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

All-Africa Review of Experiences with Commercial Agriculture

The African Sugar Industry – A frustrated Success Story

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The African Sugar Industry – a Frustrated Success Story

Background - A Most Political Commodity

Sugar (specifically sucrose) has always been a "political" commodity. It is not strictly essential to people's diet but it has many of the characteristics of an addictive drug. The craving for sweet food is so strong, and sugar is so relatively affordable, that control of the trade in sugar has historically been an important source of personal wealth, taxation and political power, similar to salt and tobacco.

The West Indies slave trade grew on the back of Europe's demand for sugar, derived from the labour-intensive production of the tropical sugar cane plant. In 1763, after defeat in the Seven Years War, France was given the option of ceding Canada or Martinique to Britain. It chose to relinquish Canada rather than give up the sugar island. During the Napoleonic Wars in the early nineteenth century France responded to a British naval blockade, which prevented the import of sugar, by promoting the production of sugar from beet, a policy which was continued after the war to avoid future reliance on imports.

The outcome in the twentieth century was a world sugar economy dominated by regulation, protection and subsidies which resisted all attempts by GATT and WTO to achieve meaningful reform and liberalisation. The global sugar economy is essentially "managed" rather than allowing free market forces to hold sway.

It is also a complicated economy. Sucrose is a consumer good sold directly to the public. It is also a raw material for the food and beverages industry and for the production of industrial ethanol mainly used as a gasoline substitute. There are other nutrative (e.g. fructose, glucose) and non-nutrative (e.g. saccharin, aspartame) sweeteners available. Sucrose can be produced from tropical sugar-cane or temperate sugar-beet. The cane and beet is normally processed in large, capital intensive factories (but can be processed in small-scale units to produce low quality sugar products, e.g. jaggery) that are owned by multinational corporations, national private businesses, co-operatives or the state. The cane and beet can be grown on large-scale, mechanised estates or on small-scale labour intensive peasant farms.

Most major developed countries (USA, EU, Japan) protect a high cost, domestic cane and/or beet industry with high tariff barriers and import quotas, as an extreme example of their more general policy of protecting their agricultural industries. The results have sometimes been quite perverse.

In the USA for example, the sugar price has been so high that it has artificially stimulated the formation of an alternative sweetener industry – High Fructose Corn Syrup (HFCS) derived from maize starch. This now accounts for approximately half of the US consumption of nutrative sweeteners. The USA does still import some raw sugar from selected countries, (about 1.1m tonnes, at a preferential price based on US domestic prices) essentially as a form of bilateral aid.

In EU the domestic market price has also been very high. This has not led to the production of substitutes since the EU effectively banned the establishment of a large-scale HFCS industry. However an initial absence of effective controls on beet growing meant that a very large surplus of beet sugar developed which could only be disposed of by exporting with the help of subsidies, to cover the difference between the EU and world market prices.

The UK traditionally gave preference to colonial and then Commonwealth sources of raw cane sugar for refining in the UK. When the UK joined the EU in 1971 it was agreed to continue this arrangement for poorer countries within the framework of the Lomé Convention so that some countries have been given quotas to sell a total of around 1.7m tonnes of raw sugar to the EU at the preferential EU regulated price. The consequence however has been to increase the surplus sugar which the EU has "dumped" on world markets.[1]

The world's largest consumers of sugar, China and India, have large, moderately high cost, protected sugar industries. With world markets prices normally lower that the domestic price, they have not sought to be consistent exporters and have hovered between being net importers and net exporters. The size of their potential imports or residual exports are however so large and unpredictable that they can have a major impact on world markets.

World sugar prices on the residual, free market have normally been so low that even the world's lowest cost, major exporters – Brazil, Australia, Thailand, Guatemala – have all had to find ways to subsidise their exports (although Australia abandoned this in the late 1990's) mainly by blending higher prices achieved in protected domestic markets with those available through exports. Brazil, the world's largest producer of sugar cane and exporter of sugar, has been able to support its industry by creating a massive sugar cane for gasohol programme, as a substitute for petrol in car engines. This now accounts for more than half the usage of sugar cane in the county.

Globally, the outcome has been an economic nonsense, with the world's second largest exporter – the EU – being one of the world's highest cost producers. Prices in the residual, free world market have fallen as low as US$150/tonne, (e.g. in 1999, and from 2002 to 2004) which is less than the marginal cost of even the most efficient producers. Exceptionally, the world market price has been increasing since mid-2005 and in 2006 has reached a 25-year high of nearly US$500/tonne, which ironically is close to the EU guaranteed price of US$524/tonne.

There have been moves in recent years under WTO impetus to cut agricultural subsidies, and tariff levels and to give freer access for poorer countries to developed country markets. Following a joint complaint from Australia, Brazil and Thailand, the WTO ruled, in 2005, that the EU sugar regime was in breach of WTO regulations, and as a result major changes are due to be implemented over the next five years. The EU

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[1] To confirm the economic nonsense of the situation, many countries with a quota to supply the EU are net importers of sugar, the quota being granted purely as a form of aid and political patronage.

guaranteed price is to be gradually reduced to US$335/tonne by 2009/10 and the EU is to end export subsidies.

A significant consequence is that countries with quota access to the EU market will similarly receive the lower guaranteed sugar price. In return the least developed country suppliers have been offered "unrestricted" access to the EU market, but only provided their combined exports do not increase by more than 25% p.a.

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 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.

Contrasting Fortunes of the Modern African Sugar Industry[2]

CDC has participated actively in the African sugar industry as owner/manager, minority shareholder and lender, working with both private sector partners and with state corporations. Appendix 1 summarises CDC's sugar industry investments since 1948.

The "world class" players

Africa is not the world's largest sugar producer, but it embraces some of the world's best[3] production facilities. In 2004/5 Africa produced 8.2m tonnes of sugar, imported 6.6m tonnes and exported 3.8m tonnes. In comparison world production was 140.7m tonnes and world exports were 47.8m tonnes. While Africa is therefore a net importer, five African countries are consistently ranked amongst the lowest cost sugar producers in the world (after Brazil and on a par with Australia):

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[2] The author was an agricultural economist with a specialist international sugar consultancy (Tate and Lyle Technical Services, 1980-82) during which time he undertook field studies of the Sudanese, Ethiopian and Swaziland sugar industries. While with CDC he served as a non-executive director of Zambia Sugar, Kaleya Smallholders and Nanga Farms from 1993-98. He was also involved in the production of unsuccessful bids to acquire sugar estates and factories in Ivory Coast and Tanzania.

[3] Best in the sense of agricultural and factory productivity and cost of production. "Quality" is not inherently a critical factor in sugar since sucrose is a simple, chemical compound. Ex-factory, bulk sugar is priced essentially according to its purity and the cost of refining. Raw sugar is typically 96% sucrose. It can be refined to reach almost 100% purity and the extent of refining done in practice depends on requirements in different consumer and industrial markets.

Zimbabwe

- 2 large private factories, (Hippo Valley – owned by Anglo American - and Triangle) threatened with confiscation.
- Total production reached nearly 600,000 tonnes from 45,000 ha of irrigated cane (two-thirds estate, one-third outgrowers) prior to land seizure in 2002, and has since fallen below 500,000 tonnes.
- Traditionally a large-domestic market (375,000 tonnes). EU quota of 59,000 tonnes and USA quota of 12,000 tonnes.

Malawi

- 2 large estate/factories, (Nchola and Dwangwa) both owned by the Sugar Company of Malawi (SUCOMA) producing around 260,000 tonnes per year in total.
- Developed by Lonrho and acquired by Illovo (76% shareholding) in mid-1990's.
- CDC sponsored, and initially managed, a smallholder settlement scheme at Dwangwa, under the auspices of the Smallholder Sugar Authority.
- Approximately half the sugar is exported, of which 55,000 tonnes is under EU and USA quotas.

Zambia

- 1 large estate and factory (Nakambala) producing 230,000 tonnes per year, plus a small-scale factory recently established in the north of Zambia.
- Nakambala developed in the 1960's by Tate and Lyle with support from CDC.
- Nationalised in early 1970's but Tate and Lyle retained as managers, then repurchased by Tate & Lyle in 1995 with CDC as minority shareholder. Acquired by Illovo in 2000 (90% shareholding).
- Smallholder settlement scheme developed by CDC - the Kaleya Smallholders Company, with 160 settlers.
- Half the production is exported. There is a 23,000 tonne EU export quota and the rest is sold regionally.

Swaziland

- 3 large estates and factories producing around 600,000 tonnes sugar per year, and accounting for around 25% of GDP:
  - **Ubombo** developed by Lonrho. Started in 1958. Acquired by Illovo (60% stake). Swazi Nation has 40% stake.
  - **Mhlume** developed by CDC and South African partner (Huletts, subsequently bought out by CDC). Started production in 1960. Swazi Nation acquired 50% stake.
  - **Royal Swazi** started in 1980. Majority owned by Swazi Nation and Government, with Tate and Lyle as managers and CDC as minority shareholder.

- Mhlume and Royal Swazi merged in 2001 and listed on the Johannesburg stock market
- CDC developed a smallholder settlement scheme in the early 1960's (Vuvulane Irrigated Farms (VIF), with around 270 farmers, supplying Mhlume.
- There are over 20 large-scale commercial growers (over 50 ha) as well as sugar company estates.
- Export quotas of approximately 180,000 tonnes to EU and 20,000 tonnes to USA.
- Industry operates within a framework established by Act of Parliament and regulated through the Swaziland Sugar Association, which is responsible for joint marketing and which developed bulk handing facilities for export via Maputo.

South Africa

- The largest sugar industry in Africa producing an average of 2.7 m tonnes per year, of which half is exported onto world markets.
- There are 50,000 registered cane growers, of which 48,000 are small-scale, supplying 14 factories.
- There are several major private groups, of which Illovo is the largest with 5 factories and 4 estates, Tongaat-Hulett has 4 factories, and Transvaal Sugar has 2. Two factories have been bought by Black Empowerment groups and are managed under contract by Illovo.
- Regulated via the South African Sugar Association

Typically these countries have been able to produce sugar at an average operating cost of around US 8-11 cents/lb (US$175-240/tonne), compared with 7.5 cents/lb in Brazil, the world's lowest cost producer. The low cost performance of these industries has been achieved due to a combination of:

- inherently good growing conditions for sugar cane (good soils; availability of supplementary irrigation; wet, hot summers for plant growth; cool, sunny, dry winters for conversion to sucrose) which produce high yields of sucrose per hectare, typically over 1 tonne per month. The world average yield of sucrose from cane is around 0.5t per month.
- availability of relatively low cost labour (cane growing and harvesting can be mechanised but labour intensive methods are generally better)
- a long dry season to facilitate harvesting and allowing sugar factories (which are capital intensive) to operate for at least 180 days per year, i.e. high capacity utilisation and better spread of overheads
- large-scale, efficient factories crushing up to 10,000 tonnes of cane per day and producing up to 200,000 tonnes of sugar per year to achieve economies of scale and also capable of efficiently using bi-products, e.g. industrial alcohol from molasses and using surplus energy for sugar refining.

- private sector ownership or private/public joint ventures to ensure technically efficient and economical operations of complex, large-scale agro-industrial ventures, e.g. the scheduling and operation of cane deliveries to the factory, up to 10,000 tonnes per day in some cases, is a major logistical exercise. Following a series of acquisitions, the industry in the region is now dominated by the South Africa based sugar specialist, Illovo.
- normally a supportive government policy environment, including effective protection from imports at residual world market prices, which provided private sector investors with the confidence to risk the large amount of capital required to promote new sugar factories and estates. (There have been exceptions. For example, the industries in Zambia and Zimbabwe have, at times, had to survive domestic price controls aimed at making sugar "affordable" for consumers but at the risk of insolvency for the producers. The future of the industry in Zimbabwe is uncertain.)
- Apart from South Africa, these countries are land-locked, providing some natural protection against imports

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.

(In 1977 Swaziland decided to implement an aggressive expansion policy by establishing the Royal Swazi factory and estate, with majority ownership by Swazi authorities. All of the extra sugar had to be sold into the regional and world markets, but by law Royal Swazi was entitled to a share of the pre-existing EU quota. This ensured that Royal Swazi was financially viable, but at a cost to the two older producers.)

As South Africa was excluded from the Lomé Convention it has been obliged to sell almost all of its surplus sugar onto the world market. Financial viability has been maintained by blending with higher prices achieved in its protected domestic market.

In all of these countries sugar-cane is grown under irrigation, and availability of water is potentially a physical constraint on further industry growth. Nevertheless had there been access to export markets at "fair" prices the sugar industry would have grown more rapidly and more extensively in these countries.

World Class Potential

Several countries have good growing conditions and export potential, but for various reasons this has not been fully realised:

Ethiopia

- Three high quality, irrigated estates and sugar factories were developed by a Dutch company, HVA, in the 1950's and 1960's – Wonji, Shoa and

Metahara, with a combined capacity of 190,000 tpa. Sucrose yields were extremely high.

- They were nationalised following the revolution of the early 1970's. During the early 1980's, when visited by the author, under the Ethiopian Sugar Corporation they were still producing efficiently
- Development stagnated as a result of the civil war. A new sugar factory, Finchaa, which was due to be developed in the early 1980's, finally started production in 1999 with an annual capacity of 85,000 tonnes.
- Overall production is now around 250,000 tonnes of which 40,000 tonnes is exported. Ethiopia has a 15,000 tonne EU quota.

Sudan

- Originally four irrigated estates/factories were developed by the Government. During the early 1980's, when visited by the author, they were performing poorly in spite of good growing conditions, due to poor management, poor factory design, corruption and a difficult economic and political environment.
- Nevertheless, Sudan is a net exporter of sugar, (Sudan has a 17,000 tonne EU quota) due mainly to a very large Sudan/Arab joint venture developed in the early 1980's – Kenana. Production is around 400,000 tonnes from 69,000 ha of cane. However as a 100% export oriented venture with limited access to preferential markets it has suffered from low world market prices. Government is negotiating with Arab investors to develop a second, massive new project – the White Nile Sugar Project.

Tanzania

- Four sugar complexes in the country (Kilombero, Mtibwa, Kagera, TPC).
- National demand is around 350,000 tonnes while production is now 250,000 tonnes having fallen to 110,000 tonnes prior to privatisation in 1998.
- Kilombero is the largest sugar complex, accounting for about half the national output, (2 medium-scale factories, large-estates, outgrowers). It was developed in 1960 as a joint venture with CDC/IFC/FMO funding and a Dutch managing partner, primarily for import substitution.
- It was nationalised in 1969. Performance steadily declined under the difficult operating conditions of 1970's and 1980's Tanzania.
- In 1998 Kilombero was acquired by Illovo (in competition with CDC). After an expensive and difficult period of rehabilitation and restoration of labour disciplines, production has recovered to over 130,000 tonnes of sugar per year. Two-thirds of the cane is supplied from company estates, and one-third from outgrowers
- Tanzania has a 22,500 tonne EU export quota, but this can only be met by compensating with (cheaper) sugar imports.
- Smuggling of sugar at free world market prices has been a major problem for the sugar industry, while consumers complain of high prices charged by the factories

Mozambique

- During the colonial period Mozambique had a substantial sugar industry producing partly for the domestic market and with preferential access to the Portuguese market.
- The industry collapsed during the course of the independence struggle and subsequent civil war, with production falling to 20,000 tonnes in total by the early 1990's.
- The industry has been privatised. CDC decided not to participate, regarding the existing factories and estates as too small to be "world class".
- Illovo acquired 76% stake in Maragra estates and factory, but even after rehabilitation production is still only around 60,000 tpa, small by today's standards.
- In spite of being a net sugar importer, Mozambique has an 8,500 tonne EU quota and a 13,000 tonne USA quota.

Import Substitution Industries

Several countries have reasonable growing conditions, which have encouraged the development of import substitution industries, e.g.

Ivory Coast – Four state-owned factories, producing 160,000 tpa in total in the early 1990's. Privatised in 1997. EU and USA export quotas of 28,000 tonnes in spite of being a net sugar importer. The industry has suffered post privatisation as a direct result of the civil war and also from a related increase in smuggling.

Cameroun – Two state-owned sugar factories, producing less than 50,000 tpa in total and in a "ruinous state" prior to being merged and sold to French investor, Vilgrain, in 1998. Combined production reached 80,000 tonnes in 2000, with cane yields of 65 tonnes/ha at 10% sucrose content. Sugar imports around 30,000 tonnes.

Nigeria – four state-owned sugar factories were developed (including Savanah Sugar, established by CDC) but badly managed. In 1990 they produced 60,000 tonnes of sugar in total. By 2004 all had ceased production pending privatisation.

Uganda – Following nationalisation and civil war production had collapsed to around 25,000 tonnes by 1990. Privatisation and rehabilitation has raised production to around 150,000 tonnes from several medium-scale factories, e.g. Kingara producing 50,000 tpa. Imports of around 25,000 tpa are still needed.

Kenya – Five state-owned or controlled sugar factories, of which the largest by far is Mumias, (capacity of around 275,000 tonnes p.a. from 2.3m tonnes of cane. Listed on the Nairobi stock market in 2001). Unusually the industry mainly relies on small-scale outgrowers which has made the pricing of sugar cane, controlled by the Government, a politically sensitive issue. Total national sugar production is around 500,000 tonnes and is below potential due to lack of effective support from the Government. Net sugar imports are around 200,000 tonnes, but nevertheless Kenya has an 11,300 tonne export quota to the EU.

The main drawback of these locations in terms of productivity is typically the lack of a sufficiently long, cold dry season which limits sucrose yields and also means that factories can only operate for a relatively short period each year.

In some cases they also suffer in terms of geography and logistics. In West Africa, for example, the largest population concentrations are on the coast (Lagos, Abidjan, Accra, Yaonde, for example), but the best cane growing conditions are inland, in the savanah zone. The inland sugar factories therefore have to bear the cost of trucking much of their sugar output to the coast, to compete with imported sugar that can be shipped relatively cheaply from the EU, Brazil, South Africa etc.

In most cases these import substitution industries were developed as public sector projects although usually, at least to begin with, with private sector management.

Many companies have been fully or partially privatised during the last ten years.

In the late 1990's CDC bid (but failed) to acquire two of the sugar estates in the Ivory Coast and made informal proposals to the Kenyan Government to participate in the privatisation of its biggest producer, Mumias. In each case CDC took the view that although the industries did not have the inherent potential to be world class exporters, they would be soundly based import substitution industries, benefiting from some natural protection afforded by transport costs, provided world market prices eventually started to reflect average world production costs.

However, since in most years actual world market prices have been well below average costs of production these import substitution industries are completely dependent on protection via tariffs and/or import controls. The availability of very low cost sugar on world markets has led to large-scale, organised smuggling, with allegations of high-level corruption or direct involvement. In both the Ivory Coast and Kenya, for example, there have been periods when the domestic price was lower than production costs, due to massive smuggling, so the factories had to accumulate unsold stocks rather than dispose of them at a loss.

The commercial viability of these industries has also been threatened by the move to regional free trade within Africa and the risk of free access being given to Africa's low-cost producers who have surplus sugar available which they would otherwise have to dispose of in the residual world market. In East Africa, for example, Kenya has insisted on retaining duties on sugar imports from COMESA members until at least 2008. As well as protecting domestic sugar producers it also protects the margins of well-connected smugglers.

Factory Estates or Independent Growers

There is relatively little controversy concerning sugar factories. There are some technological alternatives (e.g. milling or diffusion to extract sugar from cane) but ultimately the factories need to be big and to operate with high annual capacity utilisation in order to process cane at low cost.

There is much more variability and controversy surrounding perceptions and experiences of the best way to produce sugar-cane. 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 this free market approach to work there needs 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. Trucking cane over long distances is expensive and the cane deteriorates quickly once harvested.

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.

In promoting a sugar factory a key decision for the prospective factory owner is whether to produce cane on their own land, or to contract with independent growers or to opt for a combination of the two.

In most cases the industry in Africa, outside of South Africa, has opted primarily for large-scale estates owned by the factories, supplemented by, but not dependent upon, outgrowers. There have been a variety of motivations, including:

- a strategic desire to have control of cane supplies
- a desire to enjoy the potential profits from cane growing

- a belief that private farmers would not have the capital or the expertise to venture into irrigated cane growing
- a preference for public sector rather than private sector control of land

However, large-scale estate production, while it facilitates planning, equipment utilisation and other economies of scale, is essentially a bureaucratic structure with all of the problems of overheads, waste and motivation that that entails.

Inefficiencies have tended to be even higher when the large estates have been owned by national governments or in joint venture with international development agencies. Even when management has been contracted out to private companies there tended to be a reluctance to take necessary but politically difficult decisions (e.g. redundancies)[4].

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, in the author's experience, always 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.

The large-scale owner-farmer is able to achieve most of the potential benefits from economies of scale (e.g. specialist agricultural equipment utilisation), while paying more attention to detail and to avoiding waste than the typical, hired, agricultural estate manager.

<u>Outgrowers or Settlers</u>

In many countries the control of large-areas of land by foreign investors or even by nationals became a politically sensitive issues after independence. In some cases this was one of the motives for nationalisation. There has also 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.

Outgrower Approach

When the Mumias Sugar Company was promoted in 1973, as a Government-led joint venture with CDC as a partner and Booker Agriculture as managers, it was deemed impractical to acquire a large area of land for an estate in what was an already densely settled area. Instead an Outgrower Company was formed, and thousands of smallholders

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[4] In 2000 CDC sold its majority shareholding in Nanga Farms, a large sugar cane producer in Zambia, to the general manager who until then had been a CDC employee. Freed from CDC bureaucratic controls and with the incentives that derive from being an owner rather than only a manager, he quickly found ways to raise productivity, cut costs, increase the area planted to sugar cane and substantially increase operating profits.

in the area were invited to become members of the Outgrowers company and contracted suppliers of cane to the factory. There was a good response from smallholders to this cash crop opportunity and eventually over 15,000 contracted growers were recruited into the scheme.

This option was practical because:

- the area was already settled
- 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 Kenya Tea Development Authority had established a successful precedent for organised outgrower crop production with central processing
- sugar cane production was normally profitable and access to market (although not the price) was guaranteed under the outgrower contract. Growers were increasingly willing to specialise in cash crop production since Kenya has generally had a well functioning market economy, allowing food crops to be bought without risk of shortages.

The operation has been a practical success, but with, of course, many issues and frustrations to resolve from day to day.

In order to operate the factory efficiently certain aspects of outgrower cane production have to be regulated (e.g. cane varieties) and organised centrally (e.g. cane harvesting and transport). Other less time or quality sensitive operations, e.g. fertilising, weeding, can be left more to the outgrowers discretion.

The factory management have at times complained that it would be easier and cheaper to manage cane production directly, as an integrated estate, rather than having to deal with 15,000 truculent cane suppliers (who are also voters in a relatively democratic society).

The growers have complained that the factory provides poor quality services at unnecessarily high cost and that the outgrowers could do better with greater autonomy.

Issues of nepotism, political interference, corruption and postponement of difficult decisions have inevitably have arisen in the context of a majority Government owned company.

The fixing of the cane price has also been a controversial area. ‘Government’ as elected politicians would like a high cane price to gain support from the growers and a low sugar price to keep urban consumers happy. ‘Government’ as majority owner of Mumias needed to raise enough revenue to keep the business in operation, service debts and pay dividends.

There have also been social concerns about the predominance of cash crop production in the area. In principle each grower was meant to keep some land out of cane to grow sufficient subsistence food crops for the family. In practice the margins available from cane have usually been so high that many growers have preferred to focus entirely on cane. In principle specialisation in cash crop production combined with the purchase of food in well functioning domestic markets can make economic sense. However since subsistence food crop production and feeding the family has in many cases traditionally been the role of women, while cash crop production was a traditional role for men, there have been concerns that the cash from sugar cane sales has not in practice been used to buy sufficient food for the family with allegations of malnutrition within relatively wealthy households. There has also been concern that women have been expected by their husbands to assist with cane production, but the revenue from cane sales goes only to the male household head.

Settlement Scheme Approach

In Swaziland (Vuvulane Irrigated Farms, 1962), Malawi (Smallholder Sugar Authority, 1978) and Zambia (Kaleya Smallholders Company, 1979) CDC pioneered the development and operation of smallholder settlement schemes, with CDC providing both the initial management and at least part of the funding. In each case sugar is grown as an irrigated crop, with a requirement for an expensive water distribution system and for costly land levelling. In order to recover the high cost of this infrastructure development it is necessary to ensure that sufficient high yielding cane is grown and delivered to the factory. Politically and socially however the objective was to involve ordinary, smallholder farming families in the industry.

The model adopted was therefore of the central development of the land and infrastructure followed by the settlement of farm families on small blocks, typically less than 5 ha. The concept was that it should be possible to farm the block without recourse to significant hired labour, as these were to be "family farms". Tight central controls were put in place to ensure that all key agricultural operation were undertaken on a timely basis. Cane planting, mechanical operations and harvesting were normally undertaken by the scheme management, and irrigation, fertilising and weeding by the settlers. If farming standards were seen as poor, the scheme management would have the right to step in and undertake required works, charging the cost to the grower.

All three schemes were successes in the sense that development costs were recovered, good yields and production of sugar-cane were achieved and relatively high incomes were obtained by the settlers. In Zambia, for example, Kaleya had the reputation as the only Government backed smallholder settlement scheme that had succeeded in the country. In Malawi, the SSA was successfully privatised in 1999 with shares sold to staff and farmers, creating the Dwangwa Cane Growers Company.

However all three schemes have also attracted significant criticism:

- the intensity of supervision and control by CDC management meant that in some respects the settlers were more like profit sharing hired labourers rather than true, independent farmers, e.g. they had no right to stop growing cane if other crops appeared more profitable to them or vice-versa. At VIF settlers were required to set aside a portion of their irrigated land for crops other than cane, even though some wanted to specialise entirely in cane and as a consequence some land went unutilised. At Kaleya, in contrast, settlers were required to grow cane on 100% of their irrigated land and were refused permission to plant subsistence food crops on irrigable land even at times of relative high food prices.

- the costs of administering the schemes was high. A prime motivation for factory owners to contract out cane growing is to facilitate a reduction in the overheads required to run large company estates. In contrast, the smallholder settlement schemes required even more overheads. A review of the Smallholder Sugar Authority in Malawi, undertaken by CDC in the mid-1980's, revealed that the direct costs of administering the scheme and of the production services provided to smallholders was in total greater that the direct costs of estate production on a per hectare basis, (i.e. even before any allowance for the work contributed by the smallholders themselves). In Zambia, even though there was already a large central estate owned by the sugar factory, the new smallholder company established its own "nucleus estate" in order to generate cash and be more independent of the sugar factory management, leading to an expensive duplication of facilities;

- the notion of "family farms" proved to be somewhat idealistic. The settlement schemes were correctly perceived by the public as income earning opportunities in poor countries where such opportunities are limited. Settlers have therefore included not only peasant farmers but also ex-labourers, skilled workers, ex-civil servants and ex-military personnel. Once a relatively good income stream was established many families considered manual work either demeaning or to be a low value use of their time, and so much more use was made of casual, hired labour (often relatives) than was envisaged by CDC. Typically this labour is low paid and enjoys non of the security and welfare benefits (e.g. housing, pensions, clinics) of estate workers. Thus the settlers soon had the characteristics of emerging, commercial farmers and entrepreneurs, rather than the envisaged family farmers, while at the same time an "underclass" of informal, low paid hired labour was also attracted to the schemes;

- inevitably some settlers proved to be more committed, hard working, and entrepreneurial than others, and there were requests from the more successful growers to be allocated more land or for the right to buy-out other settlers. On perceived equity grounds these requests were normally rejected by the scheme authorities, but thereby the opportunity to facilitate an evolutionary increase in scheme productivity and profitability and the chance to support the development of the most capable and entrepreneurial small-scale commercial farmers was missed. Some therefore had no alternative but to use the income from cane production to invest in off-farm businesses;

- many social tensions arose as a result of bringing people together from different backgrounds, tribes, clans and political affiliations, (as perhaps would have

> occurred anyway had people moved to urban areas looking for work). Disputes also arose following illness, deaths (who inherits the plot?) and divorces. Revenues from cane sales were paid to the designated head of the household which did not necessarily bear any relationship to who, within the family, was doing the work. The scheme management found themselves having to get involved with the details of family and personal lives.

Overall, the smallholder sugar settlement schemes were promoted, and still exist, for social and political reasons, rather than because they are an essential part of an efficient sugar industry.

In 1989 CDC commissioned Antony Ellman to undertake a major review its experience with smallholder settlement schemes. He doubted their economic and social sustainability, and concluded that.

> *"Most projects have adopted capital-intensive methods of land development and high-input/high-output systems of production borrowed from the plantation sector. Although these maximise the rate of development and potential levels of production, they also maximise debt burdens, under-utilise farmers' labour and other resources, and expose both farmers and projects to extreme financial and agricultural risk…..The fact that most projects were planned without a clear understanding of farmers' needs, and that there has often been limited consultation with farmers thereafter, has greatly reduced socio-economic viability and sustainability."*

Conclusions – Better Prospects but No Escape from Sugar Politics

Five Africans countries are amongst the world leaders in low cost sugar production and several more have the potential to join them. They have not however been able to realise their full potential due to the distortions in the world market for sugar created by global protectionism.

The recent moves to allow "unrestricted" access to EU markets for African sugar, although at a price lower than the previous quota allocations, is creating a new economic prospect for the industry. This has attracted the UK's leading beet sugar producer, Associated British Foods, to enter into discussions to acquire a major stake in Illovo, in the belief that Africa, in future, will play a major role in supplying EU markets.

The final ramifications of these changes cannot be predicted with any confidence e.g. would the EU actually accept a massive increase in imports if Africa were to substantially increase its production capacity? However there is scope to hope for change and for growth.

It is most likely that sugar will continue to be a political commodity and the potential threats to even world class producers from the ‘residual’ world market will not disappear quickly. Experience has shown that successful development and operations requires a close working relationship between private businesses and supportive governments willing to provide a fair and efficient regulatory and marketing environment for the sugar industry – one which allows efficient, “world-class” producers to thrive.

A supportive government environment has helped to create Africa’s world class players (e.g. South Africa, Swaziland, Malawi). The past experience of the sugar industry in such countries as Tanzania and Cameroun and the threats to the industry today in Zimbabwe also shows the power of Governments to wreak havoc.

Africa’s world class sugar producers are large-scale and capital intensive. (A modern sugar factory would cost of the order of US$100m. The development of irrigated cane land can cost up to US$10,000/ha). All investors will need confidence in the future if they are to make further, substantial investments in land development, irrigation and processing facilities.

If world market reform does allow further expansion of the African industry then there is good potential for more cane production. It is the experience of the author of this case study that independent, commercial farmers (rather than factory-owned estates or smallholders) are best placed to achieve the lowest costs and highest margins. However the African experience has also demonstrated that smallholders are willing and able to specialise in cane production, whether as outgrowers or settlers whenever they are offered an attractive market opportunity, i.e. reasonable profit margins combined with relatively low levels of production and marketing risk.

Appendix 1

CDC'S INVESTMENTS IN SUGAR IN AFRICA 1948-2001

	Country	Description	Invest (£m)	public /private	Outcome
1950	Swaziland	Swaziland Irrigation Scheme *105,000 acres bought for arable and livestock. 50% stake sold for £10m to Tibiyo in 1982*	5.30	CDC	eventual success as a sugar/citrus venture.
1952	Swaziland	Ubombo Irrigation Scheme *irrigation for sugar cane*	0.08	pvte	success CDC provided loan; fully repaid
1957	Swaziland	Mhlume Sugar *new sugar estate and factory* Originally maj. owned and managed by Huletts. CDC took control in 1965	14.4	pvte then CDC then govt JV	Success. 50% stake sold to Tibiyo for £4.1m in 1977
1960	Tanzania	Kilombero Sugar Co *new sugar estate and factory. Dutch managing partner. IFC & FMO co-finance*	1.77	pvte/JV	equity and loan. CDC largest single investor. Nationalised 1969. CDC received Govt debt.
1962	Swaziland	Vuvulane Irrigated Farms *African and European farmer sugar settlement scheme.*	0.89	CDC	technical and commercial success; handed to Govt at cost in 1982
1967	Zambia	Zambia Sugar Co *CDC initially subscribed to convertible loans while ZSC owned by Tate and Lyle. Used to develop the Nakambala Estate and factory. Subsequently nationalised, privatised, listed on stack-market then sold to Illovo..*	8.30	pvte then Govt then pvte again	CDC loans; converted to equity on privatisation in 1994; Equity sold in 2001; technical success; sustainable business; investment failure
1970	Nigeria	Savanah Sugar *sugar estate and factory* *CDC developed and managed*	3.00	govt/ CDC JV	failure CDC withdrew 1982
1973	Kenya	Mumias Sugar Co & Outgrowers Co *sugar factory and outgrower scheme. Managed by Bookers.*	6.10	govt/JV	equity and loan; success over 15,000 outgrowers
1977	Malawi	Dwangwa Sugar Co *new sugar estate and factory*	6.56	Govt	Loans to Govt for on-lending
1978	Swaziland	Royal Swaziland Sugar Co *New sugar estate and factory. Managed by Booker-Tate*	8.54	Govt/ pvte JV	Loan and equity; technical success; sustainable business; investment failure
1978	Mauritius	Irrigation Authority *irrigation for smallholders* *CDC seconded the general manager*	2.00	Govt	CDC Loan to Govt on-lent to the Authority.
1978	Malawi	Smallholder Sugar Authority	1.96	govt	loan to Govt for on-

		Promoted and managed by CDC			lending poor results relative to costs incurred
1980	Zambia	Kaleya Smallholders Co *smallholders sugar settlement scheme. Promoted and managed by CDC with DFID support*	3.55	CDC /govt JV	Mainly loan finance. success.
1983	Uganda	Sugar Corporation of Uganda *Sugar estate and factory rehabilitation*	4.65	private	loan poor performance. Loan serviced out of other sources of income.
1989	Zambia	Nanga Farms *Rehabilitation and expansion of two state-farms. Arable, coffee, sugar. Part financed with debt roll-over*	10.45	CDC/ govt JV	technical success; sustainable business; investment failure; MBO in 2000
1989	Kenya	South Nyanza Sugar Co *Managed by Booker Tate*	3.56	Govt	CDC loan; moderate success
1993	Zimbabwe	Hippo Valley Estates *Rehabilitation of sugar after drought*	3.50	pvte	CDC loan; success
1993	Zimbabwe	Triangle Ltd *Rehabilitation of sugar after drought*	5.00	pvte	CDC loan; success