VIEWPOINT: SHORT AND LONG TERM PROSPECTS FOR SUGAR AND FORESTRY IN SOUTH AFRICA[1]

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Abstract

World sugar prices are at present falling and will affect domestic producers' profits detrimentally. Domestic consumers may not benefit from lower world prices because they have to buy A-pool sugar. Projections of sugar consumption over the long term suggest that aggregate consumption will increase roughly with population growth. Changes in domestic and international sugar policies could have a major impact on production and consumption trends.

Timber prices are now declining after five years of shortages and rising prices. Domestic demand for timber is expected to increase by 2,7 per cent per year over the next 20 years. Average annual planting rates ranging from 20 000 ha to 35 000 ha have been recommended by forestry officials.

Farmers (and companies) decide on a particular enterprise mix according to the expected relative profitability of enterprises and perceptions of risk.

Uittreksel
Kort- en langtermyn vooruitsigte vir suiker en bosbou in Suid-Afrika

Wêreld suikerpryse is tans besig om te daal en sal binnelandse produsente se winste nadelig beïnvloed. Binnelandse verbruikers sal nie baat vind by laer wêreldpryse nie omdat hulle A-poel suiker moet koop. Projeksies van suikerverbruik oor die langtermyn dui aan dat totale verbruik ongeveer met die bevolkingsgroei sal styg. Veranderings in die binnelandse en internasionale suikerbeleid kan 'n groot impak op produksie- en verbruiktendense hê.

Houtpryse is tans besig om te daal na vyf jaar van tekorte en stygende pryse. Daar word verwag dat binnelandse verbruik van hout met 2,7 persent per jaar oor die volgende 20 jaar sal groei, en 'n gemiddelde jaarlikse planttempo wat wissel van 20 000 ha tot 35 000 ha word deur bosboubeamptes aanbeveel.

Boere (en maatskappye) besluit oor 'n besonder kombinasie van produkte afhangende van die verwagte relatiewe winsgewendheid van die produkte en persepsies van risiko.

1. Introduction

This paper deals with the short and long term prospects for sugar and timber production and consumption in South Africa. It also considers factors that may influence production and consumption trends. The latter part of the paper considers the economics of interaction between sugar-cane and forestry. It also considers the cane versus timber debate that has been in progress in recent years.

2. Prospects for sugar

The area under sugar-cane in April 1990 was 375 000 ha after declining from over 400 000 ha in 1985 to 369 000 ha in 1989. This can be ascribed to the effects of the 1984 change in the cane transport scheme, the introduction of the two-tier price system in 1985 and the purchase of sugar-cane farms by timber companies. The increased area in 1990 has been attributed to a slowing down of sales of cane farms to timber companies and an increase in small grower production (SASA, 1991:8).

Sugar production in the 1990/91 season will be over 130 000 tons less than the average of the previous six seasons (SASA, 1991:3) owing to unfavourable weather conditions and less area under cane (Frean, 1991). This will affect the amount of sugar for export as 65 per cent of the season's production will be required for the domestic market (SASA, 1991:3).

From about mid-1985 until May 1990 sugar prices on the world market showed a rising trend, the New York spot sugar price peaking at 16 US cents/pound (R920/ton)[2] in May 1990 (SASA, 1991:6). This trend benefited domestic cane growers directly through rising B-pool sucrose prices. The Industry was able to repay a substantial portion of its debt, which will be reduced to R87 million by the end of March 1991. By August 1990 the New York price had dropped to 10 U.S. cents/pound (R570/ton) owing to reduced offtake and news of potentially good harvests in the USSR and India. The market has since traded at around the 10 cents (R570/ton) level, although the most recent price (January 1991) is 9 cents/pound (R520/ton) (Jordan, 1991:2). The average spot price for the 1990/91 season is expected to be under 12 cents/pound (R690/ton) compared with 13,84 cents/pound (R790/ton) for the 1989/90 season. Average export earnings in the 1990/91 season will be about 21 per cent lower than in the previous season (SASA, 1991:6). B-pool prices are expected to be lower in the 1991/92 season at R200 - R250/ton sucrose owing to depressed export prices. A-pool prices are predicted to increase but by less than in the past due to the export element in the A-pool and the Industrial loan repayment requirement (SASA, 1991:9). The A-pool price for the 1991/92 season has been estimated at R450 - R470/ton sucrose (Jordan, 1991:2).

Growers and speculators who had hoped for a repeat of the high 1980/81 prices will be disappointed. Although world consumption exceeded production in each of the past five years and sugar stocks were reduced to as low as 27 per cent of consumption (similar to the 1980/81 level), Agri-Africa (1990b) maintains that the advent of many substitutes has enabled consumers to switch consumption away from sugar easily when prices rise. Also, forecasts of increased production relative to consumption will lead to declining sugar prices. Owing to fewer countries with rigid domestic pricing systems, consumption and production are now more responsive to price signals

from the world market (Agri-Africa, 1990d). According to SASA (1991:5) the world market over the last decade has become more price-sensitive because the major buyers are now developing countries with limited resources with which to buy imports.

With export prices falling in ton price differential between A- and B-pool sucrose increased from R26 in April 1990 to about R83 (R438 - R355) in December 1990 and is expected to be around R235 in the 1991/92 season (Jordan, 1991:2-3). This trend will put upward pressure on A-pool quota prices in all mill group areas, and as aresult will lead to increased production costs of A-pool cane for new entrants and growers renting quota. Growers are, however, prevented from speculating in quotas by the stringent rules imposed by the Central Committee of the South Afican Sugar Association. A quota that is purchased can only be sold after three years of satisfactory performance or with special permission from the Central Committee (Agri-Africa, 1990f).

In 1990 the government gave permission to the Industry to expand annual sugar production by up to 300 000 tons despite the shelving of the proposed ethanol plant. Key elements of the expansion are the opening of the Industry to small growers (ie those producing less than 150 tons sucrose a year) within 30 km. of existing sugar mills and the establishment of a new mill in the Onderberg area in the Eastern Transvaal. According to SASA (1991:7) new small grower production should account for over 25 per cent of the expansion. Area under cane is expected to increase by about 47 000 ha over five years to a total of over 420 000 ha (SASA, 1991:8).

The long term prospects for sugar production are uncertain. Various scenarios are possible. One could be that the status quo (ie the current A- and B-pool system) is maintained with farmers having A-pool quotas that are only transferable within mill group areas. Another possibility is that A-pool quotas are made transferable throughout the Industry that would lead to quota prices being determined by quota supply and demand in the whole Industry resulting in the same price in all regions. The main opponents of this scenario would be sugar millers in regions with a comparative disadvantage in cane production because many farmers here would sell their quotas to farmers in more competitive regions resulting in lower mill throughput and lower profits. Mills may, however, use profits (rents) to pay farmers higher prices for cane in order to secure throughput. Since an existing mill's capital costs are sunk, it can remain in production in the short run as long as it covers its variable costs.

A possible scenario over the long term is more deregulation in the Industry in sympathy with possible world developments towards a freer market. Predictions by the USDA, for example, suggest that a multilateral liberalisation of farm trade by industrial market economies would lead to a substantial (54 per cent average) increase in the world sugar price owing to decreased production and increased consumption of sugar in the countries concerned. At the higher world price South African cane producers ought to be competitive on world markets in most years (Agri-Africa, 1990g). Domestic sugar prices, however, would fall if domestic quotas are abolished.

In another study Ortmann (1986) predicted that, if all quotas in the domestic industry are abolished, area under cane would virtually halve, assuming the *status quo* on world markets. Cane production would shift to areas with a comparative advantage in cane production (eg North Coast, KwaZulu). Employment in the Industry would decrease by about 26 per cent but consumers would benefit through lower sugar prices. Entrenched cane growers would most probably oppose such a scenario owing to expected capital losses on abolished quotas, lower cane prices and greater price risk in a free market. Millers, too, would most likely oppose such a scenario because of expected lower cane throughput over time and lower mill profits. Other insights into the effects of deregulation are given by Pasour (1990).

Concerning domestic sugar consumption, *per capita* consumption in the 10-year period from 1975/76 to 1984/85 averaged 37 kg., ranging from a high of 40,4 kg. in 1975/76 to a low of 35,3 kg. in 1979/80 (SASA, 1984/85). In the period 1985/86 to 1989/90 *per capita* consumption was on average nearly 10 per cent lower than in 1984/85, while in 1989/90 it was over 13 per cent lower (Frean, 1991). The downward trend has been attributed mainly to declining real *per capita* incomes and social unrest (SASA, 1991:3). Improved consumption figures in 1990/91 have been attributed mainly to advertising and promotional activities by the Industry (SASA, 1991:4). Domestic sugar demand is also dependent on the price of sugar in neighbouring countries; the relocation of Coca Cola to Swaziland is a case in point. Any sugar developments in countries such as Swaziland, Mocambique, Zimbabwe and Namibia should be considered by the SA Sugar Association in its sugar pricing policies.

Amongst various urban population groups sugar expenditures *per capita* in 1985 were as follows: whites R70,59, coloureds R35,40, asiatics R41,62 and blacks R27,31. In rural areas the corresponding figures were: TBVC states R22,21, and the national states R17,56 (Nieuwoudt, 1990:9). *Per capita* consumption depends on sugar prices compared with prices of 'artificial' sweeteners, and social unrest, while consumers' real incomes and perceptions of the health aspects of sugar also may play a role. Ortmann (1985:56) estimated a price elasticity of demand for sugar of -0,25, implying that if real sugar prices increase (decrease) by 1 per cent, *per capita* sugar consumption would fall (increase) by 0,25 per cent, other factors constant. Increased availability of substitutes to direct and industrial consumers would make sugar demand more price-elastic.

Long term predictions in aggregate sugar consumption were recently made by Nieuwoudt (1990). In predicting future consumption, estimates of income elasticities of demand for sugar (E_y) trends in real incomes and population growth are crucial. Using cross-sectional data, Nieuwoudt (1990:4) estimated income elasticities of demand close to zero. E_y shows the percentage change in sugar consumption when real income increases by 1 per cent, other factors constant. Ortmann's (1985:56) overall E_y estimate of 0,13 shows that sugar consumption would increase (decrease) by 0,13 per cent with increases (decreases) of 1 per cent in real disposable incomes. Working on two possible income growth scenarios, namely a 1 per cent and a 3 per cent growth in GDP per year, estimated increases in aggregate sugar consumption relative to 1990 were computed (Table 1).

Table 1: Estimates of growth in aggregate sugar consumption by years 2000 and 2010 under two economic growth scenarios

Increase in population over 1990	27 per cent		59 per cent	
Annual GDP growth rate:	3 %	1 %	3 %	1 %
Percentage increase in sugar consumption				
Nieuwoudt (1990:15)	26	24	58	52
Ortmann	28	25	62	54

Per capita sugar consumption, as was pointed out earlier, depends on changes in real sugar prices, 'artificial' sweetener prices, real incomes, social unrest and changing perceptions of sugar. Structural changes in the sugar market, arising from

changes in control in the domestic and international industries, would have important effects. For example, a free market for sugar in South Africa would lead to lower sugar prices and greater consumption, *ceteris paribus*. In the event of all sugar trade restrictions by the industrialized countries being lifted, world sugar prices would increase substantially (by over 50 per cent on average), as was mentioned earlier. Consumers in the industrialized countries would benefit. However, such freeing of trade is not expected to come about in the short or medium term owing to the reluctance of many countries to scale down or abolish their protectionist policies.

Estimates by the Australian Bureau of Agricultural and Resource Economics (ABARE) show that the highly restrictive US sugar policy has cost Australia between $90 and $230 million a year in lost export earnings. Estimates for South Africa are between R130 and R290 million annually (Agri-Africa, 1990e).

With its changing political situation, South Africa may in the next ten years be re-admitted to the Commonwealth with its preferential trade agreements between member countries. Access to the Lomé Convention and preferential bilateral trade agreements with countries such as the USA may also be possible. Such developments could open up new and relatively stable markets for South African sugar.

3. Prospects for forestry

The current area under plantations in South Africa, including the TBVC States, is roughly 1,3 million ha (about 1 per cent of the total land area) of which 73 per cent is owned by the private sector and 27 per cent by the public sector. About 51 per cent of the area lies in the Transvaal (including Venda), 39 per cent in Natal and Transkei, and the rest in the Cape (including Ciskei). Of the species planted, pines account for 51 per cent, eucalyptus 39 per cent and wattle nearly 10 per cent (Edwards, 1990a). Annual round timber production (ex forest) is currently 15 million m^3, with pines contributing about 50 per cent (7,4 million m^3), eucalyptus 43 per cent (6,5 million m^3), and wattle and other species 7 per cent (1,06 million m^3) (Edwards, 1990a). Production in 1989/90 by product was as follows: sawlogs 4,51 million m^3 (30,1 per cent), pulpwood 7,3 million m^3 (48,8 per cent), mining timber 2,45 million m^3 (16,4 per cent), and other 0,7 million m^3 (4,7 per cent). Capital investment in the forestry industry at current market valuation is estimated at R6 billion, while investment in mills (processing plants) is estimated at R7,2 billion (Edwards, 1990a).

Prices for hardwood timber have been falling since the latter half of 1989 after five years of acute shortages and rising prices. Price changes impact on quantity demanded; for example mines economise on the use of timber when timber prices rise relative to the price of precious metals. Should prices of metals (especially gold) increase (decrease) in future the value of the rand will likely increase (decrease) with them, resulting in lower (higher) export earnings for the forestry industry. In the meantime mines are making increasing use of substitutes for timber which could lead to an irreversible backward shift in mining demand for timber. Consumption of mining timber in 2020 is expected to be equivalent to current consumption levels at 2,5 million m^3 per year (Edwards, 1990a). Should real interest rates remain high domestic demand for timber in other uses may also be dampened.

International prices of timber products such as pulp and newsprint have also been falling, newsprint for example from $700/ton in 1988 to $550/ton by the end of 1989 (Agri-Africa, 1990c). Factors such as a world recession over the next year or so will influence demand for timber products. At present about 32 per cent of the output of the forest products industry is exported (Edwards, 1990a).

Officials of the forestry industry take an optimistic view of future timber demand. According to the Forestry Council Planning Committee, domestic demand for timber is expected to increase from the current 17 million m^3 to 29 million m^3 per year in 20 years time, or by 2,7 per cent per year (Edwards, 1990b:10). The second Strategic Forestry Development Plan calls for 405 000 ha of new afforestation over the next ten years, 329 000 ha in the second decade and 333 000 ha in the third period, or an average of over 35 000 ha a year (Directorate of National Forestry Planning, 1989:211). Tree breeding programmes, designed to improve plantation productivity, may reduce the rate of new afforestation required. Edwards (1990b:10) contends that an annual planting rate of just over 20 000 ha would be needed until the year 2010. However, the actual rate of afforestation will be determined mainly by economic factors such as expectations about timber prices relative to other commodity prices, and domestic interest rates. Forestry developments in neighbouring countries (eg. a 30 000 ha development in Southern Mocambique by a major South African timber company) may affect regional timber prices in future.

In the next few years real timber prices are expected to be relatively low. In the longer term, prospects look better for improved prices as growth in demand outstrips growth in supply. Domestic demand for paper products may increase rapidly over the longer term with the growth in population and under a scenario of rising real *per capita* incomes (Edwards, 1990a), and with increasing demand for environmental-friendly packaging and for paper in education, training and books and newspapers as a greater proportion of the population learns to read and write. However, the advent of new substitutes such as computer disks for storing and transferring information may dampen demand for timber products in the long term. Annual *per capita* consumption in South Africa of sawn timber (0,05 m^3) and paper and board (40 kg) is at present below the world average (0,30 m^3 and 44 kg, respectively). Annual paper and board consumption in the EEC countries and North America is 146 kg and 304 kg *per capita*, respectively (Edwards, 1990a).

A factor that could work to the advantage of South Africa's timber producers in future is the rapid depletion of natural forests in the world. Approximately half of the world's hardwoods at present are produced in the Far East and Latin America. With rapid depletion of these natural forests and increasing demand for hardwoods relative to softwoods (owing to changing technology and consumer demand patterns), 'artificial' timber plantations will play a greater role. South Africa was among the first countries to develop large scale 'artificial' plantations and has a comparative advantage in terms of experience and expertise. The high yields that local timber producers can attain (owing to favourable growing conditions and improved varieties) has a number of advantages, namely that timber can be produced relatively cheaply, plantations can be clear-felled at a younger age leading to higher returns on the capital invested, and a greater tonnage of timber can be produced within a given radius of a pulp mill leading to transport economies (Agri-Africa, 1990h). Threats to South Africa's competitive export position include low worker productivity, technology boycotts, a high cost of capital, and social unrest creating future investment uncertainty (Edwards, 1990a).

4. Interaction between sugar-cane and forestry

In recent years there has been considerable interest in Natal in the cane versus timber debate. This followed after large areas of cane land (a total of some 30 000 ha) were purchased by timber companies at relatively high prices. In 1989, for example, timber companies paid an average of R10 600/ha for cane land whereas land for continued cane farming in the same areas sold for R5 900/ha (Hudson, 1990:3). Profitability analyses, however, indicate that under most circumstances cane production is more profitable than timber growing (Sugden, 1989). The relatively high prices paid for land are probably due to competition amongst the major timber companies for good timber land. The difference between the land prices mentioned above is likely due to the fact that timber companies were selective in their purchase of land for timber production. Land

prices, whether land is used for timber or cane growing, would have been the same for the same type (quality) of land because of market effects. It appears that timber companies, in their quest to secure a dependable supply of timber at relatively low risk, have used mill profits (rents) to pay the relatively high prices for land. Securing timber supplies through other means, for example by relying more on private growers or by renting land for timber production, were probably regarded by timber companies at the time as more risky alternatives. However, land purchases have slowed down, probably due to political uncertainty and liquidity constraints following lower world prices.

Farmers (and companies) decide on a particular enterprise mix according to the expected relative profitability of enterprises and perceptions of risk. If a farmer operates on his production possibilities frontier (PPF) then he will react to changing relative profits. Figure 1 illustrates this point for a farmer facing a concave PPF (where concavity may be caused by risk and other factors), using a cane versus timber example.

The combination of timber and cane that will maximize profits will be where the highest profit line is attained, ie where the iso-profit line is tangent to the PPF, or where the slopes of the two functions are equal. Since each farmer faces his own PPF (or set of resources and his own perception of risk) he will settle for a unique mix of enterprises that will maximize his objective (utility). Sugar and timber companies do the same. A farmer (company) facing a linear PPF would most likely specialize in one enterprise.

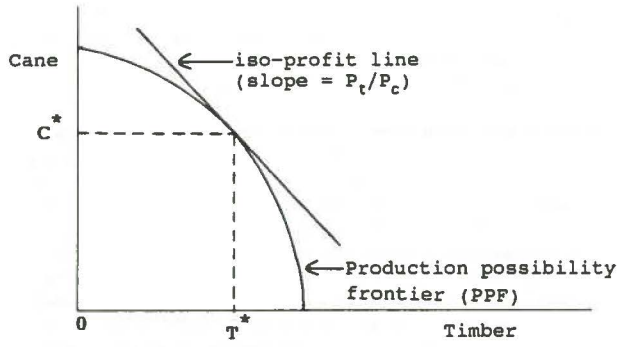

Figure 1: Optimum combination of cane and timber

In the past farmers have shifted production from cane to timber and vice versa in response to relative changes in the (expected) profitability of these two enterprises. In the mid-1960s, for example, there was a major shift towards cane production in the Natal Midlands as a result of high sugar prices and depressed wattle bark and timber prices. Since the introduction in 1985 of the A- and B-pool cane price system there has been some substitution of lower-priced B-pool cane with timber.

Since both cane and timber are long term enterprises farmers should take a long term view of relative prices. Table 2 shows how cane/timber price ratios have fluctuated over the 12 years from 1978/79 to 1989/90.

Table 2 indicates that the cane/timber price ratio has moved in cycles, reaching a very low point in 1987/88. The ratio has more recently moved in favour of cane making a switch to timber less attractive. In the longer term factors such as domestic and world sugar policies will determine trends in the ratio. For example, if the local sugar market is deregulated the ratio would move in favour of timber owing to lower domestic cane prices.

With recent large purchases of land by timber companies came increasing concern from rural communities with depopulation of their areas, and concern of private farmers with the possible impact on their labour employment situation. Edwards (1990b:9) contends that increased timber company involvement can, in many instances, be instrumental in ensuring the longer term economic viability of rural communities owing to the multiplier effect of higher labour remuneration levels and superior employment conditions.

Table 2: Cane/timber price ratios

Year	Cane/pine sawlogs	Cane/pine pulpwood	Cane/gum pulpwood
1978/79	1,48	1,00	1,11
1979/80	1,54	1,04	1,22
1980/81	1,78	1,24	1,21
1981/82	1,38	0,98	0,97
1982/83	1,35	0,95	0,92
1983/84	1,59	1,16	1,10
1984/85	1,21	0,88	0,77
1985/86	1,22	0,90	0,75
1986/87	1,30	0,97	0,75
1987/88	1,05	0,75	0,58
1988/89	1,12	0,81	0,70
1989/90	1,31	0,84	0,73

Source: Agri-Africa, 1990a

Owing to uncertainty about possible future land redistribution, timber companies may in future consider other options as less risky than land purchase in securing timber supplies, for example using mill profits (rents) to pay private farmers higher prices and thus making timber a relatively more attractive alternative enterprise, renting of land from black farmers and issuing of soft loans to private growers. Timber companies have recognised the large forestry potential in the homelands (eg. KwaZulu and Transkei) and have initiated support programmes to develop this potential.

5. Conclusion

World sugar prices are on the decline after failing to reach the heights attained in 1980/81. Structural changes have occurred in the world market; for example, numerous substitutes have enabled consumers in various countries to switch consumption away from sugar relatively easily when prices rise. Domestic cane producers will in the next few years again rely more heavily on the higher-priced A-pool cane for most of their profits. Domestic consumers may not benefit from lower world prices because they have to buy A-pool sugar.

Income elasticities of demand for sugar indicate that *per capita* sugar consumption will not change much with changes in real incomes. Changes in economic growth are thus not expected to have a significant impact on sugar consumption. *Per capita* consumption is more responsive to changes in relative sugar prices, social unrest and perceptions of sugar. Long term predictions indicate that aggregate sugar consumption will increase roughly with population growth. However, deregulation in the domestic sugar industry, world trade liberalisation and the rand exchange rate could have important effects on production and consumption trends.

The long term future of timber production in South Africa looks promising judging by projected supply and demand scenarios, and in spite of short term declining prices. A factor in favour of South Africa's timber producers in future is the rapid depletion of natural forests in the world and the experience and expertise developed locally in growing 'artificial' plantations. South Africa could have a future comparative advantage in timber production owing to a favourable climate and the expertise acquired in timber growing.

Timber companies consider many options in their quest to secure a dependable supply of timber at relatively low risk, for example land purchase, renting of land, paying farmers higher prices, and issuing of soft loans to private growers. What strategies they follow will depend on their perceptions of economic and political events in both the short and long term.

Notes

1. Based on a paper presented at the Agricultural Outlook Conference (AGROCON) in Pretoria on 19 February 1991. Helpful comments by Professor WL Nieuwoudt, Dr MC Lyne and an anonymous referee on earlier drafts are gratefully acknowledged.

2. The exchange rate in February 1991 was approximately R2.60 per US dollar.

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