

Background paper for the
**Competitive Commercial Agriculture in Sub-Saharan Africa
(CCAA) Study**

**All-Africa Review of
Experiences with Commercial Agriculture**

Lessons from Success and Failure

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Commercial Agriculture in Africa: Lessons from Success and Failure

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Summary

After a long period of pessimism about agriculture in Africa, interest now seems to be rising in identifying opportunities to promote successful commercial agriculture in the continent. This begs the questions:

- What do we know about past efforts to promote commercial agriculture in SSA?
- What worked, what didn't work, and what are the lessons looking forward?

This paper summarises the lessons learned from past experience of success and failure with commercial agriculture in Africa, based on a series of case studies that document contrasting experiences with cashew nut, cotton, food staples (cassava, maize, rice), horticulture, livestock (beef, cattle), oil crops, post-WW2 UK development of commercial agriculture in Africa, sugar, tea and tobacco. Four of these look in detail at the experience of the UK development finance organisation, Commonwealth Development Corporation (CDC), and its predecessor organisations in supporting the development of agribusiness in Africa. However, for the purposes of the paper, the defining characteristic of "commercial" agriculture is identified as "production primarily for market". In other words, it is not dependent on scale of production or related to particular types of crops.

A simple but useful organising idea for thinking about experience with commercial agriculture is that of returns to investment. As with other commercial activity, supply chain actors will engage in commercial agriculture if the returns to investment are superior to those available from alternative activities. For agribusiness, a critical question is whether the returns to capital expected from a particular commercial agriculture investment are comparable to those available from other sectors (other crops, non-agricultural opportunities) or, in some cases, from investment in the same crop in other countries. This leads us into consideration of where Africa offers "world class" agricultural production opportunities, and hence of where its comparative advantage lies. Focusing on returns to investment for agribusiness also helps us to think about what constrains large-scale commercial agricultural development in Africa and thus what policy can do to better promote such agriculture on the continent.

Where agricultural production is undertaken principally by smallholder households, the notion of returns to investment is more complicated for a number of reasons. There is the question of what smallholders wish to maximise returns to - capital, land or labour? - with the answer varying by context and circumstances. There is also the question of attitude to risk and how poor households weigh extra returns versus extra risk. An issue that is discussed in some detail in the paper is the relationship between subsistence food production, food markets and commercial production of other crops. We contend that widespread production of crops (other than staple foods) for market may be enhanced *either* by interventions that improve the efficiency of staple food markets - thereby assuring food deficit households that they will be able to purchase reasonably priced food with their earnings from crop sales - *and/or* by interventions that raise the productivity of staple food production by net deficit households.

Taking a supply-chain perspective, we also note the importance of rents, coordination and opportunism costs in determining the profitability of investment. In particular, the costs of coordinating the supply of complementary pre- and post-harvest services for smallholder producers are likely to be high at low levels of market development and may keep supply chains stuck in a low-level equilibrium. Such coordination problems can be internalised (and thereby reduced) within large-scale agribusiness operations, although the same challenges make it imperative that such operations have very high calibre management. The incentives

for upstream investments by agribusiness are, however, less in food staples supply-chains than in the supply-chains for many other commodities.

Our review of successful export experiences for inclusion within the case studies suggests that African agricultural exports have demonstrated sustained success (competitiveness) where *either* agro-ecological conditions are ideal for the crop in question *and/or* aspects of the production process are very labour intensive and/or difficult to substitute with mechanisation. “Ideal” agro-ecological conditions may be important for either quality (e.g. tea and coffee) or cost (e.g. sugar, palm oil, rubber) reasons. We note that both drivers of African competitive success – ideal agro-ecological environment and abundant labour - are essentially “given”. In other words, the basis of African competitiveness lies more in natural endowment than in created advantage (e.g. lower capital or transport costs, superior seed technology, stronger institutions). Indeed, major advantages in either the agro-ecological environment or labour costs are needed in Africa to offset the generally high costs of capital, transport and even land in production and marketing, plus generally poor institutions.

We also observe that all notable cases of African agricultural export success, with the exception of sugar, have so far occurred where the basic value of the commodity is US\$500 per ton or more. High value allows African supply systems to recoup their inherently high costs. In particular, the competitive disadvantage that comes from having to absorb high transport costs in order to get African commodities to global markets is reduced for high-value commodities, because transport costs make up a smaller share of overall shipment value. By contrast, Africa has yet to record any significant export success in low value commodities (e.g. cereals, cassava, soybean) that can be grown in a wide range of locations, including by mechanisation. Within the case studies, the one example of a low value crop close to the threshold of export competitiveness is Nigerian cassava. However, we are sceptical about the immediate potential for low value exports from most African countries because of the poor quality of infrastructure, the relatively low yields obtained and the difficulties of assembling sufficient volumes.

The commodity case studies show that African producers face a number of obstacles in competing in international commodity markets, including OECD subsidies (cotton) and phytosanitary barriers to African exports (groundnuts, horticulture and livestock). In the case of horticulture, it is increasingly the private grades and standards imposed by supermarket chains that determine whether or not a supplier can participate in the market. As experience in Kenya and Senegal illustrates clearly, in Africa large-scale horticultural producers are much better placed to satisfy these standards than smallholders. Overall, whilst international markets are not always friendly to African exports, the view taken in the report is that the biggest constraints to export success are to be found within African agricultural systems themselves.

The report also emphasises the importance of domestic and regional markets for African agricultural growth in the medium term. The combined value of domestic and regional markets for food staples within Africa – over US\$50 billion p.a. - is considerably in excess of total international agricultural exports and will grow with both population and income over time. In addition, domestic markets for horticultural and livestock products are also growing strongly. Within these markets African producers can compete on the basis of an import parity price and face lower quality requirements than typically prevail in international markets. Important policy priorities for stimulating food staples production for domestic and regional markets emerge as:

- Increased investment in agricultural research and development for staple crops;
- A pro-active role for the state in ensuring coordinated provision of pre-harvest services for smallholder producers;
- Increased investment in road and rail infrastructure, so as to reduce the farmgate cost of fertilisers and the cost of taking domestic produce to major coastal markets;
- either developments in market-based instruments or more direct state intervention to reduce price volatility.

Meanwhile, in order for regional markets to act as a “springboard” to international export success, rather than as a “dead-end” from an enterprise development point of view, we suggest that one or more of the following is needed: continued public investment in both research and infrastructure investment; a “CDC-style” investor to turn a regional enterprise into a global player, or sufficient competition engendered by regional market development that several large firms can compete for dominance, such that the impetus for cost reduction is strong.

The case studies provide examples of where large-scale commercial agriculture has outperformed smallholders and vice versa. Large-scale agriculture has proven more competitive in export horticulture, sugar and flue-cured tobacco, whilst smallholders dominate in cotton, cashew and food staples. In the case of burley tobacco in Malawi, the jury is still out of the relative competitiveness of smallholder and large-scale commercial production, whilst the tea case study finds that both models have achieved significant success within Africa.

Aside from ideal agro-ecological conditions and/or high labour intensity, other factors that have contributed to competitive success in one or more case studies include thorough planning and competent management - stating the obvious, but a message that bears repeating at a time when the resources for investment in African agriculture are once again rising. Whilst an understanding of markets is clearly essential to success in commercial agriculture, within the case studies, entrepreneurship – understood as innovation in new products or seeking new markets - has been critical to success primarily in export horticulture. This is because horticultural markets are more dynamic than traditional commodity markets, with a much greater emphasis on product marketing, branding and innovation. Similarly, whilst supplying a rapidly growing market is obviously beneficial to enterprise and/or sectoral growth, some of Africa’s success stories (e.g. tea, cotton) have occurred despite unfavourable market conditions. However, we note that, even though a sector continues to grow, its poverty reduction impacts will be reduced by falling prices.

In the past, African agriculture was hugely disadvantaged by distorted macro-economic policies, including overvalued exchange rates, industrial protection and high export taxes on agricultural commodities. However, these distortions have now been reduced in most countries. Nevertheless, the continuing importance, in particular, of exchange rate management is illustrated by several of the case studies (most notably cotton and horticulture). Finally, breakthroughs and/or ongoing progress in research (new crop varieties, pest and disease control, labour saving technology for both pre- and post-harvest operations) created the possibility for commercial agricultural success in several commodities. However, strikingly, none of these research advances was the result of research both conducted within national agricultural research institutes and funded by national government expenditure. African governments need to take agricultural research more seriously, which involves not

just putting more money into research, but looking seriously at the performance incentives for researchers and management in national agricultural research institutes.

One of the reasons why the basis of African agricultural export competitiveness has historically lain more in natural endowment (agro-ecological environment, abundant labour) than in created advantage is that the policies pursued by African governments (sometimes compounded by donor intervention) have in many cases impeded the development of commercial agriculture in Africa, rather than encouraging it. In general, we argue that the role that the state needs to play with respect to large-scale commercial agricultural development is more limited than that required to support smallholder agricultural development. The reason for this is that, if a basic enabling environment is in place, large-scale commercial farms can access most important production and marketing support services (capital, inputs, technical and market knowledge, marketing contacts) themselves. By contrast, state intervention may still be required to ensure that these services are provided to smallholders, even if general conditions in the economy are conducive to private investment.

The critical aspects of the enabling environment for large-scale commercial agricultural development are broadly in line with the so-called “Washington consensus” policies of recent decades. They include: physical security (absence of conflict); macro-economic stability; a long-run commitment to growth and private investment; clarity of property rights and protection of private property; functioning, and preferably efficient, basic infrastructure (major roads, port/airport, ideally rural power supply, perhaps railways); an effective commercial banking sector; ongoing research and development activity in relevant areas, plus phytosanitary control systems (where externalities are large). A long-run commitment to growth includes maintaining taxation at moderate levels, plus providing some predictability of government policy. Disagreements between governments and key donors can contribute to policy instability, as the case of cashews in Mozambique illustrates.

The paper argues that, for large-scale producers, the costs of land access and rights protection are generally high in Africa, contributing to Africa’s competitive disadvantage in some commercial agriculture. There are often multiple claims to rights over a given piece of land and sometimes formal and customary rights overlap. Sorting out land claims and agreeing appropriate compensation in advance can be both time-consuming and costly, but, if reasonable claims are either ignored or only partially satisfied, then management of ongoing grievances (which can also be opportunistically stirred up by local politicians from time to time) can be a continual drain on time and resources. These need not be arguments for large-scale titling programmes. However, attention should be paid to clarifying existing rights, including resolving disputes where rights overlap (often a result of historical policy swings), as well as ensuring that efficient procedures exist for paying adequate compensation when someone loses rights (of whatever nature) to a particular piece of land.

The aspects of the enabling environment highlighted above are also important when seeking to develop smallholder-based systems. However, in addition the state needs to ensure that a range of basic services (including input supply, extension provision and finance) are provided to smallholder producers. The transition within the Malawi tobacco sector post-1994, from a production base dominated by large-scale estates to one dominated by smallholders, provides an excellent example of the additional requirements when smallholders are involved. Whilst their production has expanded dramatically, most smallholder producers produce tobacco with little or no support, leading to declining average yields and concerns about leaf quality that could yet undermine the sector’s position within the international tobacco market.

The exact role for the state in ensuring that services are provided to smallholders depends critically on the structure of the output market in the sector in question (e.g. local monopoly, oligopoly, highly competitive). However, the overarching objective is to ensure both that adequate services (pre-harvest as well as output purchase) are provided to smallholder producers and that producers are paid sufficiently attractive prices for their output that they are encouraged to invest in the crop in question. The challenges of doing this are well illustrated by the post-liberalisation experience of African cotton sectors. We observe that food staples systems are characterised by highly competitive output markets with large numbers of buyers. The view of the authors is that, unless the state plays an active role in facilitating and ensuring service provision within these systems, they are unlikely to achieve the goal of productivity enhancement through intensification.

Finally, the report summarises findings of a desk review of the major social and environmental impacts from commercial agriculture in Africa. Commercial agriculture in other parts of the world has had adverse environmental impacts. More intensive and/or larger scale production in response to market stimuli is associated with a number of negative environmental impacts, including deforestation, loss of biodiversity, heavy demands on scarce water, negative impacts on human health and water quality from excessive or inappropriate application of pesticides, and increased consumption of fossil fuels. Moreover, governments in Africa rarely have both the capacity and the will to take a lead on improving the environmental performance of commercial agriculture, especially where this entails confronting powerful commercial interests. Whilst efforts should be made to strengthen institutional and legal frameworks and to increase state capacity for environmental regulation, in the short-medium term we should expect to see improved performance occurring primarily either where there is concerted action by civil society groups (international combining with local) or where large-scale investors face clear incentives for environmental accountability within their supply chains.

However, we also argue that, when assessing the environmental impact of commercial agriculture, one needs to take account of the “without commercial agriculture” scenario. Specifically, extensification of semi-subsistence smallholder agriculture as populations grow is one of the major causes of environmental degradation (including deforestation, loss of vegetation and soil erosion) in Africa at present. The intensification of production associated with commercialised agriculture could, in fact, assist in reining in this extensification.

A number of strands of literature are critical of the social impacts of commercial agriculture. We briefly review literature on intra-household distribution of the costs and benefits from commercial agriculture, on conditions for workers on large-scale farms and on land issues related to commercialisation. However, these criticisms of commercial agriculture have to be set alongside the strong body of evidence that successful development of commercial agriculture can make an important contribution to national poverty reduction objectives within agrarian economies.

As with environmental impact assessment, there is rarely any mechanism for ex ante social assessment of new interventions to promote commercial agriculture (especially government policies) in Africa. Moreover, interventions that might mitigate the social impacts of commercial agricultural development are often outside the realm of agricultural policy (e.g. education, inheritance rights; women’s land rights might be considered a partial exception).

1. Introduction

After a long period of pessimism about agriculture in Africa¹, characterised by reduced investment in the sector by both national governments and donors, interest now seems to be rising in identifying opportunities to promote successful commercial agriculture in the continent. This begs the questions:

- What do we know about past efforts to promote commercial agriculture in SSA?
- What worked, what didn't work, and what are the lessons looking forward?

This paper summarises the lessons learned from past experience of success and failure with commercial agriculture in Africa, based on a series of case studies² that document contrasting experiences with:

- Cashew nut
- Cotton
- Food staples (cassava, maize, rice)
- Horticulture
- Livestock (beef, cattle)
- Oil crops
- Post-WW2 UK development of commercial agriculture in Africa
- Sugar
- Tea
- Tobacco.

These case studies draw on the authors' personal experience, supplemented by desk research and some discussions with key informants. Four of them look in detail at the experience of the UK development finance organisation, Commonwealth Development Corporation (CDC)³, and its predecessor organisations in supporting the development of agribusiness in Africa. Others review literature on whole sectors, sometimes within a particular country, at other times across Africa. The paper also summarises findings of a desk review of the major social and environmental impacts from commercial agriculture in Africa.

Conclusions are drawn regarding the sources of competitiveness of African agriculture, factors contributing to success in commercial agriculture and the appropriate role for the state in promoting competitiveness and in mitigating possible adverse environmental and social impacts arising from an expansion in commercial agricultural activity.

2. Defining Commercial Agriculture

We identify the defining characteristic of "commercial" agriculture as being "production primarily for market"⁴. In other words, it is not dependent on scale of production or related to

¹ Throughout this report, we use the term Africa to refer to Sub-Saharan Africa.

² Summaries of the case studies are included at the end of this report. Several of the case studies can also be downloaded from XXXX. Others can be obtained from the corresponding author on request.

³ Footnote about subsequent evolution of CDC, plus website.

⁴ Some definitions of "commercialisation" also consider the degree of dependence on markets for the supply of production inputs (von Braun and Kennedy 1994). Pingali 1997 suggests that, over time, these two aspects of commercialisation will proceed broadly in tandem.

particular types of crops⁵. Indeed, we differentiate three “farm systems”, all of which can engage in “commercial” agriculture. These are:

- “family farms” (i.e. smallholders), characterized by the predominant use of family labour, no permanent workers and, at the most, only seasonal labour hired for peak production times;
- “small investor farmers”, where the owner and perhaps other family members are involved primarily in management and supervisory capacities, whilst the bulk of the labour input is provided by hired farm workers (typically including several permanent, full-time employees)
- “large-scale commercial farms”, where family labour is exclusively or predominantly managerial, there is a permanent staff of full-time hired farm workers and these hired farm staff are to some degree specialized (e.g. drivers).

So far we have defined the three “farm systems” primarily in terms of their use of labour⁶. However, one might also expect the mean quantity of land cultivated to rise across the three systems. Moreover, as we discuss below, the “family farm” category is distinguished by the prominence typically given within its farming system to food production for household own consumption.

As the name suggests, almost all activities of “large-scale commercial farms” are “commercial” as defined above. Moreover, this category of farm enterprise is fairly widely recognised.

By contrast, “small investor farmers” are a less well defined or recognised group within Africa⁷. In addition to their labour characteristics set out above, we note that the attribute that distinguishes them from “family farms” (or smallholders) is that almost all their crops are produced for the market. In other words, they are fully commercial businesses, albeit on a small scale, determining and changing their production activities solely according to market opportunities. We also note that the entrepreneurs in question often come from outside the local smallholder farming community, e.g. ex-civil servants or people from urban areas.

Our perception is that “small investor farmers” are rarely yet a major component of agricultural supply chains in Africa. However, there are occasional exceptions. Within the case studies, these are found in Kenyan sugar, tea and vegetable production. For example, in Nairobi, the growing demand for fresh vegetables from the city’s supermarkets has been met chiefly by a new class of “small investor farmers”. These are urban-based entrepreneurs with access to land close to the city. They have been able to raise the capital to invest in the irrigation and other facilities that the supermarkets desire their suppliers to have and have grown their businesses (including renting in or acquiring additional land, where necessary) with the growth in supermarket demand over the past decade. They only produce the vegetables that they sell to the supermarkets and rely almost exclusively on hired labour, much of this on a permanent, rather than casual, basis (Neven et al. forthcoming).

⁵ However, the term “cash crops” – connoting crops that are produced primarily or exclusively for market in a particular context, whereas others in the same context are produced primarily or exclusively for home consumption – will appear in this report.

⁶ The definitions presented above are derived from the terms of reference for the original assignment on which this report is based.

⁷ In a few countries, so-called “emerging commercial farms” have been part of an official categorisation of farm types for some time. We prefer the term “small investor farmers”, as it avoids the common, but erroneous, assumption that most of the people concerned “emerge” from the ranks of local smallholders.

In the case of Kenyan sugar and tea, the emergence of “small investor farmers” owes much to the 1950s land reforms (the Swynnerton Plan). Thus, outgrowers within both sugar and tea schemes have individual rights (generally freehold) to their land. CDC’s experience – here and with outgrower schemes more generally - is that many of the best outgrowers are entrepreneurs from outside the immediate area of the scheme, who acquire land in response to the opportunities that the scheme provides. They quickly reach the point of hiring in labour, whilst they themselves invest and engage in non-farm activities. Some local smallholders do also make this transition, although this process has at times been controversial due to the change in intra-household roles and relationships that it has implied.

Whilst these cases are fairly anecdotal, it is worth reflecting on what they reveal about the comparative advantage of “small investor farmers” vis-à-vis either smallholders or large-scale commercial farms. Conventional wisdom is that smallholders have advantages over large-scale farms when it comes to labour motivation, given their dependence on family labour, whereas large-scale farms have advantages in most other areas, e.g. accessing finance, inputs and market information and securing outlets for their production at remunerative prices (Binswanger and McIntire 1987; Eastwood et al. 2004; Poulton et al. 2005). As “small investor farmers” depend heavily on hired labour, they may be considered to be at some disadvantage vis-à-vis family farms. However, their limited number of employees means that they can develop personal relationships of trust, which limits any disadvantage that they are at and probably means that they are still better off than much larger commercial enterprises. In the case of outgrower schemes, the core enterprise handles market access on behalf of its outgrowers. However, in the Nairobi horticulture case, the entrepreneurs’ urban location undoubtedly gave them an advantage over rural-based smallholders in spotting the new market opportunity and making the contacts necessary to be able to respond to it. Another area in which the “small investor farmers” are clearly at an advantage vis-à-vis smallholders is in their access to capital. However, much of this is from own savings, rather than bank loans, and it is possible that some of them began their route to capital accumulation as smallholders prior to moving to their urban location. In the case of markets and finance, as in labour, therefore, “small investor farmers” find themselves in an intermediate position between family farms and large-scale commercial farms.

A final factor distinguishing them from rural-based smallholders is their ready access to food markets, especially when they live in urban areas. Even before commencing their agricultural venture, many urban-based entrepreneurs will have been used to purchasing food. Within their agricultural venture, therefore, there is no need to devote resources to food production for own consumption. This point is developed further below.

3. Conceptual Framework

A simple but useful organising idea for thinking about experience with commercial agriculture (what contributes to success? what constrains expansion? how can policy promote commercial agriculture?) is that of returns to investment. As with other commercial activity, supply chain actors will engage in commercial agriculture if the returns to investment are superior to those available from alternative activities.

For agribusiness, a critical question is whether the returns to capital expected from a particular commercial agriculture investment are comparable to those available from other

sectors (other crops, non-agricultural opportunities) or, in some cases, from investment in the same crop in other countries. Large-scale investors are looking for a return on investment above a certain threshold level. This is the principal consideration for investment in import substituting enterprises or those primarily supplying regional markets⁸. Where a crop is intended primarily for export, an international investor may additionally consider the returns from investing in Africa as opposed to within other continents. This leads us into consideration of where Africa offers “world class” agricultural production opportunities, and hence of where its comparative advantage lies. Focusing on returns to investment for agribusiness also helps us to think about what constrains large-scale commercial agricultural development in Africa and thus what policy can do to better promote such agriculture on the continent. We consider all of these issues later.

Where agricultural production is undertaken principally by smallholder households, the notion of returns to investment is more complicated for a number of reasons. There is the question of what smallholders wish to maximise returns to - capital, land or labour? – with the answer varying by context and circumstances. There is also the question of attitude to risk and how poor households weigh extra returns versus extra risk.

In much of rural Africa, smallholder households have limited alternative opportunities to agricultural investment, because local economies are still strongly agrarian. However, opportunities do still exist, including the opportunity to hire labour out to more productive farmers. Thus, focus group discussions with cotton producers in Tanzania and Zimbabwe (Tschirley et al. 2008) showed that the top group of producers, who owned their own ploughing teams and could access fertilisers (organic and/or inorganic) and crop protection chemicals, typically relied on hired labour for the majority of cotton production tasks, reserving their own labour for managerial and supervisory tasks. By contrast, the poorest producers hired their own labour out to other cotton producers first before applying it to their own cotton plots. Hired labour earned them immediate cash or food (the lack of which trapped them in this strategy), whilst the late and superficial application of labour to their own cotton plots meant that the returns to labour that they achieved from cotton production were comparable to, or less than, the wages they obtained from hiring their labour out.

3.1. Subsistence Production vs Production for Market

Arguably the main alternative opportunity (to production of crops for market) open to smallholder households is production of food crops for own consumption at home. Simple comparisons of returns and incomes from crops grown for market and food crops produced for own consumption at home generally show that, in “normal” years, returns are higher from crops grown for market⁹. This was the case in nearly all of the studies summarised in von Braun and Kennedy 1994 (see Table 3.1, p39-40). Similarly, higher returns from cash crop production are assumed as a driver of commercialisation by the gender critique of commercialisation. There are exceptions to the finding of higher returns from cash crop

⁸ Note that, as a publicly-owned enterprise, CDC at times pursued alternative objectives. For example, in the 1970s and 1980s, when currencies in Tanzania, Uganda and Zambia were not convertible, CDC made investments that were designed to turn local currency-denominated debts to the UK government into remittable foreign exchange earnings.

⁹ There is, of course, a problem of “sampling bias” in the available observations here, as, when potential returns from production of a new crop for market are less than those obtainable from existing production of food crops for own consumption, producers will generally not take such options up and hence they will not be observed. However, this does not affect the argument that is developed below.

production (e.g. Poulton 1998a; Tschirley et al. 2004; Henson et al. 2005). These exceptions reveal alternative motivations for participating in cash crop production, such as acquiring inputs on credit (which can then be diverted to food production) or acquiring new technical knowledge. Moreover, as Tschirley et al. 2008 show, returns can vary considerably across producers within a given sector (see also Peters and Herrera 1994, p319, and Briand et al. 2006).

If returns from crops grown for market are generally higher than those from food crops produced for own consumption, this raises the question of why smallholder households do not specialise in production of such crops. Whilst there are individual household exceptions, observed for example in sugar and tea production in Kenya¹⁰, whereby households devote their entire available land to a single cash crop, a more common phenomenon is that half or more of a household's land remains under cultivation of food crops for own consumption – even when returns to production for market are apparently higher (see, for example, Table 3.5 in von Braun and Kennedy 1994, and Peters and Herrera 1994). A comparison between the “small investor farmers” discussed earlier and the top smallholder cotton producers in Tanzania and Zimbabwe (see above) is instructive here. The latter commonly cultivate a total of 7-15 hectares of land – not unlike many “small investor farmers” – and their “family” labour input into cotton production is restricted almost entirely to the supervision of hired labour. However, unlike the “small investor farmers”, a third or more of their area cultivated is devoted to food production for own consumption and this activity relies largely on family labour.

A number of explanations may be advanced for the continuing prominence of production for own consumption. Firstly, local culture may place a premium on own food production, with, for example, a mark of a good head of household being that s/he can provide his/her household with home-produced food. Sometimes, such values may be enshrined in local social institutions (e.g. the organisation of complex “compound” households in northern Ghana). There may also be a gender division of labour within the household, such that women have prime responsibility for food production and provision, whilst men engage in off-farm activities and control production of crops for cash. Both culture and social institutions are likely to evolve in response to changing market conditions (e.g. the development of local food markets), but may do so with a lag (Binswanger and McIntire 1987; North 1990).

Secondly, there may be constraints to the extent to which a household can participate successfully in cash crop production. Lack of access to capital for input purchase may be an example of this. Another set of examples concern the ability to bear risk. Thus, use of purchased inputs in market-oriented production requires not just capital, but also an ability to bear risk. Especially at early stages of supply chain development, output markets may be unreliable (not just price volatility, but questions about whether traders will come at all). This is a particular problem where producers are being encouraged to make investments in tree crops, that may only yield their first harvest after three-five years, as illustrated by the struggles of the liberalised cashew industry in Mozambique (McMillan et al. 2003). Another risk-related explanation is that new crops and existing food crops may respond differently to rainfall shocks, hence justifying a diversified production approach (Ellis 2000). In some cases - especially in hilly areas – they may be grown on separate plots with different agro-ecological characteristics (Poulton 1998b; Pandey et al. 2006).

¹⁰ Overall, farmers on the Mumias sugar outgrower scheme were found to devote half of their land to subsistence food production (von Braun and Kennedy 1994, p49).

Perhaps the greatest concern amongst poor households is that, having devoted land and labour to production of a crop(s) for market, they then find that food prices in local markets are unusually high, undermining their ability to buy enough food for household consumption needs. Due to a combination of higher transport costs and hence weaker market integration, greater rainfall shocks and less irrigated production, and an absence of effective public policies for grain price stabilisation (whereas Asian governments know the political sensitivity of food price hikes, so have invested in a variety of price stabilisation systems), grain prices tend to be more volatile in African markets than in Asian ones (Dawe 2001; Hazell et al. 2005). Where food markets are unreliable, inefficient or highly volatile, farm households will seek to feed themselves first and only sell whatever they can produce beyond this (Fafchamps 1992; Jayne 1994). According to von Braun and Kennedy 1994 (p3-4): "Subsistence production for home consumption is chosen by farmers because it is subjectively the best option, given all constraints. In a global sense, however, it is one of the largest enduring misallocations of human and natural resources, and, due to population pressure and natural resource constraints, it is becoming less and less viable."

von Braun and Kennedy 1994 also examine another aspect of the relationship between cash cropping and food security: whether households that invest in cash crops sacrifice food security to do so. Their finding is that is rarely the case. Similarly, Govereh and Jayne 2003 show that cotton households in Gokwe North (Zimbabwe) produce maize more intensively than non-cotton households. Although they devote a lower area of land to maize than non-cotton households (so that more can be devoted to cotton), their food production is similar. Govereh and Jayne 2003 also show that there can be area effects from widespread cash crop production that benefit food production, for example an increase in the number of input stockists. In Senegal, Goetz 1993 found that groundnut production could have important benefits for food production through a complex set of interlocked arrangements covering land, hired labour and groundnut seed. These findings, however, are consistent with the argument advanced here. For, if adoption of a cash crop only occurs when concerns related to food security can be allayed, then non-negative outcomes of cash crop production on food security are likely to be observed.

In general, the case studies that underpin this paper do not include the type of micro-level data that would shed light on whether concerns about food security act as a constraint on smallholder commercialisation. However, we note that some companies involved in cash crop promotion have sought also to assist smallholder producers access more food, because they realise that concerns about food security act as a constraint on cash crop production. One example here is the parastatal cotton company in Mali, CMDT, which has achieved some success in stimulating maize production by not only undertaking initial varietal selection work, but also by making seeds and fertilisers for maize available to cotton producers through their credit scheme. In addition, some CDC-supported ventures that have operated outgrower schemes have devoted a portion of their land to producing staple foods that are then made available to outgrowers as well as to workers, so as to encourage them to expand the share of their scarce land holding that is planted to the particular cash crop being promoted.

We return to the policy implications of these observations in the final section of the paper. For now we note that widespread production of crops (other than staple foods) for market may be enhanced *either* by interventions that improve the efficiency of staple food markets – thereby assuring food deficit households that they will be able to purchase reasonably priced food

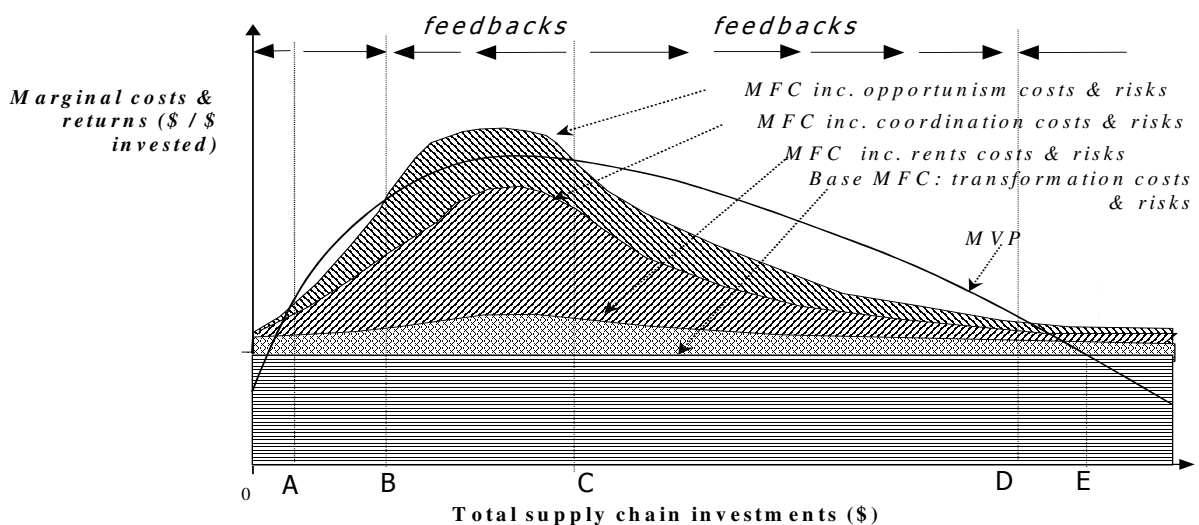
with their earnings from crop sales – *and/or* by interventions that raise the productivity of staple food production by net deficit households.

3.2. Coordination Challenges within African Agricultural Supply Chains

In the previous section we noted that there may be constraints to the extent to which certain households can participate successfully in cash crop production. These may either restrict the area of land that a household allocates to a particular cash crop (where such a crop is grown) or prevent the household from adopting the crop at all. In the latter case, these constraints may account for why only a minority of households adopt a particular crop¹¹. If the constraints are systemic, they may depress returns to investment in a particular crop/area, such that little or no production of that crop is observed in the area, even when the area appears agro-ecologically suitable. An example of systemic constraints would be a lack of critical pre- and post-harvest services (efficient input supply, seasonal finance, extension advice, output market information and/or linkages) to support profitable smallholder production of a particular crop.

In this section we reproduce a conceptual model from Poulton et al. 2006, that illustrates why provision of such services can be so difficult and, in doing so, broadens the conventional understanding of the costs incurred by investors in African supply chains. Figure 1 builds on neo-classical production economics analysis (with its emphasis on transformation costs and on MFC and MVP) by adding insights from both analysis of the effects of governance (which in current policy thinking focuses largely on rents) and new institutional economics (which is concerned with transaction risks and costs and with institutional innovations developed to reduce these risks and costs).

Figure 1 High and Low Level Supply Chain Equilibria



Source: Poulton et al. 2006

¹¹ See Barrett 2008 for a conceptual model that incorporates idiosyncratic transaction costs of market participation.

Figure 1 shows marginal factor costs (MFC) and marginal value products (MVP) for total investments along a commodity supply chain (aggregated net of intra-chain payments between, for example, input sellers, providers of farm finance, farmers, and produce buyers). According to standard production economics theory, investment in an activity should be engaged in if the expected marginal value product from investment in one unit of a factor exceeds the marginal factor cost of that investment. Within Figure 1, a critical distinction is made between different elements of marginal factor cost (MFC). This is best explained by starting from the ‘Base MFC’ line, which represents conventional neo-classical production economics analysis, determined by factor use and prices. This is conventionally drawn, as a horizontal line (representing constant factor price of investment irrespective of scale). Note that, as the figure examines costs and returns to *investment* in the supply chain, MFC will be equal to depreciation costs¹² plus the opportunity cost of capital. Economies or diseconomies of scale in accessing finance could lead to rising or falling MFC. Either of these scenarios is possible but does not affect the arguments set out below.

If the MFC represents all the conventional production costs, then under conventional analysis the optimal aggregate supply chain investment would occur where the Marginal Value Product (MVP) curve cuts the Base MFC line, at E. The shape and position of the MVP curve is determined by the price of the supply chain output(s) and by the technologies employed (higher prices and better technologies both lift the MVP curve, while MVP falls with higher investments due to diminishing marginal returns and falling prices in limited markets). It is also affected by conventional production and price risks as they reduce returns to investment.

We argue in section 4 that a number of key transformation costs for commercial agriculture (e.g. transportation) are particularly high in Africa. In addition, CDC experience of investment in agribusiness in Africa is that transformation costs are often higher than anticipated and/or returns lower due to lack of adequate data *ex ante*. For example, cotton yields on two large-scale investments in Zambia turned out to be lower than expected, because the local climatic data on which projections had been based proved unreliable. A lesson drawn from several of the case studies concerns the importance of piloting new crops in new areas before embarking on large-scale development.

However, Figure 1 also includes the transaction costs and risks associated with any investment, representing these as extra costs and risks that investors face in addition to conventional investment in basic production capacity. These transaction costs and risks are represented as extra marginal cost and risk bands above the base MFC¹³. Allowance for these additional MFC bands then affects optimal supply chain investments.

The first additional cost and risk band represents rents. There is long standing concern about poor governance and opportunities for elites to extract ‘rents’ in the context of weak or poor and predatory governance systems. These rents may be legitimate tax demands or illegitimate demands for bribes, ‘cuts’ or ‘fines’. They may be demanded by national politicians and bureaucrats, where their effect could be to discourage large-scale investment projects, such as those formerly undertaken by CDC. In East Africa well-connected individuals have periodically sought to import sugar from the (artificially low price) “residual” world market

¹² In an annual analysis this will be equal to one for working capital fully depreciated within one year, and less than one for medium and long term capital.

¹³ These could also be represented as bands reducing MVP. MFC bands are shown here as allowing easier demonstration of the relationship between supply chain investment and these costs and risks.

without paying the prescribed duties. This has threatened the viability of the local sugar sector¹⁴. By contrast, southern African sectors have been largely exempt from such practices, perhaps in part because the landlocked nature of producing countries there makes such opportunistic activity less profitable.

Rents may also be an issue at local level. Ellis and Bahigwa 2003 emphasise the negative effects of local tax regimes under fiscal decentralisation on the profitability of agricultural marketing and hence production activities in Uganda, a point also made in relation to cashew production in Tanzania by Poulton 1998b. In neither case did all revenues collected make it into the accounts that were supposed to receive them. On a more positive note, it is observed that one of the reasons why export horticulture has been able to grow so strongly in Kenya has been the supportive (corruption free) bureaucratic process for exporting from the country.

The second and third additional cost and risk bands represent coordination and opportunism risks and costs. Coordination risks and costs arise from the fact that an investment by one actor may fail as a result of the absence of complementary investments by other players in a supply chain. The reason for this is that there is complementarity (in both their farm production and profitability impacts) between the support services needed by smallholder producers to intensify their agricultural production. Hence, producers' demand for one service depends upon their expectation of reasonable (reliable and acceptable cost) access to supply of complementary services. Producers' demand for purchased inputs, for example, depends upon their reasonable access to seasonal finance, and vice versa, and demand for these services also depends upon expected reasonable access to output marketing services, demand for which in turn depends upon prior input purchases. From the service providers' perspective, returns to their investments thus also depend upon the availability of complementary services for producers to draw upon.

Opportunism risks may flow from this phenomenon of complementarity in the context of thin markets. Thus, a contracting party, with monopsonistic or monopolistic control over a complementary investment or service, may remove or threaten to remove that investment or service from the supply chain after another player has made an investment that depends upon it. However, opportunism thrives more generally in contexts characterised by weak information flows and lack of low cost legal mechanisms for enforcement of rights and contracts. We consider the importance of mechanisms to enforce seasonal credit contracts with smallholder producers in section 6.3. We also note here the problems arising from multiple and overlapping claims to land, that can be a particular problem for large-scale agribusiness ventures. In various CDC cases, local politicians or chiefs have encouraged discontent with land allocations made to commercial agriculture, which then necessitated time-consuming negotiations and additional capital investment to secure the land on the ground, effectively raising the cost of land (see section 4.1).

Coordination and opportunism risks and costs are high where total investment in the supply chain is low and markets are thin. They are likely to fall at higher levels of total supply chain investment, due either to thickening of markets and/or to efficiencies achieved within large firms¹⁵ (a point we return to shortly). Reduced risks mean that less costly counter measures

¹⁴ Note that this is a case where rent-seeking behaviour lowers the MVP of legitimate commercial investment, rather than raising the MFC curve.

¹⁵ Transaction risks in market arrangements are likely to fall at higher levels of supply chain investment as the presence of more players allows market coordination mechanisms to work, reducing especially the risks and costs of hold up by providers of complementary services. Larger transaction volumes and/or more frequent

against opportunism are required, but unit transaction costs also fall with higher volumes, giving a double benefit in cost reduction from higher levels of investment and turnover. An example from the case studies of the benefits from greater total supply chain investments and thicker markets comes from horticulture. The Kenyan horticulture industry has achieved a degree of “critical mass” – with smaller firms benefiting from the pioneering efforts of industry leaders – such that competitive equipment and service providers have now grown up to supply horticultural enterprises. The competitive and specialist nature of these service providers means that the cost of running a horticultural enterprise is lower in Kenya than in Zambia or other newer entrants into the horticultural export arena.

The most obvious impact of adding coordination, opportunism and rent costs and risks to the orthodox analysis is a shift of the profit maximising equilibrium point to the left (from point E to point D). There is also a very substantial shrinkage of the region where MVP is greater than MFC as it is reduced to investment levels between C and D. If investments in a supply chain are below C, then there are no immediate net gains from increased investment (since MFC is greater than MVP). Indeed there are net gains from reduced investment as long as MFC is greater than MVP. There is then a critical threshold level of total supply chain investment (point C) below which the marginal returns to investment are negative, with negative (or positive) feedbacks below (or above) this threshold. Below the threshold the supply chain is caught in a low level equilibrium trap and, as drawn, investment at B represents a low level equilibrium (equivalent to profit maximisation around semi-subsistence production)¹⁶.

How does the analysis in figure 1 for aggregate supply chain investment relate to investments by supply chain entrepreneurs (or potential entrepreneurs)? Of particular interest here are the coordination costs and risks. If the supply chain was managed by one or more vertically coordinated firm(s), then, although they faced the MVP and MFC curves as set out in Figure 1 and discussed above, the vertically integrated organization of the supply chain within firms would introduce a very significant change in the analysis: coordinated decision making along the supply chain could allow such firms to identify both the existence of the low level equilibrium point, and the benefits of making investments which lie to the right of this. They would therefore be able to unilaterally decide to invest at or near the optimal point D (assuming that they could mobilize the required resources). Of course, even within a large-scale operation, coordinated decision making is a demanding task. In CDC’s experience, this translates into the lesson that top-class management is required to successfully handle “complex” projects. However, one of the strengths of centralised decision-making is its ability to “internalise” and hence resolve coordination issues.

In the case of a supply chain made up of different supply chain entrepreneurs (or potential entrepreneurs) each performing different functions within the supply chain, the mechanisms to facilitate coordinated decision making may be absent. Under such circumstances, individual investment choices may lead to a stable equilibrium characterised by a low level of

transactions also reduce costs and risks, as the latter facilitates the establishment of bilateral trading relations and provide incentives for contracting parties and employees to honour them, whilst the former allows the fixed costs of establishing these relationships to be spread over larger frequent transactions (Williamson 1985). A counter-argument is that individual large investments may be more vulnerable to hold-ups, although where they are very large they may also stimulate institutional innovation and supply chain structures that reduce hold-up risks.

¹⁶ At low levels of investment the MFC and MVP curves may take a variety of different shapes, and relate to each other in a variety of ways. The broader argument for the existence of a low level equilibrium trap is not sensitive to these shapes provided that with increasing total supply chain investment MFC moves from a position above MVP to one where it lies below the MVP, before these positions are again reversed. In other words, crossover points C and D are critical to the existence of high and low equilibria.

investment and activity in smallholder farming areas (point B in Figure 1), with an atomistic market of many small players (producers and buyers), but very limited pre-harvest service provision. This is a common situation in Africa, particularly in food crops. Ironically (given the debates about market liberalisation) the neo-classical ideal of perfectly competitive markets then provides some of the necessary conditions for coordination failure, and, as discussed later, escape from the low level equilibrium trap may require the development of non-market¹⁷ coordination mechanisms.

Finally, we observe the way that techno-economic characteristics of different crops affect the incentives for private investment within the relevant supply chains and also the coordination challenges encountered within these chains. These go some way towards explaining the differential supply response to market liberalization across different crop groups. In particular we argue that although there are potential low level equilibrium trap problems for the intensification of any form of smallholder agriculture, these are particularly severe for staple crops. By contrast, for both traditional and non-traditional export systems there are often incentives for medium-large companies to provide the full range of complementary services necessary for farmers to produce high volumes of produce.

In the case of many *traditional export cash crops*, such as cotton, tea and tobacco, processors' investments in processing plant and/or downstream relationships provide them with an incentive also to make upstream investments to increase reliable access to farm products, so as to improve average capacity utilization and reduce risks of under-utilisation. Reliable access to farm products may be achieved by vertical integration (investing directly in commercial farm production), by establishing vertical coordination arrangements with large commercial farms, or by investing in service delivery to smallholder producers in exchange for rights to buy the resulting output. In the latter case processing firms commonly provide a full package of pre-harvest services plus a guaranteed output market outlet to smallholders with whom they work. The fact that one firm provides the whole package of services required for production intensification overcomes the complementary coordination problem. Meanwhile, in some cases processors are granted a local monopsony on crop purchase, either by geography or by policy decision. This enables them to minimize problems of credit default or, in terms of Figure 1, reduces opportunism costs and risks. Elsewhere, for such 'interlocking' systems to work, horizontal coordination may be needed between the companies concerned, so that they do not undermine each other's investments in service delivery through side-buying (Poulton et al. 2004). The incentives to work with small farmers thus tend to be strongest where output markets are more concentrated, as – in the absence of a strong state to facilitate coordination - horizontal coordination is easier the fewer the number of players involved. This issue is taken up again in section 6.3.

In the case of *high value products*, such as export horticulture, investments to increase reliable access to farm products may be driven less by the need to achieve high utilisation of expensive processing capacity and more by the need to assure consistent supply of high quality produce as a prerequisite for participation in high value marketing channels. Again, these incentives will tend to encourage processors to invest in interlocking smallholder service delivery processors if they are unable to either vertically integrate own production with processing or if they cannot source supplies from larger scale farms. However, the incentives for working with small farmers may be undermined where products have high

¹⁷ The term 'non-market coordination mechanisms' refers to a variety of ways by which coordination is achieved apart from price signals in broadly competitive markets. A variety of such mechanisms are discussed later in this chapter.

credence attributes, as assuring these involves more or less fixed transaction costs per producer (Raynolds 2004), posing major difficulties for intermediaries serving small farmers. Smallholder outgrower systems for high value, high credence products, therefore, generally only predominate in situations where there are major production or output market advantages in a certain area (for example low labour costs, suitable agro-ecology, or a protected market) but institutional, political or other constraints on production by large farms.

In the case of *staple food commodities*, there are few incentives for large firms to provide pre-harvest services to producers. Economies of scale and opportunities for value addition in processing are both more limited¹⁸, whilst multiple marketing channels, including local informal markets, plus the alternative of consuming the crops on farm, make it very difficult to recover the costs of provision of pre-harvest services on credit. In such systems, primary marketing tends to be undertaken by large numbers of small buyers for whom limited capital is a major constraint to expansion. Such buyers have neither the capacity nor the incentive to invest in service delivery to expand smallholders' supply. If buyers are unable or unwilling to invest in service provision, however, then the task is left to specialist service providers (input stockists, microfinance organizations, extension agencies, market information systems). In thin markets, this then raises the complementary coordination problem, where the return to a farmer from using one service is dependent upon the existence of complementary services that she can also draw upon. The corollary of this for service providers is that the return to investment for one investor is dependent upon the existence of complementary investment by providers of other services. Currently in Africa there are few institutional arrangements designed to overcome this coordination problem. For this reason, low level equilibrium traps (where supply chains are stuck with total levels of investment between A and B in Figure 1) are more likely in staple foods than in either traditional export cash crops or high value crops.

We also note that, amongst staple foods in Africa, production expansion has been much more rapid in cassava than in grains. There have been important productivity advances in cassava since the 1980s (Nweke 2004), raising the MVP curve. However, the techno-economic characteristics of cassava also reduce the complementary coordination challenges confronting production intensification. Most critically, cassava is often grown without fertilizer, removing the need both for efficient fertiliser distribution networks and for seasonal credit¹⁹. Cassava sticks are a common pool good, in that farmers can distribute them amongst themselves once they have harvested their own crop. However, in Nigeria and elsewhere cassava production expansion has been stimulated by large, public programmes to disseminate improved planting material to smallholders.

4. Agricultural Markets and African Competitiveness

In this section we ask what experience with international agricultural exports from Africa tells us about where Africa's comparative advantage has lain up to now. We then consider whether the main constraints to export success are external (related to the way in which international markets function) or domestic (within African supply chains and their immediate

¹⁸ See Jayne et al. 1995 for an account of how small-scale hammer mills out-compete industrial roller mills in maize processing.

¹⁹ It can also be harvested all year round, which minimizes seasonal price fluctuations. Whereas a strategy for maize intensification may require some form of price stabilization policy if farmers are not going to be discouraged from intensifying production by sharp price downswings in bumper years, such a policy is unnecessary for cassava.

environment) and whether regional African markets offer better opportunities than international markets.

For the purposes of this section, our main criterion for success is whether or not a sector has been able to expand its share of the relevant market over a sustained period of time.²⁰ Thus, African countries increased their share of global tea exports from 9% in 1961-65 to 24% in 2001-05, this increase being accounted for almost entirely by Kenya, which increased its share from 3% to 16% (source: FAOSTAT). Similarly, Francophone West African cotton producing countries increased their share of global cotton lint exports from 5% in 1980/81-1984/85 to 13% in 2000/01-2004/05, whilst other African countries (mainly in southern and eastern Africa) increased their share from 3% to 4% over the same period (source: ICAC data).

A second consideration could be whether or not a sector has been able to move into new markets and/or products. However, with the exception of export horticulture, there are few examples of this²¹. In a few cases, the relevant question might be whether a sector has been able to survive in the face of adversity.

Thus, in general, we expect enhanced competitiveness to be associated with sustained production growth (over 10 years or more). However, we note that lack of land with suitable agro-ecological conditions might constraint production, as has been the case for Malawian tea. For sugar, the peculiarities of the heavily distorted world market have meant that, even for producers that are (or have been) “world class” in terms of production costs (Swaziland, Zimbabwe, Malawi, Zambia and South Africa), profitable expansion is constrained by a combination of domestic and regional market opportunities plus the volume of quota for export to high-value markets such as EU and US.

4.1. Where Has Africa’s Comparative Advantage Lain So Far?

Our review of successful export experiences for inclusion within the case studies suggests that African agricultural exports have demonstrated sustained success (competitiveness) where *one or both* of the following conditions have held:

Agro-ecological conditions are “ideal” for the crop in question

Examples here include cocoa, tea, coffee, sugar and pine trees. “Ideal” agro-ecological conditions may be important for one of two reasons:

- In some commodities (e.g. tea and coffee), the market pays high quality differentials and the desired quality attributes can only be obtained where particular growing requirements are fulfilled. In these cases the big global players in the commodities in question (either traders or processors) perceive that they have to access supplies from

²⁰ The case of Senegalese groundnuts illustrates the importance of the word “relevant” here. Whilst Senegal has broadly maintained its share within world exports of groundnut oil over the past three decades, its share of the markets for unshelled and shelled groundnuts has collapsed. Unfortunately, growth in world exports of shelled groundnuts has way exceeded that in world exports of groundnut oil over this period. Groundnut oil has been out-competed on cost by a range of other edible oils, such that its share of world trade in edible oil has fallen from around 10% in the early 1970s to 1% today (source: FAOSTAT).

²¹ The Kenyan horticulture sector also stands out as the one case where an African enterprise (Flamingo Holdings / Homegrown) has established itself as a major global player (in both vegetable and cut flower production), integrating forward into European wholesaling and supermarket category management.

certain African countries in order to be able to satisfy their customers. This may lead to investment by these players in developing African supply chains.

- In other commodities (e.g. sugar, palm oil, rubber), quality differentials are less important and basically similar products can be produced through reliance on a range of business models. However, multinational companies with global brand names to protect may have to observe more demanding social and environmental standards than some developing country competitors (as they are answerable to developed country consumers, not just local regulators in their countries of operation). Therefore, they can only cut their costs so far. In order to be price competitive, they thus have to combine their capital and expertise (their main competitive assets) with growing conditions that will give maximum yields – hence the search for locations boasting “ideal” agro-ecological environments. Alternatively, the benefits of “ideal” agro-ecological environments may be necessary to offset the otherwise high costs of operating in Africa (see below).

As noted above, several southern African countries are considered “world class” locations for sugar production. In the case of sugar, ideal agro-ecological conditions means: good soils; wet, hot summers for plant growth plus sunny, dry winters for conversion to sucrose; with supplementary irrigation if necessary. In southern Africa, these conditions can produce yields that are twice the world average for sucrose production from cane per month²².

Parts of Swaziland also represent ideal agro-ecological conditions for the production of pine wood, with CDC businesses there recording unrivalled growth rates for commercial pine trees.

In the case of tea, excellent growing conditions are found in parts of Kenya, such that costs of production are comparable to those achieved in India and Sri Lanka. However, the additional benefit of production in Kenya is that the agro-ecological conditions contribute to a quality crop that realises higher average export prices than either of its two main competitors. By contrast, Malawi is also a low cost producer, but its “plain” teas realise average export prices that are consistently lower than those of Kenya (even when Mombasa auction prices for both types are compared).

A number of factors have contributed to the success of Kenyan horticulture, one of which is excellent growing conditions for particular types of vegetables and flowers. Ideal growing conditions for particular horticultural crops are very specific and Kenya has more variation, in terms of altitude, than, say, Zimbabwe or Zambia. This translates into less need to resort to artificial control (irrigation, greenhouses) to get ideal conditions, although leading Kenyan exporters have increasingly turned to artificial control as a way of reducing total water consumption (see section 7).

Aspects of the production process are very labour intensive and/or difficult to substitute with mechanisation

In these cases, Africa is attractive due to its low costs of un- or semi-skilled labour.

²² The world average is 0.5t sucrose p.m. A typical sucrose yield from cane in southern Africa is 10-12%. (Note, however, that Sudan achieves >15%).

A good example here (albeit one that now needs some qualification) is cotton, for which harvesting, in particular, is very labour intensive. Harvesting can also be undertaken mechanically, but the quality of the resulting lint is lower, due to higher levels of vegetal matter (e.g. leaf and twig fragments). However, in recent years cotton spinners have become much more concerned about other sources of contamination (e.g. polypropylene fibres from picking bags), which are associated with hand-picked cotton. As a result, machine-picked cotton currently trades at a premium over hand-picked. Nevertheless, if the institutional arrangements were put in place to give smallholder farmers strong incentives to avoid contamination of their seed cotton, handpicked African cotton could achieve useful premia over the benchmark Index A lint price. The Zambian cotton sector has created these incentives over the past decade and has seen its premium over the Index A price rise by about US\$0.05 per lb, which represents an increase of 8-10% in the total lint value.

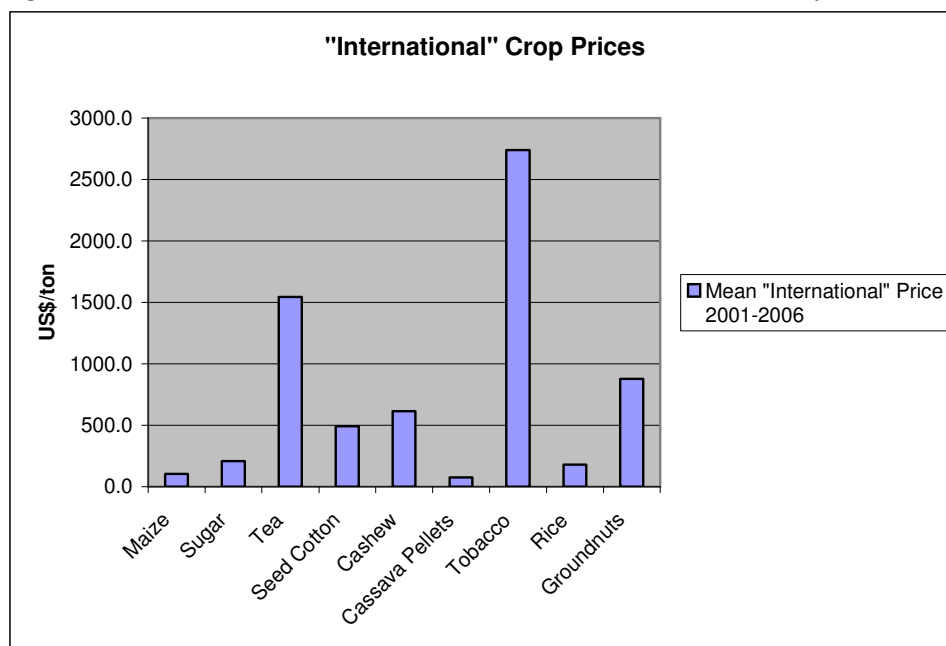
Aspects of sugar, tobacco, tea and horticulture/floriculture production and/or processing are also highly labour intensive. Tea harvesting needs to be done with care and at regular intervals, which makes it ideally suited to smallholder households.

Horticulture presents perhaps the most interesting example in this category. Since the 1970s there has been a progression in the main types of horticultural produce exported from Africa. In the 1970s the focus was on tropical products, such as bananas and pineapples. As incomes in developed economies rose and northern supermarkets sought to offer a full range of fresh produce year-round, opportunities were then identified for out-of-season production of crops that were also produced in the north, for example citrus, grapes, melons, green beans, peas, asparagus and cut flowers. Now African producers engage in year-round production of high value, partially processed “temperate” products, such as washed and trimmed mangetout, prepared fruit salads, trays of prepared mixed vegetables and flower bouquets in retail packs. This has been driven by continued increases in incomes, plus greater demand for convenience foods in developed economies, as many households now have all adult members in full-time employment. Labour for basic processing tasks is cheap in Africa, which has led to additional value added being captured within the continent.

It is important to note that both of these factors – ideal agro-ecological environment and abundant labour - are essentially “given”. In other words, the basis of competitiveness lies more in natural endowment than in created advantage (e.g. lower capital or transport costs, superior seed technology, stronger institutions). Indeed, we argue that major advantages in either the agro-ecological environment or labour costs are needed in Africa to offset the generally high costs of capital, transport and even land in production and marketing, plus generally poor institutions.

Related to this, we observe that all notable cases of African agricultural export success, with the exception of sugar, have so far occurred in what we call high value commodities (a basic commodity value of US\$500 per ton or more – see Figure 2). They are high value because either agro-ecological conditions or high labour costs inhibit their total global supply (long-term historic falls in commodity prices notwithstanding), whilst their value in turn allows African supply systems to recoup their inherently high costs. In particular, the competitive disadvantage that comes from having to absorb high transport costs in order to get African commodities to global markets is reduced for high-value commodities, because transport costs make up a smaller share of overall shipment value.

Figure 2: Indicative International Prices of Commodities Covered by the Case Studies



Definitions: Maize – US no.2 yellow, f.o.b. Gulf ports; Sugar – ISA daily price raw sugar, average of week; Tea – total tea, Mombasa auction; Cotton – Cotlook A index, equivalent seed cotton price assuming 40% ginning out-turn ratio; Cashew – mean world export price 2000-2004, FAOSTAT; Cassava pellets – f.o.b. Bangkok; Tobacco - mean world export price 2000-2004, FAOSTAT; Rice – white broken rice, Thai A4 Super, f.o.b. Bangkok; Groundnuts – US Runners 40/50, c.i.f. Rotterdam

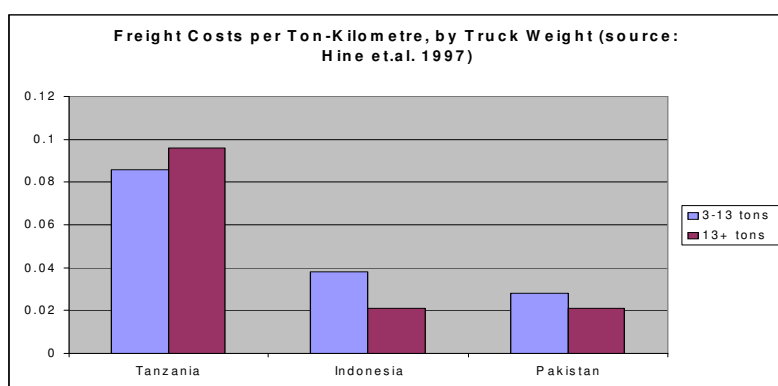
A few additional comments are required to justify these statements about costs (which are, inevitably, generalisations). Capital from domestic sources is generally expensive and difficult to acquire in Africa (unless you have privileged access to subsidised credit lines from state banks), due to the underdeveloped nature of domestic financial systems. International capital markets view Africa as risky; hence risk premia are high.

The neglect of investment in basic infrastructure (especially ports, roads and railways), leading to high transport costs, will be a recurring theme in what follows. However, even where roads are reasonable, freight transport costs tend to be high in Africa due to low volumes of business, limited competition (including in vehicle importation) and few institutional arrangements serving to enhance efficiency of freight operations (Box 1).

The Kenya horticulture industry provides a partial exception to the high transport cost story, but it is really a case of “the exception that proves the rule”. Half the EU wholesale price of fresh produce from Africa is accounted for by transport, storage and handling costs. Therefore, to survive, a sector must have efficient logistics (including also cold storage). Kenya is fortunate that its areas of good agro-ecological potential for horticulture production are relatively close to its international airports. In addition, in its early years, the industry benefited from the regular airline traffic to and from Europe stimulated by the Kenya tourism industry. Now, the industry has expanded to a size that supports competing, specialised charter airfreight companies. Similarly, dedicated cold stores have now been built at Nairobi airport, rather than holding produce in refrigerated trucks until it can be loaded.

Box 1: Road Freight Transport Costs in Africa and Asia

Whilst African roads are on average of lower quality than Asian ones and the road density much lower, research in the 1980s and 1990s found that road freight transport costs were much higher per ton/km even on roads of comparable quality (Platteau 1996a). Thus, Hine and Rizet 1991 reported that long distance road freight transport costs in Francophone Africa (Côte d'Ivoire, Cameroun and Mali) were four-five times higher than comparable costs in Pakistan. Southern African freight transport costs were also high whilst data from India and Vietnam showed costs similar to those in Pakistan. Hine et al. 1997 compared road freight transport costs in Tanzania and Indonesia and found tariff rates for trucks carrying 3-13 tons (on major roads) to be US\$0.086 per ton/km in Tanzania compared with just US\$0.038 per ton/km in Indonesia (and US\$0.028 per ton/km in Pakistan). For trucks carrying over 13 tons the rates were US\$0.096 per ton/km in Tanzania compared with just US\$0.021 per ton/km in Indonesia and Pakistan.



A number of factors contributed to these differences. Firstly, new vehicle prices tend to be much higher in Africa than in Asia – for example prices in Tanzania are 2-3 times the prices of similar vehicles (capacity-wise) in Indonesia. This is partly due to the common practice of exclusive dealerships for importation of vehicles and spare parts in Africa and partly because Asian countries typically import low specification vehicles, but have well-developed artisanal industries for the local modification (including strengthening) of vehicles after purchase. Secondly, fuel prices are often lower in Asia than in Africa.

Thirdly, however, there is much greater utilisation of trucks per year in Asia. In part, this undoubtedly reflects the lower general level of business in African economies. However, Hine et.al. also highlight the role played by trucking associations in Africa in informally dividing up work amongst local trucks. By contrast, Asian trucks make extensive use of highly competitive freight forwarding agents to secure business for them.

Finally, Asian drivers are given a much greater degree of responsibility for business performance than their counterparts in Africa. This not only encourages them to use the freight forwarding agents, but also means that they drive at much lower speeds, thereby incurring lower fuel costs and reducing the costs associated with accidents. Thus, for three-axle trucks, mean journey speeds of 50 kmh were recorded for Tanzania compared with only 15 kmh for Indonesia and 24 kmh for Pakistan (Hine et al. 1997).

What is unclear from these findings is the extent to which Asian-style institutional arrangements can be expected to emerge in Africa as volumes of freight business increase and, conversely, the role that public policy needs to play to encourage them, rather than just investing in physical infrastructure.

Only a minority of African smallholders pay rent for their land, although they are acutely aware of the opportunity costs of planting crops for sale (as argued earlier). However, for large-scale investors, the costs of acquiring and defending land are generally higher in Africa than in, say, the cerrado region of Brazil. In land-abundant countries, such as Mozambique and Zambia, the formal costs of land acquisition may be low. However, such land never fully leaves the purview of traditional authorities (who often have to agree to the land being given out in the first place) and an investor's *de facto* right to continue to operate a farm or estate can be challenged at any stage. Staving off such challenges requires continual, time-consuming (for management) and possibly also costly efforts to keep local leaders "on side". This situation may be contrasted with the political economy context in much of Latin America, where landowners are part of the political elite – although this power is being challenged in some places either by left-wing militia or by populist politicians.

Two CDC examples from Zambia illustrate these points. Mpongwe Development Co has a 99-year leasehold title to its (previously "undeveloped") land. Over the years there has been considerable encroachment by squatters, and regular liaison and negotiation with the local chiefs and politicians has been required to keep it under control. In a democracy, all the squatters have votes and it is easy for chiefs to argue that control of the land is "traditionally" theirs and for local politicians simply to argue that Mpongwe has too much. In 2003 Mpongwe embarked upon a very expensive programme to clear a cut line and put up a boundary fence, in order to avoid any doubt where the boundary was, to establish clearly the scale of the encroachment problem and to cut down on the organised theft of maize. Similarly, when CDC acquired Nanga Farms (again with a 99-year lease), the local MP organised squatters to "invade" the farm, arguing that it morally belonged to local people. The management had to gradually regain control and then adopt a strategy of fencing and cattle grazing everywhere to demonstrate that all of the land belonged to CDC and was being used.

Contrasting agricultural systems in Africa with those of major agricultural exporting countries in E/SE Asia and Latin America, we note that agricultural export success is achieved in a wider range of crops in the latter²³. This is true despite the fact that the economies of such countries (developing, rather than least developed) are often quite rapidly diversifying away from agriculture and that their labour costs are higher. From a production economics point of view, farms in these developing economies are able to substitute capital (fertiliser²⁴, mechanisation) for labour and to benefit from lower transport and marketing costs as infrastructure improves and markets thicken. In addition, they benefit from greater expenditure on research and irrigation (by both public and private sectors). Higher education levels and improved extension systems assist labour productivity. All this is underpinned by better institutions, both economic (e.g. stronger financial systems) and political (e.g. systems that allow farmer groups and local investor interests to hold state agencies to account for their performance and to argue the case for investment to support commercial agriculture).

Although our case studies document some impressive agricultural export success stories in Africa (e.g. West African cotton, tea in Kenya, sugar and pine in Swaziland), the successes of

²³ We are here thinking of countries such as Argentina, Brazil, China, Malaysia, Thailand and Vietnam, where there is some comparative advantage in agricultural production. Land abundance is a component of comparative advantage in many, but not all, of these cases. In China comparative advantage is associated with highly labour-intensive, but land saving, activities, such as horticultural production.

²⁴ Fertiliser is 2-3 times more expensive in Africa than in Asia and Latin America, as a result, *inter alia*, of high port and internal transport costs and the diseconomies that arise from supplying tiny markets.

developing countries such as Brazil, China, Thailand and Vietnam are arguably both more numerous and more impressive. They encompass high value products (e.g. coffee and cashews in Vietnam), low value products (e.g. cassava in Thailand and soybean in Brazil) and horticultural products from Brazil, Chile, China, Mexico and Thailand (Reardon and Flores 2006). Given the African experience, Latin American and Asian success in exporting low value products is arguably the more interesting. Margins in such supply chains are inevitably low, so profitability is obtained, *inter alia*, through achieving economies of scale in transport and storage. Thus, dedicated bulk handling facilities have been constructed for the export of soybeans produced in the cerrado region of Brazil. However, achievement of economies of scale requires not just major investments in infrastructure, but also the production of large surpluses in relatively concentrated areas²⁵. For this to happen, not only do yields need to be reasonably high, but significant proportions of land need to be devoted to the crops in question – which takes us back to our earlier discussion of food crop intensification as a way of enabling smallholders to free up land for commercial agriculture.

By contrast, Africa has yet to record any significant export success in low value commodities (e.g. cereals, cassava, soybean) that can be grown in a wide range of locations, including by mechanisation. At first sight, this is surprising, given that some African countries have abundant land resources that are currently underexploited and, therefore, might be assumed to have a natural comparative advantage in the production of low value crops that can be produced in extensive production systems. However, we are sceptical about the immediate potential for low value exports from most African countries because of the poor quality of infrastructure, the relatively low yields obtained and the difficulties of assembling sufficient volumes.

Within the case studies, the one example of a low value crop close to the threshold of export competitiveness is Nigerian cassava. According to Nweke 2004, over the past two decades Nigeria has emerged as the world's largest producer of cassava, thanks to the growing popularity of gari amongst urban consumers, the nationwide dissemination of new varieties developed by IITA (that are both resistant to the mosaic virus and higher yielding than traditional varieties) and the availability of mechanical graters supplied by artisanal producers. It has thus been transformed from an inferior, food reserve crop to a major cash crop. (Helpfully, it doubles as both a food crop and a cash crop for its producers). However, there has so far been relatively little industrial processing of cassava in Nigeria, either into chips for livestock feed or into starch. Critically, the productivity of the cassava supply chain is still not high enough for cassava products to be sold profitably at export parity prices. According to Nweke 2004, for export competitiveness to be achieved, further investment is required in both varietal development (to produce varieties that are suitable for mechanised peeling and that also achieve higher yields within twelve months of planting) and in road infrastructure (to further reduce transport costs from farm to port). One assumes that much of this investment will have to be public.

We are unaware of any other low value crops in Africa that are close to export competitiveness.

²⁵ Buyers may also want large and/or regular consignments of produce. However, this phenomenon is not confined to low value products. Thus, in cotton, a medium-sized mill in China might want to receive 1000 tons of lint per month, year round, from a preferred supplier [G.Estur, pers.comm.]. 12000 tons of lint is the entire national harvest from a small African producing nation, such as Malawi or Ghana, and exporters typically sell all their stock from these countries in three months. Niche markets, such as fair trade or organic, might make more sense for these countries.

4.2. *International Market Constraints*

The commodity case studies show that African producers face a number of obstacles in competing in international commodity markets.

The impact of US, EU and Chinese subsidies on world cotton markets has perhaps received the greatest attention (Oxfam International 2002). Such subsidies are believed to depress world prices by around 10-15% in the short-medium term, reducing returns to producers in other major exporting regions such as West Africa.

In the case of livestock, there has been a dramatic increase in the importation of chicken wings and legs into Africa in recent years. These are “unwanted” products in high income markets, where demand is increasingly for chicken breasts, so are sold to Africa at very low prices. However, this is a case of commercial cross-subsidisation of complementary products, rather than of government subsidies creating an uneven playing field for producers in different countries.

There are also concerns about the impact of phytosanitary barriers to African exports. Within the case study commodities, this is perhaps of greatest concern in the case of Senegal groundnuts, Kenyan horticulture and livestock. In the case of groundnuts, the concern is not so much that government policies (most notably in Europe) are consciously creating an uneven playing field for producers in different countries. Rather, it is that African export sectors have particular difficulties in responding to the ever-increasing standards being set, which are scarcely justified in terms of human health (Otsuki et al. 2001).

In the case of horticulture, whilst there may be formal public standards governing trade, it is increasingly the private grades and standards imposed by supermarket chains that determine whether or not a supplier can participate in the market (Henson and Reardon 2005). As experience in Kenya and Senegal illustrates clearly, in Africa large-scale horticultural producers are much better placed to satisfy these standards than smallholders. However, these countries, plus more recently Ethiopia, show that African producers can be competitive within these chains.

Regulations to ensure that livestock products affected by foot and mouth disease (or other diseases) do not enter rich country markets may well have solid justifications in terms of human health. However, unlike in horticulture, in livestock African countries have found it difficult to maintain the necessary control regimes to be allowed to continue to export. A critical difference between the two types of supply chain is that most food safety issues in horticultural production (e.g. minimisation of pesticide residues, cleanliness during post-harvest handling) are focused on the immediate production unit, so can be handled by private action and incentives within the supply chain. By contrast, livestock roam and livestock diseases readily spread from one enterprise to the next. Disease control thus almost inevitably involves public action: encouraging dipping or vaccination, setting and enforcing movement restrictions or buffer zones where disease is endemic in wild animals within an area (e.g. foot and mouth disease within buffalo populations) and responding to disease outbreaks. Where public sector capacity has declined over time (e.g. Zimbabwe), the ability to protect disease free status for high value export has also diminished. Even where public sector capacity has been maintained (e.g. Botswana), with growing domestic and regional markets, exporting to

the demanding EU market has become less attractive over time, although public investment is still required if basic safeguards to human health are to be maintained for local consumers.

Finally, there is a question of whether any of Africa's export success stories have been dependent on preferential access to otherwise protected high value markets in the EU or the US. Tropical commodities such as tea rarely face protection, as they are not grown by domestic producers within these markets, whilst, as already noted, cotton producers have succeeded despite unfair competition from subsidies US and EU growers. In the case of sugar, the "world" market has been hideously distorted by various forms of protection in most producing countries, such that few countries (Brazil excepted) could make money at the prevailing "residual" market price. In this case, low cost producers, such as Swaziland, have increased production up to the point where domestic and regional market opportunities plus the volume of quota for export to high-value markets such as EU and US are exhausted. However, the lowest cost southern African producers will probably expand production as markets are liberalised (and the value of preferential access deals is reduced), even if their total profits do not rise under the new dispensation.

Kenyan horticulture is another case where preferential access to EU markets has been a factor behind industry growth. Indeed, with the ending of the Lome Agreement in December 2007 and the likelihood that Kenya would not be classed as a least developed country under the regime that replaced it, one of Kenya's biggest producers, Homegrown, was considering relocating to a neighbouring country, so as to continue to gain preferential access (Odhiambo 2007).

Overall, whilst international markets are not always friendly to African exports, the view taken here is that the biggest constraints to export success are to be found within African agricultural systems themselves. These constraints, therefore, provide the focus for much of the rest of this report.

4.3. Domestic and Regional Markets

So far in this paper we have highlighted the importance of both intensifying food staples production and improving the performance of local markets if smallholder farmers are to expand the area of land that they devote to production for market. However, simultaneously we have expressed scepticism about the immediate potential for low value agricultural exports from Africa because of the low yields, poor quality of infrastructure and the difficulties of assembling sufficient volumes. We have also noted that phytosanitary requirements in some export markets act as a constraint to the export of livestock and oilseeds, at least whilst the capacity to meet these requirements within African supply chains is low.

Whilst international export revenues are important, so export opportunities should be seized where they exist, these positions cause us to emphasise the importance of domestic and regional markets for African agricultural growth in the medium term. The combined value of domestic and regional markets for food staples within Africa – over US\$50 billion p.a. - is considerably in excess of total international agricultural exports (Diao et al. 2003) and will grow with both population and income over time. In addition, domestic markets for horticultural and livestock products (the value of which is not included in the US\$50 billion p.a. estimate) are also growing strongly. However, according to Diao et al. 2003, during 1996-2000 meat accounted for 11% (US\$1.1bn p.a.) of Africa's food imports. Furthermore, oils and

fats accounted for 12% (US\$1.2bn p.a.) and sugar for 8% (US\$800m p.a.) - products that African farmers could be producing themselves.

Within these markets African producers can compete on the basis of an import parity price and face lower quality requirements than typically prevail in international markets, at least as long as supermarket development remains in its early stages (Reardon and Timmer 2005).

Within African food staples markets, a challenge is posed for domestic producers by the preferences of many urban consumers for “superior” staples, such as wheat and rice, for which production capacity is currently limited in Africa. According to Diao et al. 2003, during 1996-2000 wheat and rice accounted for 25% of Africa’s food imports by value. Moreover, the combination of falling international shipping costs and poor infrastructure within Africa mean that the costs of shipping food to Africa are sometimes less than the internal transport costs within Africa. This makes it difficult for domestic producers to compete with food imports in rapidly growing coastal cities.

However, the food staples case study provides some cause for hope here. In Nigeria and Ghana, urban consumers have greatly increased their consumption of gari (made from cassava flour), which combines low perishability and high convenience, when its price has fallen relative to wheat and rice (Nweke 2004). Also, Nerica rice offers potential for African producers to capture a larger share of growing urban rice markets, although the technical research breakthrough represented by Nerica has yet to translate into a major adoption “breakthrough” by African farmers.

Important policy priorities for stimulating food staples production for domestic and regional markets, therefore, emerge as:

- Increased investment in agricultural research and development for staple crops. The successes in staples intensification noted in the staples case study (cassava in Nigeria and Ghana since the mid-1980s, the abortive maize “revolutions” in southern and eastern Africa in the 1980s and early 1990s) and the potential of Nerica rice were/are all based on breakthroughs in varietal research. Research priorities include: making varieties more tolerant to pests and diseases, so that existing yield potential is more fully realised in smallholders’ fields; increasing responsiveness to fertiliser, as fertiliser prices continue to rise faster than food prices, and assisting local producers to meet the changing demands of urban consumers.
- A pro-active role for the state in ensuring coordinated provision of pre-harvest services for smallholder producers. We note here that the services to be provided depend on the crop. Cassava, Africa’s second most important food staple, is vegetatively propagated and requires few if any purchased inputs. This makes it an ideal crop for small farmers, and reduces the need for coordinated input delivery and credit systems, a problem that efforts towards maize intensification have yet to overcome in a sustainable way²⁶. However, because cassava farmers clone new crops with cuttings from their prior season’s crop, private seed companies have no financial incentive to distribute cassava cuttings. Multiplication and distribution of improved cuttings, therefore, requires significant public support in the early years of any new variety release. By contrast, maize intensification requires that producers access a range of pre-harvest support services, including supplies of improved seed, fertiliser,

²⁶ It can also be planted throughout the rainy season and harvested over a period of up to 18 months, so does not suffer from major intra- or inter-seasonal price instability.

technical advice and seasonal finance. In Asia states played a major role during the Green Revolution years in ensuring that producers could access the full range of pre-harvest services – including, commonly, subsidising the costs of fertiliser, credit and irrigation water. Fertiliser subsidies are back on the policy agenda again within Africa. Whilst still hotly debated, well-designed²⁷ subsidies may function as a substitute for missing credit markets (overcoming the fertiliser affordability constraint for beneficiaries) and failing extension systems (compensating for less efficient fertiliser use through changing relative input and output prices). If so, they also provide a way (albeit perhaps a second best way) around the challenge of having to coordinate provision of these services to dispersed smallholder producers.

- Increased investment in road and rail infrastructure, so as to reduce the farmgate cost of fertilisers and the cost of taking domestic produce to major coastal markets.

In section 3.1 we identified price volatility in food staple markets as a major constraint to investment in other crops, destined for market, by food deficit households. However, for food surplus households, price volatility discourages investment to further expand the marketable surplus of food staples. Rainfall variability, particularly in the absence of irrigation, is the main driver of price volatility. Mechanisms to reduce volatility include regional trade (where neighbouring countries experience different climatic conditions), price hedging (where the necessary markets exist) and state intervention (principally storage).

From a technocratic perspective, regional trade seems the safest option. Within Francophone West Africa, considerable intra-regional trade in cereals now occurs. Moreover, this encouraged production expansion in response to the opportunities created by the 1994 CFA devaluation (when imported rice and wheat suddenly became much more expensive in coastal cities). However, in southern and eastern Africa, numerous policy impediments, including occasional unilateral export bans on major staples, contribute to a relatively low level of regional trade. Moreover, progress on changing this state of affairs has been slow. In the case of food staples, the major constraint is political: politicians are reluctant to see temporary food surpluses leave their borders in a context where the regional food balance has been deteriorating for some years. Hence, progress on regional trade may be contingent on production expansion, not vice versa. In this case, progress on both cereals intensification and widespread commercialisation of smallholder agriculture may depend either on developments in market-based instruments or on more direct state intervention to reduce price volatility²⁸. Here we note that most Asian states have intervened heavily to reduce the volatility in rice and/or wheat output markets to give producers the confidence to invest in more intensive production technologies.

Despite the generally low levels of intra-regional trade, there have been some successes in supplying regional markets, even in southern and eastern Africa. Zimbabwe regularly supplied other countries in the southern African region with maize, wheat and animal feeds until the recent policy-induced economic crisis. South Africa is now the sole surplus supplier of these commodities within the region. Zambian enterprises have achieved some success in

²⁷ Undoubtedly the major argument against subsidies is that in practice they too often become instruments for political patronage, generating rents for well-connected farmers, rather than representing serious attempts to assist poorer households raise their food production. This is first and foremost an issue of political will. However, design elements, e.g. equitably distributed vouchers (as in Malawi) as opposed to blanket price reductions, can help.

²⁸ The papers in special issue 31:4 (2006) of *Food Policy* provide different perspectives on this issue.

selling sugar and soya to neighbouring countries, whilst Kenyan dairy products have been sold around East Africa.

We note that these are very different businesses to global marketing enterprises. In particular, they are far more dependent on indigenous capital. The final question to address in this section, therefore, is whether regional markets are more of a “dead-end” from an enterprise development point of view (competing on an import parity basis and facing less demanding buyers in quality terms than in international markets) or a “springboard” (whereby successful competition in domestic and regional markets allows firms and sectors to learn how to get their production costs down before trying to compete in international markets).

Both scenarios could, of course, occur. For landlocked countries such as Zambia, there may be regional opportunities for maize export, but transport costs mean that Zambia will never compete in international markets for low value products. On the other hand, if Zambia established itself as a regional supplier of maize, there might be a knock-on effect as some South African exports were redirected to international markets. However, the Nigerian cassava story – actually one of development to supply a large domestic market, rather than regional markets – suggests that import substitution activity could be more of a springboard. To cross the threshold from import substitution to competitiveness as an international exporter, consideration of the cassava case suggests that the following may be needed:

- continued public investment, as explained earlier, in both research and infrastructure investment
- a “CDC-style” investor to turn a regional enterprise into a global player (the reasoning here being that major international commodity traders need to see a certain scale and/or potential demonstrated before they start to invest in a new context).

In Nigeria, there has been high level political commitment to developing the cassava industry, with leading political figures also investing in cassava production. In other contexts, the level of competition engendered by regional market development may be a critical factor. If free cross-border trade extends over a wide enough area that several large firms can compete for dominance, then the impetus for cost reduction is likely to be strong.

4.4. *Smallholder vs Large-Scale Production*

It is a well established proposition that the choice of large-scale commercial vs smallholder “farm system” within a given development context depends primarily on the technical and economic (or techno-economic) characteristics of the crop in question (Binswanger and Rosenzweig 1986; Jaffee 1995). Large-scale commercial agriculture incurs higher wage costs than smallholder “family farms” and often also higher land costs²⁹, but these can be offset by other factors, the importance of which depends on the crop.

Within the case study commodities large-scale commercial agriculture has outperformed smallholders in:

- Export horticulture. This is due to the high quality requirements imposed by European supermarket customers (Dolan et al. 1999). By contrast, horticultural production for

²⁹ Note that higher land costs incurred by large-scale farms represent effective protection of smallholders by current African land tenure systems, rather than a fundamental competitive advantage of smallholders.

the domestic market has much higher participation by “family farms” and, as argued earlier, “small investor farmers”;

- Sugar (with the partial exception of the Mumias Sugar Company in western Kenya). This is because, where irrigation is required to achieve commercially attractive yields, there are major advantages to large-scale land preparation for irrigation development. This then leads to a situation where access to the irrigable land is conditional upon participation in the outgrower scheme – a situation that has either not proven conducive to high performance by outgrowers or has led to the scheme management incurring high costs in settling inheritance and other land disputes. The conclusion reached by the sugar case study is that the most promising agro-business model in an African context (leaving aside political considerations) is to have independent, large-scale farmers supplying a given processing factory³⁰.
- Flue-cured tobacco in both Zimbabwe and Malawi, where large investments in curing barns are required.

Meanwhile, within the case study commodities smallholder production dominates in:

- Cotton, because of the labour intensity of production and harvesting;
- Cashew, the production of which has low capital and management requirements, but necessitates the commitment of land to a perennial crop, which will not start bearing from 3-4 years. (Smallholders thus need plenty to have confidence that someone will eventually come to buy their nuts, if they are to plant cashew trees).

In neither cotton nor cashew is the perishability of the crop after harvest a significant problem. By contrast, in tea there are major coordination challenges involved in ensuring a reliable supply of a highly perishable raw material to processing factories. This factor works in favour of large-scale commercial production. On the other hand, the labour-intensity of the picking process (which much be done well if high quality is to be maintained) counts in favour of smallholder producers. The tea case study finds that both models have achieved significant success within Africa.

In the case of burley tobacco in Malawi, the jury is still out of the relative competitiveness of smallholder and large-scale commercial production. The drying process is much less capital-intensive than for flue-cured tobacco, making it much more suited to smallholder growing conditions. However, until the 1990s smallholders in Malawi were not permitted to market burley tobacco, so smallholder production conditions were created on large-scale estates through the so-called “visiting tenant” system and some smallholders sold burley tobacco through nearby estates. When the restriction on smallholder marketing was lifted in the early

³⁰ According to the sugar case study: “In several major sugar producing countries, e.g. Thailand, India, Brazil, Guatemala it is normal for factory ownership and cane growing to be separate. Factory owners compete to buy cane from independent growers who may be small-scale peasants through to large-scale estates. Relations between farm and factory may be regulated by the state or managed through long term supply contracts or be completely determined by competitive market forces. The main advantage of the free market approach is the standard one that competition forces all participants to strive for greater efficiency or risk going out of business. The disadvantage, for a complex industry, is the risk of poor co-ordination of deliveries to the factories and consequent inefficient factory operation and periods of either excess factory capacity or excess cane production leading to waste of investment and resources. In Thailand, for example, factory capacity utilisation is about half that achieved by the world class African factories. For the free market approach to work there need to be many factories and many growers all within a reasonable distance of each other so that there is a practical option to deliver cane to rival factories. ... These conditions have not been applicable so far to Africa. Apart from South Africa, each country only has a small number of factories, usually at long distances apart. There has therefore been mutual dependence between cane growers in one area and a single factory capable of processing the cane.”

1990s, smallholder burley tobacco production boomed. At the same time, large-scale estate production of all types of tobacco went into decline due to the poor prices offered on the Malawi auction floors. This would appear to demonstrate the superior competitiveness of the smallholder production system. The outstanding question mark pertains to the quality of the smallholder crop and whether this can still satisfy the small number of international buyers that dominate the export of Malawi leaf. Contracting farming relationships - instead of the arms-length relationships across the auction floors that once worked fine for commercial growers – may provide the answer here.

Finally, smallholders also dominate production of staples for domestic and regional markets, in part because large-scale commercial enterprises can often obtain higher returns from crops other than staples. However, as Mpongwe Development Corporation (see food staples case study) in Zambia demonstrates, there may be some market opportunities for large-scale commercial production of staples to feed Africa’s growing markets.

In recent years there has been considerable debate over the future viability of small farms in Africa and elsewhere (<http://www.ifpri.org/events/seminars/2005/20050626SmallFarms.htm>). This has been caused in part by the rapid changes in global supply chains for important products, such as horticultural products (global trade in which is growing rapidly). However, whilst the difficulties faced by smallholders in remaining competitive in these rapidly evolving supply chains are now well documented, the case studies show that there are sectors where smallholders retain their traditional advantages.

5. Additional Factors Contributing to Success: Insights from the Case Studies

In the previous section we highlighted the importance of ideal agro-ecological conditions and/or high labour intensity as conditions conducive to African competitive success in international agricultural markets. By contrast, we noted that costs of transport, land and capital all tend to be high. In this section we highlight other factors that have contributed to competitive success in one or more case studies.

5.1. Thorough Planning

This is perhaps stating the obvious, but it bears repeating, particularly at a time when the resources for investment in African agriculture are once again rising. Amongst the case studies, the experience of post-World War 2 UK investment in African agriculture provides the clearest lessons in this regard, although CDC experience reported in other case studies also highlights the importance of piloting new crops or production technologies before embarking on large-scale ventures³¹.

In the immediate aftermath of the Second World War, Britain was short of food and raw materials. The Ministry of Food was, therefore, keen to promote increased production from

³¹ Thus, in horticulture the CDC investment in Makumbaya in Gambia could not solve pest problems in a new area for horticultural production. It also encountered logistical difficulties. Forest Resource Industries in Ghana failed due to weak (family) management, combined with disease problems affecting its mangoes. When CDC invested in Sulmac in Kenya, they hoped to establish it straight away as a major vegetable producer (it was already a major producer of cut flowers), but found that the company had to establish its credentials as a supplier of the new crops before getting lucrative supply contracts.

Britain's colonies. In 1947/8 two separate statutory bodies were created. The first was the Overseas Food Corporation. Its first and last major initiative was the East African Groundnuts scheme in Tanganyika. This was an almost complete agronomic and commercial failure. Unrealistic targets were set and large areas of land were cleared, at high cost, without having established appropriate technology for land development and subsequent cultivation. The scheme was abandoned once it was realised that the groundnut yields achievable were unable to cover even the running costs of the scheme, let alone contribute to the repayment of the heavy debts incurred for its establishment. The term "Groundnut Scheme" became a byword in Britain for grandiose, ill-conceived, and poorly implemented government projects.

The second was the Colonial Development Corporation (forerunner to CDC). Spurred on by the injunction of Sir Stafford Cripps, Minister for Economic Affairs, that, "An occasional failure is the necessary price of adventurous development and we must not allow safety first to be the key note of our work...", this embarked on a project identification, implementation and operation strategy that was simply too risky. Its over-eager acceptance of the need to act urgently and at high risk led to a series of failures and insolvency for the organisation as a whole.

The case study documenting Post-WW2 UK development of commercial agriculture in Africa concludes the following from this early experience:

"It is important in business development to avoid too many 'news'. New countries of operation; new products; new markets; new management, new technologies. When one 'new' is piled on top of another, failure becomes almost inevitable. The obvious answer is pilot schemes to establish suitable technologies, to test markets and to prove commercial viability. However in practice many Governments, state-enterprises, development institutions and private entrepreneurs have been reluctant to invest the time and money needed for adequate pilot phases before embarking on commercial scale operations.

It is also important not to compound project/business risk with financial risk. CDC raised 100% of its capital in the form of loans with fixed interest and repayment obligations, and mainly used the proceeds to make equity investments that carried no equivalent obligation to return proceeds to CDC. To manage financial risk, revenue streams should be reliable while keeping cost streams as flexible as possible. CDC tried to reverse this important relationship. Thus CDC demonstrated that pioneering agricultural development is both expensive and risky and then compounded this with high financing risk."

5.2. *Competent Management*

Various of the CDC case studies emphasise the importance of strong management. This flows from the complex nature of investment in commercial agriculture, whereby managers need to be familiar with the technical aspects of high productivity production and with the business model for their particular commodity as well as competent in administrative and financial organisation, in dealing with staff and in handling relations with local leaders and community representatives. In some commodities, most notably sugar and tea, there are particular logistical challenges to be managed in getting large quantities of highly perishable harvested produce from the farm to the processing factory.

Weak management has been an issue in particular where CDC has gone into partnership with other investors – a challenge that they now have to tackle head-on having been reconfigured as fund managers making equity investments in businesses established by others³². On the other hand, joint investments with leading international agribusiness firms has been seen as a way of accessing desired commodity specific expertise (hopefully in areas where those firms might not have invested without the partnership with CDC!).

As noted in section 3.2, whilst large-scale enterprises (with strong management) can internalise some of the coordination challenges arising from the complex nature of investment in commercial agriculture, this is not possible for small or medium sized enterprises. Hence, where existing markets are thin, mechanisms may need to be created to assist coordination between producers and suppliers of various, complementary pre- and post-harvest services.

5.3. *Entrepreneurship*

An understanding of markets is clearly essential to success in commercial agriculture. Unsurprisingly, the private sector is found to be generally more responsive to market developments than the state or its agencies. This is apparently even being seen in liberalising West African cotton sectors (the most successful state-controlled sectors in Africa for many years³³), where private companies have been most active in responding to the threat posed by polypropylene contamination of seed cotton/lint (for example).

However, within the case studies, entrepreneurship – understood here as innovation in new products or seeking new markets - has been critical to success primarily in export horticulture. This is because horticultural markets are more dynamic than traditional commodity markets, with a much greater emphasis on product marketing, branding and innovation – even though there is often less physical transformation of the product between the farm-gate and the retailer's shelf.

CDC's experience (as owners and managers) in horticultural enterprises has on balance been disappointing; their conclusion being that the best private companies cope with the demands of such a highly dynamic sector better than an institutional investor. The Kenyan company Homegrown exemplify the entrepreneurship that characterises the sector. As well as developing its production capacity, Homegrown has established air charter companies, was the first to own private cold-storage facilities at Nairobi airport, has invested in downstream companies within the EU and has successfully developed its branding³⁴. Such leaders may create opportunities for successful followers within the same sector.

³² The various CDC case studies show that investors may enter a project for a variety of reasons (the creation of a sustainable enterprise is not always their ultimate objective) and may lack expertise in a particular product or market (and be unwilling for a variety of reasons to proceed on the basis of a limited pilot phase first). It is important that the terms of private sector involvement in a particular project requires them to take risks with their own capital, not be fully insured against project failure.

³³ ... although the French (parastatal) CFDT controlled the export of cotton lint from Francophone countries and also maintained an equity stake in the national cotton companies.

³⁴ The Zimbabwe cotton company, Cottco, has also exhibited similar tendencies: investing both upstream in seed production and downstream in textile manufacture; developing a lint classing system that enabled it to sell direct to spinners (bypassing international traders) and expanding into neighbouring countries (Uganda and Mozambique). Several of these gains have since been undermined by the country's economic crisis, however.

5.4. *Market Growth and Development*

Supplying a rapidly growing market is obviously beneficial to enterprise and/or sectoral growth. Thus, the growth of the Kenyan horticulture sector has been boosted by the growth of year-round consumption of a wide range of horticulture products in UK/Europe. Meanwhile, the growth of the smallholder dairy sector in Kenya and of cassava production in Nigeria have both benefited from rapidly growing local consumer demand for the products.

A comparison between two CDC forestry investments initiated around 1950 – Usutu Pulp Company in Swaziland and Tanwat (wattle) in the Southern Highlands of Tanzania – shows the benefits of a favourable market conditions. As well as the ideal growing conditions for pine in Swaziland, Usutu benefited from a robust market for kraft pulp wood (characterised by cyclical international prices, but no downward trend). By contrast, the price for wattle declined steadily over time, even before the major price declines in other commodities set in.

On the other hand, some of Africa's success stories have occurred despite unfavourable market conditions. World tea prices have fallen steadily in real terms since 1960, yet Kenya has dramatically increased production and market share³⁵. In this case, Kenya benefited from increases in taxation on the tea industries in India and Sri Lanka during the 1950s, which encouraged global tea traders to seek alternative sources of supply.

In the case of cotton, Africa's share of global markets has grown in a context where total global supply has expanded at least as fast as demand. The fundamental question is then whether the sector or enterprise can compete at prevailing prices. However, we note that, even though a sector continues to grow, its poverty reduction impacts will be reduced by falling prices. This appears to be true of Malian cotton (Wodon et al. 2006) and one might expect it to be true of cashew in Côte d'Ivoire, Tanzania, Guinea-Bissau and Benin.

Finally, the case of Senegal groundnuts shows the difficulties that a sector faces when its (immediate) demand is relatively stagnant. An important additional dimension to this story is the sector's struggles to raise the productivity of its smallholder production base. Major efforts were made during the 1960s to promote animal traction and fertiliser use amongst the country's groundnut farmers, and in the early 1970s shorter-cycle groundnuts, which are well-adapted to conditions in the drier zones of the groundnut basin, were introduced. However, since the mid-1970s there are no examples of major technical change within the sector, despite increasing problems of soil fertility. The sector has also struggled to develop institutional arrangements that permit the provision of high quality seed and fertiliser on credit to smallholder producers. In this case, declining prices for the final product have squeezed the surplus available for investment in the productivity of the supply base.

5.5. *Macro-economic and Exchange Rate Management*

In the past, African agriculture was hugely disadvantaged by distorted macro-economic policies, including overvalued exchange rates, industrial protection and high export taxes on agricultural commodities (Krueger et al. 1988). Macro-economic imbalance and the perverse incentives created by this provides the "background" to the lack of success of some CDC's

³⁵ Indeed, Kenya's rise has undoubtedly contributed to the price decline.

investments in Tanzania and Zambia. However, these distortions have now been reduced in most countries. According to World Bank 2007a, p98: “Reforms in agriculture-based countries, particularly in Sub-Saharan Africa, more than halved the average net taxation of agriculture from 28% to 10% from 1980-84 to 2000-04.”

Nevertheless, the continuing importance, in particular, of exchange rate management is illustrated by several of the case studies. Since the mid-1980s the fortunes of Francophone West African cotton sectors have been greatly affected by first FCFA overvaluation, then devaluation starting in 1994 and subsequently a return to overvaluation³⁶. Unfortunately, such fluctuations are largely out of the hands of West African governments, as they reflect changes in the exchange rate of the euro (to which the FCFA is pegged) and the US dollar. Moreover, whilst overvaluation is disastrous in the short run for cotton sectors³⁷, it aids other countries within the FCFA zone that would otherwise be struggling to cope with the impact of higher world oil prices on their national import bills.

Fluctuations in the real exchange rate have also been problematic for the cotton sector in Zambia in recent years. A dramatic appreciation against the dollar in 2005, ahead of a Presidential election, squeezed the price that cotton companies could afford to pay producers and stirred up considerable discontent amongst producers regarding their treatment by the companies.

Kenya has also seen its currency increase in value against the US dollar in recent years. This is said to be a second reason why Homegrown was considering relocating to a neighbouring country (see section 4.2).

Finally, the recent history of the Zimbabwe cotton sector provides a surprisingly nuanced, but still striking, example of the dangers of macro-economic instability. As the country's economic crisis has been driven by a foreign exchange shortage, there has been a strong (albeit very uneven) depreciation of the real exchange rate since 2001. This has benefited the cotton industry. Combined with the fact that cotton has been one of the few (legitimate) ways of earning foreign exchange in the country, numerous additional companies have entered the sector. Thus, the number of firms buying seed cotton increased from five during 1999/2000 – 2000/01 to eleven in 2002/03 – 2003/04 and seventeen in 2006/07. This has had a serious negative impact on the ability of quality-conscious companies to provide incentives to producers to supply high quality seed cotton. As a result, the premium achieved by the country's lint on international markets has fallen. It has also put considerable strain on company-operated seasonal credit schemes, as side-selling has increased dramatically. Meanwhile, day-to-day operation of cotton businesses has been made far more difficult and costly by shortages of fuel and other basic items – sometimes even cash with which to buy seed cotton!

³⁶ According to Tschirley et al. 2008, within Francophone West African countries, “the substantial appreciation of the CFAF since 2000/01 has received great attention from policy makers as a major cause of the profitability crisis affecting the region's cotton sectors. Indeed, during 2005/06 the US\$ Cotlook A Index average was roughly the same as in 2000/01, while during the same period the CFAF appreciated from 731 CFAF per US\$ to 535 CFAF per US\$. As a result, the world price of cotton in CFAF terms fell by 37 percent ... What is less recognized is that the CFAF *depreciated* substantially from the 1994 devaluation through 2000/01, during which the CFAF/US\$ rate was at an all time high. As a result, both nominal and real exchange rates in 2006 were nearly identical to what they were in 1995, just after the adjustment.”

³⁷ It remains to be seen whether the current profitability crisis within Francophone cotton sectors catalyses reforms to increase efficiency and cut marketing costs within the cotton supply chain. In Mali, where marketing margins are the highest, such reforms are long overdue.

5.6. *Technology*

Technology (appropriate and inappropriate) features strongly in the majority of the case studies. The importance of getting the basic technology right is a key lesson of the UK Post-World War 2 case study and some other CDC case studies. More positively, breakthroughs and/or ongoing progress in research created the possibility for commercial agricultural success in several commodities.

The most important products of research were new crop varieties with a range of improved attributes, for example:

- higher yielding varieties, e.g. maize in southern/eastern Africa, cassava in Nigeria and Ghana
- varieties that permitted greater productivity through processing, e.g. West African cotton (varieties with high ginning out-turn)
- varieties resistant to pests or diseases, e.g. Nigerian cassava
- shorter season groundnut varieties suitable to drier conditions within the Senegal groundnut basin.

In the case of the revitalisation of the cashew sector in Tanzania beginning in the late 1980s, the research breakthrough was to identify and disseminate a technology (sulphur spraying) for the control of powdery mildew disease.

Labour saving technologies have been important in a number of West African contexts. Thus, both Francophone cotton sectors and Senegalese groundnut production benefited from widespread promotion and adoption of animal traction for ploughing and also for weeding (cotton) and harvesting (groundnuts). In Nigeria mechanical graters for gari preparation released women's labour (previously tied up with the fermentation of cassava) to plant more cassava and greatly increased the returns to labour from cassava production (Nweke 2004). Interestingly, however, both the blades for groundnut harvesting and the graters for gari preparation were developed by local artisans. In Nigeria research institutes attempted to produce mechanical graters for gari preparation, but in the end farmers preferred the models that were developed by local artisans, based on designs from neighbouring countries (Nweke 2004).

Industry-led technological innovation is also seen in the Kenyan horticulture case, where leading firms have invested in water-efficient drip irrigation, storage of water runoff, artificial wetlands for pollution control and geothermal temperature control for greenhouses (themselves more water efficient than open fields) in response to concerns about falling water levels and other environmental problems in and around Lake Naivasha, the heart of the industry (see section 7).

Given the long-term downward trend in international prices of many agricultural commodities – biofuel- and livestock-driven reverses in some commodities notwithstanding – the importance of continually enhancing productivity through adoption of new technologies so as to establish or retain competitiveness on both world and domestic markets is evident. However, we note that major developing country competitors are much better at investing in ongoing research and development to support their commercial agriculture than are African countries. For example, Brazil and China have major publicly funded research programmes, whilst Vietnam is scaling up its efforts. By contrast, none of the research advances

highlighted above was the result of research both conducted within national agricultural research institutes and funded by national government expenditure. In maize in southern Africa, cotton in Zimbabwe and groundnuts in Senegal, key technological advances were made by pre-Independence research systems. In Zimbabwe in particular, white commercial farmers ensured that the state invested in high quality research to meet their productivity and other needs³⁸. In the case of West African cotton, regional research efforts received a large technical and financial input from France. Similarly, aid-funded work led by Italian and British researchers led the effort to control powdery mildew disease in the Tanzania cashew sector. Work on new cassava varieties in West Africa was centred on IITA.

African governments need to take agricultural research more seriously, which involves not just putting more money into research, but looking seriously at the performance incentives for researchers and management in national agricultural research institutes. In many cash crop systems, higher performance is likely to be achieved if closer linkages are established between commodity-focused researchers or institutes and the main private sector players. There is some tradition of this within the Zimbabwe cotton sector. One option is for stakeholders in the industry to take over the management of the relevant research institute - including hiring, firing and remunerating staff - in return for which they pay for the running costs through levies or some other contribution. This has happened, for example, within the Tanzanian tea sector, with the result that the Tea Research Institute is widely seen as the best performing in the country - even if there are concerns that funding levels remain inadequate (World Bank / Government of Tanzania 2004).

5.7. *A Note on Replication of Success*

Based on the experience of the case studies, there is perhaps more replication of success than one might initially expect. In West Africa, the Francophone cotton model was adapted in at least ten countries. Similarly, cashew production has increased significantly in four countries since the mid-1990s.

We see two main drivers of replication:

- where agro-ecological conditions and FDI policies are favourable, international investors will come in to multiple African countries. This can be observed in cotton in southern and eastern Africa post-liberalisation and arguably also in sugar. It may also now be happening to some extent in export horticulture, with expansion in Tanzania and Ethiopia.
- Donors (most obviously the French in the case of Francophone cotton, but possibly also USAID in the case of cashew?) push for replication wherever success is observed.

Note that replication can have some costs. Whilst the collapse in the world price of cashew kernels may be “blamed” first and foremost on production expansion in Vietnam, the major expansion in supply of raw nuts from Africa since the mid-1990s has also contributed significantly to the increased world supply, thus putting downward pressure on prices.

³⁸ We do, however, note that a continual stream of new seed varieties has been released by the Cotton Research Institute - soon to be joined by the research department of Quton Seed Company - since 1980. This is, therefore, a partial exception to our general rule. Nevertheless, this ongoing activity builds on a proud tradition of cotton research within the country dating back to 1925 that, inter alia, developed cost-effective practices for jassid and bollworm control and produced the first high yielding varieties of Albar seed from material originally brought in from Uganda (Mariga 1994).

6. Policy to Promote Export Competitiveness of African Agriculture

6.1. Government Policy: Desirable Roles for the State

Earlier we argued that the basis of African agricultural export competitiveness currently lies – and has historically lain - more in natural endowment (agro-ecological environment, abundant labour) than in created advantage. To some extent, this is a function of general under-development, especially if development is seen in terms of a political economy process of creating enabling institutions. However, as argued by North 1990, elites have some autonomy in their choice of policies – and the policies pursued by African governments (sometimes compounded by donor intervention) have in many cases impeded the development of commercial agriculture in Africa, rather than encouraging it.

In this section we briefly spell out the desirable roles of the state with respect to commercial agricultural development, then offer some general comments on past experience with African state intervention.

We distinguish four sets of circumstances, depending on the “farm system” involved and whether or not there are specific, sector-wide club goods that are important to the competitiveness of the sector internationally (Table 1).

Table 1: Desirable Roles of the State with respect to Commercial Agricultural Development

	No Sector-Specific Investment	Sector-Wide Club Goods
Large-scale Commercial “Farm System”	enabling environment	enabling environment + ensure club good provision
Smallholder “Farm System”	enabling environment + ensure service provision (balancing competition and coordination)	enabling environment + ensure club good provision + ensure service provision (balancing competition and coordination)

Examples of specific, sector-wide, club good investments that can influence the competitiveness of a sector are shared testing facilities and cold stores at airports in the case of horticulture. Such investments face one of two challenges. On the one hand, if existing players are to contribute to the funding of such investments, they have to be able to agree amongst themselves how funding is to be shared and how the management of the resulting assets will be made accountable to those who funded them. (There is also the question of the terms of which new entrants access these assets). On the other hand, if such investments are to be made purely on a private, commercial basis, those contemplating the investments need to be assured that the industry is going to continue to grow so as to utilise them. (This is a classic specific asset investment issue). Depending on the number of players (processors, exporters) in a sector and the existence and strength of representative, corporate bodies (e.g. exporters’ association), it may be possible for the private sector to organise and manage sector-wide, club good investments without significant government involvement. However, it is equally likely that the government will be required to play a coordinating role, either assisting the industry players to negotiate collective investments or setting out a credible plan for industry development that gives private, commercial investors the confidence to invest in sector-

specific assets. In some cases, the government may undertake such investments itself, for the benefit of the industry.

Investments in disease control systems for livestock sectors share some of the attributes above. However, as argued above, they are likely to be too complex and the externalities too great for industry stakeholders to organise such systems on their own. They may also have wider public health benefits for local consumers and residents, so it is generally accepted that the state should take the main burden of responsibility for establishing and maintaining such systems.

In general, we argue that the role that the state needs to play with respect to large-scale commercial agricultural development is more limited than that required to support smallholder agricultural development. The reason for this is that, if a basic enabling environment is in place, large-scale commercial farms can access most important production and marketing support services (capital, inputs, technical and market knowledge, marketing contacts) themselves. By contrast, state intervention may still be required to ensure that these services are provided to smallholders, even if general conditions in the economy are conducive to private investment. This is because, as illustrated by Figure 1, the provision of complementary pre- and post-harvest services to smallholder producers can present significant coordination challenges. For some commodities, e.g. many traditional export commodities, the incentives exist for agribusinesses to provide the full range of such services to individual smallholders. However, regulation of such activity may still be required both to protect these incentives against free-riding by competitor firms and to ensure that the terms on which services are provided to smallholders are reasonable. In other cases, e.g. cereals, the incentives rarely exist for crop buyers to provide pre-harvest services to smallholders, in which cases alternative mechanisms may have to be found to coordinate the activities of specialist suppliers of complementary pre-harvest services.

6.2. *The Enabling Environment for Commercial Agriculture*

The critical aspects of the enabling environment for large-scale commercial agricultural development are broadly in line with the so-called “Washington consensus” policies of recent decades. They include:

- physical security (absence of conflict);
- macro-economic stability (see section 5.5);
- a long-run commitment to growth and private investment;
- clarity of property rights and protection of private property;
- functioning, and preferably efficient, basic infrastructure (major roads, port/airport, ideally rural power supply, perhaps railways);
- an effective commercial banking sector (although some commercial producers may be able to access capital from international buyers);
- ongoing research and development activity in relevant areas (see section 5.6)
- phytosanitary control systems (where externalities are large).

Physical security is of particular importance to land-based activities, because of the large areas involved (which may translate into large perimeters to defend) and the difficulties of monitoring and controlling activity in rural areas.

The quality of the enabling environment for commercial agricultural development in recent decades has, predictably, varied by country. The case studies note that there has been a reasonably supportive environment for agribusiness investment, including foreign investment, in Kenya. However, for long periods there was official suspicion of private sector investment in other countries (e.g. Tanzania). Moreover, even the “supportive” environment in Kenya has been more passive (maintain macroeconomic stability, keep taxation to acceptable levels) than active (invest in basic infrastructure or research to increase the competitiveness of agriculture).

A long-run commitment to growth includes maintaining taxation at moderate levels. There is a general history of taxing success in Africa, including – as noted above - a history of high export crop taxation. Another aspect of the long-run commitment to growth is the predictability of government policy. The credibility of a country as a place to do business is hard won, but easy to lose³⁹. Even if export taxes are currently low (for example), will the government suddenly raise them? Or, in the case of sugar, will influential individuals be allowed to import artificially low cost sugar from the “residual” world market without paying duty, thereby undermining the profitability of domestic producers?

The cashew case study provides an important variant on this theme. The travails over policy towards cashew processing in Mozambique have become something of a “cause celebre” for critics of the World Bank. Having encouraged privatisation of Mozambique’s cashew processing factories in the early 1990s, the Bank began to pressurise the Mozambique government to reduce the export tax on raw cashew nut exports that protected the newly privatised businesses. The motives for this pressure were in many ways good and, indeed, the merits of the basic processing-through-export-tax policy are still debatable. However, the Bank’s intervention in this case contributed to a sense of policy uncertainty and unpredictability, such that the majority of the cashew processing factories eventually closed without raw cashew exports growing significantly.

The cashew case study illustrates, too, that the policy credibility problem is not just an issue for foreign investors. Not only were many of the investors in Mozambique cashew processing domestic firms, but the case study makes the point that smallholders also need to trust policy makers if they are to invest in planting trees. More generally, many entrepreneurial Africans have taken their skills and capital outside the continent because of the poor policies pursued in their home countries.

In section 4.1 we noted that, for large-scale producers, the costs of land access and rights protection are generally high in Africa, contributing to Africa’s competitive disadvantage in some commercial agriculture. Perhaps as importantly, uncertainties over land rights can act as a major disincentive to new agribusiness investment. There are often multiple claims to rights over a given piece of land (for example, farmers and livestock herders) and sometimes formal and customary rights overlap (see Shivji 1994 for the case of Tanzania). On a day-to-day basis multiple claims are managed by local, including traditional, authorities. However, rapidly rising populations, forced changes to livelihood systems in neighbouring areas (for example, due to conflict) or new land claims (for example, due to commercial agricultural investment) can upset the existing equilibrium. Central land agencies may lack either the capacity or the patience to understand complex local land claims before granting formal title

³⁹ Once a country has acquired a reputation for bad or changeable policy, it can take some time to persuade the Board of Directors of large firms to make investments there, even after reforms have commenced.

to apparently “underutilised” land. Alternatively, expression of large-scale commercial interest in an area may cause people to assert “rights” to land that previously they had not considered it worth asserting⁴⁰. Sorting out land claims and agreeing appropriate compensation in advance can be both time-consuming and costly, but, if reasonable claims are either ignored or only partially satisfied, then management of ongoing grievances (which can also be opportunistically stirred up by local politicians from time to time) can be a continual drain on time and resources.

These need not be arguments for large-scale titling programmes. However, attention should be paid to clarifying existing rights, including resolving disputes where rights overlap (often a result of historical policy swings), as well as ensuring that efficient procedures exist for paying adequate compensation when someone loses rights (of whatever nature) to a particular piece of land.

Turning to the more pro-active aspects of the enabling environment, we note that, whilst it is important to maintain taxation at moderate levels, it is also important that governments invest some of the tax revenue that they receive back into the commercial agricultural sectors that generated them. An important, if rather sweeping, statement is that African governments have tended to enjoy the fruits of commercial agricultural success without investing to sustain that success. Where the fruits of that commercial agricultural success have come from high world prices for the product in question, other countries have often made their own investments in competition to established African sectors. In cashew, for example, the rise of Vietnam as a major producer and processor has halved the world price of kernels within a decade or so. In oilseeds, Senegal has just about maintained its share of the world market for groundnut oil over the past thirty years, but this market has hardly expanded, whilst consumption of competing oils has grown strongly, as has the export market for shelled (and, to a lesser extent, unshelled) groundnuts.

The nature of commodity markets is, therefore, that continued investment is required if a country is to remain competitive. We highlight the importance of continued public investment in infrastructure (including both port facilities and road infrastructure) and agricultural research.

Infrastructure investment has been a big priority in both Thailand and in the cerrado region of Brazil. In the latter case, investments have encompassed roads (although maintenance is currently a problem here), railways and ports. However, rarely have African economies made sustained efforts to upgrade their infrastructure. African ports not only lack physical capacity, but too often are inefficiently (and even corruptly) run. Box 1 noted, however, that it may take more than just greater public investment to reduce Africa’s high transport costs.

Meanwhile, the importance that African countries and commodity sectors invest in their own research systems was highlighted in section 5.6. There are fewer ready technology spill-overs from developed (generally temperate) agricultural sectors to Africa than to, say, Latin America. Yet, a country such as Brazil has made major investments in agricultural research for both import competing and export crops. Mobilising political support for renewed public investment in African agricultural research – and sensitising political leaderships to take an

⁴⁰ Hypothetical examples of complex claims that might only be asserted vigorously when a large-scale investor occupies a piece of land would be the “right” to incorporate that land within a long-term shifting cultivation system (as may have happened once a decade or less in the past) or the “right” to graze animals on that land during a drought period.

active interest in the performance of their national research systems – should be a key objective of organisations such as NEPAD.

One additional reason for state intervention, highlighted in Table 1, was that international competitiveness at times depends on investment in sector-specific club goods. Within the case studies, examples relate to the horticulture and livestock sectors⁴¹. As Reardon and Flores 2006 emphasise, public-private partnerships are increasingly common as a way of increasing a country's competitiveness in international horticulture markets. However, we would also expect to encounter more examples where countries were looking to expand their exports of low value commodities (e.g. facilities for bulk handling of soybeans in Brazil).

We note that public investment in sector-specific club goods comes quite close to the state “picking winners”. Some Asian states have been quite successful in this⁴², but there are reasons to doubt the capability of many African states, as they currently function, to do this. Part of the reason for this lies in the different relationships between state and private sector in Africa and Asia. This needs further research, but we hypothesise that:

- Closer links between state and private sector in Asia allow the state to be better informed about potentially beneficial investments;
- Although closer to major private sector players, Asian states are less likely to be fully “captured” by them. Kickbacks are still a common feature of business life, but those providing them are nevertheless expected to contribute to the realisation of the national development project in exchange for the contracts or authorisations granted.

6.3. *Beyond the Enabling Environment*

The aspects of the enabling environment highlighted in the previous section are also important when seeking to develop smallholder-based systems. However, in addition the state needs to ensure that a range of basic services are provided to smallholder producers, given that individual smallholders cannot effectively demand the provision of such services and that markets servicing smallholders can fail for a number of reasons. The basic services that smallholders require include input supply, extension provision and finance. Depending on the market structure of the commodity system in question, the state may also need to play a role in ensuring that adequate mechanisms exist to provide incentives to smallholder producers to aim for good quality produce.

The transition within the Malawi tobacco sector post-1994, from a production base dominated by large-scale estates to one dominated by smallholders, provides an excellent example of the additional requirements when smallholders are involved. Institutional arrangements within the Malawi tobacco sector are based around the auction system for tobacco marketing. These

⁴¹ However, CDC did recently make a successful exit from a fully private-sector investment in a bulk handling facility for grain and fertiliser at Mombasa port in Kenya. Whilst this has the potential to reduce grain and fertiliser prices in Kenya, it is perhaps notable that the area where the private sector was sufficiently confident of future business was in food import, rather than commodity export.

⁴² The Vietnamese state has been active in targeting sectors for export success, then leading the drive to achieve this. As a partial exception to our general argument, two of the sectors targeted by Vietnam have been coffee and cashew, where there are no significant critical mass issues, so few sector-specific club goods. However, both coffee and cashew are tree crops. Hence, major state investments can be justified as a way of signalling to producers that it will indeed be worthwhile to plant. In both cases, Vietnam has dramatically increased production and its share of world exports, but, as a result, world prices also crashed, leading to losses for some producers. These were, therefore, only qualified wins.

arrangements worked well until the 1980s. Large-scale tobacco farms were independent businesses (more or less well run) that could access credit directly from commercial banks. Moreover, the direct interaction between their senior management / owners and the representatives of the international buyers, on the auction floor and elsewhere, meant that they developed a good understanding of what the buyers wanted. Thus, there was little need for vertical coordination or integration of the supply chain.

By contrast, few smallholder producers personally attend the auction, so intermediate institutions are needed to offer them efficient ways of getting their tobacco to auction and to provide them with reliable information on buyers' quality requirements. Institutional arrangements are also required for the delivery of pre-harvest services (finance, extension advice, input supply) to enable smallholders to respond to the demands and requirements of buyers, as well as to raise their productivity and returns from tobacco production.

There have been three ways that smallholder producers could get their tobacco to auction since liberalisation in 1994. For some years intermediate buyers (IBs) bought leaf from producers at the farm gate. By 1997 around 4000 such buyers were registered, although they never accounted for much more than 10% of the total crop sold at auction. However, the scheme proved controversial for three reasons:

- Some IBs lacked expertise in tobacco grading and handling, so their activities were alleged to undermine the quality incentives faced by producers;
- There were allegations that IBs paid unjustifiably low prices to growers;
- The scheme was disliked by estate owners as it was claimed to encourage side-selling by the so-called visiting tenants, who farmed much of their land on a sharecropping basis⁴³.

Jaffee 2003 argues that most of the allegations levelled at IBs as a whole were unfounded, although they may have been true for individuals. Arguably, with time, the IB system could have evolved to provide the market information and extension services – if not the inputs and credit - that smallholder tobacco producers need. However, faced by concerted opposition from other sector stakeholders, the scheme was terminated in 2000.

Since 2000, producers have instead been able to take their leaf to one of 88 designated depots where it is stored until it can be transported (with sufficient other consignments) to the auction. Effectively, this is the current default option for smallholder tobacco growers. The depots are owned and managed by individuals, typically people associated with the Tobacco Association of Malawi (TAMA). Transportation of tobacco from the depots to the auctions is done at set transport rates negotiated by TAMA. However, as with IBs, performance of depot managers is at best uneven. For example, tobacco may be allowed to deteriorate in quality whilst in storage. Unlike the IB system, the current system lacks competition. As a result, the incentives facing the managers of designated depots are not conducive to high quality service or information provision.

The third way that some smallholder producers have been able to take their tobacco to auction since liberalisation is through clubs affiliated to the National Association of Smallholder Farmers of Malawi (NASFAM). An effective club structure can facilitate provision of extension advice (either through links with government extension staff or in-house), improve

⁴³ According to van Donge 2002, the original stipulation that tobacco could only be sold at official auction floors was introduced to protect landlords with visiting tenants from the activities of an earlier generation of peripatetic buyers

access to fertiliser supplies through bulk ordering and create an environment in which seasonal credit is repaid. NASFAM also negotiates its own transport rates with transporters, which can be considerably lower than those set by TAMA. Members of NASFAM-affiliated clubs, therefore, tend to pursue more intensive tobacco production practices than other producers. However, NASFAM-affiliated clubs only comprise about 20% of smallholder tobacco growers' clubs in Malawi⁴⁴. NASFAM continues to expand, but there are limits to how fast new groups can be formed and trained if they are to develop into strong, independent organisations (Chirwa et al. 2005). Meanwhile, the remainder of smallholder producers produce tobacco with little or no support, leading to declining average yields (Jaffee 2003) and concerns about leaf quality that could yet undermine the sector's position within the international tobacco market.

The exact role for the state in ensuring that services are provided to smallholders depends critically on the structure of the output market in the sector in question. As elaborated in Poulton et al. 2004, the overarching objective is to ensure both that adequate services (pre-harvest as well as output purchase) are provided to smallholder producers and that producers are paid sufficiently attractive prices for their output that they are encouraged to invest in the crop in question. For traditional export cash crops, we note three main sectoral types:

- Some sectors are organised as local monopolies, either because high post-harvest perishability encourages this (e.g. tea, sugar) or because policy chooses to promote this form of organisation (e.g. privatised/ing cotton sectors in Mozambique, Burkina Faso and Côte d'Ivoire). Under these circumstances, processors should have adequate incentives to invest in service provision to smallholder suppliers. Therefore, the role of the state can be limited to a) ensuring that there is an ongoing programme of research to support the development of the sector; b) setting the rules of the game for local monopoly concession (re-)tendering, to ensure that this process provides investors with both the confidence and the incentives to invest in service provision, and c) a "competition policy" role to ensure that smallholder producers receive a fair price for their output, if this is not adequately guaranteed by b). We do not pretend that these roles are easy. However, all of them can be performed by a committed central government agency without its own field capacity or a large budget beyond salaries and reasonable operating costs for central staff.
- A few sectors function as oligopolies (effectively duopolies in the case of the cotton sectors of Zambia and pre-2002 Zimbabwe). Here again, processors should have adequate incentives to invest in service provision to smallholder suppliers. Assuming that there is a basic level of trust between the oligopolists, informal coordination should facilitate input credit recovery and ensure that sufficient incentives exist for extension provision and maintenance of quality control. Under these circumstances, it should be possible to limit the role of the state to a) and c) above. Ensuring that smallholder producers receive a fair price for their output is a particularly delicate balancing act in these sectors, however. Given the costs associated with pre-harvest service provision, new entrants into the sector that simply aim to buy at harvest time can always offer higher prices than those that have provided services. On the other hand, if they are allowed to compete on this basis, the incentives for investing in service provision soon disappear. Some regulatory barriers to market entry do thus need to be maintained.

⁴⁴ The experience of Kilicafe in the Tanzania coffee sector is similar to that of NASFAM in Malawi tobacco: with a strong farmers' organisation to provide pre-harvest services and to assist with output marketing, smallholder producers can do well in an auction-based system and even successfully engage in direct export marketing. However, like NASFAM, Kilicafe only serves a fraction of the coffee producers in Tanzania.

- In highly competitive markets with large numbers of buyers, private coordination amongst buyers may well be unachievable. As a result, there are likely to be few, if any, incentives for interlocked pre-harvest provision service and output purchase. Thus, unless the state plays an active role – ideally, in collaboration with the private sector – in providing key services, such as input supply and extension, these may simply not be provided. In turn this can undermine the ability of the sector to achieve the productivity enhancement that is critical to poverty reduction. The Tanzanian and Ugandan cotton sectors provide powerful examples here.

With regard to cotton, Poulton et al. 2004 argued that concentrated cotton sectors had outperformed others in southern and eastern Africa because the firms involved had sufficient incentives to invest in pre-harvest service provision to smallholder producers, as well as being able to provide producers with adequate incentives to deliver high quality seed cotton. At the same, despite being essentially oligopolists, these firms paid remunerative prices to producers. However, this latter outcome was fortuitous from a public policy perspective, rather than being the result of effective public competition policy. The firms concerned wished to expand supply either because they had underutilised ginning capacity or because they were parts of larger organisations with ambitions well beyond the national market in question. In other words, the basic performance result was obtained because state policy was at best benignly passive. There were no cases of effective, interventionist state policy either to correct for private coordination failures or to regulate competition within the cotton sectors studied.

Subsequent experience reveals some progress in developing more effective, interventionist state policy in Tanzania (where public-private collaboration has permitted the implementation of a passbook scheme to assist cotton producers to access greater quantities of crop protection chemicals) and Uganda (where an officially promoted zoning scheme is creating incentives for ginners to invest in pre-harvest services). At the same time, debates over industry regulation in both Zambia and Zimbabwe highlight the fact that ill-conceived regulation could do more to undermine sectoral performance than the absence of regulation. Regulation of smallholder cash crop sectors (broadly defined to include interventions to assist coordination, as well as competition, amongst industry stakeholders) still has a long way to go in Africa.

Meanwhile, West African cotton sectors have come under considerable pressure from the World Bank since the mid-late 1990s to undertake liberalisation reforms. This pressure has met with considerable resistance, both from within and outside the countries concerned, but the resulting attention given to the reform question means that a rather cautious liberalisation has eventually been embarked upon, reflecting something of a compromise between initial starting positions. Arguably, the approach taken in Burkina Faso (a local monopoly model with limited competition, compensated for by a multi-stakeholder solution to the seed cotton pricing issue) is the best one for the immediate future of the sector⁴⁵.

An additional observation, derived from the case study on cashew, is that smallholder production of tree crops introduces an additional complication: smallholders need to be encouraged to commit to “specific investments” in planting trees. Over time, private buyers can show that they are able to provide a reliable and remunerative output market for purchase of tree crop products. However, there may be an important initial role for the state in

⁴⁵ Here the danger is that multi-stakeholder processes can be inflexible in response to changing external conditions – the dramatic rise in the real value of the FCFA over the past five years being a powerful case in point. There are also questions as to whether the multi-stakeholder deliberations in Burkina are truly free of interference from the state.

signalling (through investments in research and extension and, in the Tanzanian cashew case, also input supply) that it is committed to the development of the sector and that, therefore, producers can have the confidence to plant new trees⁴⁶.

Finally, we return to domestic market systems and, in particular, food staples. As discussed in sections 3.2 and 4.3, these are characterised by highly competitive output markets with large numbers of buyers. Thus, unless the state plays an active role in facilitating and ensuring service provision within these systems, they are also unlikely to achieve the goal of productivity enhancement through intensification.

7. Environmental Impacts of Commercial Agriculture in Africa

Commercial agriculture in other parts of the world has had adverse environmental impacts. Here we briefly review the environmental impacts of commercial agriculture in Africa. Our starting point is that commercial agricultural production qualitatively transforms the physical environment within which it takes place – that is inevitable. More intensive and/or larger scale production in response to market stimuli is associated with a number of negative environmental impacts. Moreover, the public capacity and procedures for mitigating the environmental impact of commercial agriculture in Africa are currently limited. However, we also argue that, when assessing the environmental impact of commercial agriculture, one needs to take account of the “without commercial agriculture” scenario. Specifically, extensification of semi-subsistence smallholder agriculture as populations grow is one of the major causes of environmental degradation (including deforestation, loss of vegetation and soil erosion) in Africa at present⁴⁷. The intensification of production associated with commercialised agriculture could assist in reining in this extensification.

It is impossible to assess, in the abstract, whether the negative environmental impacts associated with the commercialisation of agriculture are greater or lesser than those (different impacts) arising from the extensification of semi-subsistence agriculture “without commercialisation”. We observe that smallholder commercialisation is likely to produce more environmental “goods” (in terms of extensification avoided) than large-scale development, but that it may be easier for fledgling environmental regulation capacity to influence the negative impacts of large-scale development than of smallholder commercialisation.

It is particularly when considering land use that one has to ask, ‘What is the “without commercial agriculture” scenario?’ In Africa, the area of land planted to cereals, roots and tubers doubled during 1966-2006; in Asia it fell by 20% over the same period⁴⁸. Extensification occurs when farm households are unable to invest in their existing natural resource base to raise yields, so rising numbers lead to ever greater areas of land being cultivated for food. Earlier we argued that, for many households, assistance to intensify their

⁴⁶ In some cases, loans from state-owned agricultural development banks have been provided to encourage smallholders to invest in tree crops (Baumann 2000). However, the capital requirements for the establishment of cashew trees are only modest. Hence, other ways of signalling commitment are perhaps equally effective.

⁴⁷ World Bank 2007b observe that the environmental impacts of production intensification are largely observed in high potential agricultural areas, whereas those of extensification are associated first and foremost with less-favoured areas. However, in Africa little of the potential of high potential areas has yet been realised; semi-subsistence agriculture is still common even in such areas.

⁴⁸ Source = FAOSTAT. Africa figures are total for all Sub-Saharan African countries. If South Africa is excluded, the rate of increase has been higher still. Looking at regions within Asia, South Asia has experienced the greatest expansion in area planted to cereals, roots and tubers: 11% growth between 1966 and 2006.

staple food production is a prerequisite to engagement in commercial agriculture. However, as the studies in von Braun and Kennedy 1994 show, the higher returns from commercial cultivation can in turn provide both the means to intensify staple food production and the incentives that producers need to invest in the maintenance of their natural resource base (see also Reardon et al. 1999). Experience shows that such investment will be further encouraged by tenure security and by extension advice or other local level promotion of appropriate technologies for soil and water conservation (Tiffen et al. 1994; Hatibu et al. 1999).

On the other hand, if forest or other uncultivated land is cleared for commercial agricultural production, then cultivation is likely to be associated with loss of biodiversity and an increase in carbon emissions.

For various reasons, large-scale commercial cultivation may have larger environmental impacts than smallholder production. As examples below will illustrate, large-scale commercial agricultural developments can encourage entirely new population settlements, as workers are housed and they in turn demand goods and services. This has clear economic benefits, but places new demands on local resources (water, fuel) as well as generating waste. Meanwhile, in southern and eastern Africa, historic processes of land acquisition for large-scale commercial agriculture forced existing populations onto marginal lands that are not really suitable for arable agriculture at all, let alone the populations that they are now supposed to support. Current day extensification of semi-subsistence smallholder agriculture in these marginal lands can be directly linked to these historical actions.

Large-scale commercial monocropping may also lead to greater loss of biodiversity than more scattered smallholder production. Thus, large-scale oil palm plantations are associated with forest clearance and biodiversity loss in Asia and one might expect the same in Africa, if plantations are established in response to biofuel-induced price rises⁴⁹. By contrast, smallholder production of palm oil in West Africa has traditionally occurred as part of a sustainable agroforestry system. On the other hand, the Green Revolution in Asia (which involved millions of smallholder rice and wheat producers) also stands accused of causing massive biodiversity loss, through the selection of a small number of varieties for commercial cultivation and the increased application of pesticides. This demonstrates that even smallholder production, on a sufficient scale, can have major impacts.

Globally, sugar production is held to have been particularly bad for biodiversity, due to the scale of production and associated land clearance in tropical forests and coastal wetland areas (Clay 2003, p166). However, although still organised around large-scale schemes, its impact on biodiversity has been less in Africa, where sugar production takes place in less ecologically vulnerable areas in landlocked countries, such as Swaziland, Malawi, Zimbabwe and Zambia.

Tea is a high value crop that thrives on acid upland soils that are poorly suited to other crops. It is usually produced on terraces which, combined with the ground cover provided by tea plants, results in relatively good soil and water conservation (once the crop is established). However, tea production typically takes place in upland forest regions that are especially rich in biodiversity. An example is the East Usambaras, a fragile mountainous region of Tanzania, where CDC made investments in tea. As well as the loss of biodiversity resulting from

⁴⁹ The tropical forests of West/Central Africa are one of three major areas left on the planet, the others being the Amazon and the forests of south-east Asia. These, therefore, represent a biodiversity “hotspot” of global significance (World Bank 2007b).

converting natural forests into tea plantations or smallholder tea plots, jobs and income generating opportunities can draw in new settlers with the attendant risks of encroachment into surrounding forests.

The extent of water use also depends on the crop, with sugar being an example of a particularly water-demanding crop, usually grown under irrigation in Africa. The impacts of such water use depend on total water availability and the number of competing local uses. Globally, large-scale irrigation is also associated with other environmental problems, most notably the flooding of land for dam construction (sometimes with displacement of human, as well as animal, population) and salinisation of soil. Irrigation development in Africa lags far behind that of other continents⁵⁰, so the scale of the problems has so far been less. Similarly, whilst cotton occupies a large share of irrigated land globally, most cotton production in Africa is rainfed and not associated with major conflicts over water.

Whilst crop production can be very demanding of water, processing of certain crops can be similarly demanding of wood. Two examples here are tea (where substitute fuel sources are available and commonly used) and tobacco (where wood use is common in curing). It is estimated that tobacco production accounts for 5 percent of Africa's total deforestation and for 20 percent of deforestation in Malawi (Geist 1999). This is not only a threat to biodiversity, but also to the sustainable production of tobacco itself (Jaffee 2003).

Negative impacts of (excessive or improper) input use include: pollution of water sources by pesticides and nitrates (also by waste products from sugar factories or livestock processing); the impact of pesticides on human health (especially those responsible for spraying) and on other organisms (including the natural predators of pests), and declines in basic soil fertility following sustained high chemical fertiliser use. The production of agrochemicals, especially inorganic fertiliser, also consumes large quantities of energy, contributing to greenhouse gas emissions.

Cotton stands out as the heaviest user of pesticides: "Globally, cotton accounts for 11 percent of all pesticides used each year, even though the area of production is only 2.4 percent of the world's arable land. With regard to the subset of insecticides, cotton producers use 25 percent of all insecticides used each year." (Clay 2003 p292, citing Soth 1999). Although the levels of pesticide use in Africa have generally yet to reach the high levels observed in other parts of the world, concerns about the high incidence of pesticide-related illness amongst cotton growers in Africa are rising (see, for example, Maumbe and Swinton 2003⁵¹). Often it is women that suffer the most as they are the ones that do much of the spraying.

In general in Africa the problem with inorganic fertiliser use is that there is too little, rather than too much. Fertiliser use per hectare of arable land has scarcely risen over the past three decades and is a tiny fraction of the average application rate observed in South Asia or other regions (Larson and Frisvold 1996; Crawford et al. 2003). Fertiliser requirements and use do, however, vary considerably by crop, with tree crops typically using relatively little, but tobacco and tea being particularly heavy users. Due to the extent of their cultivation, as well as to the rates of fertiliser application within commercial systems, maize and cotton are the two main users of fertiliser in Africa.

⁵⁰ World Bank 2007b cites (Sub-Saharan) Africa as the only major region where the area under irrigation could (and should) still be expanded.

⁵¹ Pesticide usage in Zimbabwe is amongst the highest in Africa, with some surveys showing an average of ten sprays per season.

The case of the flower export industry around Naivasha, Kenya, illustrates several of the environmental impacts from commercial agriculture that we have so far summarised. Over exploitation of water resources by the flower growers was held responsible for falling water levels, thereby threatening an internationally valued wetland ecosystem, whilst a growing population on the lake shore (some of whom have been drawn there in search of employment) led to deforestation, pollution, and pressure on wildlife as a result of fishing and hunting. Runoff of fertiliser and chemicals also contributed to eutrophication within the lake. Since 2000 considerable effort has been devoted to achieving more sustainable management of resources, especially water. The organisation of floriculture growers (Lake Naivasha Growers Group) has appointed a horticultural expert to sensitise members on water conservation and environmentally friendly production techniques, whilst leading firms have invested in (more efficient) drip irrigation, storage of water runoff, artificial wetlands for pollution control and geothermal temperature control for greenhouses (themselves more water efficient than open fields). Whether this is sufficient to protect the lake ecosystem, which is simultaneously subject to a number of other stresses, remains open to debate (Becht et al. 2006; University Of Leicester 2006).

Meanwhile, the very concept of air-freighted, off-season vegetable production is coming under increasing scrutiny within Europe, given the contribution of aircraft to global carbon emissions. (By contrast, most of Africa's traditional commodity exports are sea-freighted). However, this is a complex debate, given that producing countries such as Kenya have much lower emissions level per capita than consuming countries (even once air-freighted exports are included) and need the foreign exchange and employment generated by such trade.

Turning to livestock, cattle are the major use of agricultural land worldwide. Ranching has been a major source of forest clearance in the Amazon, whilst soybean production (itself mainly for export to Asia to feed livestock) has recently attracted as much attention. Through both forest clearance and direct methane emissions, cattle production is a major contributor to global warming. Meat processing can also be polluting of water sources, whilst the cold chain for fresh meat is energy intensive.

However, in Africa, most livestock production is still at best semi-commercial. Within existing systems, there are concerns that overgrazing (increasingly likely as populations rise and crop agriculture competes with livestock for available land) can reduce natural vegetation and damage the soil structure, leading to soil erosion and reductions in biodiversity. On the other hand, there is also new evidence showing that, "contrary to expectations, pastoral settlement practices may enrich rather than deplete rangeland biodiversity" (Nicholson et al. 2001, p13).

Overall, the contribution of *commercial* agriculture in Africa to global greenhouse gas emissions is modest, especially when the "without commercial agriculture" scenario is taken into account.

In theory, many of the major impacts of commercial agriculture can be foreseen⁵², such that a sound planning process could specify the design features and management actions necessary to mitigate them. The problem is that, for a whole range of reasons, well-informed, far-sighted

⁵² Some indirect effects, such as the consequences of migration in response to new employment opportunities, will be more difficult to predict, as may be the effects of new chemicals on local ecosystems.

and impartial planning processes rarely exist in Africa (or elsewhere?). Thus, negative impacts from commercial agriculture continue to be observed, the extent of such impacts in Africa perhaps limited as much by the limited scale of commercial agricultural development to date as by anything else.

We conclude this section with some reflections on the challenges of mitigating the environmental impact of commercial agriculture in Africa, drawing on our case studies. As a responsible institutional investor, CDC has for some time had to consider the environmental impacts of its investments. Thus, in the mid-1990s, CDC decided to merge East Usambaras Tea Co (EUTCO) with a nearby Estate, so as to achieve economies of scale, rather than expanding EUTCO in its environmentally sensitive location. In many cases, however, incorporation of environmental concerns into commercial agriculture is, at best, reactive (rather than pro-active). There are many reasons why this might be, including: weakness of environmental regulation, the desire of investors to cut costs or of politicians to see quick development, lack of information about the value of environmental benefits derived from existing ecosystems, and the marginalisation of local voices (which are often the ones most likely to articulate the value of these environmental benefits) within planning and approval processes.

The case of floriculture exporters around Lake Naivasha in Kenya arguably provides a successful example of (belated) incorporation of environmental concerns into large-scale commercial agricultural operations (see earlier references for a sense of the ongoing debates here). Even as a “successful” case, it is instructive, however. According to Becht et al. 2006, environmental concerns were taken seriously first and foremost due to the information gathering and advocacy work of a civil society organisation, the Lake Naivasha Riparian (Owners) Association (LNRA). This was a conservation-minded group dating back to 1929, which had become largely dormant by the 1980s, but was re-energised when a new chairman saw the threat posed by floriculture. Indeed, the Lake Naivasha Growers Group (LNGG) was initially set up in response to the “threat” to their commercial interests posed by LNRA. However, LNGG subsequently adopted a much more constructive position, which Becht et.al. attribute to a realisation that the entire industry could be threatened by unsustainable resource use, combined with increasing pressure on horticultural suppliers to EU markets (especially supermarkets) to be environmentally and socially responsible. The Kenyan government appears to have been supportive of efforts to improve the management of the lake, but not a driver of positive change.

This case can usefully be compared and contrasted with two others. In the case of cotton, there is growing civil society concern about pesticide (ab)use both in western markets and amongst some producer groups. Groups such as Pesticide Action Network (www.pan-uk.org) campaign vigorously on cotton, whilst there has been a recent upsurge in interest in organic and fair trade cotton, with several initiatives now underway in West Africa. In time, these are likely to influence spraying (and possibly other) practices within the conventional cotton chains. However, at present public policy dialogue is concerned much more with how to increase smallholders’ access to pesticides than how to control their use. Meanwhile, little, if anything, is done by government to try and mitigate the impact of tobacco production on deforestation. Unlike CDC or Kenyan horticultural exporters, multinational tobacco firms are under little pressure from downstream actors to reduce the environmental impacts of their

activities⁵³ and may simply try to relocate if the wood resources in a particular country became too depleted to support competitive tobacco production. These cases may be illustrative, rather than representative. However, what they illustrate is that governments in Africa rarely have both the capacity and the will to take a lead on improving the environmental performance of commercial agriculture, especially where this entails confronting powerful commercial interests. Whilst efforts should be made to strengthen institutional and legal frameworks and to increase state capacity for environmental regulation, in the short-medium term we should expect to see improved performance occurring primarily either where there is concerted action by civil society groups (international combining with local)⁵⁴ or where large-scale investors face clear incentives for environmental accountability within their supply chains.

Around Africa, modern environmental legislation is being passed and dedicated environmental agencies being set up. Building capacity, however, takes longer and commercial agriculture may not always be top priority. Instigation of formal requirements for environmental impact assessment (EIA) is typically an early step. However, whilst these cover large-scale projects (such as those approved by investment promotion centres), they are less likely to come into play if, for example, a Ministry of Agriculture launches a programme to promote cotton production in a new part of the country. Moreover, in practice EIA processes are often subject to the same stresses that work against pro-active environmental planning (see above), so are most likely to lead to thorough-going environmental scrutiny of new projects where the investor concerned has their own reasons for taking such issues seriously (as, say, CDC would). Hopefully, however, they can restrain or prevent some of the worst potential impacts. Meanwhile, smallholder commercialisation offers the potential for some environmental “goods” (in terms of extensification avoided), even whilst the mechanisms for mitigating its possible negative consequences are poorly developed.

8. Social Impacts

A number of strands of literature are critical of the social impacts of commercial agriculture, most notably on relationships and welfare within smallholder households. We briefly review some of this literature in this section.

As with environmental impact assessment, there is rarely any mechanism for ex ante social assessment of new interventions to promote commercial agriculture (especially government policies) in Africa⁵⁵. Moreover, interventions that might mitigate the social impacts of commercial agricultural development are often outside the realm of agricultural policy (e.g. education, inheritance rights; women’s land rights might be considered a partial exception).

However, these criticisms of commercial agriculture have to be set alongside the strong body of evidence that successful development of commercial agriculture can make an important contribution to national poverty reduction objectives within agrarian economies. It is thus with this evidence that we begin.

⁵³ They are increasingly dependent on sales in Asian, rather than western, markets, whilst in the latter the burdens imposed by litigation cases far outweigh those of environmental lobbies.

⁵⁴ For example, in Uganda civil society organizations are currently resisting government plans to convert national park land into agricultural land to be used for sugar cane production [M.Morris, pers.comm.].

⁵⁵ Canagarajah and van Diesen 2006 make this point for Uganda.

8.1. *Commercial Agriculture and Poverty Reduction*

There is a well-established literature (e.g. Ravallion and Datt 1999; Irz et al. 2001; Gollin et al. 2002; Christiaensen and Demery 2007; World Bank 2007a) showing that, in poor, agrarian economies, agricultural growth is particularly good for poverty reduction. This is so because large numbers of poor households participate directly in agricultural production and/or are employed as labourers on farms, and their consumption patterns mean that an important part of any incremental income they receive is spent on locally produced goods and services. Commercial agriculture as defined in this report, i.e. production for market, is implicit in most of these growth scenarios.

Because they are the most widely grown crops, including by many of the poorest households, simulation modelling finds that growth in production of staple food crops has bigger impacts on poverty than either growth in export crops or growth in the non-agricultural economy (Diao et al. 2006). However, such modelling does not explicitly address the question as to how many of the households participating in staple food crop growth do so to enhance their food self-sufficiency as opposed to producing or increasing surpluses for market⁵⁶.

Meanwhile, despite the more restricted geographical and socio-economic profile of export crop farmers, growth episodes within export crop systems can still have major poverty reduction benefits. Thus, Deininger and Okidi 2003 found that an increase in coffee prices was a major driver of the falls in poverty achieved in Uganda during the 1990s. Similarly, the recent boom in cocoa production in Ghana is held to be an important factor behind the impressive falls in poverty that have occurred in the south and centre of the country in recent years (Ghana Statistical Service 2007). Within our case studies, Jaffee 2003 suggests that the expansion of smallholder tobacco production was a major reason for observed falls in poverty in the country during the 1990s, when many other factors were perhaps less conducive.

One common feature across the Uganda and Ghana cases is the role played by rising world prices. These should benefit all producers within a sector and, even if larger producers reap the largest absolute gains, the gains to poorer producers may still be important relative to their starting income levels⁵⁷. However, world prices fall as well as rise. Hence, poverty reduction gains will only be maintained if some of the windfall from temporarily higher prices leads to investment either in productivity enhancement (e.g. newer trees in the Ghana cocoa sector) or in non-farm activities that continue to yield returns even once prices fall. This illustrates the importance of having efficient pre-harvest (and other) services to complement gains in output markets in reducing poverty.

Considering cotton, Minot and Daniels 2005 show the importance of a healthy cotton sector for poverty reduction in Benin. However, in apparent contrast, Briand et al. 2006 find that poverty remains stubbornly high in cotton producing areas of Mali, despite the fact that these are some of best areas of agricultural land in the country and despite the considerable growth

⁵⁶ Related work does caution that these poverty reduction effects are dependent on supportive growth in demand for increased production, in order to avoid a situation where productivity gains by producers are fully offset by price falls (Diao et al. 2003).

⁵⁷ Another common feature is that the crops in question are perennial. In the case of annual crops, large increases in production of a particular crop may only equate to small increases in total farm-level production and income, because of the opportunity cost of switching out of other crops. If so, poverty impacts will also only be small. This is less likely with perennials.

that occurred in the cotton sector over the past decade. Briand et al. 2006 are unable to provide a full explanation for this, but suggest that part of the explanation lies in the low profitability of cotton production for many producers, especially with the current declining yields, low world prices and yet high input costs. In addition, as pointed out by Wodon et al. 2006, sales of cotton constitute only around a quarter of household income. The question then arises as to why cotton production increased so dramatically over the past decade despite the apparent low profitability. Briand et al. 2006 suggest that households value the guaranteed market and access to inputs and credit that comes with cotton production. However, whilst input access may have encouraged producers to remain in cotton production despite falling returns, it is unlikely to have driven a large increase in production if returns were lower than those achievable from other crops. An insight from the household modelling work conducted by Poulton 2005 is that, if returns to cotton are higher than those available for other crops, then households may expand cotton production when prices fall to compensate for the lost income from lower prices. The CFA devaluation in 1994 coincided with rising world prices, making cotton very attractive. However, these price gains were then gradually eroded in the latter half of the 1990s. Meanwhile, it is the top third or so of producers who account for the bulk of cotton production in most African countries and they are able to make a profit from cotton even when poorer producers apparently make losses (Briand et al. 2006; Tschirley et al. 2008).

This extended discussion of the Malian cotton case serves to illustrate that growth in production and sales of a particular crop are not enough to guarantee poverty reduction. Where specific poverty assessments have not been conducted, we should perhaps, therefore, pay attention not just to production figures, but to evidence on productivity trends within a sector. Again, neither total factor productivity (TFP) nor labour productivity data may be available, but yield estimates are more likely to be (at least at sector level, if not disaggregated by producer type, which would be even more interesting from a poverty perspective). Sustained growth in yields would indicate that production expansion was not simply the result of resource switching across crops. Under these circumstances, we might expect poverty reduction to be occurring⁵⁸.

Finally, a hot topic in many African countries is the relative benefits of smallholder versus large-scale agricultural production. On the one hand, the linkages, especially consumption linkages, between smallholder agriculture and the rest of the economy make for much greater poverty reduction impact where growth occurs in smallholder, rather than large-scale, agriculture (Bautista and Thomas 1999; IFAD 2001). Thus, the poverty impacts observed by Jaffee 2003 were associated with an opening up of the Malawi tobacco sector to previously excluded smallholder producers. On the other hand, as argued in this report, there are (export) sectors where large-scale farms have been found to be more competitive than smallholder-based systems and hence enjoy greater growth prospects. Export horticulture is a particular case in point here. World demand is growing rapidly, but the obstacles to successful smallholder participation in international supply chains are large. If agro-ecological conditions within a country favour horticultural production and there are limited alternative ways by which the country can earn foreign exchange, it may have little choice but to develop large-scale farms⁵⁹.

⁵⁸ Of course, yield growth could be coming entirely from increased input usage – analogous to all production increases coming from switching out of other crops.

⁵⁹ Ethiopia is an obvious case in point here. The country has long been heavily dependent on coffee for its foreign exchange earnings, but world coffee prices have declined sharply since the early 1980s.

Maertens and Swinnen 2007 explore the poverty implications of switching from smallholder to large-scale suppliers for the case of horticultural exports from Senegal. Smallholder export horticulture developed in Senegal in the 1990s. However, in the latter part of that decade, the inclusion of smallholders within the supply chain was increasingly challenged by the private grades and standards introduced by importers in the major European markets. The industry reoriented itself towards estate production, while retaining a minority of its original smallholder outgrowers (the top producers). It has subsequently grown to the point where the total number of people employed by the industry (estate workers plus remaining outgrowers) far exceeds the total number of outgrowers contracted prior to the reorganisation. Maertens and Swinnen (2007)'s analysis of household survey data divides the population of the export horticulture production zone into three categories: those who have remained as outgrowers, households with one or more member employed on the new export horticulture estates and households with no direct connection to the industry. It shows that those who have remained as outgrowers are the best off. However, households with one or more member employed on the horticulture estates are significantly better off than households with no direct connection to the industry. Moreover, many of the households with one or more member employed on the horticulture estates would not qualify as outgrowers. While they have similar education levels to outgrowers, they have less land and fewer non-land assets. Because of the relatively inclusive nature of estate employment⁶⁰, Maertens and Swinnen (2007)'s simulations indicate that poverty levels in the area are lower under current arrangements than they would have been even had the contract farming form of organisation been able to continue.

A critical issue when considering expansion of large-scale agriculture is where the land will come from. Some African countries, for example Mozambique and Zambia, remain land-abundant and can accommodate additional large-scale farms without disruption to existing settlement patterns (as, indeed, they have when welcoming displaced white farmers from Zimbabwe in recent years). Under such circumstances, the arrival of large-scale farming may catalyse improvements in local infrastructure that benefit other local residents (Hayami et al. 1990). CDC investments, for example those in the relatively remote southern highlands of Tanzania, have been observed to have this effect. However, resettling smallholder households to make way for new commercial investments is a much more dangerous exercise. Our view is that this should only be contemplated where there is an overwhelmingly favourable benefit cost ratio, e.g. displacing 50 families to make way for 500 employees. Secondly, ideally the main reliance should be on market forces. If the benefit : cost ratio is so favourable, it should be possible to offer a good price to the smallholders to leave, or to lease their land to the estate. Unfortunately, in some countries government policy is not to compensate for the land per se (theory being there is plenty in the country) and only to compensate for permanent improvements and assets. As noted in section 6.2, this needs attention.

8.2. *Intra-Household Allocation of the Benefits from Commercialisation*

The discussion in the previous section considered the impacts of commercial agriculture on poverty at the household level. However, an extensive literature considers the impacts of smallholder farm commercialisation on the intra-household distribution of labour effort, income and thus welfare.

⁶⁰ Migrant families are, however, under-represented as estate employees.

Economic models often assume that the household is a homogeneous production unit with a common set of goals and priorities. However, the reality is more complex. The divergent interests of male and female members of the household and gender-based divisions of resources, responsibilities and incomes within the household can make the transition to commercialised smallholder production less smooth than it might otherwise be. In some situations it has been observed that the production of crops primarily for market has had a negative impact on intra-household relations and on the status and welfare of women within the household and the local community. Specifically, the processes of commercialisation may undermine women's access to resources, especially land; place additional demands on women's time and labour; reduce the traditional autonomy of women in the household, making them more dependent upon the goodwill of male heads of household; undermine household food security; increase child labour; or increase intra-household tensions and conflict.

There is a long-standing concern that the reallocation of land and women's labour from food production to cash crops in the context of traditional divisions of labour in which women have the primary responsibility for meeting household food needs can create food security and nutrition problems (von Braun and Kennedy 1986). This is especially so where the proceeds of cash crop sales are largely controlled by men who do not bear responsibility for food provision. Although the revenues from higher value cash crops may be more than sufficient to meet a household's basic needs and nutritional requirements, the cultural changes needed for more equitable intra-household resource distribution may lag behind changes in the household economy. Additionally, since agricultural markets do not always function very well, cash revenue does not necessarily provide food security. The studies reported in von Braun and Kennedy 1994 explored these questions in some depth. As noted in an earlier section, the majority of households that adopted the commercial crops or technologies under study remained self-sufficient in food. Taking children's weight-for-age z scores as the key indicator, income was found to have a positive effect on child nutrition in most studies where information was available, whilst a significant negative effect on child nutrition from the share of cash crop income in total income (holding total income constant) was found only in one case, in Sierra Leone. Here, von Braun and Kennedy 1994 hypothesise that the negative effect arises from the fact that the crops under study (coffee, cocoa, oil palm) were tree crops, such that households had to forego income during the 5-7 years before the trees began fruit production.

Access to land and control over women's labour are a major source of gender conflict inside the household. The shift to commercially orientated production systems can erode women's traditional rights to land whilst at the same time requiring them to work longer hours in male-controlled cash crop production – work for which they are often poorly remunerated. The resulting loss of female autonomy can make women and their children more vulnerable than before. This fuels resentment which can be harmful to commercial agricultural production itself. In Kenya a study of smallholder production of French beans for export shows how gender conflict of this sort led to a deterioration in bean quality and ultimately to smallholders losing their contracts to supply beans (Dolan 2001). In another Kenyan study it was estimated that 30 percent of tea plots were neglected because of disputes over female labour (Sorensen and von Bulow 1990). In Gambia similar conflicts over land and labour led women to withdraw their labour from irrigated rice production schemes which the government and donors were trying to develop in the country's wetlands – the schemes performed very poorly as a result (Carney 1993).

Intra-household cooperation is clearly important if the smallholder household is to act as an efficient agricultural production unit. In a comparative study of tobacco production in two different communities in Kenya, Heald 1991 argues that the degree of cooperation/conflict between male and female members of the household varies between households and depends partly on farm prices – higher prices encourage greater cooperation between men and women – and partly upon ethnic ideological differences concerning household corporate identity and gender-based divisions/sharing of labour. In relation to Kenyan tea production, Sorensen and von Bulow 1990 found that because women’s labour is crucial to production and because of the difficulties of hiring labour, women do have a certain amount of bargaining power when it comes to negotiating their labour input and influencing the way tea revenues are spent. In a study of the effect of intra-household relations on smallholder coffee production, Lim et al. 2007 identify a significant but weak negative correlation between women’s bargaining power and the output of coffee – greater female bargaining power is associated with more resources allocated to staple food production. In many communities improved cooperation between men and women in both food provision and commercial agriculture depends ultimately on cultural and ideological change, especially in societies where the corporate identity of the household is weak. However, Sub-Saharan Africa is culturally very diverse, so one has to be cautious when making broad generalisations.

8.3. *Conditions for Workers on Large-Scale Farms*

Large farms and estates are often compared unfavourably with smallholder production in terms of social development, being viewed as inequitable with respect to land distribution and sometimes also as exploitative when it comes to employment conditions. Hurst et al. 2005 note that waged agricultural workers, many of whom work on large farms and plantations, are one of the poorest occupational groups in sub-Saharan Africa and “remain unrecognised in terms of goals, policies, programmes and activities to eliminate poverty.” Nevertheless, as the discussion of Maertens and Swinnen 2007 above made clear, the case against plantations and estates is not always that clear-cut.

Estate workers and the local community often benefit from housing, schools, clinics, roads, water and sanitation – facilities that in many rural areas might not otherwise exist. The concentration of population in estates may also facilitate the provision of government and NGO services and other infrastructure (roads, telephones, electricity), which can be prohibitively expensive when supplied to scattered smallholder households. Within the case studies that underpin this report, this was illustrated by CDC’s Mpongwe and Munkumpu arable farming schemes in Zambia and its Tanwat wattle estate in Tanzania. By contrast, outgrowers on sugar schemes pioneered by CDC in Swaziland, Malawi and Zambia hired casual labourers who received none of the benefits enjoyed by estate workers, such as housing, pensions, clinics etc⁶¹. Similar observations are made in relation to casual labourers hired by Kenyan smallholders producing tea for the KTDA. These workers do not have the same benefit as labourers hired by Kenyan tea estates.

However, estate agriculture has also been criticised for acting as an enclave in deprived regions - providing benefits to those directly involved, but with little filtering out to the wider community. Speaking of the Mumias sugar outgrower scheme in Western Kenya Oniango

⁶¹ Note that estates are also often keen to employ family members – not just the head of household - for cash wages, because it is cheaper than bringing in additional workers with all of their associated infrastructure/service costs.

1999 notes that, “there is little the community has to show for it in terms of economic gains ... [and that there] ... is not much evidence of improved housing or schools, or even health centres/hospitals, or roads, except those aspects which are handled directly by the Mumias Sugar Company”.

Controversially, when the East Usambara Tea Company built a secondary school, students were expected to pay for their tuition by working on the estate (source: tea case study). This highlights an important point, which is that social development initiatives such as education come at a financial cost which cash crops such as tea can help to meet. How the cost should be shared between the various stakeholders in the tea industry is an ethical issue as well as an economic one.

In importing countries public concerns over the way estates treat their workers have helped drive the growth of ethical trading practices and associated codes of conduct. The aim of most ethical codes is to improve employment conditions relating to, for example, security of employment, working hours, health and safety (e.g. exposure to toxic chemicals and pesticides), fair wages, and adequate formal representation.

Ethical trading practices are an increasingly important feature of the value chain that links European buyers of horticultural products with their African suppliers. They are discussed by Barrientos et al. 2003 and Tallontire et al. 2005 in relation to their impact in the African horticulture sector, drawing on case studies of Kenyan flowers, South African fruit, and Zambian flowers and vegetables. Whilst well intentioned, the growth in ethical trading and social codes does have some drawbacks. In some cases this includes driving production away from the smallholder sector where compliance with ethical codes such as those relating to child labour, and environmental codes such as those regarding pesticide use, is hard to monitor. Additionally, social codes do not necessarily achieve better outcomes for many of the workers that they are intended to protect, notably women and informal workers. Most employment in the African horticultural sector is informal and less easily regulated by codes of conduct. Therefore, those working in the informal sector, including women who are the main suppliers of casual and seasonal labour, do not benefit much from social codes.

Barrientos and Kritzing 2004, examining labour conditions in the South African fruit sector, highlight the risks and vulnerabilities faced by informal contract workers who enjoy little in the way of work security or employment benefits. They also note that whilst the informal contracts do provide some male workers with regular, relatively well paid work, the informal contract work available to women is likely to be poorly paid and of a short duration. The cost of complying with social and environmental codes and competitive pressures to reduce costs may also discourage employers from employing workers on permanent contracts. Barrientos and Kritzing 2004 find evidence of this in the South African fruit sector. Where employers do succumb to the pressure from Northern buyers to provide more secure and permanent forms of employment, women who often depend upon the flexibility of casual labour, may find themselves with fewer employment opportunities than before. Women often find the flexibility of casual labour more suited to their needs because of their domestic and childrearing commitments. Cultural norms also tend to favour men in the award of permanent employment contracts. As a result women could actually lose out if the opportunities for casual labour are withdrawn in favour of permanent contracts.

8.4. *Land Issues*

Land is obviously a critical resource in agriculture and income distribution is greatly influenced by control over it. In Africa private property rights over land – in the shape of legally recognised titles that can be exchanged in the market place – are less developed than elsewhere in the world. Although there are exceptions (e.g. in parts of Kenya), traditional forms of land tenure still hold sway throughout much of the region. Understanding the social impact of agricultural commercialisation requires an understanding of these complex systems of property rights and how they affect access to land. Whilst land has historically been an abundant resource in Africa (allowing agricultural growth to take place through extensification rather than intensification), rapid population growth is now making land scarce in many areas. As a result, new forms of property rights and new technologies are needed if land is to be exploited efficiently and sustainably. However, technological change and land reform creates social tensions and has major social and political ramifications⁶², the nature of which determine whether or not the transition from subsistence-orientated agriculture to commercialised production takes place smoothly and in a way that benefits the poor. Platteau 1996b provides a review of the evolution of land rights in Africa, the social and economic implications, and associated difficulties. He notes that customary land rights often provide protection for the poor including women and ethnic minorities which formal land titling can erode or eliminate.

New economic opportunities, such as those created by the commercialisation of agriculture, draw in migrants from areas where there are fewer opportunities. A sudden influx of migrants can create various problems, especially where local services and the resources to support them are inadequate. In Zambia, for example, the establishment of CDC's Mpongwe arable farming estate in a previously unsettled part of Zambia drew in large numbers of migrants in search of work. This led to the development of unplanned squatter settlements with various problems such as poor sanitation and a lack of clean water, the theft of crops, encroachment on the estate's land, and a high incidence of malaria and AIDS.

Migration brings together people from different cultural and ethnic backgrounds who typically find themselves in competition for jobs, land and other resources – both with each other and with the indigenous people. Often it is pastoralists and sometimes it is hunter-gatherers, such as the bushmen of the Kalahari, that are most threatened by agricultural development. In Botswana, for example, the development of cattle ranching has squeezed the Kalahari bushmen off their ancestral lands, and in the irrigated regions of southern Somalia much of the chronic violence there can be traced to conflicts between pastoralists and agriculturalists over access to land and water (Merryman 1996).

In Africa, where allegiances based on ethnicity, tribe and clan are very strong, economic competition can accentuate the divisions created by these allegiances. Cultural and ethnic diversity increases the likelihood of misunderstandings and the opportunities for individuals

⁶² Kimenyi and Ndung'u 2005 argue that historic land policies related to commercial agricultural development are at the root of many of the inter-communal tensions still observed in Kenya today. These started with the allocation of prime agricultural land in the Rift Valley Province of Kenya to European settlers. (At the time this was used mainly by pastoralist communities who had no documentary evidence to back up their claim to it). As commercial agricultural enterprises developed, people from other parts of the country also moved to the Rift Valley to seek work. Following independence, some of the former estates were parcelled up and given to smallholder households. However, the main beneficiaries were members of the then President's Kikuyu tribe, not the Kalenjin, Maasai, Samburu and Turkana, who believed they had the historic claim to it.

to mobilise support in their conflicts with others. This makes it all the more likely that the often unavoidable social tensions associated with economic competition will escalate into inter-ethnic fighting. In a buoyant rural economy or thriving sector where the demand for migrant workers is high, ethnic and tribal divisions may cause few problems, providing there is sufficient land, housing, water and other basic necessities. However, when the demand for labour falls – due to falling commodity prices or other economic circumstances – or when land and the basic infrastructure needed to accommodate migrants and meet their basic needs is lacking, the ensuing competition can lead to social unrest and inter-ethnic violence. Sometimes the social and ethnic tensions created by migration are relatively low key, as in the case of the three outgrower schemes pioneered by CDC in Swaziland, Malawi and Zambia which attracted migrants to settle on newly developed land. However, in other cases the conflict has been much more serious. The experience of the Ivory Coast and the civil war there is a case in point (see Crook 2004; Chirot 2006).

Civil War in Ivory Coast has roots in conflict over land fuelled by migration to the cocoa growing south from other parts of the country and from neighbouring countries. During the cocoa boom years between 1960 and 1980 the government of the time encouraged this migration by sanctioning migrant control over land that they developed for cocoa production. This caused disaffection amongst local populations which intensified in the 1990s as economic hardship caused by the end of the cocoa boom and growing urban unemployment deepened. The latter encouraged southerners to return to their villages where they now had to compete with migrants for land. The host communities “began attempting to 'renegotiate' earlier land arrangements with migrants, leading to increasingly violent clashes in the countryside” (Crook 2004, p.1). Politicians in the south, including government leaders, have exploited hostility towards migrants and foreigners in order to gain support. In 2000 the government restored customary rights over land, reversing the previously favourable position enjoyed by migrants. Political manoeuvring has deepened divisions between indigenous southerners and migrants from other parts of the country, making it easier for rebel leaders to take control of the north of the country in a civil war that followed an abortive coup in 2002. It has also helped fan the flames of inter-ethnic violence that has persisted throughout the country.

8.5. *Policies for Inclusion*

In this final section, we draw together ideas from a number of parts of the paper to briefly address the following questions:

- What can be done to maximise the number of smallholder households that can participate in commercial agriculture?
- Is there anything that can be done to improve the intra-household distribution of costs and benefits from commercial agriculture?
- How can the social benefits from large-scale agriculture be maximised?

What can be done to maximise the number of smallholder households that can participate in commercial agriculture?

This is an area that is undoubtedly worthy of further research. However, the arguments presented within this paper suggest the following:

- Commercialisation policies should not neglect domestic markets, where there are few barriers to entry that might discourage successful smallholder participation;

- Particular attention should be paid to food staples. Food staples are grown by a greater proportion of households than any other crop, though only a minority are likely to (or should) be engaged in regular surplus production. However, some technologies and institutional arrangements that assist surplus producers may also enable deficit households to satisfy more of their foods needs from a smaller area of land, thus allowing them to devote more land to the production of other crops for market;
- Improving the efficiency with which staples markets function will also benefit deficit households, allowing them to devote more land to the production of other crops for market. Institutional arrangements, such as commodity exchanges, that reduce the transactions costs of long-distance trade, should help here. In addition, in section 4.3 we argued that either developments in market-based instruments or more direct state intervention might be needed to reduce cereals price volatility. Meanwhile, the logic of Figure 1 is that, whilst interventions to increase the efficiency of food staples markets might help stimulate production, greater production might also be a major contributor to increasing the efficiency of markets;
- Increased investment in roads will improve the efficiency with which staples markets function. It will also bring more smallholders into contact with more market opportunities for alternative crops;
- For export crops, smallholders have demonstrated their ability to be competitive in some, but not all, commodities. Where competitiveness has been demonstrated, preference should be given to developing smallholder systems, rather than estates. A critical challenge here, however, is to develop systems that deliver effective pre-harvest services to smallholder producers. Such systems will rarely serve all households in an area, especially where seasonal credit is involved. However, the stronger the system, the greater the proportion of households that should be able to benefit. Institutional innovation for pre-harvest service provision is thus a major priority.

Is there anything that can be done to improve the intra-household distribution of costs and benefits from commercial agriculture?

The evidence that commercial agriculture – especially smallholder agriculture - is excellent for poverty reduction at the household level, plus the fact that there are often few alternatives in rural Africa, argue for its promotion. However, concerns about the possible negative intra-household consequences need to be taken seriously.

As with environmental impact assessment, there is rarely any mechanism for ex ante social assessment of new interventions to promote commercial agriculture, other than in project interventions by socially responsible investors (e.g. CDC) or where donors (e.g. World Bank) are involved.

The fundamental issue is that of intra-household bargaining power. This takes us into the socio-cultural arena and towards policies, such as education and inheritance rights. Strengthening women’s land rights is a key challenge.

A comprehensive social protection system is some way off in most of Africa, but would act as a safety net for losers from the commercialisation process in general. Following the logic of Lim et al. 2007, it might also strengthen the bargaining power of women within households, if it offered some protection to any who were kicked out.

Thus, there are things that can be done, but one should not expect major changes for some time. In the meantime, therefore, efforts to promote commercial agriculture will continue to attract some criticism on social, as on environmental, grounds.

How can the social benefits from large-scale agriculture be maximised?

We have argued that large-scale agriculture should be promoted with caution and primarily a) where agro-ecological conditions favour commodities in which large-scale farms have demonstrated a clear competitive advantage over smallholders and b) where land pressure remains limited. The study by Maertens and Swinnen 2007 shows that, where these conditions are met, even large-scale agriculture can be considered good for poverty reduction.

Civil society groups in developed countries have begun to put pressure on some large-scale farms, through the supply chain, to improve social and environmental practice. The evidence suggests that there is still further to go in these endeavours, not least in seeking ways to protect the rights of casual workers.

Meanwhile, governments could (in theory, at least) enact labour legislation that sought to influence employment practice without creating major labour-market distortions. One example would be to set a minimum wage marginally above the prevailing market clearing wage.

Another promising avenue – developing the multipliers from large-scale agriculture – is to promote use of local procurement (hence developing business relationships with local industries and artisans), especially amongst investors from outside the country.

9. Summaries of Case Studies

9.1. Cashew (Colin Poulton)

Although Africa is a major supplier of cashews, accounting for 31% of world nut production during 2000-2004, the story of Africa's cashew industries is on balance a disappointing one. Until 1980 Africa – and, in particular, Mozambique and Tanzania – was the main cashew producing region in the world. However, Mozambique and Tanzania lost this position due to a combination of policy neglect (both countries) and civil conflict (Mozambique), leaving India as the world's biggest producer through the 1980s and into the early 1990s. Since the mid-1990s there has been considerable success in raising raw nut production in four African countries (Côte d'Ivoire, Tanzania, Guinea-Bissau and Benin). However, this performance has been eclipsed by that of Vietnam, which only entered cashew production in the early 1980s, but has now grown to be the world's largest supplier. Furthermore, as global cashew production has grown, so export prices have fallen: by half between 1998 and 2003.

Meanwhile, Africa is the only major producing region in the world without a significant processing industry. During 1995-2004 Africa supplied 86% of global exports of raw nuts, with India being almost the sole buyer. Africa is thus heavily dependent on India as the market for its raw cashew nuts.

The experience of cashew sector reform in Mozambique has attracted particular attention as a “*cause celebre* for the anti-globalization movement” (McMillan et al. 2003, p2). At Independence in 1975 many of the Portuguese traders left Mozambique whilst many Asians moved to towns and ceased buying cashew. The new government through a state organisation called Caju de Mozambique took over ownership of the processing factories. The outbreak of civil war in 1982 disrupted all activities further. Reform of the cashew sector in Mozambique commenced with the 1987-90 Economic Recovery Programme. The processing factories were privatised during 1991-94. Through the 1990s a contentious policy issue was the continuation and level of the tax on raw nut exports, designed to support the rehabilitation of the domestic processing industry. Pressure on the Mozambican government to reduce the export tax came particularly from the World Bank. In 1999 a law was passed stipulating that the export tax would be set annually in the range 18-22%. However, even this guarantee of protection did not stop 14 of the 18 factories operating in 1997 closing down by 2001. A major reason for this was that, despite increases in the real price paid to producers for their nuts during the 1990s, the supply response was very poor.

In Tanzania cashew production had originally been stimulated by multinational trading companies but during the 1960s control of the marketing system was assumed by the state. Further, the government’s policy of “Ujamaa” villagisation in the early-mid 1980s led to a further drop in production and the depression of producer prices. Recovery began with two technical assistance projects, funded by the Italian and UK development administrations respectively, to identify the best ways of tackling powdery mildew disease. Resistant tree lines were identified and sulphur spraying was promoted as a way of combating the fungus. This was combined with the liberalisation of cashew marketing in 1991. Whilst production and export of raw nuts rose, the government has opted not to protect its domestic processing industry – despite the availability of several factories (funded by donors in the late 1970s), some of which have never operated. More recently, production has fallen in response to falling prices, which farmers attribute in part to oligopsonistic practices by exporters.

With some parallels to the case of sugar, all major cashew processing industries – except African - enjoy policy support. It is perhaps, therefore, not surprising that, without some degree of protection, local factories in Tanzania or Mozambique cannot compete with the cashew processing industry in India. However, the Mozambique case shows that this is not a sufficient condition for success. To be efficient, factories need to be large, but they then require a large, local raw nut supply, especially in a country where transport costs are so high.

The establishment of new cashew trees is not particularly capital-intensive. Moreover, the land can be inter-cropped with food crops until a tree canopy has been established. Nevertheless, planting new trees is a long-term decision and smallholder households will only plant new trees if they are confident of the medium-long term future of the local cashew sector. McMillan et.al. argue that they require credible signals of commitment from other players in the sector if they, too, are to invest.

In Tanzania, the state demonstrated its commitment to cashew industry development by providing basic public goods (such as research and extension), plus facilitating input supply if required, leaving private buyers simply to compete for cashew output. Private traders were quick to respond to the opportunities created by output market liberalisation because there was a firm commitment by the government. In Mozambique, on the other hand, the state has not been active in promoting cashew, and private buyers have come and gone, at least in part because the ongoing debate over the export tax has produced considerable policy uncertainty.

9.2. *Cotton (Colin Poulton)*

Cotton is produced in almost half of the countries of Sub-Saharan Africa and is a major cash crop in at least 12 of these countries. Millions of households thus depend directly upon it as their main cash earning activity whilst others benefit as labourers on cotton farms or in ginneries. Cotton is one of the few crops in which SSA has increased its share of world trade over the past 25 years, despite significant production expansions in other parts of the world, and, therefore, counts as one of SSA's major "commercial" agricultural success stories.

Cotton is a smallholder-dominated crop in all SSA countries except South Africa. The main reason for this is the labour intensity of seed cotton production and especially of the harvesting process. Hand picked cottons are cleaner⁶³ than machine-picked and historically have commanded a premium over machine-picked cottons on the world market. However, this trend is changing, as the textile industry becomes increasingly sensitive to non-vegetal contamination in lint, which can be disastrous in high speed, automated spinning mills.

At the same time, there are definite challenges involved in supporting smallholder cotton production. Cotton companies have to find ways of supplying affordable, high quality seed to large numbers of smallholders each season, along with expensive pesticides and fertilisers, many of which have to be provided on credit. Economies of scale in varietal research mean that it is rarely optimal for individual companies to undertake their own research programmes. However, there are issues of funding, management and accountability involved in industry-wide programmes, just as there are for public provision of extension advice (which is necessitated by the large number of pests that cotton is susceptible to). Finally, experience shows that strong competition for seed cotton tends to undermine the enforcement of grading, which is necessary to provide farmers with clear incentives to deliver high quality seed cotton at marketing time.

The overall challenge in regulating an African cotton industry is to achieve an appropriate balance between competition – to ensure that producers receive an attractive seed cotton price, amongst other things - and coordination – to tackle the challenges set out above.

The success of cotton sectors in a number of African countries over recent decades shows that cotton is a good crop for African smallholder producers if the necessary support services can be provided to assist their production activities. Historical experience highlights the following as key issues for the development of cotton production in Africa: the role of government in supporting a national cotton industry, sector organisation with horizontal coordination amongst buying/ginning companies, strong company management, exchange rate management, and investment in the development of new seed technology.

9.3. *Food Staples (Peter Hazell and Colin Poulton)*

Africa's demand for food staples is projected to double by 2020. If Africa's farmers could capture a good share of this growth then this would make a significant contribution to growth and poverty reduction on the continent. Increasing the productivity of staples can be a key to releasing land, water and labour for the production of other cash and export crops.

⁶³ When referring to cotton lint, cleanliness means the absence of vegetal matter other than cotton fibre.

In recent decades, by contrast, African food staples production has not kept pace with population growth leading to increased import dependence, worsening poverty and malnutrition, and greater risk of famine. These poor trends in the growth of food staples production in Africa have been caused by declining world prices (currently experiencing some reversal), shifting consumer preference for rice and wheat, low value-weight ratio implying high freight transport costs, and limited productivity enhancement. There has, however, been significant variation across regions in staples performance, with West Africa achieving noteworthy increases in cereals yields. Cassava production and yields have also both risen, most notably in West Africa, but also in other regions.

Farms of less than 2 hectares in size account for 70-90% of all farms in many African countries and for the lion's share of food staples production. Despite some ambitious mechanization programs, farm mechanization has not been successful in most of Africa. Without viable labour saving technologies, small farms with their better per hectare endowments of unpaid family labour retain a competitive edge over large farms.

The majority of smallholder households in Sub-Saharan Africa are net deficit in food production terms and that only a minority sell any food staples at all in an average year. Thus, much of this food staples production is consumed on the farm. Food staples production is pro-poor because increases in cereal yields have an enormous impact on poverty. Not only does it lead to greater on-farm productivity for many poor farmers, but it brings down food prices for everyone else. However, the technical and institutional requirements for achieving increases in food production at national level (increased use of improved seed and inorganic fertiliser, focused on high potential areas) and amongst food deficit households (low cost technologies, suitable to more marginal production environments) may be different.

Food staples have not yet served as the kind of growth sector for Africa that they did in Asia during the Green Revolution. However, two successful African experiences in increasing the productivity of food staples are reviewed. During the 1970s and 1980s governments in Kenya, Malawi, Zambia and Zimbabwe promoted smallholder maize intensification, building on the outputs of past agricultural research by promoting technical packages of improved maize varieties and inorganic fertiliser, supported by credit access and interventions in output markets to support and stabilise producer prices. With structural adjustment, however, these programmes were abandoned as fiscally unsustainable. More recently, there has been a dramatic spread of new, mosaic-resistant and higher yielding cassava varieties, starting in West Africa. Uptake of these varieties has been encouraged by the growth in consumer demand for gari (toasted cassava flour) and by the spread of mechanical graters produced by local artisans. In Nigeria, government policy contributed by banning (in 1985) rice, wheat and maize imports, so as to stimulate domestic food production, and by organising a multi-agency programme to distribute stem cuttings of the new varieties free to farmers around the country. In contrast to maize, the characteristics of cassava reduce the need for pre-harvest support (fertilisers, credit) to smallholder producers or for interventions to stabilise output prices over time – both of which are complex and challenging. Common features of the two success stories include: improved varieties resulting from concerted agricultural research effort, promotion of these varieties through extension, and strong political commitment and policy support.

Finally, the main policy recommendations for promoting the growth, commercialization and trade of food staples include:

- encouraging agricultural research and development;
- strengthening domestic markets. In cereals and especially in southern and eastern Africa, this is likely to entail some mechanism to reduce the inherently high price variability resulting from climatic variation and high transport costs (often in landlocked countries);
- promoting intra-regional trade. Africa exports only 4% of its total cereal production and about 60% of these exports are to other African countries. However, governments are expected by their electorates to take action to ensure food availability in times of scarcity, so effective measures to stimulate aggregate food supply might be required *before* they are willing to make credible, long-term commitments to allow free cross-border trade in staple foods.

9.4. Horticulture (Geoff Tyler)

The high income elasticity of demand for horticultural products means that, as people get richer, they tend to eat more fresh, packaged and added value produce. In recent years, horticulture (for both domestic and export markets) has been an important growth industry for developing countries. In the case of Africa, by the late 1990s the export of fresh produce was approximately equal to two-thirds of the export value of traditional agricultural commodities.

Horticultural exports from developing countries originally centred on products such as bananas and pineapples that cannot economically be grown in temperate climates. They then expanded to embrace the production out of season of crops that can only be grown in the northern regions in the summer, e.g. citrus, grapes, melons, green beans, peas, asparagus, cut flowers. The most recent trend, on which the case study focuses, has been the production of some high value, “temperate” items all year round in developing countries because, in spite of high transport costs, they can be produced more cheaply (even during the northern summer) due to lower labour costs. Examples include washed and trimmed mangetout, prepared fruit salads, trays of prepared mixed vegetables, flower bouquets in retail packs.

Africa is well placed to participate in this market being closest to Europe, which is the world’s largest importer of fresh produce. ACP countries have also benefited from preferential, duty free access to EU markets. Within Africa the industry developed first in Kenya, starting in the 1970s. It then spread, but on a smaller scale, to other countries in the region - Tanzania, Uganda and Zambia - all of which were economically less stable and less well-disposed towards the private sector during the 1970s and 1980s. During the 1990s the industry also expanded rapidly in Zimbabwe and South Africa, where good management and marketing skills have been able to compensate for longer transport distances and higher labour costs.

The African industry embraces both large, multinational integrated businesses and smallholders growing less than one hectare of vegetables. Since vegetable production is highly labour intensive, but not as capital intensive as flower production, there are potential cost savings if production is contracted out to smallholders who can make use of family labour and informal hired labour. In Kenya, and on a smaller scale in Tanzania, there has been substantial participation by smallholders. However, it has proved challenging to sustain this as the safety-related process requirements of supermarkets have become more stringent.

Critical success factors for the horticulture industry include: excellent agronomic conditions (each horticultural product has its own optimal requirements in terms of climate, soils, altitude, day-length etc.); economical and fast transport links; entrepreneurial management and marketing (as high value fresh produce combines attributes of both traditional, undifferentiated commodities and the modern, branded, consumer goods sector), and the ability to satisfy increasing labour, health and safety requirements. In the early years of industry development in Kenya, the growth of mass tourism enabled exporters to take advantage of lower freight rates being offered for the spare cargo space on jumbo jets carrying the tourists on their return journeys. All of the leading exporting countries in Africa have established mechanisms for developing the industry, normally in partnership with Government and aid agencies, allowing shared facilities to be developed and also helping set industry standards which help the country to gain a good reputation for quality.

In the early 1970s CDC participated in the establishment of the industry in Kenya. However, the cost and risks of pioneering proved too high for CDC, which sold its investments, coming to the conclusion that the sector was too entrepreneurial and high risk for an institutional investor. By the late 1980s and early 1990s the high value horticulture industry was well established in Kenya, and CDC, as a development institution, believed it should support projects aimed at spreading the benefits to other African countries. Again, however, some of the projects were complete failures while others proved to be poor investments. As a result of these negative experiences in the early 1990s CDC decided to focus on finance for the expansion and development of existing enterprises. Two ventures financed by CDC-managed venture capital funds performed well and provided investors with good returns on their capital. However, where it took a controlling stake in, and managed, two large-scale, established horticultural ventures, with a view to expansion, it again found horticulture a difficult industry to succeed in. Experience with York Farms in Zambia showed how challenging it is to remain profitable in the fresh produce sector. When good profit margins are achieved they attract increasing competition. Eventually products which start out as high priced, “differentiated” specialities become low margin “commodities”. As with most modern consumer-oriented businesses (whether agricultural, manufacturing or services), there is a need for constant innovation if overall profit margins are to be maintained. Meanwhile, a key lesson from Sulmac in Kenya was the difference between marketing ambitions and implementable plan. Sulmac began large-scale vegetable production without having put into place specific marketing arrangements which offered a secure outlet and adequate profit margins. It was an over ambitious response to a grand strategy which had not been piloted on a more reasonable scale.

In conclusion, even when operating in an established country, it is still possible to fail commercially. Even when the optimum physical and economic conditions are present, the success or failure of the individual enterprise eventually comes down to the entrepreneurial and managerial skills of the senior management team. Although horticulture is a high value industry with an immense potential for success, practical risks are still involved at every stage leading to a critical dependency on management performance.

9.5. *Livestock (Peter Hazell)*

Livestock accounts for a large share of total agricultural GDP in several African countries – one third in Ethiopia, half in Kenya, two thirds in Sudan and 80 – 90% in Djibouti and Somalia. There has been a substantial increase in the number of livestock in Africa since

1980/82, with the fastest growth in pigs, chickens and goats. There has been a commensurate increase in livestock production, with rates of increase that are comparable to the increase in production of total cereals over the same period (about 75%).

However, in general the livestock sector is a “missed opportunity” in Africa. Africa has lost out on its traditional livestock exports, even at a time when world markets for livestock markets have grown rapidly. The problems have been an inability to increase productivity and reduce unit costs, and to control livestock diseases and meet increasing international demands for animal certification and traceability. Imports of most livestock products have either declined or remained flat since 1980-82. However, there has been an explosive growth in chicken meat, driven by the dumping of unwanted chicken parts, particularly surplus legs and wings, by the EU and US.

Using an FAO/World Bank typology, the paper distinguishes four main types of livestock systems: (a) Pastoral and nomadic/semi-nomadic, which are low input and low productive subject to extreme drought risks, (b) mixed crop/livestock farming of which most production is consumed locally and very little enters the international market, (c) intensive peri-urban production of which very little output is exported and instead caters to the increase in domestic urban demand in recent years, and (d) cattle ranching which is found mostly in southern Africa and whose major output is meat which is exported to Europe.

Beef and live animal exports from Botswana, Namibia and Zimbabwe prospered until the 1990s, but have since struggled. The case study focuses on the Botswana story, where post-Independence industry development was driven by the Botswana Meat Commission (BMC), set up in 1965. BMC was given a monopoly over the marketing of all live cattle and beef exports, so as to maintain capacity utilisation at the country’s single abattoir (Lobatse) in the face of attractive competition from the southern African regional market for live animals. It was also tasked to ensure that the quality and health standards of major export markets were met. The BMC had high level support from the government, and this proved to be very important for sustaining public investment in controlling cattle diseases and in representing cattle producers’ interests in trade negotiations (e.g. with the EU).

The BMC performed remarkably well in terms of sales, exports and prices until the 1980s, but there was then a downward trend in world beef prices and, following an outbreak of foot and mouth disease in 1977, exports to the lucrative EU market were only allowed to resume under tight quotas. Subsequently, the competitiveness of the beef export chain vis-à-vis sales to the growing domestic and regional markets has been further undermined by an appreciation of the pula, rising administration costs within BMC (and unprofitable investments in canning, tannery and pet food units) and the growing cost of meeting EU veterinary standards, especially controlling foot and mouth disease. These factors are all contributing to a diminishing supply of export grade animals for slaughter, whilst BMC is in financial trouble, running significant deficits most years. As a result, political support for sustaining significant public expenditure in the sector is diminishing, especially as most of the benefits are reaped by relatively few large cattle ranchers.

There are two major livestock trading regions in SSA that draw primarily on extensive pastoral systems: The Greater Horn of Africa (GHA), which has about 100 million cattle and 175 million sheep and goats, and west Africa which has about 50 million cattle. Most exports go to neighbouring countries in both regions. In the GHA region, for example, cattle move from Ethiopia and Somalia to Kenya. Sudan is about the only significant exporter of live

animals and meat outside the region, selling mostly sheep and sheep meat to the Gulf countries. However, several countries export significant amounts of hides and skins, much of which trade is destined for the international market. In West Africa, the main livestock exporters are Burkina Faso, Mali and Niger, and the main importers are Cote d'Ivoire, Ghana and Nigeria. There are virtually no exports to countries outside the region. Most producers are relatively poor and depend heavily on income from livestock production, often selling in order to buy food staples.

In some contrast to the southern African case, regional and national markets are generally underdeveloped, constrained by low per consumption levels; poor infrastructure; high direct, indirect and illicit taxes; lack of market information; insufficient trader credit; and again inadequate disease control and animal certification. Production also occurs in remote areas facing high transport and transactions costs.

Finally, the dairy industry in Kenya stands out as a success story. Dairy development in Kenya can be traced back to the colonial era when commercial farmers successfully lobbied the government for a range of publicly provided financial and policy supports (including quarantine laws, veterinary laboratories, artificial insemination services, and marketing and price controls managed through the Kenya Cooperative Creameries). These were extended after Independence to give support to smallholder farmers, with production rising steadily through the 1970s then much faster in the 1980s. Liberalisation in the early 1990s led to a dramatic switch to the marketing and consumption of raw milk (cheaper for poor consumers), whilst the demise of Kenya Cooperative Creameries (due to political interference, mismanagement and increased competition) increased the degree of price instability, especially for producers. KCC was revitalised in 2003 and optimism within the sector again appears high.

Africa's livestock industry faces many challenges. The more successful experiences with beef in Botswana and milk in Kenya show the importance of sustained national efforts to build up the livestock industry through public investments in disease control and genetic improvements and strengthening market institutions to enable them to cope with perishable products, highly seasonal supplies, and health and safety standards.

9.6. Oil Crops (Colin Poulton and Geoff Tyler)

During the last 50 years, Africa has shifted from being a major exporter of oil crops to a substantial net importer, in the face of the relentless and continuing advance of the oil palm as the world's cheapest source of vegetable oil.

The groundnut (peanut) sector in Senegal represents the main example of export-oriented oilseeds production in Africa in recent decades. As of 1970 the sector represented "a success story for the rapid transformation of a subsistence economy into an export-oriented cash crop economy" (Kelly et al. 1996). However, the world does not stand still and the sector has struggled to retain its international competitiveness for most of the subsequent period, gradually losing ground to other groundnut producing countries and substitute products.

Our general observation is that African export sectors have enjoyed sustained success where they benefited either from optimal agro-ecological conditions or from very high labour intensity. The Senegalese groundnut sector enjoys neither of these advantages. The soils of

the so-called Peanut Basin have poor structure and low organic matter content, while the area suffers frequently from dry years. Groundnut processing can be labour-intensive, but the same processes can be readily mechanised.

The foundation for Senegal's competitive position was laid in the colonial period. Major emphasis was placed on varietal and other research and associated extension, such that by 1951 half of the groundnut production in the territory was attributable to improved varieties. Both French and national researchers contributed to groundnut research in Senegal after independence, leading to the successful development and extension, in the early 1970s, of shorter-cycle peanuts, which are well-adapted to conditions in the drier zones. In addition, major efforts were made during the 1960s to promote animal traction and fertiliser use amongst groundnut farmers, whilst during the 1970s locally manufactured (artisanal) harvesting blades were increasingly used in conjunction with animal traction for groundnut harvesting.

Until 1967 the sector enjoyed preferential prices within the French market. However, since the removal of this privilege, a casualty of France's negotiations with neighbours to form the European Economic Community (later EU) single market, the sector has been exposed to the full force of international competition. To remain competitive in such circumstances, a sector must continually increase its productivity, so as to match improvements achieved in other countries. Unfortunately, since the mid-1970s there are no examples of major technical change within the sector to rival shorter-cycle peanuts or animal traction and associated mechanisation.

Aside from maintaining its initial momentum in research, the biggest challenge facing the Senegalese groundnut sector has been that of evolving efficient institutions to enable farmers to access sufficient quantities of high quality inputs (most notably, seed and fertiliser), without simultaneously penalising them through depressing the producer price. The state-led approach in the 1960s and 1970s became increasingly expensive, especially when credit forgiveness was offered in response to periodic drought years. Reforms were introduced from 1980 onwards. Private traders have gradually been allowed back into groundnut marketing, lowering marketing costs within the sector. However, the credit system has never recovered to service the majority of producers, whilst the viability of fertiliser use declined following the removal of fertiliser subsidies in 1985. National production has been in gradual decline since 1975.

The case study also documents an attempt at import substituting oil crop production in East Africa. In the mid-1980s CDC participated in a high profile venture aimed at promoting national oilseed production concentrating on sunflower production in Kenya, working with East African Industries (EAI) Ltd to provide inputs and technical advice to farmers. A new joint venture was created in 1986 called Oil Crop Development Ltd (OCD) to provide inputs and services on credit to contracted growers in return for exclusive right to buy the grower's crop, with the cost to be recovered from the value of the crop. EAI in turn undertook to ensure a market for the resulting vegetable oil. OCD failed for a number of reasons, including setting goals that were too ambitious for administration to handle, hasty implementation of the scheme leaving insufficient time to assess credit-worthiness of each recipient of input packages, and unequal dependency between OCD and EAI resulting in the EAI being able to dictate its own terms to the OCD.

Nevertheless, import substitution possibilities clearly exist in Africa if local producers can compete – possibly with modest levels of protection – against imported palm oil. A prerequisite for the sustained adoption of specific crops is that potential buyers offer attractive prices that lead to good margins for the growers. This can be supplemented by special measures (research, training etc) but such methods cannot be substitutes for attractive margins in the long term. Producers are unwilling to make necessary investments to raise production without some sort of guaranteed market.

9.7. Post-WW2 UK Development of Commercial Agriculture in Africa (Geoff Tyler)

This case study aims to identify aspects of colonial and post-colonial agricultural development experience that are of relevance today and which illustrate some of the practical advantages and drawbacks when governments and government agencies take on a leading role.

One reason for government intervention has been the “infant industry” concept that free-markets alone will not achieve an optimum economic development path and that a certain critical mass in terms of size and experience is necessary before international competitiveness can be achieved.

In the immediate aftermath of the Second World War, Britain was short of food and raw materials. The Ministry of Food was therefore keen to promote increased production from colonies. As a result, the Colonial Development Corporation (CDC) was created in 1947/8 under the Colonial Office. CDC was not envisaged as an “aid” agency or simply being a bank but as an agency that would “prefer venture to caution”. During the period of 1948-51 many of its schemes did not prove to be successful because of investments made in projects that did not have a proven agricultural basis for commercially successful production. However, the decade of 1952 to 1962 proved to be years of recovery and consolidation. The cases of Tanwari (wattle extract for the leather industry) in Tanzania and Usutu (pines for the pulp industry) in Swaziland demonstrate two contrasting cases of “enclave development” and commercial success respectively.

These experiences demonstrate that pioneering agricultural development is both expensive and risky. A supportive and stable macro-economic and political environment was a necessity but not a sufficient condition for success. The projects of CDC proved to be more successful when the organization worked with experienced private sector partners or was involved in expansions and rehabilitations of existing ventures such as replicating crops already familiar to a country or extending established estate crops to smallholders. The solid performance of CDC in the 1950s created the confidence for the British Government to retain CDC after decolonisation and utilise the renamed Commonwealth Development Corporation as its main instrument for promoting commercial economic development.

During 1964-1983 CDC worked under the then dominant framework of state led development. Despite many successful projects that established sustainable businesses, there was growing criticism that this approach also financed the unsustainable growth of the African public sector bureaucracy. From the mid 1980s CDC increasingly supported projects with private sector partners. However, it was difficult to find experienced and reputable private sector sponsors willing to invest substantial sums in agribusiness in high-risk Africa, and in its desire to support private sector development CDC undoubtedly made some unwise

investment decisions. From 1997 plans were made to turn CDC into a public private partnership, then to privatise it. Given CDC's poor recent track record as a promoter and developer of 'world-class' agribusiness ventures, a strategic decision was taken in 2000 to sell off most of its agribusiness portfolio. However, a further change in the privatisation approach has meant that, since 2006, agribusiness has again been promoted strongly through a new African Agribusiness Fund. Recent commercial performance has been good, but it is too early to assess the long-term viability either of CDC's latest incarnation or of the African Agribusiness Fund.

Thus, CDC's changing investment policies, reflected in its African agribusiness portfolio, reflect the twists and turns of international development policy and fashion.

9.8. *Sugar (Geoff Tyler)*

Sugar has always been a "political" commodity. In the twentieth century the world sugar economy was dominated by regulation, protection and subsidies, which resisted all attempts by GATT and WTO to achieve meaningful reform and liberalisation. Support for a high cost, domestic cane and/or beet industry in most major developed countries (USA, EU, Japan) led to the "dumping" of surplus sugar on world markets. As a result, prices on this "residual" free market have normally been so low that even the world's lowest cost exporters – Brazil, Australia, Thailand, Guatemala – have had to find ways to subsidise their exports (although Australia abandoned this in the late 1990s) mainly by blending higher prices achieved in protected domestic markets with those available through exports.

This international context of a "managed" sugar economy is important when reviewing and assessing the development and performance of the sugar industry in Africa. Normal economic criteria of international competitiveness are difficult to define, and a liberal regime of open access to sugar imports at the residual free world market price would be commercial suicide for even the most efficient sugar producer. "World class" needs to be defined in terms of production costs, rather than competitiveness in the artificial world market. Government regulation and intervention is not something to be deplored but is essential. However it needs to be undertaken wisely and efficiently if it is to yield outcomes that are reasonable for both efficient producers and the sugar consumer and also to ensure that the country fully benefits from any preferential access to high priced export markets, e.g. EU and US quotas.

Africa as a whole is a net sugar importer. However, five African countries – Swaziland, Zimbabwe, Zambia, Malawi and South Africa - are consistently ranked amongst the lowest cost sugar producers in the world (after Brazil and on a par with Australia). The low cost performance of these industries has been achieved due to a combination of ideal growing conditions for sugar cane, availability of low cost labour, a long dry season to facilitate harvesting, large scale efficient factories, private ownership or public/private joint ventures that are able to ensure technical and economical efficiency of large scale ventures and supportive government policies. Ideally these world class industries would have expanded further. However, since exports to the residual free world market have normally been at a financial loss, most of these countries have limited their core production capacity to meeting domestic requirements, exports under any available EU and US quotas and regional African markets.

Except in South Africa, African sugar industries tend to consist of a small number of factories, usually at long distances apart. There has, therefore, been mutual dependence between cane growers in one area and a single factory capable of processing the (highly perishable) cane. A key decision, therefore, is whether a factory should produce cane on its own land or contract with independent growers (or opt for a combination of the two). In most cases the industry in Africa has opted primarily for large-scale estates owned by the factories, supplemented by, but not dependent upon, independent growers. However, where independent, large-scale (e.g. over 100 ha) commercial farmers have been given the opportunity to supply cane under contract, for example in Swaziland, Zambia (and in Zimbabwe prior to the seizure of white-owned cane farms in 2002) they have achieved higher yields and higher gross margins than on nearby company estates. This model has also been extensively employed in South Africa with its large-pool of experienced, large-scale commercial farmers.

In addition, in many countries there has been a motivation to spread the perceived benefits of the sugar industry by promoting the production of cane by smallholders. Two basic models were developed – for outgrowers and for settlers. The most prominent example of outgrower production occurs at Mumias in western Kenya. This is feasible because cane is grown as a rainfed crop in Kenya, without irrigation and so without the need to establish and operate an expensive and complex irrigation infrastructure. The operation has been a practical success, albeit with many challenges (due, inter alia, to political interference and periodic reversals of the policy of tariff protection) and also subject to some criticism regarding the quality of service and prices received by the outgrowers. Meanwhile, settlement schemes have been developed where sugar is to be grown as an irrigated crop, with a requirement for an expensive water distribution system and for costly land levelling. Whilst good yields and production of sugar-cane have often been achieved, translating into relatively high incomes for the settlers, the costs of administering the schemes has been high. The intensity of supervision and control by management has at times meant that settlers were more like profit-sharing hired labourers than true, independent farmers, which in turn attracted criticism. Moreover, having some responsibility for the land, scheme management have found themselves getting involved with the details of family and personal lives, which distracts from their core tasks of sugar production.

9.9. *Tea (Geoff Tyler)*

Black tea is traditionally a plantation crop that requires a heavy capital investment in order to clear land, raise tea seedlings in a nursery, plant out, weed and fertilise for several years prior to achieving the first commercial harvest, transport of the green leaf, and for tea processing. The leaf deteriorates quickly once plucked, so there has to be total co-ordination between field and factory. Nevertheless tea production and harvesting is not normally mechanised and is therefore labour intensive. Tea is normally grown as a rainfed crop and once established, it is a relatively robust, tolerant crop that can withstand periods of neglect. It is harvested and sold for most of the year and generates a regular source of income. Since tea must be processed within six hours of plucking it is feasible to extend credit and services to contracted outgrowers confident that the outgrower will, ultimately, have to honour his obligation to sell his green leaf to the factory. Thus, smallholders are not seriously disadvantaged

Large-scale British-owned tea plantations in India and then in Ceylon (Sri Lanka) transformed tea into a popular, healthy low-cost beverage all over the world. Following independence,

Indian and Sri Lanka took steps to gain control over the largely British-owned tea sector. As a result many tea companies took the strategic decision to develop new sources of tea production in Kenya, Uganda, Tanzania and Malawi. Between 1947 and 1973 tea production in Kenya and in the rest of East and Central Africa grew by 9.6% p.a. and 9.5% p.a. respectively and their combined share of world exports also increased dramatically.

Whereas tea production in Uganda, Tanzania and later Malawi declined, growth in Kenya rose from 14,000 tonnes in 1960 to nearly 200,000 tonnes in 1990. Moreover this growth incorporated the development of the world's largest smallholder tea production scheme – the Kenya Tea Development Authority.

The Commonwealth Development Corporation participated in the development of the African tea industry in several countries. CDC's participation through the Kenyan Tea Development Authority conceptually, financially, and technically was very successful and that KTDA grew into the biggest single tea growing institution in the world. At one point it was estimated that nearly seven percent of Kenya's population was dependent upon KTDA in one way or another for their livelihood.

Contributory factors to this success included secure individual land-titles, sound macro-economic management and low taxes. Over time, KTDA benefited from being part of a wider, successful industry with all the advantages of industry-wide economies of scale in terms of input services, packaging, transport, auction costs, shipping etc that that entails. It is also noteworthy that many Kenyan leaders (whether political or civil service) participated in one aspect or other of the tea industry (and other agro-industries) and thus had a personal stake in its success, i.e. Government policy was to increase private Kenyan participation in its agricultural export industries rather than to nationalise them.

KTDA's early success was also due to its high level of integrity, which gave confidence to smallholders that they could deliver their leaf to KTDA and then would be paid a fair price without excessive deductions or KTDA overheads. However, as KTDA grew into one of the biggest enterprises in Kenya, politicians and other powerful individuals recognised that there was money and patronage to be squeezed out of KTDA. By the 1990s KTDA had become a politicised institution, eventually losing its monopoly rights and being privatised as the Kenya Tea Development Agency Limited in 2000, through the issue of shares to its smallholder growers.

Perhaps the most important lesson from the long-term history of tea is the reality of global competition. The policy in India and Sri Lanka of levying substantial taxes on tea exports only accelerated the growth of competition elsewhere. A second major lesson derives from the positive experience of outgrower, smallholder tea in Kenya. This demonstrates that smallholders have the capacity to respond to economic incentives, perform competitively and specialise when the overall market economy is functioning well.

9.10. Tobacco (Colin Poulton, Jonathan Kydd and Dalitso Kabambe)

Tobacco in Malawi is an export success story albeit one where the benefits from success have rarely been shared equitably within Malawi.

Tobacco is a high value crop with average international prices for tobacco leaf currently in the range US\$2500-3000 per ton. Although consumption of tobacco is strongly discouraged in developed countries, demand for cigarettes is growing strongly in developing countries that now account for 70% of global cigarette consumption. Generally small-scale family farms dominate tobacco production around the world. In Malawi tobacco production has historically been concentrated on large-scale farms. However, in recent years smallholder producers of burley tobacco have come to dominate the sector, following the lifting of restrictions on their participation. Malawi, after Zimbabwe, is the second largest tobacco producer in Africa. These two countries account for just under 70% of tobacco produced and 87% of tobacco leaf exports in Africa between 1965 and 2004. In Malawi the tobacco industry accounts for around 60% of total export revenue, provides employment to around one million people (20% of the total labour force) and is the main source of household (cash) income in the major growing districts.

While the growing of tobacco does not require particular care, skill and care are required in the initial raising and transplanting of seedlings as well as during harvesting and post-harvest handling. The entire production process is labour-intensive and cannot readily be mechanised.

Tobacco production in Malawi faces three main challenges: Yields are falling, quality is falling, and there are high transaction costs associated with the current marketing arrangements. These emphasise the importance of developing appropriate institutional arrangements if a competitive and profitable export industry is to be built (or sustained) on a smallholder production base.

This case study also highlights the challenges involved in developing an export sector where the international market is highly concentrated. For many years, the Malawian elite maintained close relationships with the major international tobacco buyers. This created the auction system that served the Malawi tobacco sector well when large-scale producers dominated the sector. However, with the switch towards a smallholder production base the absence of intermediate institutions to link the majority of smallholder producers to the auction system leaves the suitability of the auction system open to question. Contract farming is the most viable alternative but it is not compatible with the continuation of the auction. The growth of burley tobacco production in Brazil highlights the fact that improved institutional arrangements are essential if Malawian tobacco is to maintain its competitive position in the world market and continue to contribute to Malawi's poverty reduction goals.

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