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# Success Stories from African Agriculture: What are the Key Elements of Success?

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## 1 Introduction

Success is not a word often heard when dealing with contemporary issues in agriculture in sub-Saharan Africa. For 30 years, the overall picture has been one of failure. While other regions of the developing world have seen increases in agricultural production *per capita*, sub-Saharan Africa<sup>1</sup> has seen a decline, the index falling from 114 in 1969–1971 to 97 for 2002–04, a 15 per cent fall over 33 years (data from the United Nations Food and Agriculture Organization Statistics (FAOSTAT)). Consequently, Africa has lost much of its share of international trade in agricultural produce, and has seen rising levels of food imports.

It is easy to sink into pessimism about African agriculture and ignore the longer historical record. Over two extended periods in the twentieth century, one from the start of the century until 1929, the other from the late 1940s until the early 1970s, African agriculture grew well ahead of population growth. In both periods strong demand for exports of tropical products was a driver, and both ended when primary commodity prices fell. Since the early 1970s episodes of notable growth have been less general, being specific to particular crops and regions, and sometimes short-lived. Rice in the inland delta of the Niger (Diarra *et al.* 1999), open-pollinated varieties of maize in the middle belt of Nigeria (Smith *et al.* 1993), maize and cotton in Zimbabwe (Eicher 1995; Poulton *et al.* 2004a), horticultural exports from Kenya (Minot and Ngigi 2003), and peri-urban production of dairy, fruit and vegetables for the city of Kano (Mortimore 1993) are just a few of many examples.

Comparatively few attempts have been made to compare and interpret such episodes of agricultural

growth. When carried out, two approaches have been followed. One has been to synthesise the findings from published case studies (Turner *et al.* 1993; Snrech 1995; Wiggins 1995, 2000), an approach that allows a wide range of factors to be considered with evidence gathered at district and village level – particularly useful when agricultural development takes place within complex natural and human systems. The other, also based on case studies, has been the International Food Policy Research Institute's (IFPRI) study that asked more than 1,100 specialists in African agriculture to nominate up to three examples of success – from which they gathered 253 nominations from 118 replies (Gebre-Madhin and Haggblade 2001; Haggblade *et al.* 2003). From these they selected 11 cases for more detailed study. In both sets, a limitation is the relatively small number of cases reviewed – the largest sample, that of Snrech (1995), contains just 30 cases.

This article briefly summarises the findings from these overviews, and discusses their implications for policy-makers.

## 2 Findings from reviews of success

IFPRI's selection of 11 cases includes seven related to specific commodities (including maize, cassava, bananas, cotton, horticulture, floriculture and rice), a cattle vaccine, soil fertility measures, farm organisation and research capacity. They usually show spurts of growth that subsequently give way to stagnation or decline. Sustaining success has often proved problematic.

Technical advances associated with particular commodity successes are emphasised, although

the role of other elements is recognised. No general model of development appears: instead, IFPRI's review shows a diversity of agents involved in marketing, input supply and infrastructure provision, as well as in research and extension. The public sector dominates in research and physical infrastructure, and is often important in extension; but otherwise, key actors are spread across the spectrum from farmers themselves, to small-scale traders, non-governmental organisations, and parastatals and large companies.

The case studies reviewed by Turner *et al.*, Snrech and Wiggins look at cases of agricultural growth in specific locations, rather than by commodity or innovation. Although the findings are diverse – hardly surprising given the range of contexts selected – there are common themes in these studies.

First, population density frequently correlates positively with agricultural development. These findings offer some support for Boserup's (1965) proposition that rising population pressure would, given certain conditions, lead to intensified farming. A well-known example is that of the upper areas of Machakos, Kenya. Population grew by more than five times from the 1930s to the early 1990s, but agricultural production grew faster, farmers invested in conserving their land, and the district went from being synonymous with poverty and famine to one that was relatively prosperous (Tiffen *et al.* 1994).

Second, access to markets and the associated demand for agricultural surpluses, factors endogenous in Boserup's hypothesis, come out strongly as drivers of growth, especially in the reports from Snrech and Wiggins. Given effective demand, the most likely outcome is agricultural growth that sees greater marketed surplus and higher incomes for farmers, with multiplier effects within the local rural economy.

That farmers will not produce a surplus unless there are markets and attractive prices may be a truism, but one that is surprisingly often overlooked in studies of African farming, and, more important, apparently insufficiently appreciated by policy-makers. The question of the sources of demand will be explored in the next section.

The third point of agreement is that, by and large, changes within farming systems tend to be marginal, and build upon the structure of farming by households working smallholdings on land held under communal systems of tenure, rather than being revolutionary and involving changes to such

structures. In response to forces of population pressure and market demand, farmers change their cropping patterns, redeploy household labour and intensify such work, and make small capital investments in inputs, draught animals, some tools, and, in some cases, in simple means of irrigation.

New techniques are generally adopted by making small changes to existing systems. Given time, the accumulation of successive changes can transform farming, landscapes and society: but such transformation is thus generally seen in the medium to long term, as applies in the case of Machakos. In this, the African experience may not be so very different from that seen in much of Asia and Latin America, where the apparent quantum leaps of the Green Revolution were, on closer inspection, the cumulative effect of a series of quite small improvements for any given crop or locality. Rarely in Africa over the last 30 years has there been a sustained effort for agricultural development: most policies and programmes have lasted for less than ten years.

The main difference between the two sets of studies is that the IFPRI review tends to emphasise supply-side factors, while the others stress the pull of demand. The difference is, to be sure, one of emphasis: neither set of authors deny that the other factors play an important role. But it matters for policy in a continent where so often departments of agriculture have made great efforts to supply farmers with new techniques and associated inputs, and then have been frustrated when these have been ignored.

The dangers of policy that focuses on supply can be seen in recent years in Ethiopia: the 1990s drive to get farmers to plant improved maize seed and apply manufactured fertiliser succeeded and resulted in large increases in the crop, but that only led in turn to an 80 per cent fall in prices in 2001. Farmers reacted by abandoning the new technology (Gabre-Madhin *et al.* 2003).

Since much has been written about the supply of innovations through research and extension (see Jones, this *IDS Bulletin*), the rest of this article develops the theme of demand.

### 3 Demand for agricultural production

What have been the sources of demand that have allowed agricultural growth to date? Three can be identified.

1. Demand from the international market was, for much the last century, the clearest stimulus to agriculture. But the share of produce going for export has declined over time. The volume of most of the traditional exports – cocoa, coffee, cotton, sugar, tea, tobacco, etc. – may have increased absolutely, but usually more slowly than the growth of world agricultural trade (see Amanor, this *IDS Bulletin*). But there have been, even in the last 20 years, some instances of lively growth of exports. Examples include cotton from francophone West Africa, horticulture and floriculture from Kenya, fruit from the Côte d'Ivoire, and fruit and wine from the Cape (see Toulmin and Guèye; Barrientos *et al.*, this *IDS Bulletin*).
2. Of increasing importance is domestic demand, driven by the growth of the cities creating demand for both staples and higher value produce demanded by the more affluent. Throughout West Africa thriving belts of agriculture surround cities, supplying all manner of produce including the vegetables, fruit, dairy and other livestock produce that command higher than average returns (Tiffen 2003).
3. In the recent past but rarely today, demand may be orchestrated by the state, through parastatals. Throughout much of Eastern and Southern Africa during the 1970s and 1980s, marketing boards bought up staple produce including cereals, cattle and milk, at guaranteed prices. In most cases prices were uniform across the country. This usually meant setting a price that averaged out transport costs, so that growers distant from the main markets were offered prices at the farm gate or local buying points above previous levels, while those close to the markets were offered less than before. Moreover, the same parastatals supplied key inputs of seed and fertiliser and working capital to fund this, and again pan-territorial prices were often adopted (Jayne and Jones 1997).

The effect on remote producing areas was dramatic: with access both to inputs and a buyer, on terms far better than had previously applied, there were large increases in the deliveries from such areas. Examples include maize shipments from Eastern and Northern Provinces of Zambia, the Southern Highlands of Tanzania, and the more remote communal areas of Zimbabwe.

The third source of demand is now, for the most part, history. The parastatals ran up losses, as they increasingly found themselves doing business in distant provinces at high costs in transport, while also seeing business decline in areas close to the cities where farmers either diverted supplies into better-rewarded parallel markets or abandoned staples in favour of higher-value crops. By the early 1990s, if not earlier, they cut back their operations in favour of the private sector. In many of the more remote centres of production, the effect was equally dramatic as farmers reverted to less intensive production, sometimes switching from maize to small grains and tubers, and producing only for local markets.

What then are promising markets in the future? Prospects for traditional exports are modest, since world prices are low and expected to decline still further or remain low for the medium term. Non-traditional exports may have better markets, but even with rapid growth in these sectors, production starts from such a low base that the effects will be restricted to small groups of producers and areas (Diao *et al.* 2003).

This leaves the internal markets. Population growth as well as the potential to substitute for some imports means the market for staples will expand – but relatively weakly given the low income-elasticity of demand and slow economic growth. As the Ethiopian case cited above shows, strong agricultural growth can produce gluts on such markets with falling prices. The market for higher value produce – above all that for livestock produce – could expand rapidly, especially if economic growth picks up.

But the existence of markets is only one part of effective demand for farm produce seen in terms of prices at the farm-gate. To appreciate the other dimensions we need to turn to matters of transport, trade and intermediation, that is to issues of supply chains.

#### **4 Organising supply chains**

If the importance of demand is a truism, then so is that of transport costs. Much of Africa has a lower density of roads, rail and water links than other parts of the world (see deGrassi, this *IDS Bulletin*). Moreover, operating costs are often much higher. Platteau (1996) reports road haulage costs in Africa as being as much as four times higher than those that apply in Pakistan.

It is not just the state of the physical infrastructure that raises costs, but the way transport is operated. Road haulage companies use costly sophisticated trucks driven by hired drivers with little interest in keeping costs down. The wealthy owners of the trucks operate cartels that are able to charge rates to cover high running costs. Enterprise throughout the economy suffers from elevated transport costs, but agriculture is hit particularly hard since production is spread over large areas and cannot be concentrated in nodal centres as can manufacturing industry or many services.

It should not be a surprise, then, that when Diao *et al.* (2003) model the effects of agricultural growth, farm output, producer incomes, exports and consumer prices, all improve if transport costs can be lowered. Getting transport costs down has the potential to allow both farmer incomes to rise while the prices of agricultural produce fall to the benefit of consumers. In effect, the parastatals of Eastern and Southern Africa proved this when they implicitly subsidised transport costs in the 1970s and 1980s.

Borders within Africa still represent – despite the many, often overlapping agreements designed to facilitate trade – substantial barriers that raise transport costs, thanks to border congestion, excessive paperwork, restrictions on trucks operating in other territories, disparate standards on produce, etc.

The other dimension to efficient supply chains is overcoming the various failures that deter farmers, traders, processors and exporters from responding to underlying incentives. This may well explain the striking failure of the private sector to provide inputs or buy produce on the scale that the former parastatals did in Eastern and Southern Africa (Dorward *et al.* 2004; Poulton *et al.* 2004b). Would-be investors know too little about the likely behaviour of their customers or suppliers: they fear they will be exposed to opportunism. Rural traders do not stock fertiliser, worried that they will be left with unsold inventories; bankers are wary of advancing seasonal credit for fear of non-repayment; processors do not set up plant concerned that they will not be able to attract produce to run their mills at capacity; farmers do not use fertiliser and improved seed for lack of credit and fears about their ability to sell increased output at a decent price.

Others wonder if it is market failure that is the problem, or whether it is fear of public intervention

in the supply chains that deters investors. Jayne *et al.* (2002) argue that the frequent public interventions in grain markets – bans on exports, limits and licensing of imports, unpredictable buying and selling of public stocks – in Southern Africa are sufficient to explain the reluctance of private enterprise to invest more in buying, storing and processing cereals. Michael Lipton (pers. comm.) wonders whether it is just that the underlying economics – including high transport costs – deter investors: when the opportunities exist, he argues, people will find ways to overcome such failures.

While the relative importance of market failures may be in debate, few would deny that they are significant. Hence finding and promoting institutions that overcome such failures is a key challenge, now that the option of having the state organise the chain has been rejected (Dorward *et al.*, this *IDS Bulletin*).

The need for this is sharpened by arguments that smallholders, who carry out the lion's share of farming in Africa, face increasingly demanding conditions in supply chains. In export markets, international buyers demand higher standards of product quality, uniformity, packing, use of chemicals, traceability of produce, timing of delivery and size of lots (Dolan and Humphrey 2000). Meanwhile in domestic and regional markets, supermarket chains are becoming increasingly influential, and set standards for their suppliers well above those seen to date (Weatherspoon and Reardon 2003). Meeting these new demands requires institutional responses (see Barrientos *et al.*, this *IDS Bulletin*).

## 5 Conclusions

Policy-makers face a dilemma with agriculture in Africa. If effective demand for output is critical for success, as is argued here, then this is not something that the state can affect directly – at least, not under the current consensus where the provision of (private) goods is left to the market. But policy can support demand indirectly, as follows.

- Transport costs in Africa are often high: by the time farm produce is shipped a few hundred kilometres, costs can represent 50 per cent or more of those of production. Getting the railways in good working order and operated reliably is a priority for long-distance movements of food

in Southern Africa: unit costs are roughly half those of road transport.<sup>2</sup> Investing in physical infrastructure may be expensive, but the value of investments can be multiplied if accompanied by reforms to transport operations. Acting to reduce the power of cartels in trucking, for example, and allowing trucks to operate across borders, can cut the costs.

- Governments may encourage and facilitate institutional innovation in agricultural supply chains to overcome market failures (see Dorward *et al.*, this *IDS Bulletin*). This may mean providing seed capital to start-ups by producer associations, underwriting some risky investments, helping convene forums that bring together farmer representatives, co-operatives, government and commercial companies to find ways to promote particular sub-sectors and remove obstacles, and in general looking to develop competitiveness – not a word often used in agricultural policy circles. Few government agriculture departments, however, have much experience of this kind of facilitation.
- A better understanding of markets and the possibilities for competing in them may help guide transport investments, key institutional innovations, and the direction of research. For

example, international markets for farm commodities may not see rapid growth, but neither will they disappear and some farmers somewhere will make their living from supplying them. Lessons can be learned from countries with notable success in agricultural exports, such as Chile, New Zealand and Thailand. These may be useful for areas that have low-cost access to ports and abundant land. What is to prevent parts of Mozambique and Tanzania, for example, from becoming the lowest cost producers of selected primaries?

What else does experience suggest? There is a warning: with only a few exceptions, large-scale public investments in specific agricultural projects fail all too often. The clearest examples come from irrigation, where time and again governments have invested millions in large public schemes for surface irrigation. The usual result has been a scheme developed at costs much higher than originally estimated, then poorly operated, and which yields a miserable return. If there is one reason these schemes fail, it is that they try to change too much too quickly in complex systems, and almost inevitably run into a series of unforeseen obstacles (Adams 1991; Movik *et al.*, this *IDS Bulletin*).

## Notes

\* This article benefited from helpful comments on an earlier draft by Rob Tripp. The author is, however, solely responsible for opinions, errors and omissions here.

1. From here on, all references to Africa refer to the part south of the Sahara.
2. From interviews with grain traders in Lusaka and Johannesburg, June–July 2004.

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## Part I Scene Setting

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