensure that they benefit from the arrangements.

### **5.7 Adapt to climate change**

As Africa addresses the underlying structural causes of its food production problem, policy attention will be needed to critically assess the impacts of climate change on food production and what measures will be needed to improve climate change adaptation by farmers.

Greater public investments will be needed to support new technologies to improve the productivity of crops, enhance crop resilience, expand irrigation, improve efficiency of irrigation and expand roads to allow for food to move easily between food surplus and deficit regions and to improve domestic price transmission from the world market into rural areas. Nelson *et al.* (2009) estimate that an additional \$7.4 billion per year will be required to reduce the impact of climate change on developing countries, of which sub-Saharan Africa will need at least \$3 billion (Table 8). The priority areas for public investments for climate change adaptation in sub-Saharan Africa are the expansion of rural roads, agricultural research and improving the efficiency of irrigation.

**Table 8: Additional annual investment expenditure needed to counteract the effects of climate change on nutrition**

	SSA	South Asia	Developing countries
<b>US\$ 2 000 million</b>			
<b>NCAR model with developing country investments</b>			
Agricultural research	314	172	1316
Irrigation capacity	537	344	907
Irrigation efficiency	187	999	2158
Rural roads (area expansion)	1980	8	2671
Rural roads (yield increase)	35	9	66
Total	3053	1531	7118
<b>CSIRO model with developing country investments</b>			
Agricultural research	326	185	1373
Irrigation capacity	529	344	882
Irrigation efficiency	186	1006	2128
Rural roads (area expansion)	1911	16	2881
Rural roads (yield increase)	36	13	74
Total	2987	1565	7338

Source: Adapted from Nelson *et al.* (2009)

The availability of suitable agricultural land will also be affected. While overall prime land for agricultural production is unlikely to change in developed countries, land suitable for double cropping in sub-Saharan Africa could decline by 10 to 20 million ha, while land that is suitable for triple cropping could decline by 5 to 10 million ha (Schmidhuber & Matuschke 2010). Estimates show that the net effect of climate change on Africa could be as high as \$132 billion (Morrison *et al.* 1997). Policies to promote climate change adaptation in African agriculture should be promoted, and technology, institutional and infrastructure interventions will be needed. Africa will need to develop more drought-resistant crop varieties for its farmers.

The development and scaling up of weather index crop insurance needs to be accelerated. Weather index crop insurance has been successfully piloted in Malawi, Ethiopia and Kenya. Public-private partnerships can be used to develop innovative models for reaching the poor, who will be affected the most. For example, in Kenya, Syngenta has introduced 'Kilimo Salama' weather-indexed farm input insurance programme to cover the costs of loss of seeds and fertilisers for poor smallholder farmers. In partnership with Safaricom, the largest mobile phone company in Kenya, they have revamped over 30 weather stations and are piloting the insurance scheme in which farmers may not need to pay more than 5% of the cost of seed and fertilisers to insure their farm inputs in the event of poor weather. Area-based weather index insurance coverage has also been piloted by the World Food Programme in Ethiopia. The challenge of weather index insurance is ensuring that the index is correlated with the actual losses faced by farmers.

The cost of insurance is also high and, when combined with already high interest rates for credit from banks, insurance becomes unaffordable by the poor. This can be changed if governments use part of their annual set-aside funds for disaster payments in the case of catastrophic events to front-load subsidies for farmers to afford crop insurance. This will expand access, lower the cost of developing and marketing insurance products, reduce insurance premiums because of larger effective demand for insurance among farmers, and reduce the fixed costs of developing a market for crop insurance (Adesina 2010). Additional investments will be needed to develop sufficient density of weather stations to make it easier for insurance companies to determine the basis risk and to price their products appropriately, and to help build local understanding among farmers and the rural population about the real risks they face and their willingness to pay for different types of insurance products.

Greater investments will also be needed in supporting community-based adaptation strategies through better land management and the diversification of livelihood strategies (Nelson *et al.* 2010). Other measures to reduce the impacts of climate change include increased use of safety nets, provision of climate information, building climate change forecasting capacity within African research institutions, improved carbon accounting for carbon trading systems, diversifying the income base outside of agriculture, and changes in the global carbon trading systems to include agriculture carbon, especially the new REDD+ initiative (Hassan 2010).

### **5.8 Stronger role for the state to spur agricultural growth**

The development of policies to drive the agricultural agenda in Africa should no longer be dominated, influenced and biased by policy analysts outside of Africa. No agriculture in the world has ever developed on the basis of externally driven policies. Following the structural adjustment programmes, the focus of policy training and analysis shifted quickly towards macroeconomic policies. 'Getting prices right' dominated the policy debate, with the belief that removing distorting policies that affect exchange rates and implicit taxation of agriculture would be enough to drive a supply response in agriculture in Africa. This paradigm failed to realise that the fundamental reason for the low agricultural productivity had to do with the long-term structural capacity of the agricultural systems. The failure of the paradigm was evident: while tradable sectors responded to improved incentives from realigned exchange rates, the food crop sector suffered as prices for imported farm inputs rose, while the lower exchange rates also favoured imports of cheap food, creating a double disincentive for smallholder producers of food crops. Africa must learn a lesson from the misguidance of structural adjustment. It needs to develop home-grown policies that are more amenable to its own stage of development and level of poverty. Whereas capacity building in Africa has focused on macroeconomics, the microeconomic policy capacity needed in Africa to spur growth within the real sectors was deemphasised. While there is no shortage of analysis of policy options to stimulate agricultural growth in Africa, the problem is very little translation of policy analyses into concrete policy actions.

This policy transformation function is dysfunctional. Unlike in the 1960s and 1970s, African agricultural economists have become disconnected from the mainstream of how to shape policies for development. Much of the literature is filled with a preoccupation with the 'mainstream lines of thought' in the international literature, as opposed to reflective and realistic policy option developments that match the reality of smallholder farmers on the continent. This is in sharp contrast to the approach taken by the policy economists who drove the Asian green revolution, who focused on what worked locally.

There is a myth that there exists a single silver policy bullet for solving African agricultural challenges. This is unrealistic for a continent as diverse as Africa. As argued by Idachaba (2000), policy options have to be developed for diverse 'policy environments' in what he called 'policy varietal trials'. The lack of appreciation of the need for these 'policy varietal trials' leads some analysts to criticise every single local policy approach taken to solve problems in Africa, even when they are unique to the specific conditions of countries. There is a severe lack of understanding of the political economy that drives agricultural policies outside and within Africa, and how these coalesce to dampen well-intended local policy options developed on the continent. A process of learning and correction, a critical part of experiential policy making, is much needed. The cost of learning from policy experiments designed to fit the particular situation of African countries, and that balance the role of the state and market, would be much lower, and more sustainable, than the staggering cost of the negative impacts of structural adjustments designed as one-size-fits-all bromides that undermined African agriculture and increased poverty on the continent.

African countries should develop evidence-based home-grown policies that can best help drive accelerated growth of their agricultural sectors – not conditioned by dominant market fundamentalist agendas, which have not worked in Africa for decades. In his recent book *Free Fall: Free Markets and the Sinking of the Global Economy*, Nobel Laureate and economist Joe Stiglitz challenges the market fundamentalist philosophies that have dominated development thinking, noting that, under market fundamentalism, the state is seen as the problem, not the solution. The ascendancy of Keynesian theory in the aftermath of the global financial crisis has challenged the market fundamentalist paradigm, as governments and central banks across the world move away from the neo-classical belief that markets will self-correct to interventionist fiscal and monetary policies. The growth in economic stimulus packages to the tune of trillions of dollars in developed economies suggests that reliance on markets alone is not the way to solve deep social and economic problems.

There is a major lesson here for African agriculture: unfettered markets cannot solve the problem of the food crisis in Africa. What Africa needs is a more proactive state that will provide significant stimulus packages for its agricultural sectors, where over 75% of its population lives, to help unlock poverty traps and accelerate rural economic growth. Increased government spending will be needed to raise incomes in rural areas if there is to be any significant increase in aggregate demand to drive overall economic growth. The state needs to ramp up support to build roads, irrigation and other rural infrastructure, while also providing support for farmers. The state needs to intervene to correct for market failures, which have left some 300 million living on less than a dollar per day. A more proactive state, helping to steer the development of markets, will have a much greater chance of success in accelerating agricultural growth. State intervention to provide support is not necessarily inimical to the growth of private markets. Non-state actors and market and non-market actors can help ensure that increased public financing for agriculture is well directed to areas of highest impact.

Strengthening the role of the state to make better policy decisions to drive food production requires training for and capacity of policy analysts. The Collaborative Master's in Agricultural and Applied Economics is an African-driven programme that is training a new generation of agricultural and applied economists for Africa who have a better understanding of the policy and institutional priorities for agriculture. To ensure that policies are translated into action, there is a need to develop policy hubs and policy action nodes that regroup diverse stakeholders in a specific policy issue (e.g. seeds, fertilisers, markets, land, etc.) to work closely together to ensure that best-bet policy options and regulations are developed to remove impediments. This needs to be complemented by policy advocacy efforts that drive the translation of policies into action, and to monitor and evaluate the effectiveness of policies. Capacity-building efforts should also target the agricultural parliamentary committees across Africa to improve their understanding of the challenges of agriculture, the need for higher public expenditure and the establishment of good governance and accountability systems to monitor the impact and effectiveness of public expenditure in support of agriculture.

## 6. Conclusions

This paper has examined the effects of the global food and financial crises on shaping the performance of agriculture and food security in Africa. These two intertwined crises caused significant macroeconomic, fiscal, balance of payments, social, economic and political challenges for net food-importing developing countries. While short-term transitory factors (e.g. rising incomes, urbanisation, expanding demand for food with higher economic growth rates, rising demand for bioenergy) have played important roles, other long-term structural factors are also shaping the food crisis, in particular the decline in total factor productivity, decline in official development assistance, negative effects of decades of distortions from domestic farm support

policies in developed countries, and the decline in global food stocks as agricultural investments were dramatically reduced and priorities shifted to social sectors. The structural challenge is especially serious in Africa, where, until recently, per capita food production had declined for three decades. The food crisis should not be a surprise for Africa, as the continent had, until recently, been under-investing in agriculture.

The food crisis left a major lesson for Africa: it can no longer continue to depend on expensive food imports, as well as thin and volatile global markets, to meet its food requirements. As the events of the food crisis unfolded, traditional food-exporting countries banned food exports; thus, even if importing countries had the resources to finance food imports, the food was not there. Food security in Africa is now a matter of national and regional security and cannot be left to the vagaries of markets; and neither can Africa, with all of its abundant resources, continue to be a net food-importing region.

Decades of reliance on market fundamentalist policies in Africa have undermined its ability to transform itself into a major food-producing and next food-exporting region. The global financial crisis has shown the flaws in the market fundamentalist models, as developed countries themselves have moved quickly towards interventionist measures to correct for market failures. African farmers are the least supported in the world, even though the sector accounts for some 75% of all employment. Lack of access to production technologies, binding capital constraints, limited investment in critical public goods such as roads and irrigation, and lack of bold comprehensive policies to support farmers have left African farmers in a low productivity trap, as well as in poverty traps, for at least three decades.

The following policy recommendations are made in this paper to help accelerate food production:

- First, African countries should accelerate investments to raise the productivity of staple food crops. These have the greatest potential to meet food security, open up opportunities for Africa to grow its share of food markets, and lift millions out of poverty.
- Second, African farmers should be provided with comprehensive support systems to allow them to get out of poverty traps. What is needed is a mechanism that combines public support to farmers with a market-driven system to connect the farmers to financial markets over time. Growth enhancement support combines public support with a private sector-driven mechanism in terms of which farmers who have had access to subsidised inputs over time are connected to financial markets to help them leap to higher income growth pathways.
- Third, the paper has recommended a range of policies to promote the use of fertilisers among farmers and to address the demand, supply and technical constraints to expanded fertiliser use. The use of fertilisers should be combined with organic inputs to achieve high fertiliser-use efficiencies.
- Fourth, improved seed policies are needed to expand the adoption of improved seeds by farmers, build the capacity of seed companies, expand financing for farmer seed-producer groups and seed companies, and harmonise seed laws to help expand the regional market.
- Fifth, urgent measures are needed to reduce the risk of lending by commercial banks to agriculture. This should include expanded use of risk-sharing instruments to reduce the risk of lending by banks to agriculture, build the capacity of banks to understand the needs of the sector, develop new, affordable products, and deploy new financial-delivery platforms for reaching the rural sector.
- Sixth, agricultural investments in Africa should be focused and carefully targeted to the breadbasket areas, where the potential for agricultural growth is high.

- Seventh, given that global food production will be affected negatively by climate change, it is critically important to invest in the development of drought- and heat-tolerant crops, irrigation, improved water management and scaling up of indexed crop and livestock insurance schemes. To ensure that poor farmers are able to afford the cost of insurance, governments should consider granting some of their resources traditionally used for disaster payments to frontload support for farmers and to subsidise their cost of insurance.
- Finally, as the global financial crisis has clearly demonstrated, market fundamentalist approaches have failed. This was not an isolated case: the same has occurred in African agriculture, with the negative impacts of structural adjustments that advocated a removal of the state from agriculture. Africa has paid a high price for such misguided and externally imposed policies, which advocated a ‘one-size-fits-all’ approach that ignored the reality of African economies. African countries should develop home-grown policies that can best drive accelerated agricultural growth, and should not be conditioned by the predominant market fundamentalist agendas that have not worked here.

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