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Helping Africa to Feed Itself: Promoting Agriculture to Reduce Poverty and Hunger

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Tomato growers, Brong-Ahafo, Ghana

About the authors

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About the report

This report is based upon the published literature, complemented by canvassing the opinions, through telephone and interview, of a cross-section of development practitioners and researchers, listed at Annex A. Where not otherwise stated, the quotes in this report come from these interviews. Quotes from colleagues in the Futures Agricultures Consortium have been taken from short statements made in Nairobi, February 2009.

The authors would like to thank all those who took the time to share their ideas and expertise with the authors. It is only a pity that space does not allow more quotations from those who were consulted.

Disclaimer

This report represents the independent analyis of the authors. The views expressed within are not necessarily those of the Friends of Europe, of the persons consulted in producing this report, or of Futures Agricultures Consortium or the Overseas Development Institute.

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Abbreviations

AGRA	Alliance for a Green Revolution in Africa
AU	African Union
Bt	Bacillus Thuriengiensis, a bacterium that produces toxins that make it an insecticide
CAADP	Comprehensive Africa Agriculture Development Programme
CMAOC	Conférence des Ministres d'Agricultures de l'Afrique de l'Ouest et du Centre [Conference of Agriculture Ministers of West & Central Africa]]
EAFF	East African Farmers' Federation
FAO	Food & Agriculture Organisation of the United Nations
GDP	Gross Domestic Product
GM	Genetically modified
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
k	Thousand
M	Million
MDG	Millennium Development Goal
NEPAD	New Partnership for Africa's Development
OECD	Organisation for Economic Co-operation & Development
PROPAC	Plateforme Sous-régionale des organisations paysannes d'Afrique Centrale Regional Platform for Small Farmer Organisations of Central Africa
ROPPA	Réseau des Organisations Paysannes et de Producteurs de l'Afrique de l'Ouest Network of Small Farmer Organisations of West Africa
SACAU	Southern African Confederation of Agricultural Unions
UMAGRI	Union Magrébine des Agriculteurs
Farmers	Union of the Maghreb
WTO	World Trade Organisation

Summary

Understandable concern exists over the state of hunger in Africa: almost one third of the population are estimated to be hungry, while more than a quarter of infants are underweight in the countries to the south of the Sahara. Moreover, parts of Africa are all too often hit by sharp increases in hunger when harvests fail or strife breaks out. Can Africa feed itself? And what needs to be done?

This report reviews the evidence and opinions drawing on available statistics, the considerable literature and interviews by telephone and email with key informants. The review looks at the record on food security, problems and successes of agriculture to date, future challenges, and points of agreement and contention.

The key points arising from this review are as follows:

- Africa suffers badly from hunger: south of the Sahara, FAO estimates that almost one in three is undernourished, 265M people in all, while more than a quarter (28%) of children of less than five years are underweight.
- Agricultural production in Africa has increased only slowly over the last forty years: expressed per person, production has barely increased at all during this time.
- It would be easy to imagine that the lack of food production has led to hunger, but that would simplify. The association is less direct than may be imagined. It is poverty that leads to hunger, and, together with health and care, that leads to malnutrition, rather than lack of food production. But since so many of Africa's poor are engaged in farming or linked activities, promoting agriculture is a good way to reduce poverty and, through that, hunger.
- A further critical qualification is the amount of variation seen across the continent. Levels of food security, and indeed of the factors that lead to food security — food availability, access to food and utilisation of food — vary greatly across the fifty-five countries of Africa. This suggests that the issues are not about the geography or history of Africa, but rather are matters of policy.
- At least half a dozen factors have are frequently mentioned to explain the disappointments seen. They include: the difficult geography of Africa with large areas with semi-arid climate and poor soils, exacerbated by environmental decline as rising populations over-use resources; lack of incentives to farmers for lack of effective demand when urbanisation is limited, incomes low, and roads to market poor; unfavourable external conditions when farmers in OECD countries favoured by subsidies can dump produce on to African markets and when access to some Northern markets are blocked by trade rules ; lack of technology appropriate to Africa with its multiple and varied systems; failures of markets that have seen private enterprise provide too few financial services and inputs in rural areas; and government failure to invest in the sector — donors have been even more culpable, and policy biases that have favoured urban areas over rural, and otherwise deterred private investment in farming. The diversity of views on this reflect that the continent is large, with widely differing conditions and experiences, influenced by an array of factors acting with varying impact through time and across space.
- As part of the theme of variation, it should not be forgotten that African agriculture has scored successes. They may not be generalised, or always sustained, but they happen. Success is associated with farmers having the incentive of effective demand for marketed output; adopting technical improvements — some based on local innovations, some coming from formal research; set within a context of functioning supply chains — sometimes organised by state companies — and an economic environment that has allowed investment and innovation.
- There are challenges in the future, not least from climate change; but there are opportunities as well, including the likely strong demand for farm produce from growing and more urban populations within the continent and from Asia.
- A broad consensus has recently emerged amongst governments and donors that agriculture has been neglected and that more needs to be done to promote the sector, not least by renewed public investment. This can be seen in the Maputo declaration of 2003 when African leaders committed themselves to spending 10% of their budgets on agricultural development and to strive to reach 6% rate of growth in agriculture. NEPAD's initiative, now assumed as well by the African Union, the Comprehensive Africa Agriculture Development Programme (CAADP) attracts widespread support and provides a framework for government and donor efforts. Private initiatives such as the Alliance for a Green Revolution in Africa (AGRA), funded largely by the Bill & Melinda Gates Foundation, complement this and reflect the consensus that more needs to be done.
- Two qualifications to that consensus might be noted. One is that it is not just a matter of how much is spent on promoting agriculture, but on what: the argument being that returns to investment in public goods in rural areas — such as roads, research and extension, rural schooling, clean water and health care — are high. The other is that governance needs to improve as well. Unless rural people have more say in decision-making, they will not get the attention they deserve nor will the programmes and policies implemented in their name be appropriate.
- Beyond consensus, however, there are four sets of issues that divide opinion. The extent to which the state needs to intervene in markets to correct failures is one. When the private sector does not supply inputs or financial services in rural areas, does this mean the state has to intervene as in the past; or does it require institutional innovations that would encourage private enterprise to fill the gap? Malawi has subsidised the price of fertiliser for the last four crop seasons to remedy perceived market failures, with the apparent result that there have been four consecutive bumper harvests. Yet others wonder whether the cost is sustainable and whether more could have been achieved with the same funds had they gone to strictly public goods.
- Trade liberalisation is a second case: while some favour open trade, others call for protection of African agriculture from imports. This applies especially when world markets can be heavily affected by exports of cereals, beef and dairy products produced in the North

by subsidised farms. This also applies to export crops. US cotton, grown with generous subsidies from the US government that enables exports of cotton at low cost, thereby reduces returns to African cotton growers.

- There are strongly held views on choice of technology and how innovations should be generated. Should Africa intensify its use of external inputs or should it seek systems that economise on them? Above all, opinion divides over the application of biotechnology, on whether to permit transgenic crops and species, and on who should have control of that technology. Some are deeply suspicious of technologies that are owned by a few transnational corporations, and some are almost as suspicious about the activities of the international agricultural research stations grouped under CGIAR.
- Last, but not least, there is debate over whether small farms can invest, innovate and generate growth, or whether more scope should be given to large-scale farms that are presumed to be more efficient in their management, to have access to know-how, and that are able to access sufficient capital to intensify production. These arguments have been stimulated still further by the wave of plans announced in the aftermath of the 2007/08 price spike by food importing countries to acquire land in Africa to grow, on large farms, cereals for export to the Gulf and parts of Asia.
- In defence of small farms, history shows that in the early stages of agricultural development, the small scale of farms has not historically been an obstacle to growth or conservation of resources. Small farmers innovate, invest and conserve their soils and water — given the right conditions. This was the case in the Asian green revolutions: it has also been so in Africa.
- But would farming benefit from greater investment and know-how that large corporations can mobilise? Yes, but whether that is done by offering large-scale farmers land concessions, or whether it is through forms of contract farming and co-operation that link large firms in the supply chain to small farm suppliers, is a key question. There are reasons to continue to prefer small farms. They have technical and economic advantages in the management of household labour that is effectively self-supervising. Smallholder development may be more effective in reducing poverty and hunger, since it tends to be intensive in labour, both of the family and also of neighbours who lack land and who are generally poor, thereby generating jobs and some income for those who need it. When small farmers spend extra income, they tend to spend locally so that jobs are created in the rural economy off the land.

What may be concluded from this? Four implications for policy-makers can be drawn out:

1. There is great diversity of circumstances and experiences across the continent. It is unlikely there is some universal solution to the problems faced. On the contrary, analysis and selection of options has to be largely a national matter. This can be seen positively: if some countries can see their agricultures grow and prosper, then so can others. If landlocked, Sahelian Burkina Faso — whose agricultural success deserves to be better known — can do it, then what excuse has any other country?

   Recognize the diversity and heterogeneity of agriculture across the continent.

   Avoid easy and ideologically biased answers. Acknowledge that agriculture is and will remain a special sector that can neither be fully addressed with neoliberal nor neo-romantic ideologies.

   Detlev Puetz, Principal Evaluation Officer, African Development Bank

2. Policies probably do not have to be perfect. The important things are to get the basics broadly right and avoid major mistakes. The latter include conflict and political instability, macro-economic chaos, heavy implicit taxation of farming, and gross under-investment in rural roads, schools, health centres and agricultural research and extension. Hence a country that manages a relatively stable macro-economy, with a reasonably welcoming investment climate, that invests sufficiently in public goods in rural areas, and makes some progress in reducing rural market failures is likely to see its agriculture grow and become more productive. With that should come substantial reductions in rural poverty and improvements in nutrition.
3. There is huge potential for learning across Africa. With fifty-five countries a rich variety of experiences are continually being generated. To date, there has been less evaluation of agricultural and rural development experiences, and dissemination of lessons, than there could have been. Problems have received a disproportionate amount of attention compared to studying successes and looking to replicate them.
4. More specifically, a key current question is whether the initiatives started in the last few years — with CAADP and AGRA to the fore — are the right measures. In as much as agriculture has suffered from underinvestment across much of the continent. Initiatives that seek to remedy this are welcome. Increased investment needs to go primarily on public goods — rural roads, schools, health centres, water and agricultural research and extension. It needs to be complemented by macro-economic stability and efforts to remedy market failures.

There remain, however some knotty questions surrounding market failures. While managing the macro-economy and providing public goods are fairly straightforward, dealing with market failures is not. Fostering institutions, facilitating private-public arrangements, judiciously intervening in the market and deploying 'smart' subsidies where absolutely necessary — judging which of these, and the mix, in any given circumstance is not easy. Getting effective answers is likely to require trial and error. Government will often need to act to facilitate, to mediate and broker deals between private parties. For some ministries of agriculture and their staff, these are likely to be demanding roles. Yet if the needs are recognised and action taken, the challenges can probably be met.

Last but not least, if the goal of feeding is better nutrition, then the health dimensions of nutrition need attention as well as agriculture. Providing access to clean water,

sanitation, and simple primary health measures such as immunisation are equally part of the Millennium Development Goals. Given funds and the will, implementation of these is largely straightforward. Ensuring that future generations get a good start in life will, of course, be of great benefit to agriculture in the long run.

What may be concluded for European aid donors seeking to assist African countries, the regional economic commissions and the African Union to stimulate agricultural development? The most obvious point is to fund and support African initiatives: that goes without saying. Beyond that donors, who deal with many countries and contexts, need to recognise the importance of analysis specific to countries and regions within them. They also need to admit that while some things are fairly straightforward, relatively simple to plan, fund and implement, other important issues require processes of trial and error to find effective solutions in local circumstances. It would be good also if donor efforts could more sustained, allowing enough time for promising developments to become embedded before switching attention and funding to some other issue. Donors could also ensure that more evaluation of development efforts takes place and that the lessons are effectively disseminated across countries.

1. Introduction

Africa suffers from chronic hunger. Following the food price spike of 2007/08, FAO estimates that another 12% have been added to the numbers of undernourished people in Africa south of the Sahara, bringing the total to 265M, almost one third of the population. In the same region, more than a quarter (28%) of children aged five years or less were underweight in 2006. A glance at FAO's map of hunger — see **Figure 1.1** — shows large parts of Africa experiencing chronic and widespread hunger. Only South Asia experiences comparable levels of hunger. As if this were not bad enough, food crises and famines break out repeatedly in parts of Africa: not a year goes by without appeals to the international community for aid to prevent starvation. These alarming facts prompt the questions, can Africa feed itself? And if so, how?

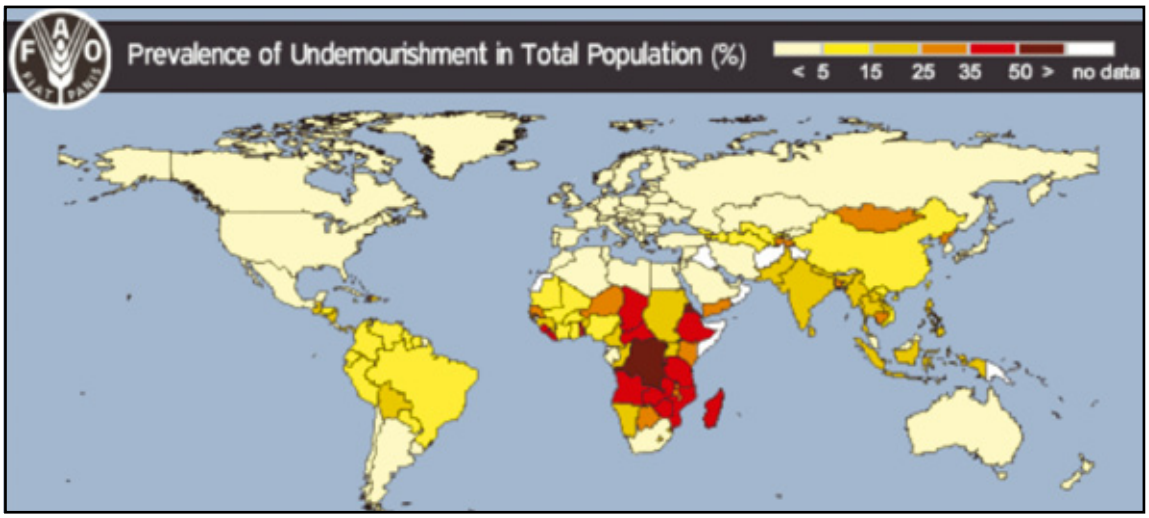
Straightforward as these questions may seem, answering them is complicated since hunger and malnutrition are only partly a result of lack of food production. Indeed, to anticipate later parts of this report, Africa produces enough food — not counting the additional availability owing to imports and food aid — to feed all of its population adequately, were the food evenly and equitably distributed. It is poverty, rather than any physical lack of food, that condemns so many Africans to hunger. And for many malnourished infants, food is only one of their worries: disease, often linked to poor water and sanitation, is as much of a problem as diet.

Yet agriculture is critical to the food security of many Africans. Much of the population still lives in rural areas and most Africans farm: it is a key source of income, central to livelihoods. Agricultural development has the potential to reduce poverty and hunger, since it generates incomes for farmers and all those who work in agricultural and food chains providing inputs, transporting, storing and processing agricultural produce. Moreover, in domestic markets that are often isolated from world markets by distance and high transport costs, producing more food can help reduce the real cost of food to the benefit of the poor. Hence agriculture matters, even if its impact on hunger may be less direct than might be thought.

Although food insecurity and malnutrition — 'hunger' broadly speaking — are closely related, there are important differences in definitions and concepts, as set out in **Box A**. Despite hunger being related only indirectly to food production, most debate on hunger in Africa focuses on food production. This simplification needs questioning.

This report begins by reviewing the current state of food security in Africa. It then sets out the explanations surrounding the difficulties of food production, but qualifies this by noting successes that can easily be lost to sight. Emerging trends and future challenges are reviewed. The main issues for current and future policy are then discussed, with a more detailed examination of some of the key controversies, before concluding.

Figure 1.1. Hunger Map, 2010, FAO



Source: FAO

Box A. Defining food security and malnutrition

Food security is usually defined in terms of individuals having the food they need to live their lives.

'Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO 1996).

'Food security' is sometimes used to mean national self-sufficiency in food supplies. This is unhelpful since the correspondence between national production and hunger can be weak. India is generally self-sufficient in cereals production, yet there are more hungry Indians than in any other country: Iceland imports much of its food, yet its people are well fed. Food security in this paper refers strictly to individual nourishment.

Food insecurity can be a chronic condition, although typically varying by season with hunger felt most acutely in the last few months before the main harvest when food supplies and income run short. On top of chronic hunger, crises can plunge many more into temporary hunger — see Box B.

Hunger can otherwise be seen as one of two conditions: undernourishment and malnutrition. Undernourishment is a measure of access to food. FAO estimates the numbers and prevalence of those not getting access to food for developing countries by assessing the availability of food in countries, based on estimates of production and the balance of food traded, distributing this across groups of people roughly according to incomes, and then computing the numbers who would not then get enough calories to meet their daily needs.

These estimates give a broad guide to levels of hunger, but the impact on nutrition requires more precise observation. Since the damage from malnutrition is greatest for infants, surveys record first and foremost the height and weight of children aged less than three or five years. From these measurements three statistics can be computed:

- Height for age — low scores indicate stunting, the long-term cumulative result of inadequate nutrition or health or both;
- Weight for height — low scores indicate wasting, the consequence of recent acute starvation or severe disease or both; and,
- Weight for age — low scores indicate underweight, a combination of stunting and wasting.

The resulting statistics are then compared to international reference levels and malnourished children are then classed as moderately or severely malnourished.

The Millennium Development Goals include targets for food security. Goal 1 is to eradicate extreme poverty and hunger: Target 1.C[1] is to halve, between 1990 and 2015, the proportion of people who suffer from hunger. Two indicators are specified:

- Indicator 1.8: Prevalence of underweight children under-five years of age; and
- Indicator 1.9: Proportion of population below minimum level of dietary energy consumption [proportion undernourished].

2. Current state of food security and agriculture in Africa

Food security

According to FAO data (2009) the proportion of Africans undernourished is high: in 2004/06 it was 30% in Sub-Saharan Africa, showing only a small improvement from the 34% registered in 1990/92. Clearly at that rate of improvement, the MDG indicator of halving the proportion undernourished would not be met. But these data are proportions: since population has been rising, the actual numbers hungry have risen, from an estimated 167M to 212M: an increase of 45M people undernourished.

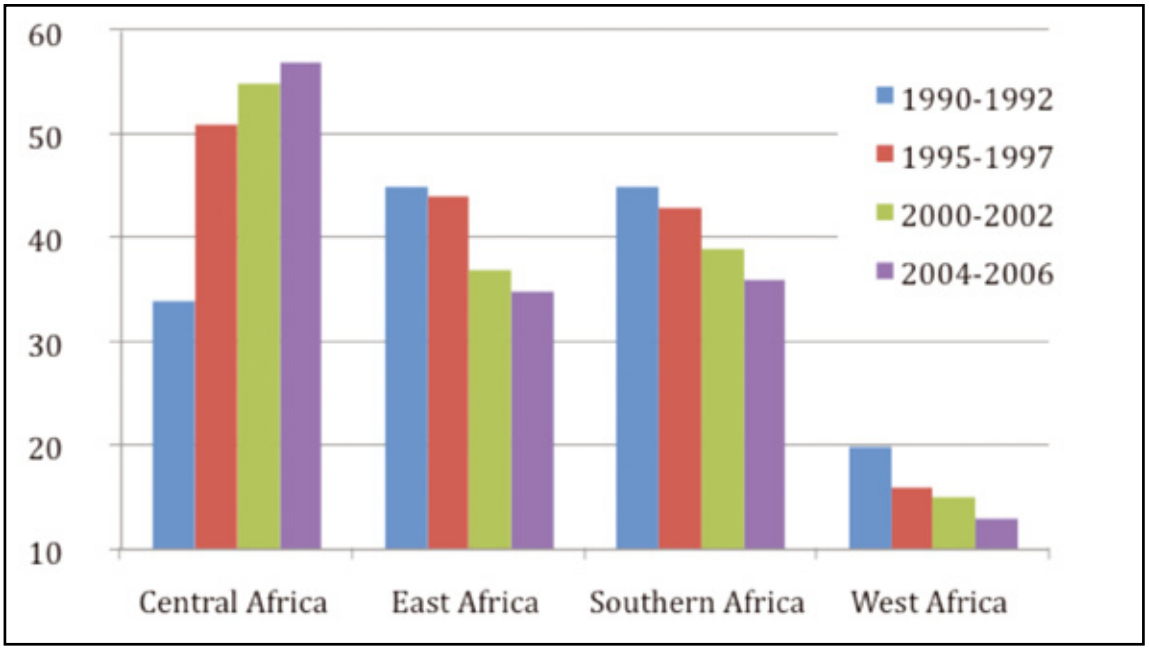
There have, however, been considerable variations across Africa. **Figure 2.1** shows the proportions living in hunger since the early 1990s by region for Africa south of the Sahara. Hunger is much lower in North Africa[2] than elsewhere, with less than 5% of the population undernourished. Even south of the Sahara there are notable differences across regions. West Africa experiences levels of hunger that are roughly half those seen in other parts. Southern Africa, despite its relative wealth, has surprisingly high levels of undernourishment.

Undernourishment tends to be seasonal, with those poor in incomes and food enduring hunger in the period leading up to the harvest when supplies dwindle and prices tend to rise. Food security varies between years as well. Bad harvests, civil war, and economic chaos can affect food supply leaving many more people temporarily hungry, sometime acutely so in food crises and famines, see **Box B**.

Progress in reducing hunger has been very different across the regions as well. West Africa has shown the greatest improvement since the early 1990s. If progress is sustained, the target for 2015 will be achieved in that part of the continent. East Africa has reduced the proportion significantly since the mid-1990s and at that rate, would also reach the target. In both these regions, the absolute numbers hungry have fallen. On the other hand Southern Africa has made slow progress, while Central Africa has seen huge increases in the prevalence of hunger. Much of the latter deterioration is associated with repeated civil strife in Congo DR.

While the statistics are not encouraging overall, this illustrates an important theme: the very considerable variations seen across Africa. The failures, disappointments and catastrophes get media attention and provoke calls for international response: progress and success do not, and so are always likely to be obscured. There is

Figure 2.1. Africa, percentage undernourished, by region



Source: FAO 2009. Regions follow FAO definitions: there are important differences between these and the UN regions for all areas except West Africa.

Box B. Temporary food insecurity: food crises and famines

Food crises and famines attract more attention than chronic hunger, since they can rapidly plunge large numbers into acute suffering, with consequent destitution, migration, and high death rates. When they happen they prompt calls humanitarian aid from governments and civil society.

Food crises often stem from a shock to food supplies: harvest failures owing to drought and floods; or to farming being interrupted by conflict or economic chaos. In remote areas this may then lead, temporarily, to insufficient food available. In better-connected areas food may soon arrive from other areas, but thanks to high transport costs, prices can be high so that the problem quickly becomes one of economic access.

Some parts of Africa see frequent food crises. No less than 23 countries were the subject of UN (OCHA) humanitarian appeals in 2007 and 2008. FAO also monitors food emergencies. Between 1999 and 2007, 17 countries were frequently mentioned.[3]

Famines, when increased hunger leads to a sudden and substantial rise in mortality, are relatively uncommon. Indeed, so unusual is outright famine that John Seaman (1993) wrote that the chances of an African dying of famine were 'vanishingly small'. Mortality in famines is rarely from starvation: the majority of victims die from disease typically caused by crowding into relief camps with poor sanitation. Recent famines in Africa have been closely linked to conflict. War and strife can comprehensively and suddenly close down livelihoods, destroy savings and assets, and force people to move with little means of support.

The numbers affected by food crises and famines can be large, although compared to those suffering from chronic undernutrition, they are probably fewer. For example, even in the Horn of Africa where food crises are frequent and affect large fractions of the population, the average number of persons assessed as needing relief is around 20M. This can be compared to the more than 200M Africans who suffer from chronic undernourishment.

nothing uniquely African about these problems. Clearly some parts of the continent have found answers. While citizens and leaders in Africa can learn from the rest of the world, there are often lessons in neighbouring countries.

Nutrition statistics show rates of children under five underweight at 28% for Sub-Saharan Africa (6% for North Africa) in 2006, showing a little improvement from the 1990 estimates of 32% (and 11%). The rate of improvement seen for Sub-Saharan Africa is well below that necessary to reach the MDG target by 2015.

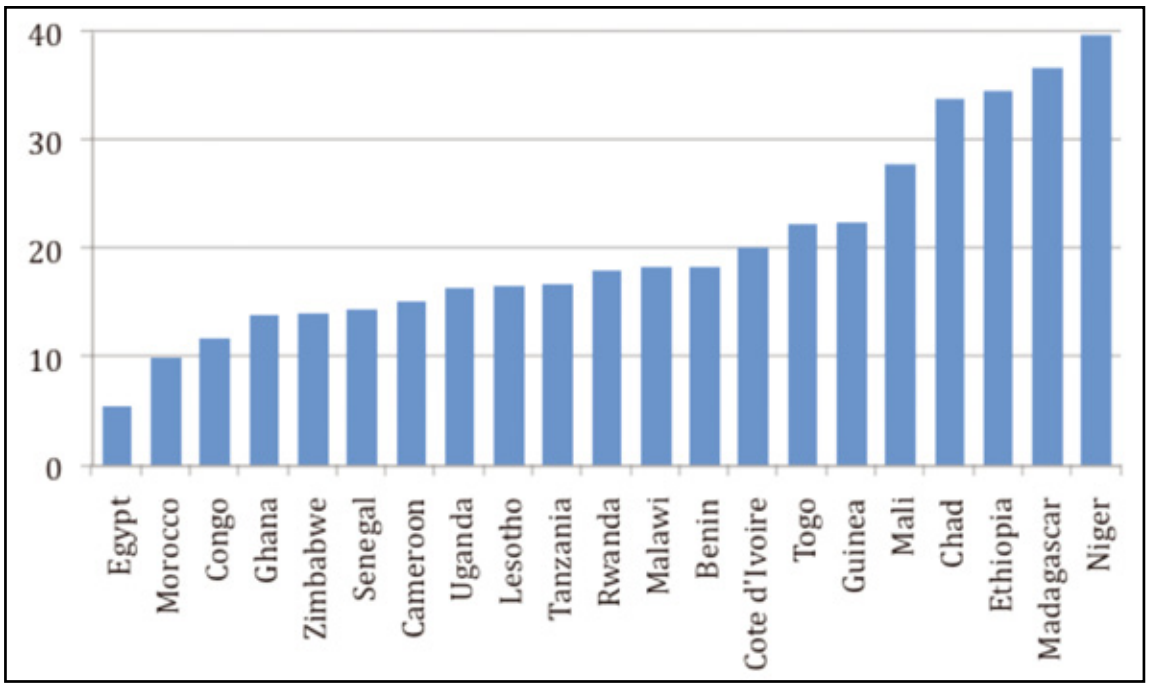
As with undernourishment, however, there is great variation in rates of underweight children across the countries of Africa. As **Figure 2.2** shows, rates vary between almost 40% to as few as 5%.

Looking at progress between the early 1990s and the mid 2000s, see **Figure 2.3**, there are similar differences across nations. Some countries have seen reasonable progress over the thirteen years, sufficient if maintained to reach the MDG target by 2015: Egypt, Senegal and Tanzania are examples. Others, however, have made slow if any progress, as seen in Morocco, Madagascar and Niger.

Explaining the outcomes

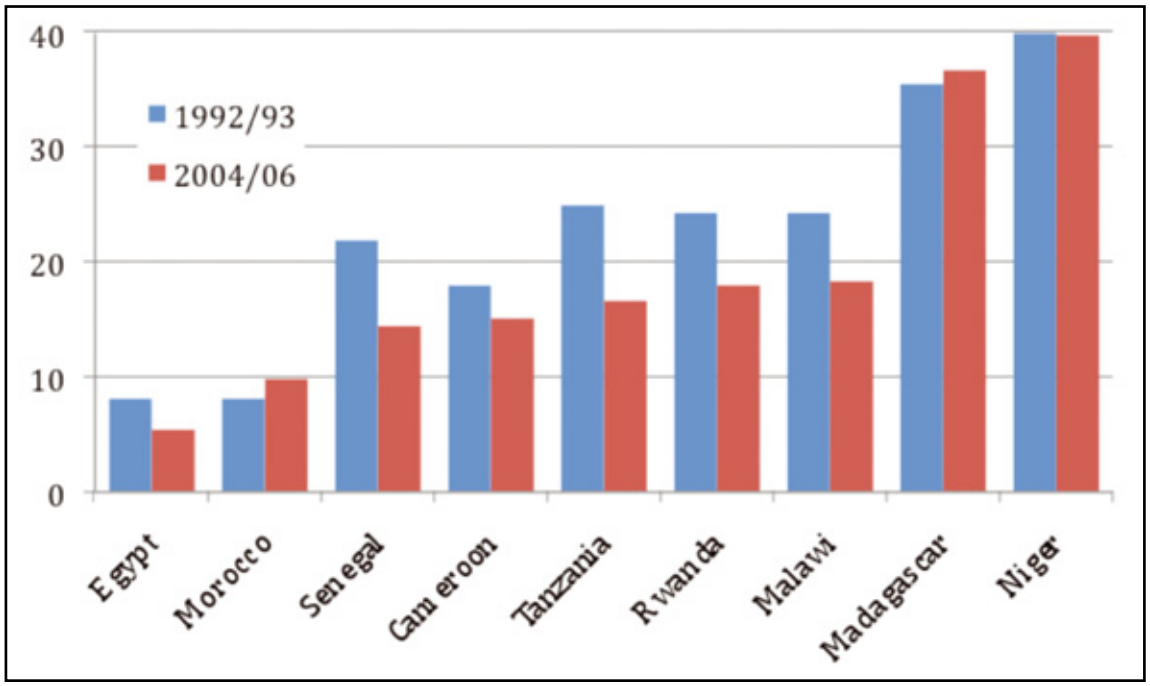
What influences the outcomes in food security seen? A widely adopted framework sees food security as the result of three factors: food availability, access to that food, and utilisation of food.[4] Evidence on these will be examined in turn.

Figure 2.2. Africa, rates of underweight children under five in selected countries, 2004/06



Source: WHO data, from national surveys.

Figure 2.3. Africa, rates of underweight children under five in selected countries, 2004/06 and 1991/93



Source: WHO databases. Comparable data are available for only nine countries out of 55.

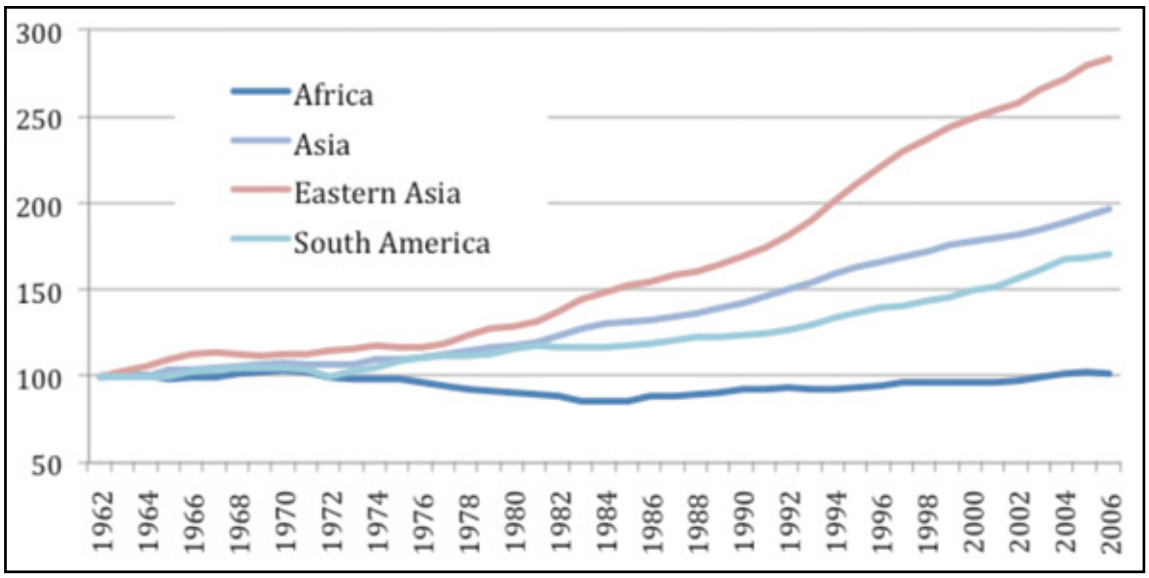
Food availability in Africa

Over the last forty years, food production in Africa has increased slowly. As **Figure 2.4** shows, while food production per person in East Asia almost tripled, in Asia almost doubled, and that in South America rose by 70%; in Africa food production per person has barely improved at all.

Two important qualifications apply, however: Africa's record is blighted by a dismal decade that began in the first half of the 1970s, and since the early 1980s the trend is steadily increasing; and patterns have been different between the main African regions, see **Figure 2.5**. Overall African food production per head since the early 1980s has risen, by some 18%.

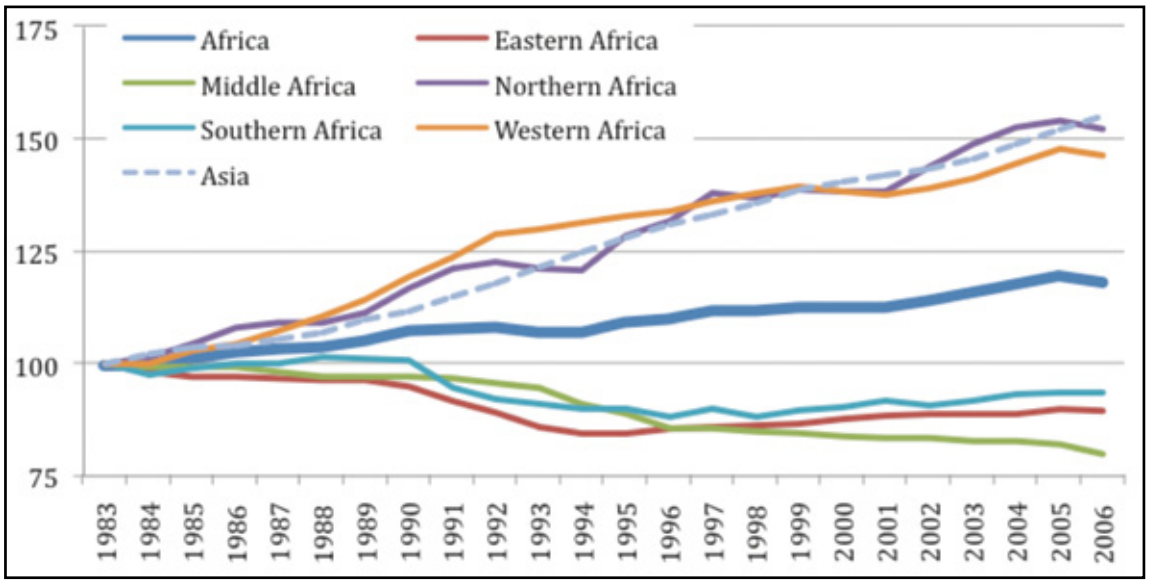
But what is more striking is the difference between two regions that have done much better: Northern and Western Africa, with 52% and 46% increases respectively, and those for the rest of Africa where food production per capita has fallen over this period. Indeed, Northern and Western Africa have not only raised production well ahead of population growth, but have also matched the record of Asia in raising food production per capita in this period. Concern over food production is not an Africa-

Figure 2.4. Food production per capita, 1961/62 to 2005/07



Source: Data from FAOSTAT, FAO. Gross food production per capita, indices, taken as three–year moving averages and based to 1961/63.

Figure 2.5. Africa, food production per capita, 1982/84 to 2005/07



Source: Data from FAOSTAT, FAO. Gross food production per capita, indices, taken as three–year moving averages and based to 1982/84

wide problem but is rather concentrated in Eastern, Middle and Southern Africa.

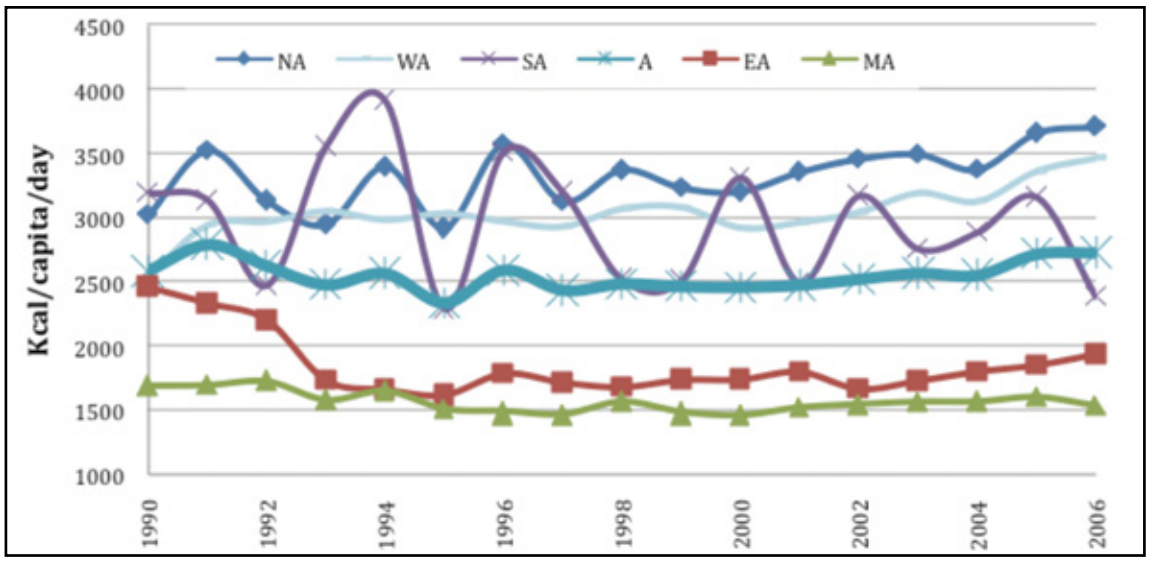
The growth of food production does not indicate how much food there is, nor does it take account of the net balance of trade in food. **Figure 2.6** shows the amount of staple food — cereals, roots and tubers — available in Africa and its regions, including domestic production plus net imports, converted to energy equivalent. Since 1990 staple foods available per person have been roughly the same, at around 2,500 Kcal/head/day, across the continent. Given that 2,000 kcal should satisfy the average need for energy,[5] then hunger should have been the rare exception in Africa in recent times. This estimate, moreover, understates total energy in the diet, since no account is taken of pulses, fruit, vegetable, meat, dairy and fish. This suggests that hunger is a problem of distribution, not of food availability.

Once again, the regional contrasts are notable. Food availability has been rising in Northern and Western Africa, stagnating or falling elsewhere. In levels, three regions have averages well above daily average requirements, with Southern Africa joining Northern and Western, while Eastern and Middle Africa fall below the threshold of 2,000 kcal.

Food access

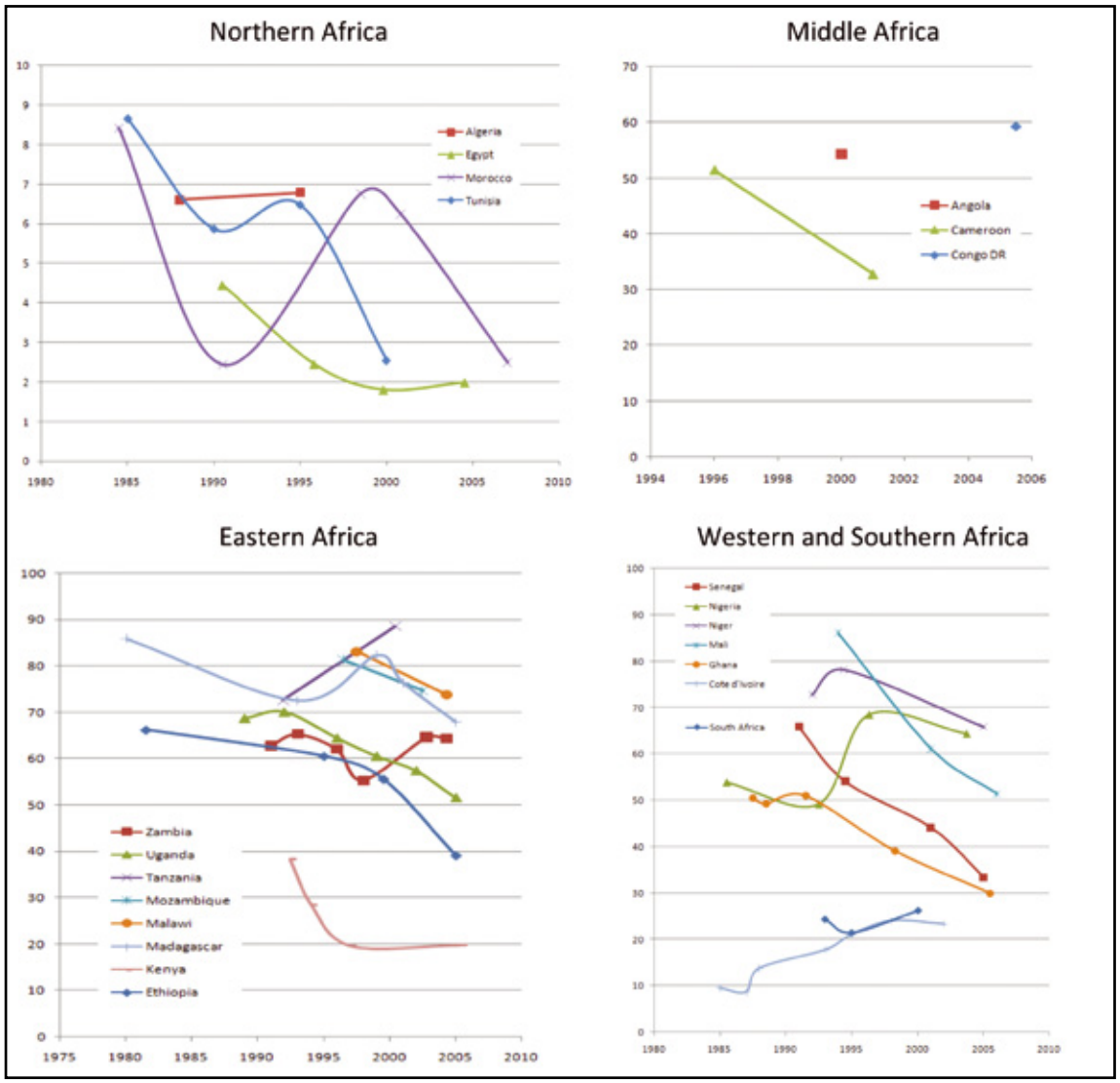
> *People may think solution is to grow food. That's a risk, since self-sufficiency is not the answer ... it's about distribution of food and making sure markets work better.*
>
> Stephen Devereux, Research Fellow, Institute of Development Studies, University of Sussex

Figure 2.6. Staple food availability (kcal/capita/day) by UN region in Africa, 1990–2006



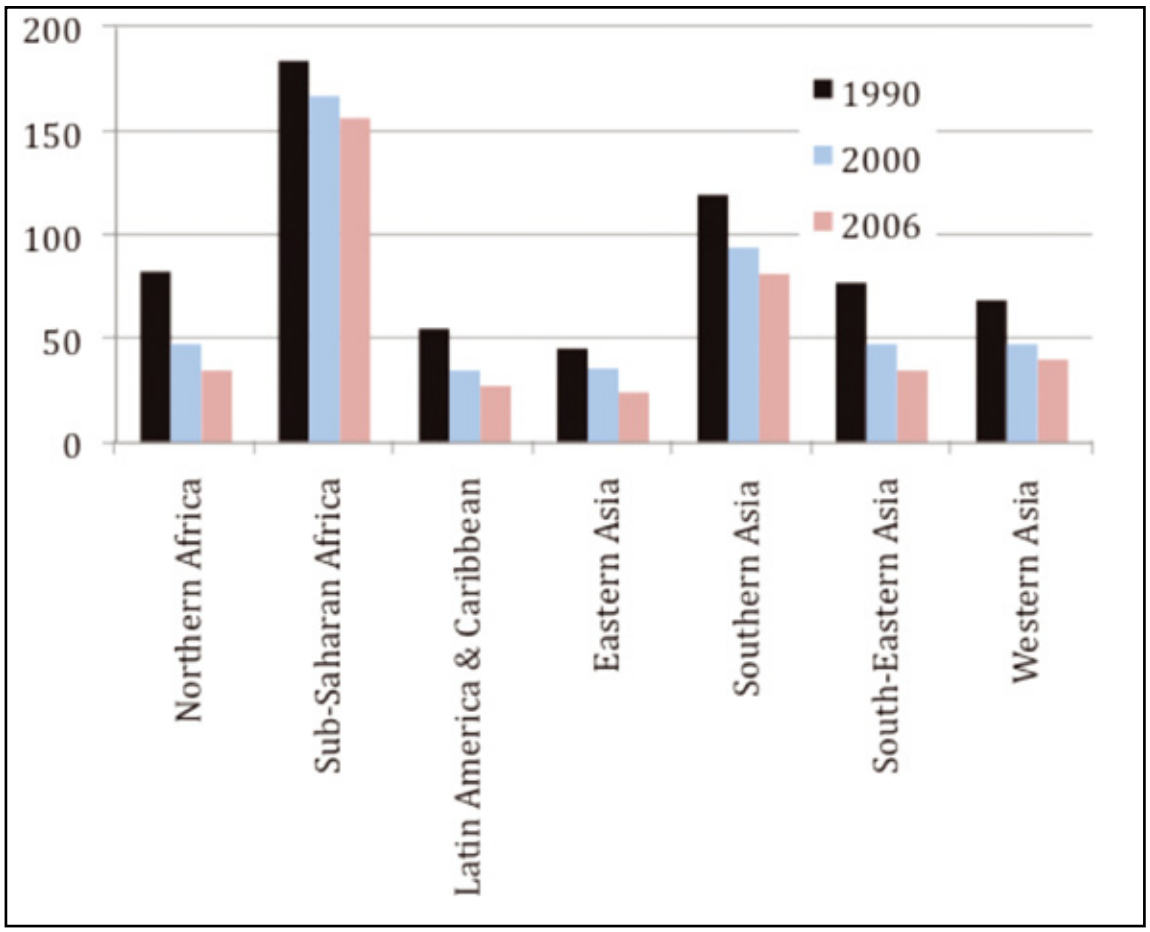
Source: Constructed using data from FAOSTAT

Figure 2.7. Poverty headcounts as percentage of population in selected African countries



Source: Constructed using World Bank POVCAL data

Figure 2.8. Under five mortality per thousand live births, Africa and other developing regions, 1990 to 2006



Source: UN MDG Report 2008

> *If on average, there is enough food in Africa to feed everyone, then much of the problem is one of access. Incomes are not distributed evenly: poor people are overwhelmingly those who go hungry.*
>
> *Increasing agricultural production must go hand in hand with increasing the incomes of the poorest, particularly small-scale farmers.*
>
> Olivier De Schutter, United Nations Special Rapporteur on the Right to Food: Extract of written contribution to 17th session, Commission on Sustainable Development of the United Nations, 4–15 May 2009

Since the early 1990s, real GDP per capita, has been rising in Africa as a whole, at an annual average rate of 2%, and at 2.3% for the period 2000–07. In every region there has been an increase in average incomes. The exceptions to this have been those individual countries beset by strife or economic chaos, most notably DR Congo, Côte d'Ivoire, and Zimbabwe.

But access is about distribution, so the relevant data concern poverty and progress towards its reduction. Unfortunately, reasonably accurate assessments of poverty are not made that often, so the record is far from complete. For Sub-Saharan Africa overall, the World Bank believes that poverty rates of 56% in 1990 fell to 50% in 2005: progress, but slow progress. **Figure 2.7** shows those countries for which there are data. In many countries, poverty levels remain very high: one third or more is common; and in some countries more than half the population. Only in Northern Africa are the rates below 10%. Although rates of in poverty vary considerably between countries, in most cases poverty has fallen since the early 1990s. Access to food is thus probably improving, albeit slowly and with much variation across countries.

Food utilisation

It is not just food intake that affects nutrition: the way food is consumed, the care of children, and above the health of individuals can be equally important. Since it is infants that are most prone to malnutrition and most harmed by its effects, their health matters. Taking the mortality rate of children under five as an indicator of infant health, **Figure 2.8** shows that Africa south of the Sahara runs higher rates than other parts of the developing world and that the situation has improved only slowly since 1990. This suggests that malnutrition of infants in much of Africa is as much a problem of health as it is one of feeding.

Discussion

The key points are:

- Africa has high rates of food insecurity, both in undernourishment and malnutrition.
- Prevalence, however, is far from uniform across the continent. Conditions are significantly better in Northern and Western Africa.
- Although in the last quarter century much of Africa has not matched the increases in food production per

capita seen in Asia and Latin America, Northern and Western Africa have.
- On average there are enough staple foods available in Africa to meet dietary requirements for energy. Hunger stems from unequal access to food. Despite some progress in reducing poverty since 1990, in many countries one third or more of the population lives on less than one dollar a day.
- South of the Sahara, high rates of infant malnutrition in Africa correlate with very high rates of under-five mortality.

Hence it is far from clear that Africa's problems of food insecurity are primarily related to production of food. They are determined by poverty and health, not by food production.

> *Food security and hunger has to do with 3 issues that need to be dealt with simultaneously: (1) Availability – Food production and Agriculture development; (2) Accessibility – simulating economic growth, income growth, social protection and safety nets; and, (3) Nutrition – prevention (health and nutritional education) and treatment (supplementary and therapeutic feeding) programs.*
>
> Bernard Esnouf, Head of Agriculture and Rural Development, Agence Française de Développement

There are, however, strong links from farming to hunger, but they are largely indirect. Since agriculture is the largest employer of labour in much of Africa, and especially of poor people, increasing agricultural production and productivity has a strong impact on incomes — of farmers and their families, of those who depend on working on their neighbours' fields for a substantial part of their income, and of those employed in the food chain, providing inputs, processing and transporting output. A successful agriculture also means that farmers have more money to spend, and much of this will be spent locally, creating more incomes and jobs to others in the rural economy who work off the land — carpenters and masons, furniture makers, tailors, cooks and waiters in catering, bus drivers, etc. And since most of the poor in Africa live rurally, these linkages are especially important in reducing poverty.

Last, but not least, the price of food in inland Africa depends heavily on local production. Imported food is often far more expensive than locally produced food owing to transport costs. When local farmers produce more, food prices fall and all those who have to buy at least part of their food — and this includes many poor farmers who do not produce all their own requirements — benefit.

A good example of these effects has been seen in the last three years in Malawi. Determined to make sure that the country produces enough maize to meet domestic consumption, the government introduced subsidies on fertiliser and seed, above all for maize. The last four harvests have broken records and exceeded, by some margin, national needs. In some years that has had major benefits for the land hungry poor of rural Malawi, since it has led to greater demand for causal labour pushing up wage rates that are critically important to the rural poor, while the harvests in some years have pushed down prices. Hence rural labourers have seen the returns to their efforts rise substantially. [FAC 2008, 2009]

So agriculture matters for poverty and hunger. In much of Africa, few things can do as much to reduce poverty as can increased agricultural productivity. Hence it is justified to focus on agriculture, but that concerns needs to be balanced by an equal concern for reducing poverty and improving health.

3. Explaining disappointing performance of African agriculture

Ever since the early 1970s there has been mounting dismay at the performance of agriculture in many parts of Africa, leading to a plethora of analyses of what has gone wrong and what should be done to improve matters. Frequently cited explanations include geography and environmental decline; lack of technology; unfavourable external conditions; lack of effective demand for farm output; continuing government failures that deter investors; and market failures that also deter investment.

Geography, environmental degradation and fertility decline

Although Africa hardly lacks natural resources, they are not always of high quality and there are some significant natural limitations to agriculture.

> *Africa is constrained by climate, soil quality, a higher disease burden, and crop diversity. Africa's climate is by no means pervasively adverse, but there are large areas where rainfall is either too high or too low to productively produce cereals (which were the main ingredient in the "Green Revolutions" elsewhere in the world). High rainfall is associated with increased pestilence and often with poorer soils because of leaching of nutrients (e.g. the Congo basins). The drier parts of southern, eastern and western Africa also largely limit production millet and sorghum, but these cereals are not very productive, and do not seem to have resulted in good high yielding varieties with responsiveness to fertilizer. Other parts of Africa also have fragile soils vulnerable to erosion and non-sustainable farming practices. Irrigation is also rare in Africa and partly constrained by its more mountainous topography.*
>
> *In addition to soil and climate constraints, the tsetse fly, malaria and other tropical diseases have also kept population density low in many areas, and directly constrained labor productivity and livestock cultivation. Africa's lower population density also meant that farming practices were highly extensive in much of Africa, essentially based on fallow farming as a means of regenerating soil fertility. Hence, there was probably less interest in yield-increasing technologies that drove the Green Revolution.*
>
> International Food Policy Research Institute, IFPRI

While this is well understood, it is less clear just how much such limitations have frustrated agricultural development.

But some argue that things are getting worse, arguing that natural resources degradation resulting from population growth, (MEA 2005) including cutting of trees for fuel wood, overgrazing and other unsustainable land management practices leading to widespread soil fertility decline (Pender et al, 2006, Koning & Smaling 2005). This takes place while most African farmers already use too little fertiliser to maintain the fertility of their soils (Sanchez 2002, Koning and Smaling 2005). In 2006, a worrying report from the International Centre for Soil Fertility (Henao & Baanante 2006) suggested that African soil nutrients were, on average, depleted five times quicker than they were renewed. Reviving Malthusian arguments, the authors claimed that:

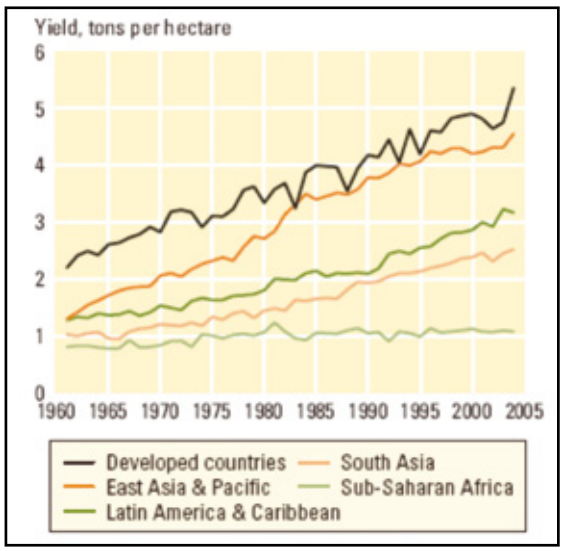
...high population density in many countries already exceeds the long-term population carrying capacity of the land.

Desertification and water scarcity are images frequently associated with Africa. Some populations are indeed strongly affected, and around a quarter of the African population resides in water stressed areas. However, water scarcity in Africa is less severe than in Asia or the Middle East, and large water resources are still unexploited (World Bank 2007). Neo-Malthusian arguments rarely refer to the African continent as a whole, but worries over exhausted natural resources are common for marginal dry lands or highly populated areas.

Lack of technical innovation

Increases in crop yields per hectare have been much slower in Africa than in any other region of the world, see **Figure 3.1**. To some extent this may reflect low and falling soil fertility in some areas, but lack of technical innovation is commonly seen as a major factor. Innovations popularised during the Asian green revolution have not experienced the same success in Africa. Improved varieties have accounted for a large share of the yield increase in Asia, while their dissemination been much slower in Africa (World Bank 2007). Also, the diversity of agro-ecological conditions as well as of the staple crops used in Africa make improved varieties more difficult to develop and to disseminate (IAC 2004).

Figure 3.1. Evolution of cereal yields since 1960 across regions



Source: World Bank 2007

Yet less has been spent on agricultural research and development in Africa than anywhere else (World Bank 2007, Binswanger et al. 2009). Lack of innovation has often been aggravated by high dissemination costs, in part due to low population density, but also due to lack of effective demand for technical innovations (Wiggins 1995).

Slow progress in the use of irrigation — less than 4% of crop land is irrigated (Binswanger et al. 2009), despite its high unexploited potential (World Bank 2007) is another element hindering increases in crop yields.

For some analysts, technology is the number one barrier to improved productivity.

The source of these problems is not fluctuating food prices on the world market, but low productivity on the farm. The production growth needed will have to come from improved farm policies, technologies, and techniques, including those that address the effects of climate change.

Chicago Council on Global Affairs 2009

While these two first arguments focus on limited production potential, the following stress external conditions that prevent the African farmers from producing at their full potential.

External conditions: OECD subsidies and trade rules

Farmers in OECD countries are largely protected, either through subsidies or trade barriers worth at least US$228 billion a year (Anderson et al. 2006a).[6] Aid to agriculture development from these countries, in marked contrast, amounts to around US$3 billion a year (World Bank 2007, p 103).

Support to farmers in the North can harm African agricultural markets. Northern subsidies tend to boost world production and press down international prices, lowering returns to African exporters — cotton is a prime case where exported US cotton produced with a subsidy lowers the world price — and making local markets vulnerable to cheaper imported food. Northern countries are sometimes accused of dumping their excess food on African markets, partly through subsidised commercial exports, and partly through food aid. Although meant to improve food security in receiving countries, food aid can depress prices on local food markets.

Cheap food from developed countries has been dumped all over the world, including through international food aid programmes.

Frederic Mousseau, Humanitarian Policy Advisor, Oxfam

Trade rules can harm African farmers, even if most African countries benefit from preferential trade agreements such as the Everything-But-Arms (EBA) agreement with the EU. Non-tariff barriers, typically in the form of stringent sanitary and phytosanitary standards, can be daunting; while 'tariff escalation' by which processed farm

goods attract higher import duties than unprocessed discourage value addition in exporting countries.

Significant opportunities to African farmers would result from reducing support, either reducing from subsidies of from relaxing trade barriers (Anderson et al. 2006). Unfortunately international negotiations on trade and associated subsidies are more or less at a standstill.

Without a level playing field, farmers' associations fear that continued support from the North to their farmers will price African farmers out of their own markets. The injustice is striking: African countries, often agricultural based, cannot benefit from their competitive advantages partially because northern countries are protecting a small number of farmers.

> *Agriculture is the main source of income for the rural poor. Collapse of export prices due to agriculture subsidies in northern countries leaves millions of farmers with debts and extreme poverty. The social and economic impact of such a policy is immeasurable. Reducing poverty, first and foremost, means paying farmers at the right prices*
>
> Seydou Traore, Minister of Agriculture of Mali, Extract of general declaration to the 26th session of IFAD board, 2003

Lack of effective demand for farm output

But food markets are largely domestic and regional. Are the local stimuli to production strong enough? Many observers think they are not, for several reasons.

First, African farmers face high costs in getting to market, thanks to high per unit transport costs, a consequence of low population density, poor infrastructure, high maintenance costs (Platteau 1996) and in some cases transport cartels. Market access is more difficult in Africa than in any other region of the world, see **Figure 3.2**. High transport costs result in low farm gate prices, and therefore limited incentive to production. The 2005 Commission for Africa report states:

> *Africa's agricultural potential is constrained by a wide range of obstacles and bottlenecks that include [...] and the decline post-1980s of investment in rural infrastructure and in small market towns and villages that link local markets to the global economy.*

Second, local and national markets for agricultural products are also often quite small. Industrialisation and diversification of many African economies is still marginal. Despite rapid urbanisation, much activity in African cities is informal, marked by low productivity, underemployment, and low wages, with limited demand for food and other agricultural outputs (Losch 2008).

Last but not least, policies have often led to limited production incentives. In the past, and especially during the 1970s, macroeconomic policies often imposed high levels of net taxation to farmers. Although tax levels have been relaxed in many cases (World Bank 2007), African farmers still face more tax and attract less support than farmers in other parts of the world (Lloyd et al. 2009).

Muted price stimuli may only be one side of the equation. The two next arguments adduce that African farmers' capacity to respond to demand is limited, not primarily by technical or environmental constraints, but by failures of governments and markets.

Government failures: too little investment and policy that deters investors

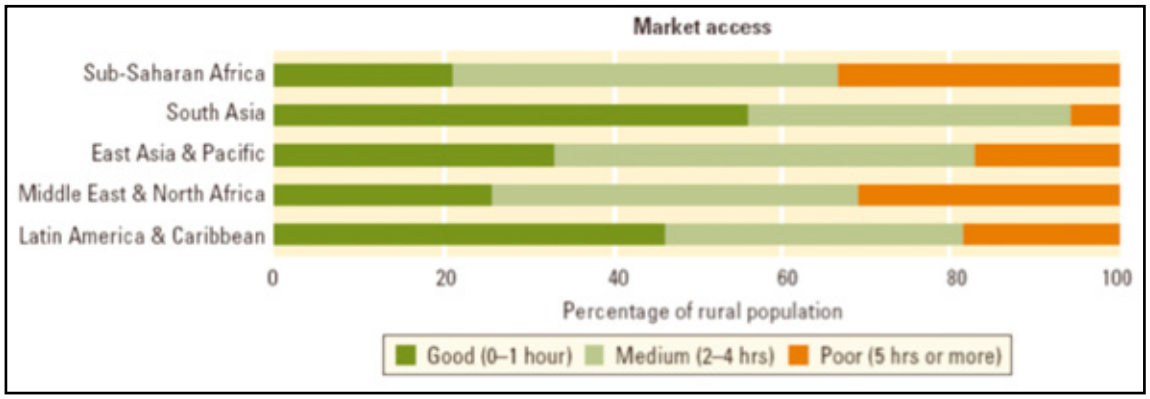
In recent times, many Africans governments have spent little on promoting agricultural development and public spending has been declining relative to the size of the sector. In 1980 it was reckoned that on average African countries spent 7.5% of the value of agricultural production (GDP) on the sector. The equivalent figure for Asia was 9.6%. By 1998 about two-thirds of African countries had reduced this fraction, so that the overall average was by then only 6% of agricultural GDP. (Fan & Rao 2003)

> *[Why has agricultural performance been disappointing?] Falling public spending on agriculture; and lack of investment in rural infrastructure including physical infrastructure (roads, railways, irrigation systems, power) and institutional infrastructure (land rights, agricultural finance)*
>
> Mungara Njoroge, Actis, Nairobi

> *There has been a lack of investment, and even where investment has taken place, it has been concentrated on the large-scale commercial sector rather than on small farmers.*
>
> Fiona Hall, Member of the European Parliament

> *The neglect of agricultural sector in its development strategy and budget allocation has severely constrained the provision of public services such as*

Figure 3.2. Farmers access to markets across regions



Source: World Bank 2007, adapted from Sebastian 2007

agricultural research and extension, rural infrastructure and education.

International Food Policy Research Institute (IFPRI)

The poor performance of African agriculture stems from the neglect of the sector. On one hand, public investments in support services (research and extension) and infrastructure (irrigation and communication) have been low, particularly considering agricultural contribution to GDP. On the other hand, investments from the private sector were hampered by a host of factors including low commodity prices and poorly designed public policies.

Kevin Cleaver, Assistant President, Programme Management Department, International Fund for Agricultural Development

Inadequate public investment can deter private investment: there is, after all, not much point in investing in farming in an area where the roads are so poor that increased production cannot be marketed. In addition political instability and governance failures in general can deter investment, categories that include the following shortcomings:

- Overall political and economic instability. In 2007, no less than twenty-two out of thirty-four countries classified as fragile states by the World Bank were in Africa;
- Despite liberalisation of economies, governments have still been reluctant to trust food markets, resulting in sudden interventions that are difficult to predict and that scare off private activity (Jayne et al 2002); and,
- Inadequate policy formulation and implementation —including slow decentralisation, little involvement of producers associations, the private sector and the civil society in policy processes, and limited implementation capacity. Lack of a coherent policy framework and low institutional capacities for policy implementation emerge as keys factor for the poor performance of aid in African agriculture (e.g. World Bank IEG 2007).

Governance issues have been paramount, including macro- and sector policies that were too little implementation oriented, ineffective public services, and the only partly successful transformation of agriculture services

Detlev Puetz, Principal Evaluation Officer, African Development Bank

Policy choice, however, is not only a domestic issue. Some observers stress how structural adjustment and liberalisation of African economies has prevented governments from helping their farmers.

Structural adjustment policies have reduced scope for public action and policies

Fred Mousseau, Humanitarian Policy Adviser, Oxfam

The role of structural adjustment in creating poverty, as well as severely weakening the continent's agricultural base and consolidating import dependency, was hard to deny.

Walden Bello, Senior Analyst, Global South, Social Research Institute. Chulalongkorn University, Thailand

Moreover, governance failures have not been only of African governments. Donors have made plenty of errors as well. Aid donors cut their spending after the late 1980s by even more than governments. In the late 1980s official development assistance to agriculture Sub-Saharan Africa was estimated at US$4 billion: by the early 2000s it had fallen to just US$1 billion. (Binswanger & McCalla 2008 using OECD data)

Some donors have struggled to appreciate local realities and made mistakes as a consequence, as this example from Southern Africa shows:

During the food crisis of the early 2000s in Southern Africa, it took WFP and the UN more than six months to understand the distinction between chronic and transitory food insecurity (they thought they were dealing with a short term aberration at first). As a result their delivery strategies undermined local governance systems and attempts at more representative rural institutional capacity building over the previous decade (food was dumped on traditional leaders, in many instances).

Michael Drinkwater, Senior Advisor, CARE

Donors have moreover often been inconstant in their efforts, not supporting efforts long enough for them to take root.

In Zambia, Zimbabwe and Malawi, there were extremely effective crop breeding and adaptive research systems in the late 1980s and 1990s, supported handsomely by donors. A lot of good crop varieties were produced, many based on local genetic materials, with the result, that it could have been possible to vastly improve the appropriateness of crop varieties for smallholder farmers throughout the region.

However, the varieties never entered commercial breeding programs, donors lost interest, and absolutely nobody paid attention to what was happening to the results of 10–15 years of very good agricultural (breeding and farming systems) research. As a result most of that investment was lost.

Michael Drinkwater, Senior Advisor, CARE

Market failures, especially for credit and inputs, and poverty traps

The excessive reliance on markets, and a reduced role of the state, undermined agricultural strategy.

Professor Sam Moyo, African Institute for Agrarian Studies, Harare, Zimbabwe

When in the 1980s and 1990s country after country in Africa liberalised their economies, usually as part of the conditions for access to finance from the International Monetary Fund and the World Bank, the role of the state in organising the supply of inputs, credit and technical assistance to farmers, and in collecting harvests and processing, was cut back. Public agencies that organised the supply chains for both food and exports were closed down or else had their remits trimmed to minimal

functions. From then on, it was to be private enterprise that would service farmers and the market would co-ordinate and discipline activity.

Building effective private – public partnerships is a challenging enterprise since it needs cultural changes from both sides.
Giulia Di Tommaso, Director Legal Policy and International Relations, Unilever

The expectation was that private businesses would step into the gap and under the rigours of competition provide effective and efficient services. Farmers would get inputs at lower cost, while being paid more for their output. This would stimulate production and growth.

There is a need for a better mix of state and market led service policies (research, extension, market development, input supplies, subsidies ...) that address both conceptualisation and implementation problems in coordination and trust across stakeholders.
Andrew Dorward, Professor of Development Economics, School of Oriental & African Studies, University of London

Instead, farmers have often found themselves frustrated by market failures (World Bank 2007). Inputs such as fertiliser and improved seed are not available locally, or if they are, they are very costly. Credit is impossible to get from banks and other formal agencies: only short-term loans at high interest from traders and money-lenders are on offer. Facing many risks in production, farmers have found it impossible to insure against them. All they can do is set aside precious funds to guard against rainy days. Moreover, some private traders have monopoly power in thin, nascent markets to overcharge on inputs or underpay when buying crops.

Market failures do not only apply to farmers, they equally affect traders and would-be investors. Lacking information on the character and ability of farmers, they may be unwilling to take the risks of extending credit or of investing in agricultural businesses.

With too little activity in the markets, thin markets can generate volatile prices so that farmers face considerable price risks when producing for the market. Lack of market activity also means that economies of scale in input provision and marketing are not achieved, so pushing up costs.

Market failures tend to be more severe for farmers who are poor, operate at small scale and for women farmers — since women often have lower levels of education, fewer connections with traders in supply chains, and less time to negotiate with them. Thus market failures not only are economically inefficient but also often are socially regressive.

Consequently opportunities to invest and innovate both on farms and in supply chains can go begging. At worst the market failures lead to poverty traps. Poor households cannot get access to credit to invest in more production: being vulnerable to hazards and with no insurance, they must diversify and engage in low risk activities, thereby foregoing opportunities to specialise in higher value production. Such poverty traps prevent investment and agricultural growth (Sachs et al. 2004, CPRC 2008).

[Smallholders] are in a semi-subsistence poverty trap, cannot produce enough food, so cannot diversify into higher value crops since they fear a bad harvest.
Colin Poulton, Research Officer, School of Oriental & African Studies, University of London

These failings are compounded by too little public investment in infrastructure, information systems, research and extension, so that farmers have had limited access to services (Poulton et al 2004). Attempts to restore subsidy-based systems have usually encountered important sustainability constraints.

Failures with both state led service policies, and market led service policies, which failed to appreciate the challenges to smallholder agricultural development.
Andrew Dorward, Professor of Development Economics, School of Oriental & African Studies, University of London

Collective land tenure[7] is also often seen as a barrier to investment, either owing to insecurity of possession or simply because collectively owned land cannot be offered as collateral to back credit.

In many parts of the continent, inequitable land distribution and insecurity of land tenure discourage investment and undermine the livelihoods of poor people.
Commission for Africa 2005

But the point in contentious: others report that farmers often feel secure and invest under collective tenure.

Comment: a large continent, many contributing factors

On a large continent with greatly varying ecologies, socio-economic characteristics and different national policies, it is not surprising that many and quite different factors have been identified as contributing to the overall disappointing record of agriculture. It is likely that all of those mentioned are or have been important at some time and in some place. In section 6 the discussion will return to the major differences in opinion.

4. Explaining success as well

It is not that clear if the agriculture story in Africa has really been that disappointing. It's disappointing if you just stare at hectare yields, which still are not that relevant everywhere.
Detlev Puetz, Principal Evaluation Officer, African Development Bank

A number of policy makers think the performance of African agriculture has been disappointing because the yields didn't increase as quickly as elsewhere and because the green revolution packages weren't very widely adopted in Africa.

That is true but it doesn't mean that the performance of African agriculture was disappointing: the overall food production has increased to at a rhythm comparable to other continents: food production followed

the population growth; it has been multiplied by four since the independences.

Bernard Esnouf, Head of Agricultural and Rural Development, Agence Française de Développement

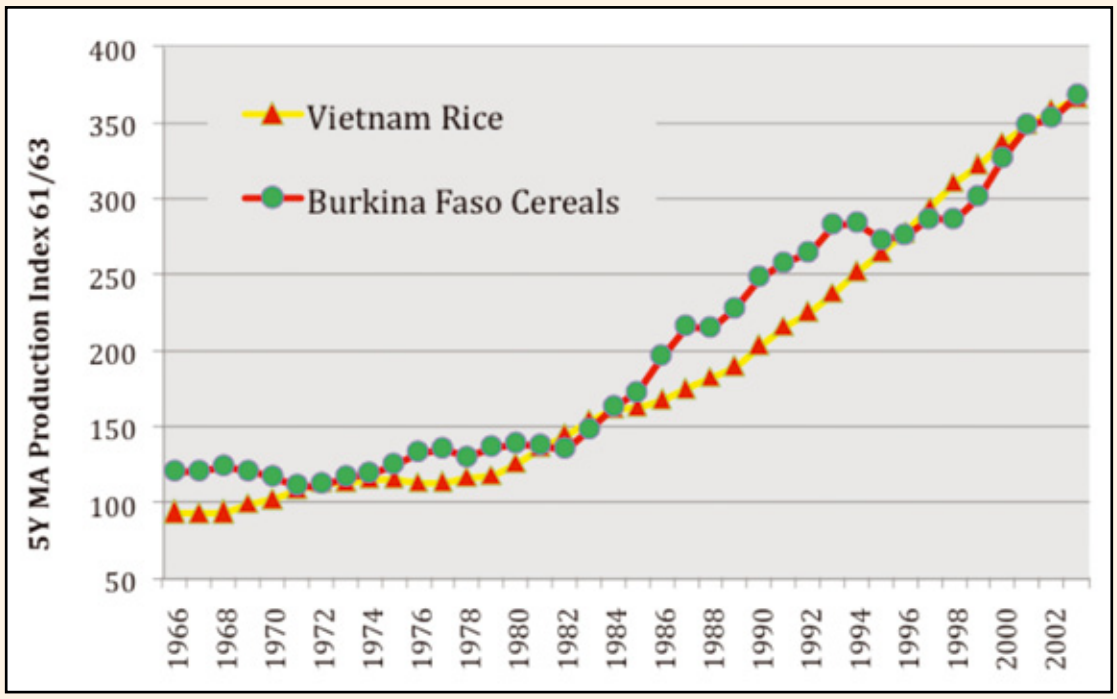
So much has been written about the disappointments in African agriculture that it is easy to overlook the successes. During the last fifty years[8] there have many instances when in some part of the continent, and for particular crops and activities, there have been veritable booms in farming.

Examples would include the very rapid growth in small-scale production of first coffee, in the 1950s, and then tea, from the 1960s, in highland Kenya. Farmers were allowed from 1954 onwards to plant these crops and did so with success and enthusiasm, supported by co-operatives for coffee and an highly effective state company for tea, the Kenya Tea Development Authority.

Box C. Burkina Faso, sustained success in agriculture

The statistics are remarkable. Since the early 1960s output in cereals in Burkina has grown at an annual average of 3.5% a year, well ahead of population growth, a rate that matches that of Vietnam.

Figure 3.2. Farmers access to markets across regions



Source: FAOSTAT production data, taking five-year moving averages.

How has this, generally unheralded success, been achieved? In the 1960s the central plateau of Burkina was an area of average rainfall in the range 500–700mm, poor soils, and yields of cereals — mainly millet and sorghum — of just 500kg/ha. With such meagre resources, many of the able-bodied young men migrated to find better work, often to Côte d'Ivoire and other countries to the south. But since then field surveys reveal the following changes:
Soil and water have been conserved, most notably by use of stone bunds and improved traditional planting pits ('zai') to retain water and topsoil;

Trees have been planted, livestock have been kept in semi-intensive systems and the manure gathered and applied to the fields; and,

Collective institutions to manage wells, natural resources, village cereal banks and schools have multiplied.

Hans Binswanger-Mkhize (2009) comments:

The change is visible to the naked eye: On [my] recent visit … crops looked greener and healthier than [I] had ever seen them before, crop livestock integration had happened in many parts, degraded arid lands were being recuperated via traditional and new techniques, and a number of new crop varieties had been introduced, there were more trees on the land.

These changes have not been revolutionary, but rather evolutionary: they draw mainly on local knowledge and organisation, facilitated and assisted by government, donors and NGOs.

The results can be seen in the national statistics, but there is local detail as well. In Bam province, millet and sorghum yields rose from 406 and 446kg/ha respectively in 1984/88 to 662 and 669kg/ha in 1996/00. Water levels in wells have risen in areas that have conserved soil and water. More greenery is evident in aerial surveys. Migration is still common, but less so than in the past. Above all, rural poverty has fallen.

Sources: Binswanger-Mkhize 2009, Mazzucato & Niemeyer 2001 , Reij & Smaling 2008

Farmers did not devote all their land to the cash crops: they continued to grow maize, beans and other food crops. Maize production was improved by widespread adoption of hybrid maize varieties bred for Kenyan conditions. Some farmers were also able to invest in a few cows and intensive, stable-fed dairying was added to the portfolio. In the last two decades many farmers have also produced horticultural crops, some for export — Kenyan green beans, for example, can be seen on the shelves of supermarkets in Europe — but even more for the increasingly large domestic market in Nairobi. Did intensification in this case lead to over-use of natural resources? No: on the contrary, with productive fields, farmers invested in terraces, in planting trees on field boundaries, using more manure and fertiliser. (Tiffen et al. 1994)

On the other side of the continent, in West Africa, cotton production expanded rapidly in the 1980s and 1990s across the guinea savannah zone —north of the forest belt and south of the Sahel. In this case production was organised by state-owned textile development companies that supplied inputs on credit and collected the crop.

Many of the more recent growth spurts have seen food produced for domestic markets: in the 1980s, examples include hybrid maize in Zimbabwe (Eicher 1995), the Southern Highlands of Tanzania, and Northern and Eastern Provinces of Zambia — in all cases with small farm production organised by state agencies.

> *Zimbabwe's peasant farmers in the immediate aftermath of independence were incredibly efficient, given their constrained land situation, but were effective because they received the right inputs, on time, had farming systems that combined organic and inorganic fertilizer, and received reasonable prices – again mostly on time – for their products. As soon as the institutional systems collapsed, under the weight of everything else going wrong too, so did the farming systems.*
>
> Michael Drinkwater, Senior Advisor, CARE

Smaller-scale booms in marketed food crops include rice in the Malian inland delta of the Niger (Diarra et al. 1999), open-pollinated varieties of maize in the middle belt of Nigeria (Smith *et al*. 1993), and peri-urban production of dairy, fruit and vegetables for the city of Kano (Mortimore 1993).

IFPRI surveyed specialists to identify successes in African agriculture where there had been a'a significant, durable change in agriculture resulting in an increase in agriculturally derived aggregate income, together with reduced poverty and/or improved environmental quality.' (Haggblade et al. 2003, 10; see also Gabre-Madhin & Haggblade 2001) They reported many technical advances, including hybrid maize varieties in Zimbabwe, Kenya and open-pollinated maize in West Africa; use of improved bananas in East Africa; horticulture and fruit produced by smallholders on contract in Kenya; cassava resistant to pests and diseases that had helped produce large increases in cassava production in West Africa and parts of south-eastern Africa; cotton in West Africa; and smallholder dairying in Kenya.

Not all of these successes have been sustained. On the contrary, they have often been sensitive to prevailing prices, in some cases linked closely to world market prices, as well as to state support and organisation — as Drinkwater adds to the story of small farmers in Zimbabwe.

> *As soon as the institutional systems collapsed, under the weight of everything else going wrong too, so did the farming systems.*
>
> Michael Drinkwater, Senior Advisor, CARE

On the other hand one of the most remarkable stories of long run progress comes from Burkina Faso, where cereals production — in a poor, landlocked, Sahelian country frequently best by drought — has increased over forty years by the same amount as Vietnam, generally regarded as a green revolution success in Asia. **Box C** provides the details.

What explains these successes? Not surprisingly, there is no one factor, but most cases combine three elements, thus:

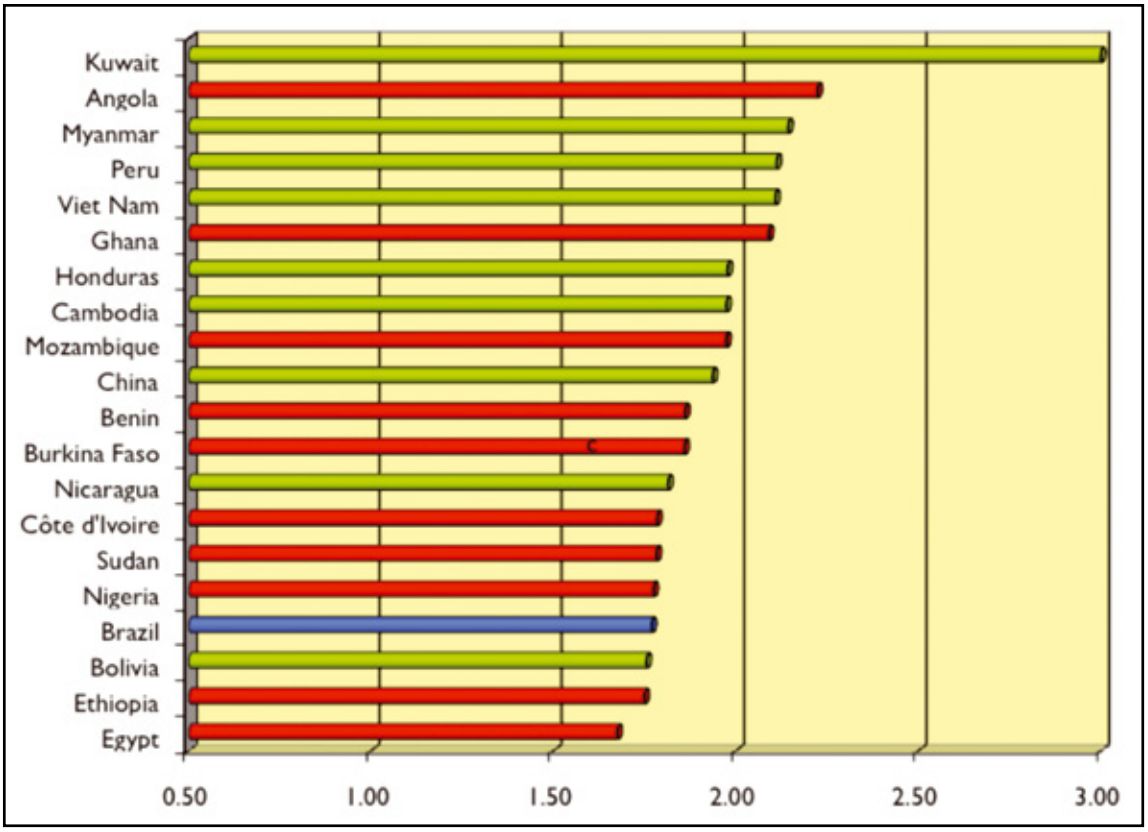
- Effective demand at the farm gate. Farmers have to get a reasonable return for their output or they simply will not produce and market surpluses. Some of the booms seen have been set off when a parastatal or large private company has offered to collect the crop at a guaranteed price. In other cases, investments such as a better road linking a productive area to a regional market has then seen traders arriving in villages offering good prices for crops they can sell in the city;
- New technology in some cases has allowed farmers to grow crops with higher yields and less vulnerability to pest and diseases. Although technical progress has not been on the scale as in Asia, there have been successes as noted above. When technology has been adopted it is usually in the presence of the next factor; and,

> *Functioning supply chains. For export crops, there has often had to be an effective company, state or private, capable of supplying farmers with inputs, encouraging quality, then collecting, processing and grading the harvest. For domestic food crops often all that has been necessary is an enterprising trader with a vehicle.*

It should also be added that basic requirements for agricultural development were in place: there were passable roads to farming areas; and political and macroeconomic stability. Too often in African agriculture the golden goose has been killed off by economic policies that have effectively taxed farmers to the hilt, or by corruption and inefficiency that has seen the fruits of farmers' labour siphoned off by functionaries in state agencies.

The successes are not limited to small areas: there have been, since the early 1990s, some African countries that have seen their agricultures grow at rates that match any other country in the world. There are around ten such agricultural growth stars in Africa: see **Figure 4.1**. The

Figure 4.1. Growth of agricultural output, 1990/92 to 2004/06, Africa compared to other countries



Source: FAOSTAT data, Gross agricultural PIN, taking three-year moving averages. Comparison covers 138 countries with more than one million persons

problem in Africa is not that success is impossible, but that it is only ten and not all fifty-five countries.

If there is one key lesson it is that the African record is highly uneven, through time, but above all across countries. There is nothing about the disappointments that is uniquely African. What makes the difference is not geography, or even history: it is policy. If Burkina Faso's farmers can do as well as they have, what country elsewhere in Africa has any excuse?

5. Looking to the future

Although environmental prospects are quite cloudy, there are many reasons for optimism over agriculture markets, technology, and policies.

Population, environment, climate change, and other shocks

Images of droughts, floods or epidemics hitting Africa are commonly seen in the media, but growing evidence points the worrying question: Is the worst yet to come?

Demographic transition in Africa is less advanced than anywhere else, and fertility rates are still very high in many countries. It is estimated that the population of Africa will have doubled by 2050 (UNDESA 2009), contributing to a third of the world's population growth by that time. Ratios of the population of working age will remain lower than in other regions of the world until at least 2030, strongly constraining households' economy. In many parts of Africa this will be aggravated by the HIV/AIDS epidemic, leaving millions of African children orphans.

With natural resources already overused in some parts of the continent, serious concerns emerge out of these population prospects. For example, an IPCC report (Bates et al, 2008) on world water prospects proposes that:

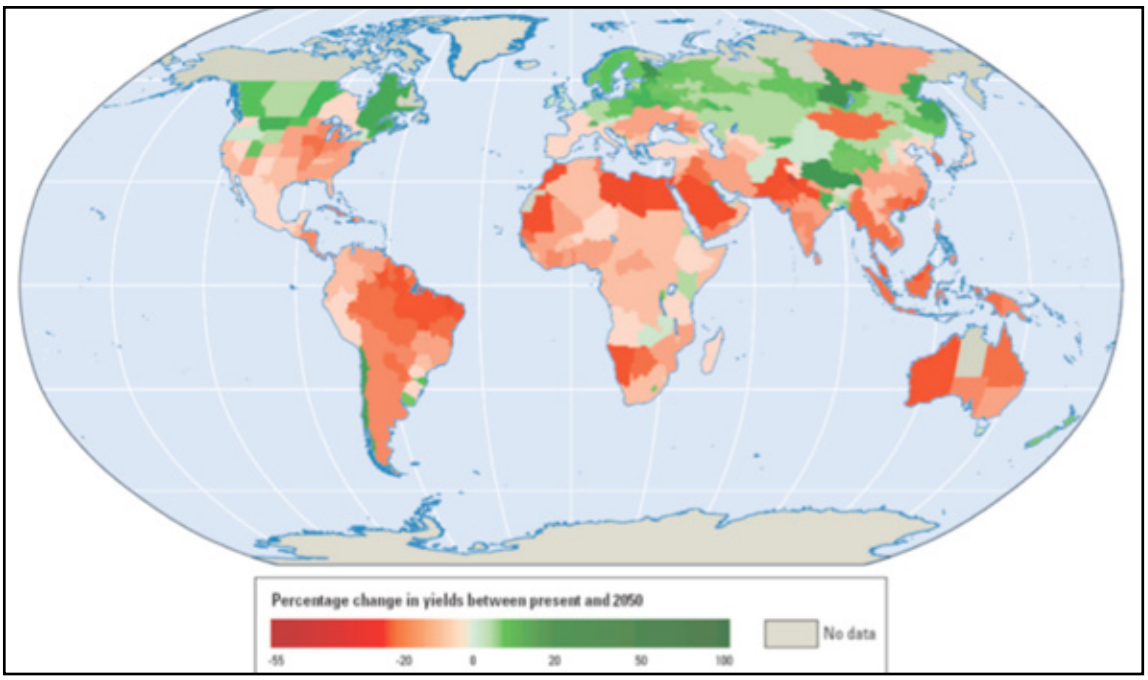
> *In some assessments, the population at risk of increased water stress in Africa, for the full range of scenarios, is projected to be 75–250 million and 350–600 million people by the 2020s and 2050s.*

Addressing climate change will require important adaptation and mitigation efforts.

> *The biggest challenge for agriculture will be climate change, which will create more unpredictable and extreme conditions everywhere and will leave many areas in Africa with less rainfall. Farmers will need to develop a range of coping strategies. It is likely that many people will leave the land and that the urbanisation of the population will continue apace in many countries, leading to increased pressure on services and facilities in urban areas.*
>
> Fiona Hall, Member of European Parliament

The 2010 World Development Report (World Bank 2009b) asserts that while developing countries are the most vulnerable, they lack the skills and resources to address the challenges that lie ahead. With changing temperature and rainfall patterns, yield potential will be affected by climate change. Current predictions, see **Figure 5.1**, suggest the effects could be worse in many African countries than elsewhere. Most pessimistic analysts foresee increased conflicts over land and natural

Figure 5.1. Impact of climate change on potential agricultural yields by 2050



Source: World Bank 2009b

resources as a result of demographic trends and degraded resources.

Markets and demand for agricultural produce

Medium to long–term forecast predict firm demand in world food. Although increased demand can create tensions on food markets as abruptly reminded by the 2007/2008 food crisis, expanding world markets might well be a chance for African agriculture:

First, there are increasing market opportunities in Asia. Economic development and diet diversification boost demand for products Africa may be in a good position to supply.

The second key opportunity is linked to biofuels expansion. It will be very difficult for OECD countries (the EU in particular) to reach their biofuels targets without significant imports. Those countries with underused land, such as Mozambique and Zambia, could well benefit from these expanding markets.

In addition to firm demand on traditional export markets, "high added value" exports (such as floriculture or fair trade products, etc...) are rapidly expanding, and the CMAOC expects value of these new exports to match traditional exports value by 2030.

> *High food prices, in the long run, would be a significant opportunities for African agriculture.*
>
> Albert Engel, Head of the Agriculture Food and Fisheries Department, German Technical Co-operation (GTZ)

But most observers see the single largest opportunity in be Africa's own markets where population growth, urbanisation and economic growth should see significant growth of demand (Binswanger 2009).

> *... while demand for exports on commodities and high value should rise from respectively US$ 8 and 3 billion in 2000 to around US$20 billion in 2030, it is expected that demand on domestic and regional agriculture markets will jump from US$50 to 150 billion over the same period*
>
> Conference of Ministers of Agriculture in West and Central Africa

While market opportunities are likely, agricultural productivity will need to improve if chances are to be seized and threats from imports are to be resisted.

> *[African farmers need] to focus on being world competitive because as infrastructure improves artificially high internal prices are likely to fall closer to world prices in the medium term.*
>
> Carl Atkin, Partner, Bidwells Agribusinesss

Biotechnology and other technical advances

Technical innovation is to be expected — see the record summarised in **Box D**, perhaps especially using biotechnology. Although some applications are controversial — see later section — biotechnology may allow progress in solving some of the less tractable issues in crop breeding, such as improving drought resistance and encouraging nitrogen fixation.

A key part of the challenge to scaling up research, development, and extension efforts will be to strengthen institutions that deliver innovations adapted to African agriculture and to build effective private-public partnerships (Binswanger 2009). There is broad agreement that investment in research pays off (World Bank 2007) and that they should be increased (Chicago Council on Global Affairs, 2009).

Information technologies have already delivered some benefits to farmers through mobile phones in delivering economic information. There may be further applications through remote sensing with information on physical

Box D. Technical advances and African agriculture

Although some see African farming as 'traditional' and of low productivity, this can obscure the history of agricultural innovation in the continent. Advances can be seen in most aspects of farm technology, as for example.

New varieties: some of the most common crops grown in Africa are imports, such as maize that arrived from the Americas in the C16. There is a long history of local selection of varieties and a more recent one of formally-developed improved varieties, both hybrids and open-pollinated, of the main crops grown. While the diversity of local ecologies and the comparatively broad range of staple crops grown has impeded the mass adoption of a few improved varieties as applied with rice in Asia during the green revolution, improved varieties have been adopted by the majority of farmers in certain areas and for specific cops: hybrid maize in Zimbabwe in the 1980s, and in Kenya since the 1960s are good examples.

More recent examples include advances with cassava and rice:

> *In one year in Uganda mealy bug led to a 90% loss in the country's cassava harvest. However, IITA has developed cassava varieties that are resistant to the mealy bug, which has triggered considerable increases in cassava production in the continent. WAREDA has also developed the NERICA rice variety, which has overcome a long-standing constraint that African rice varieties have lower yield and poorer taste than Asian varieties, but the latter are less resistant to African pests and diseases. So far NERICA looks extremely successful at increasing yields, and there are high growth rates of adoption in eastern Africa as well as western Africa. These and many other examples show that R&D in Africa can have very high returns if it is strategically targeted and appropriately funded.*
>
> International Food Policy Research Institute, IFPRI

Use of additional inputs: although the average use of manufactured fertiliser may be low in Africa, in some areas such as highland Kenya use is similar to levels seen in Asia. Obstacles to use are less technical, more matters of logistics and the ratio of prices between the local cost of fertiliser on farm and the value of the crops grown.

Recent promising developments include micro-dosing, where fertiliser is applied more precisely in time and space, thereby economising on fertiliser and gaining greater impacts on yields per unit of chemical. This makes more sense when fertiliser is relatively expensive compared to labour.

Soil and water management: although less than 4% of the crop area is currently irrigated, the limitations may be as much economic as technical. Where there are prospects of growing high value crops in dry seasons, farmers can be quick to improve their irrigation, as seen in the fadama valley lands in areas close to Kano where farmers have introduced diesel pumps to lift water to their plots where previously there were only shadufs in use. Some irrigation schemes that previously had disappointed in the yields achieved have been revitalised when better management has been introduced, as seen in the Office du Niger rice-growing scheme of Mali.

Investments in soil and water conservation have been undertaken, but only when it has been proved that it is profitable to do so. Good examples are the fanya juu terracing of Machakos and other parts of upland Kenya, and the planting pits and bunds deployed on the central plateau of Burkina Faso.

In the fight against pests and diseases, major successes have been scored in vaccinating cattle against rinderpest, producing cassava that resists mosaic virus, and in clearing the West African savannah of the black fly that causes river blindness in humans and so deterred use of potential arable land.

Information technology shows promise. Increasingly African farmers live in areas covered by the networks and can get access, albeit through loan or hire, to mobiles. Although the prime use of phones may be social, they are being used to convey market information and even to transfer money. There is clear potential for passing farmers and land managers information on physical conditions, and above all short-range weather forecasts.

> *[Use] new technology smartly, especially mobile phones, since they are the most effective means of conveying market information rapidly, but also laptop computers, solar energy, and the more traditional radios.*
>
> Michael Drinkwater, Senior Advisor, CARE

Sources: Diarra et al. 1999, Gabre-Madhin & Haggblade 2001, Haggblade et al. 2003, McMillan & Meltzer 1996, McMillan et al. 1998, Molony 2008, Mortimore 1993, Overå 2006, Reij & Smaling 2008, Tiffen et al. 1994

conditions passed rapidly to farmers and other land managers through cell networks.

Government policy and donors

The past few years have seen renewed promises and commitment to support agriculture in Africa. At the international level, declining investment in agriculture has turned around since 2005. Following the 2007/2008 food price crisis, further commitments were made; not least at the 2009 G8 summit in L'Aquila, Italy, when US$20 billion[9] over three years to boost food supplies in developing countries was promised. Some emerging economies, such as China, are also looking to make large investments in African agriculture.

The private sector is starting to step up as well. Foundations such as AGRA or Yara have emerged as important actors, carrying ideas and establishing new funding mechanisms to support productivity. All this is good news but will need hard thinking on how best to deliver support in an effective and coordinated manner.

But the greatest news comes from Africa itself. After two decades of low investments in agriculture, changes are now well under way First, taxation of agriculture has reduced across the continent (World Bank 2007) with African governments committing themselves to greater investment in agriculture though the 2003 Maputo's declaration.[10] The Comprehensive Africa Agriculture Development Programme (CAADP), an initiative of NEPAD now assumed by the African Union, supports African countries to define agriculture policies based on a common framework through national roundtable discussions. This is being harnessed by the Regional Economic Communities[11] which promote regional integration and trade.

The 2003 Maputo declaration as well as the launch of the CAADP process by NEPAD are signs of renewed commitments to agriculture.

Albert Engel, Head of the Agriculture Food and Fisheries Department, German Technical Co-operation (GTZ)

Potential of uncultivated land

Africa's land potential has again been recognised. When the 2007/08 price spike formed, it was not long before some countries that lack arable land but not oil wealth began to look to acquire land in Africa to grow food and ensure their supplies. For example, Jordan signed a deal for 25k ha in Sudan, Qatar agreed 40k ha in Kenya, and Saudi Arabia requested 500k ha in Tanzania. (von Braun & Meinzen Dick 2009)

The World Bank has just published (2009a) an assessment of the potential of the Guinea Savannah, a vast area of some 700M ha[12] that covers more than a third of the continent, and of which less than 7% is currently under crops. Until now the Guinea Savannah has been largely ignored, partly since the productive potential is medium rather than high, but largely since much of it was relatively inaccessible for lack of road access and there was little effective demand for what it could produce.

There are a number of opportunities in Africa, such as a great potential for production and underexploited land, but also the creativity and productivity of human resources.

Giulia Di Tommaso, Director Legal Policy and International Relations, Unilever

Areas geographically similar in Northeast Thailand and the Cerrado of Brazil have been transformed to become major agricultural exporters: with investment and the right policies, argues the Bank, the experience could be repeated in Africa. Given future increased demand within Africa, the potential to displace currently imported food, plus possible future markets in biofuel feedstock and supplying the rapid increase in demand in Asia for vegetable oils, animal feed and other produce, large tracts of the Guinea Savannah could be tilled creating jobs, incomes and export earnings.

6. Agricultural development: which way forward?

Consensus ...

During the last few years a consensus has emerged on agricultural development in Africa. It begins by recognising the role farming can play in economic growth, poverty reduction and food security. CAADP is perhaps the best statement of this consensus, stating that

Agriculture-led development is fundamental to cutting hunger, reducing poverty (70% of which is in rural areas), generating economic growth, reducing the burden of food imports and opening the way to an expansion of exports.' (NEPAD 2003, 2)

Most governments and donors admit that they have invested too little in agriculture and have neglected programmes and policies to promote the sector. Thus it is accepted that more public investment is needed to stimulate agriculture and to attract complementary private investment and initiative. In Maputo in 2003 African leaders agreed that they should spend 10% of their budgets on agriculture and strive to achieve agricultural growth rates of 6% a year.

That investment, moreover, has to finance public goods that the market will not provide. IFPRI research shows high returns to spending on these items. (Fan & Rao, 2003) For agriculture key public goods are:

- the physical infrastructure of roads, power lines, and sometimes also irrigation and drainage;

Infrastructure is important in so many ways for African farmers. It affects the price of fertilizers, seeds and other agricultural inputs, the prices farmers receive for their outputs, the effectiveness of extension services as well as health and education services, and the strength of rural-urban linkages and nonfarm economic growth.

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- generating knowledge through research and extension;

Agricultural research and development is a necessity, not a luxury, because pests and diseases are constantly evolving and are a serious constraint on African agriculture. Research and extension also needs to become more friendly and useful to smallholders. Smallholders need more affordable technologies tailored to their land and labor endowments. Many of the most high-impact technologies of recent years possess these characteristics, including small-scale irrigation (e.g. treadle pumps), smaller packages of fertilizers and even mobile phones.

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and

- investing in the capabilities of rural people through rural schooling, clean water and health care.

Africa needs to invest heavily in education which is a key factor in helping to reduce hunger and malnutri-

tion. A well educated population figures out the solutions to the issues it faces.

Kevin Cleaver, Assistant President, Programme Management Department, International Fund for Agricultural Development

Confident, educated young women capable of challenging traditional behaviours are at the heart of successful development.

Fiona Hall, Member of European Parliament

More broadly, CAADP sets out priorities for action under four pillars, thus:

- Extending the area under sustainable land management and reliable water control — to build soil fertility, increase irrigation and especially small-scale irrigation;
- Improving rural infrastructure and trade-related capacities for market access;
- Increasing food supply and reducing hunger, through farm support services and supportive policy to enhance farming, more ability to respond to disasters and emergencies, plus targeted safety nets; and
- Agricultural research and dissemination.

The Plan estimated that between 2002 and 2015 some US$251 billions would be needed, an annual average of US$19 billions, plus an additional US$3 billion a year for relief. Investment would be backed by policies to support farmers and investors.

... and controversy

So far, so good: few disagree with the broad directions set out. There are, of course, no end of technical issues that need to be addressed in particular countries, provinces and districts to translate overall strategies and funds into effective policies and investment programmes.

But there are also points on which more detailed discussions run quickly into controversy. Four are particularly salient: the role of the state in overcoming market failures; liberalisation of trade and the protection of farming; the future of small farms and the scope for larger-scale farming; and the use of biotechnology in general and genetically modified (GM) crops and animals in particular. What the points of difference? The arguments need setting out in some detail.

States and markets

While few would contest that market failures exist, the extent to which they stymie agriculture is not well established. Indeed, there are other explanations of why there was less response to market opportunities following liberalisation, including the fall in international prices that took place from the early 1980s until the recent recovery of agricultural commodity markets, the lack of investment in public goods by governments and donors, the disincentives to export and episodes of dumping on national markets prompted by OECD farm policies, and in some countries continuing biases in policy that have seen farmers taxed unduly compared to others. In addition, some stress the importance of continuing disincentives to private investment arising from sudden and sporadic interventions in agricultural markets by governments (Jayne & Govereh 2002). The market has not necessarily failed, they argue, it has not been given the chance to show what it might achieve.

That said, most would concede that market failures can be serious deterrents to investment. What is then controversial is how to solve them. One way is to create and foster institutions that generate information and provide reassurance about the actions of other parties — standards, regulations, and contract law are examples — as well as the formation of organised groups of farmers capable of overcoming scale diseconomies in input supply and marketing, and of representing farmer interests.

Rural development will also depend on effective farmer institutions owned by farmers themselves, without interference from state actors. The revival of an independent agricultural co-operative movement in Africa should be emphasised.

Commission for Africa, 2005

Need to enhance public-private partnership and strengthen the role of farmers' organizations.

Kevin Cleaver, Assistant President, Programme Management Department, International Fund for Agricultural Development

The other way is to have states intervene again, at least until market activity builds to a point where economies of scale are reached and enough information is generated to allow commercial activity.

Deregulation has often been imposed by northern countries while applying these (regulated) models to themselves. More effective incentives to production needed for more predictable markets, and possibly higher prices (acceptable to consumers). These regulatory measures could work either at national or perhaps more likely at regional levels.…

Access to credit needs to be facilitated by the public sector and cannot be left to be managed by the private sector alone. Access to credit is very much linked to the land issue, since access to credit for agriculture can only be guaranteed on assets. Land property rights/leasing contracts are a must for farmers to access credit.

Bernard Esnouf, Head of Agricultural and Rural Development, Agence Française de Développement

On no single issue have the differences been seen more strongly than on the issue of subsidies on fertiliser. Orthodox opinion has been sceptical: subsidies distort prices, create rents that often captured by those who could pay the market prices, and leave governments with a bill that can be high and difficult to end. But, others counter, poor farmers are locked in poverty traps: they need the fertiliser, but cannot pay, and so cannot raise production. Moreover, soils desperately need additional nutrients to replace those taken out by the crops. To deny the subsidy is to leave small farmers in poverty while aggravating soil degradation and erosion.

Experiences from Kenya and Malawi provide examples of what can be done. In 2005/06 the Malawi government implemented a universal subsidy on a rationed amount of maize seed and fertiliser, despite the strong disapproval of donors such as the Bank and the IMF. In the three subsequent seasons harvests have exceeded national requirements and records have been broken. But the costs have risen from an initial US$50M to over US$200M prompting questions over how sustainable this is, and what the opportunity cost of the programme is. (FAC 2009)

Less well publicised is the Kenyan experience of liberalising fertiliser markets in the early 1990s. The response from private importers, wholesalers and local input suppliers has been good. Small farmers now can obtain fertiliser at an average distance of 3.4km, down from the previous 8.1km. The cost of getting fertiliser from Mombasa to the growing areas has been much reduced as logistics have been improved. More small farmers now apply fertiliser than before and it has contributed to increased yields. All this has been achieved at virtually no cost to the public budget. (Ariga & Jayne 2009)

Two countries, two different experiences: perhaps Kenya was only able to get the market to function since it has a better developed private sector, and more roads in the main farming areas, compared to Malawi. This case shows how fine judgments about the roles of markets and states can be, and how carefully proposals need to be tailored to circumstances.

There are no simple and universal answers to the issues raised here. Careful analysis and good judgment is needed to decide how important market failures and how best to address them.[13]

Unwelcome market outcomes such as volatile prices for agricultural produce may not strictly be a market failure, but they are a cause for concern. Many believe that governments should be more active in stabilising prices, probably using public stocks.

> *We need market friendly price stabilisation for effective management of grain reserves*
>
> Professor Ephraim Chirwa, Chancellor College, Malawi

> *The factors that contributed to the latest food crisis illustrate that long-term food security means the emphasis must be on stabilising markets, improving the dynamics of rural sectors, and rebuilding food stocks close to the most vulnerable populations.*
>
> Gilles Saint-Martin, Associate Director, Head of European and International Relations, CIRAD, France [2009]

> *More effective incentives to production need more predictable markets, and possibly higher prices (acceptable to consumers). These regulatory measures could work either at national or perhaps more likely at regional levels.*
>
> Bernard Esnouf, Head of Agricultural and Rural Development, Agence Française de Développement

> *Yet for many countries, the capacity to stabilise prices may be limited — technically, price stabilisation can be demanding; while the costs of public stocks large enough to cope when supply varies considerably with the weather could be high.*

Trade liberalisation

> *Au delà d'une approche purement productiviste telle que développée par le passé, les stratégies agricoles doivent désormais considérer d'une part, le développement de l'agro-business comme le véritable levier de la croissance agricole et d'autre part, l'intégration régionale par le biais des marchés agricoles comme le véritable garant de la sécurité alimentaire du continent.*
>
> *Apart from the purely production approach developed in the past, agric strategies should from here on consider, on the one hand, the dev of agro-business as the key lever of agricultural growth; and, on the other hand, regional market integration as the guarantee for the continent's food security.*
>
> Conference of Ministers of Agriculture for West and Central Africa

Liberalisation of African economies in the 1980s and 1990s saw protection of domestic markets cut, to participate in multilateral trade opening and gain the benefits of trade. In theory this should help countries to specialise in those goods for which they have comparative advantage. This has, however, left them vulnerable to import surges and dumping of produce from OECD countries where farmers can grow and sell produce at below cost, thanks to the very high public subsidies they receive. Problems tend to be acute in those goods that can be produced in temperate areas, including cereals, dairy, sugar, tomato paste, beef, etc.[14]

Hence there are calls for Africa to protect its domestic markets again. Producer organisations, for example, have called for:

> *The poverty, the dependence and the food insecurity which already afflicts Africa could be aggravated by liberalization without regulation and an even broader opening of our frontiers and agricultural and food markets as stipulated by the WTO agreements and as the Economic Partnership Agreements with the European Union seek to impose.*
>
> *The food security of African countries cannot be based on importations of residual international stocks and on markets where prices are highly volatile.*
>
> Farmers' Organizations of Africa, Statement to the G8 (2009)

More probably needs to be done to counter import surges: some of this may simply be technical, having units in governments that can detect them before they damage local industries; and some is political in terms of deciding how to counter them. The WTO Agreement on Agriculture provides some scope for response by developing countries, but the technical conditions to remain complaints with the Agreement can be demanding.

Where protectionism may be most harmful in the long run is within Africa itself. Progress to economic integration has been marked by laudable rhetoric, but less action to overcome practical obstacles to greater trade across African borders.

Prospects for small farms

Some see the small size of most farms in Africa as an obstacle to progress, lamenting that economies of scale cannot be achieved, if not on the farm at least in the supply chains. One of the most eminent scholars of development, Paul Collier (2008), argued that small-scale farming in Africa was not capable of meeting the challenges of contemporary agricultural development:

> *…reluctant peasants are right: their mode of production is ill suited to modern agricultural production, in which scale is helpful. In modern agriculture, technology is fast-evolving, investment is lumpy, the private provision of transportation infrastructure is necessary to counter the lack of its public provision, consumer food fashions are fast-changing and best met by integrated marketing chains, and regulatory standards are rising toward the holy grail of the traceability of produce back to its source….*
>
> *Large organizations are better suited to cope with investment, marketing chains, and regulation.*

Others disagree, such as the producers' organisations who press for:

> *Recognition of the dominant role of family farming as the prime route to ensuring food security, fighting against poverty and for economic and social development in Africa.*
>
> Farmers' Organizations of Africa, Statement to the G8 (2009)

In the early stages of economic and agricultural development, the small scale of farms has not historically been an obstacle to growth or conservation of resources. Small farmers innovate, invest and conserve their soils and water — given the right conditions. This was the case in the Asian green revolutions: it has also been so in Africa, where the successes mentioned in section four all took place on small, family-run farms.

Small-scale farming has advantages in the management of household labour that is effectively self-supervising. Smallholder development may be especially effective in reducing poverty since it tends to be intensive in labour, both of the family and also of neighbours who lack land and who are generally poor, thereby generating jobs and some income for those who need it. When small farmers spend extra income, they tend to spend locally so that jobs are created in the rural economy off the land.

Note, however, the two qualifications. First, 'given the right conditions': small-scale farming, or any farming, will find it hard to progress when governments do not invest sufficiently in the key public goods mentioned above. Similarly, shallow markets prone to failures can prevent small farmers from getting credit, inputs, or striking beneficial deals when marketing their produce. Above all, as the dismal history of agriculture in Africa in the 1970s showed, when farmers are heavily taxed both explicitly as has often applied to export crops, and implicitly through overvalued exchange rates and heavy protection of local industry, there will simply be little incentive to invest and innovate.

Second, 'in the early stages of development': when economies grow, meeting the demand for agricultural output requires achieving exacting standards, quantities, timeliness and certification. Labour costs rise and the relative cost of capital and machinery falls, so the advantages of small-scale farms diminish. It is to be expected then that increasing numbers of small farm households will gain ever larger shares of their incomes from off-farm activities including migration, while a minority of small farms intensify and commercialise their production, quite probably renting in fields from their neighbours.

> *… smallholders – … are the backbone of agriculture and play an important safety net in all African countries. At the same time, ensuring agriculture transformation, the emergence of a stronger commercial agricultural sector, and a gradual increase in farm size.*
>
> Detlev Puetz, Principal Evaluation Officer, African Development Bank

In the long run, then, Paul Collier will probably be right that the future will see larger scale units in developing world agriculture. But whether policy-makers should seek to accelerate the process of land concentration is another matter.

Few would disagree that agriculture, above all in Africa, would benefit from greater investment and know-how. Whether that is done by offering large-scale farmers land concessions, or whether it is through forms of contract farming and co-operation that link large firms in the supply chain to small farm suppliers, is a key question. In part this is a question of how to address market failures of information that leave small farms at a disadvantage when commercialising; but in equal or larger part it is also a social and political question about rights and entitlements, and the kind of rural society that people would like.

Technology: incremental or transformational?

One of the deepest cleavages in opinion arises over technology. On one side stand those who believe that for African agriculture to move forward, the best technology on offer must be used — and that means applying the skills of biotechnology when appropriate. Biotechnology includes the use of genes taken from one organism to another, transgenic or 'genetically modified'[15] (GM) crops and species. To deny African farmers the potential gains from this technology is to condemn them to poverty, some argue.

> *It is our objective to ensure that we can change the lives of the farmers in sub-Saharan Africa by also giving them this technology*
>
> Daniel Fungai Mataruka, Executive Director, African Agricultural Technology Foundation (AATF) speaking in Brussels, September 2009

On the other side are critics who argue equally passionately that:

- the priority problems of African farmers do not need technical fixes;
- biotechnology transfers ownership of genes conserved for generations by farmers to transnational corporations, leaving farmers open to the monopoly power that those corporations can exercise;
- using specialised varieties depletes local gene pools; and that,

- there are unknown and potentially catastrophic uncertainties in using GM organisms. A precautionary principle would avoid their use until such uncertainty is resolved.

Genetically Modified Organisms need to be recognised as a red herring. They lock farmers into certain seed and pesticide suppliers and can easily lead to greater indebtedness. The structural problems they pose are the same as those which occurred in previous largely unsuccessful "green revolutions". A true agricultural revolution is one which engages and empowers small farmers.

Fiona Hall, Member of European Parliament

Instead, argue the critics, better technology should developed locally and incrementally building on local innovations and transferring ideas from farmer to farmers. Scientists are welcome to assist and facilitate, but they should not be defining the technology.

Some would go further and argue that technology should aim to develop systems that use external inputs sparingly if at all, to develop systems that are ecologically harmonious.

The conditions for a Green Revolution in Africa are not, and have never been, in place. Recent interventions such as the Millennium Development Project, Alliance for a Green Revolution for Africa or even the up-to-now successful input subsidy in Malawi are unlikely to be sustainable.

The flaw in these interventions is the narrow perspective adopted: agricultural sustainability cannot be reduced to questions of production alone. Neither is agricultural sustainability simply the wise and careful stewardship of the land. Both views remove farming from its social, economic, political and historical determinants. Rather, it would be better to recognise the need for social transformation that embeds agriculture as stewardship in webs of social relationships that link production, consumption, questions of equity and environmental justice.

In direct contrast to the universalising message of the New Green Revolution, agroecology is particular, contextual and nuanced. It strikes a balance between production, stability and resilience through diversification rather than intensification.

Dan Taylor, Director, Find Your Feet

The debate is often fierce: it is easy to overstate the case on either side and fail to recognise where opponents may be right. What might one conclude about the main points of disagreement?

- How important is better technology for African farmers? Historically, the record shows farmers time and again making technical changes, sometimes using local improvements that some (by now unknown) farmer has developed, but at other times adopting hybrid varieties of maize that are the product of quite advanced scientific research. Technology, however, is not always the main concern of farmers: when rural roads are impassable, for example, it makes no sense to produce more than the household can consume. There are few disagreements on this,[16] the underlying dispute is about how much to invest in research and the direction that research takes which leads to the next point …
- Ownership of research and the genes it uses. The critics have a point. Governments have allowed funding to international agricultural research to wane, while the corporations have increased their spending on research. The balance between public and private research has swung substantially to the latter. The companies, not surprisingly, have looked to produce innovations that have a market — and that means producing improvements for relatively wealthy farmers in OECD and newly-industrialising countries, not for poor African farmers. It has also meant that the companies have sought to protect their investment in research through extensive patenting of genetic advances and even of genes.[17]

  Are these developments an improvement on the largely public system of agricultural research at the time the green revolution began? Yes, in terms of sheer scientific capacity. But surely not in ownership of genes and the use to which biotechnology is usually put. There has to be better way to represent the public interest and, not least, the interests of African farmers. But some critics need to define their concerns: is it the nature of biotechnology itself, or is it corporate control over this that is the concern? Those who stress the need for African farmers to have access to the best that science can produce, usually also argue for (massive) reinvestment in public research, rather than for private research.
- The risks of GM. There may be no resolution of this argument since it is probably not possible to remove all risk of something going wrong. GM crops, most notably of Bt cotton, are already being used in parts of Africa, and with some success. Against the risks of catastrophe must be weighed those of lost opportunities.

Coda: Local voices and better governance

Finally, there is one point that many stress but where the route to the objective is not so clear. That is better governance in which rural voices, especially of poor farmers and of women, are heard and have their due weight in policy.

Partly this is a matter of making systems more effective by harnessing the energies and capabilities of rural people:

Don't call for increased aid: aid effectiveness needs attention. How to utilise own resources and skills is also a high priority.

Amdissa Teshome, AZ Consult, Addis Ababa

One priority is to enable small farmers far from capital cities ... to experiment and improve their productivity ... better to spend on local initiatives than global and national efforts, local initiatives would be a large part of the answer

Gem Argwings-Kodhek, Senior Researcher, Tegemeo Institute, Kenya

Africa needs to strengthen their capacity to implement better policies and use their resources more efficiently through governance reforms that focus on both demand- and supply-side approaches at the local, national and global level. This includes creating the appropriate institutional and policy infrastructure that supports local feedback, learning and adoption alongside global cooperation and knowledge transfers.

Moreover, given the multi-sectoral nature of agricultural development and productivity-enhancing policies, the Ministry of Agriculture needs innovative mechanisms and skills for regulatory activities and cross-sectoral coordination, engaging a broad range of stakeholders, including other ministries, the private sector, civil society, and donors in the formulation of integrated strategies and approaches, including private-public partnerships.

International Food Policy Research Institute, IFPRI

Yet it is also about power and politics. Producer organisations demand a greater role in decision-making:

[We as producers organisation should] Assume our responsibilities and to participate actively and fully in the formulation, the implementation and the evaluation of agricultural and rural development policies.

EAFF et al

But mostly Africa's rural populations really need genuine voice. ... [African leaders need to] recognize that its people are its best resource and give them more of a fair chance. Real respect for human rights by political leaders in Africa, would go a long way to providing the basis for more effective economic and social systems and institutions to be built.

Michael Drinkwater, Senior Advisor, CARE

Democratisation processes that are ongoing in Many African counties is a very positive trend that should help promises to be kept: with more democratic political systems politicians will have to engage in more effective dialogues with rural population, and therefore better respond to their needs.

Bernard Esnouf, Head of Agricultural and Rural Development, Agence Française de Développement

7. Conclusions

The key points arising from this review are as follows:

- Africa suffers badly from hunger: south of the Sahara, FAO estimates that almost one in three is undernourished, 265M people in all, while more than a quarter (28%) of children of less than five years are underweight.
- Agricultural production in Africa has increased only slowly over the last forty years: expressed per person, production has barely increased at all during this time.
- It would be easy to imagine that the lack of food production has led to hunger, but that would simplify. The association is less direct than may be imagined. It is poverty that leads to hunger, and, together with health and care, that leads to malnutrition, rather than lack of food production. But since so many of Africa's poor are engaged in farming or linked activities, promoting agriculture is a good way to reduce poverty and, through that, hunger.
- A further critical qualification is the amount of variation seen across the continent. Levels of food security, and indeed of the factors that lead to food security — food availability, access to food and utilisation of food — vary greatly across the fifty-five countries of Africa. This suggests that the issues are not about the geography or history of Africa, but rather are matters of policy.
- At least half a dozen factors — geography and environmental decline, lack of demand, unfavourable external conditions, lack of technology and failures of markets and governments — are frequently cited as having contributed to the overall disappointing record of agriculture in the continent over the last forty years. The diversity of views on this reflect that the continent is large, with widely differing conditions and experiences, influenced by an array of factors acting with varying impact through time and across space.
- As part of the theme of variation, it should not be forgotten that African agriculture has scored successes. They may not be generalised, or always sustained, but they happen. Success is associated with farmers having the incentive of effective demand for marketed output; adopting technical improvements — some based on local innovations, some coming from formal research; set within a context of functioning supply chains — sometimes organised by state companies — and an economic environment that has allowed investment and innovation.
- There are challenges in the future, not least from climate change; but there are opportunities as well, including the likely strong demand for farm produce from growing and more urban populations within the continent and from Asia.
- A broad consensus has recently emerged amongst governments and donors on the need for more efforts and investment for agricultural development, with CAADP as a focus. It is agreed that there needs to be more public investment in the sector, partly since that will help stimulate private investment, especially in public goods such as roads, research and extension, rural schooling, clean water and health care.
- In the details of agricultural strategy at least four issues divide opinion. The extent to which the state needs to intervene in markets to correct failures is one, with the current debate over fertiliser subsidies being a lively example. Trade liberalisation is a second case: while some favour open trade, others call for protection of African agriculture from imports. The extent to which small farms can invest, innovate and generate growth, or whether more scope should be given to large-scale farms, is another point in contention. Finally there are strongly held views about the degree to which biotechnology should be used to generate innovations and specifically on whether to permit transgenic crops and species.
- Finally, many observers argue that conditions for agricultural development will only improve when rural people have more say in their governance. There is less consensus on how that may be achieved.

What may be concluded from this? Four implications for policy-makers can be drawn out:

- There is great diversity of circumstances and experiences across the continent. It is unlikely there is some universal solution to the problems faced. On the contrary, analysis and selection of options has to be largely a national matter. This can be seen positively: if some countries can see their agricultures grow and prosper, then so can others. If landlocked, Sahelian Burkina Faso — whose agricultural success deserves to be better known — can do it, then what excuse has any other country?

> *Recognize the diversity and heterogeneity of agriculture across the continent.*
>
> *Avoid easy and ideologically biased answers. Acknowledge that agriculture is and will remain a special sector that can neither be fully addressed with neoliberal nor neo-romantic ideologies.*
>
> Detlev Puetz, Principal Evaluation Officer, African Development Bank

- Policies probably do not have to be perfect. The important things are to get the basics broadly right and avoid major mistakes. The latter include conflict and political instability, macro-economic chaos, heavy implicit taxation of farming, and gross under-investment in rural roads, schools, health centres and agricultural research and extension. Hence a country that manages a relatively stable macro-economy, with a reasonably welcoming investment climate, that invests sufficiently in public goods in rural areas, and makes some progress in reducing rural market failures is likely to see its agriculture grow and become more productive. With that should come substantial reductions in rural poverty and improvements in nutrition.
- There is huge potential for learning across Africa. With fifty-five countries a rich variety of experiences are continually being generated. To date, there has been less evaluation of agricultural and rural development experiences, and dissemination of lessons, than there could have been. Problems have received a disproportionate amount of attention compared to studying successes and looking to replicate them.
- More specifically, a key current question is whether the initiatives started in the last few years — with CAADP and AGRA to the fore — are the right measures. In as much as agriculture has suffered from under-investment across much of the continent. Initiatives that seek to remedy this are welcome. Increased investment needs to go primarily on public goods — rural roads, schools, health centres, water and agricultural research and extension. It needs to be complemented by macro-economic stability and efforts to remedy market failures.

There remain, however some knotty questions surrounding market failures. While managing the macro-economy and providing public goods are fairly straightforward, dealing with market failures is not. Fostering institutions, facilitating private-public arrangements, judiciously intervening in the market and deploying 'smart' subsidies where absolutely necessary — judging which of these, and the mix, in any given circumstance is not easy. Getting effective answers is likely to require trial and error. Government will often need to act to facilitate, to mediate and broker deals between private parties. For some ministries of agriculture and their staff, these are likely to be demanding roles. Yet if the needs are recognised and action taken, the challenges can probably be met.

Last but not least, if the goal of feeding is better nutrition, then the health dimensions of nutrition need attention as well as agriculture. Providing access to clean water, sanitation, and simple primary health measures such as immunisation are equally part of the Millennium Development Goals. Given funds and the will, implementation of these is largely straightforward. Ensuring that future generations get a good start in life will, of course, be of great benefit to agriculture in the long run.

What may be concluded for European aid donors seeking to assist African countries, the regional economic commissions and the African Union to stimulate agricultural development? The most obvious point is to fund and support African initiatives: that goes without saying. Beyond that donors, who deal with many countries and contexts, need to recognise the importance of analysis specific to countries and regions within them. They also need to admit that while some things are fairly straightforward, relatively simple to plan, fund and implement, other important issues require processes of trial and error to find effective solutions in local circumstances. It would be good also if donor efforts could more sustained, allowing enough time for promising developments to become embedded before switching attention and funding to some other issue. Donors could also ensure that more evaluation of development efforts takes place and that the lessons are effectively disseminated across countries.

End Notes

[1] The other two targets under the first Goal are:
Target 1.A. Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day
Target 1.B. Achieve full and productive employment and decent work for all, including women and young people

[2] Refers only to Algeria, Egypt, Libya, Morocco and Tunisia.

[3] Northern Africa: Sudan; Eastern Africa: Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe; Middle Africa: Angola, DR Congo; and Western Africa: Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger. [Wiggins & Keats 2009, calculations from FAO GIEWS publications: Crop Prospects and Food Situation 2009 – 2006 editions and Africa Report 1999-2005 editions]

[4] Some add stability to these three, especially stability in availability and access.

[5] FAO estimates daily average calorie needs for countries. In 2004/06 the median requirement was 1,820 kcal a day per person, with a country maximum of 1,990.

[6] This may be conservative estimate of all support to agriculture and food production in OECD countries: some go as high as US$499 billion for 2001, see Anderson et al. 2006a.

[7] Individual freehold tenure is not common in rural Africa. More often farm land is legally vested in the community or state, although most crop fields are allocated to individual farmers under rights to use, but not necessarily to rent or sell the land.

[8] And before that as well. Ever since the record of rural Africa has been written in any detail — since the last half of the C19 — there are examples of farming booms.

[9] Of which USD 5 billion are new commitments.

[10] Signatory governments committed to spend 10% of public expenditures in agriculture

[11] Arab Maghreb Union (AMU), Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), Inter-governmental Authority on Development (IGAD), Economic Community of West African States (ECOWAS), Central African Economic and Monetary Community (CEMAC), Economic Community of Central African States (ECCAS), and West African Economic and Monetary (UEMOA).

[12] Around 1,500M ha is currently used for arable agriculture in the world. Thus if one half of the Guinea Savannah were brought into production, the extra 350M ha would increase the tilled area by almost one quarter.

[13] Although subsidies are often disliked by economists for distorting prices, creating opportunities for rents, and for budgetary costs; there are arguments for using subsidies in special cases to overcome lack of information, to achieve scale economies, etc. In such cases, the search is for 'smart' subsidies: those that are limited in time until the objectives have been achieved; targeted to those who really need them rather than those for whom they constitute unearned rents; and designed so as to enhance the development of markets rather than to displace them. Technically this is challenging, while politically maintaining discipline over populist instincts to spread subsidies far and wide is demanding.

[14] To these can be added produce that is not subsidised but which is virtually a by-product of OECD farming. Increasingly some parts of chickens, such as feet but increasingly wings, have little value in Northern markets and can be exported to Africa for whatever price they can command. Local chicken farms then find it hard to compete.

[15] Not a particularly accurate label, since traditional crop breeding, indeed farmer selection of seed, are examples of modifying genetics.

[16] Unless it is felt that a focus on agricultural research distracts from other concerns. Does it? At times this debate has the flavour of professional jealousy between physical and social scientists. We should relax and work together: both groups have skills and insights that need to be applied.

[17] In a particularly egregious case, a corporation developed a gene to prevent seed being reused from one crop to the next — the so-called 'terminator gene'. As one commentator puts it, this is rather like Thomas Edison, having tamed electricity, deciding that its best use would be in electric chairs (Holmén 2003). The corporation, realising it had scored a public relations own-goal, then declared that it would never use the technology.

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