

The Foreign Exchange Content of Kenyan Agriculture¹

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Introduction

This Kenyan case study focuses on three issues which may be of general interest in the discussion of cash crops and macroeconomic management. They are (a) the size and nature of the imported inputs used in the production, processing and transport of domestic and export agriculture; (b) the average import content of major food and non-food crops; and (c) the net foreign exchange contribution of the agricultural sector towards the balance of payments, and interdependence between agricultural export earnings and imported inputs needed for domestic food production.

Throughout, 'cash crops' refers to agricultural commodities sold through parastatal marketing boards and traded privately by individuals, companies and estates. No attempt has been made to estimate the imported inputs used in agricultural production for on-farm consumption and that traded in local village markets, but the imported inputs used in these items are thought to be relatively small. The estimates are based on a lengthy study of foreign exchange issues and the agricultural sector commissioned by the Government of Kenya, from which several tables are reproduced with permission. Data on the value of agricultural inputs and sales were obtained mainly from financial controllers and accountants in numerous firms, parastatals, and estates contacted during nine months of field work carried out during 1984-85. The data were usually from audited income and expenditure statements, and the financial year 1983/84 was the most recent twelve month period for which information was available.

The agricultural sector was defined broadly and includes not only on-farm production but also transportation and processing. Input data were collected for each major cash crop:

production inputs	fertiliser, agrochemicals, hand tools, tractors, field machinery, field vehicles, petrol and oil, bags, seeds.
processing inputs	processing machinery, fuel oil, electricity, processing ingredients, packaging.

¹ The views expressed are those of the writer and do not necessarily reflect those of the Government of Kenya.

transport trucks and lorries, railways.

Information with which to estimate expatriate management fees, the repatriation of profits and dividends by foreign companies, or the cost of foreign borrowing by agricultural parastatals was not available. Owing to the difficulties encountered in estimating depreciation, the foreign exchange estimates for processing machinery are thought to be understated, and this mainly affects sugar and cereal milling. The foreign exchange costs of storage facilities, and of transporting domestic commodities from the factory or store to the final consumer, are not covered in the study because insufficient data were available with which to make reasonably reliable estimates. Most domestic cash crops have been estimated at the ex-store or ex-factory level, and export crops calculated at the f.o.b. level can be converted to the ex-factory or ex-store level simply by deducting transport costs from the total cost of imported inputs.

The foreign exchange content of each production, processing and transport item was estimated using information gathered from the main suppliers, supplemented with data from the import licensing schedules, official price structures, and other sources. For example, from the official price structure it was found that the cnf price of fertiliser at the port of Mombasa accounted for around 70 per cent of local retail prices. Similarly, information provided by a major petroleum company showed that the cnf value of imported crude petroleum represented 50 per cent of the sales price of petrol used by tractors, and fuel oil represented 100 per cent of the import cost, since fuel oil did not attract sales or import duties and was cross-subsidised by other petroleum items. Based on a breakdown of the import content of spare parts, repairs, renewals, and depreciation, the import content of road transport was estimated at 35 per cent of local transport costs.

Standard assumptions as to the average import content of each production, processing and transport item were then applied to the 1983/84 financial data, and the foreign exchange components were aggregated for the following major agricultural commodities:

export crops coffee, tea, horticulture, tinned pineapples, sisal, pyrethrum extract, cashew nuts, wattle extract.

cereals	maize (NCPB purchases only), wheat, barley, rice.
milling	maize flour, wheat flour, animal feeds.
other domestic crops	sugar oilseeds, tobacco, cotton.
dairy and livestock	animal drugs and medicines, hides and skins exports, canned meat (KMC), milk products (KCC).

Separate estimates were made for coffee and tea produced on small-holdings and on estates; and horticulture exports were represented by the two major items — cut flowers and french beans. Three separate estimates were made of imported inputs used in the production and transport of maize purchased by the National Cereals and Produce Board (NCPB), with deliveries subdivided into those from: large scale mechanised farms, small mechanised farms, and small non-mechanised farms.

Comprehensive data on the value of dairy and livestock production or sales are not available in Kenya, but considerable attention was paid to estimating the cost of imported inputs for animal drugs and medicines, based on figures collected from the Department of Veterinary Supplies and all major agro-chemical suppliers of veterinary products. In addition to the imported inputs used in animal production, foreign exchange is also used in the processing and transportation of dairy and livestock products for the domestic market and for export. Unfortunately the coverage of these imported inputs for dairy and livestock commodities shown in Table 1 is far from complete, and it includes only the processing and transport costs of packaged milk products from Kenya Co-operative Creameries (KCC) and of processed meat from Kenya Meat Commission (KMC), plus the imported inputs used in processing hides and skins for export.

2. The Size and Nature of Foreign Exchange Inputs used in Domestic and Export Agriculture

Those imported inputs which could be identified are summarised in Table 1 by major commodity groups, with further details given in Table 2.

As we see from Table 1, the total foreign exchange inputs for marketed agriculture in 1983/84 were estimated at Ksh 2,969 mn, or US\$215 mn. As a check on the reasonableness of this figure we may wish to compare it with the total import bill and the value of agricultural production. Total foreign exchange inputs for the production, processing and transport of agricultural commodities represented 13 per cent of total visible imports in 1983/84, and 13 per cent of

agricultural GDP averaged over the same years, which suggests that the estimates are not excessive. Moreover, elsewhere it has been shown that the national accounts figures considerably understate the value of traditional agriculture and on-farm consumption [Sharpley 1986:23-32].

The coverage of cash crops shown in Table 1 is somewhat similar to that published in the *Statistical Abstract* series on 'Gross Marketed Production from Large and Small Farms', but while the GMP series records the value of marketed production of major crops, dairy and livestock sold through official parastatal marketing boards and by estates and companies, it excludes much of the value added due to transport and processing activities. The value added in processing the two major export crops, coffee and tea is included in the GMP series, but the value added from milling cereals is excluded, together with the value added from the processing, packaging and transport of canned pineapples, wattle extract, pyrethrum extract, sugar, oilseeds, tobacco, cotton, hides and skins, and milk products. Bearing in mind these differences in coverage, the estimated value of import inputs used in the production, processing and transport of agricultural cash crops covered in Table 1, represented around 25 per cent of Gross Marketed Production averaged over 1983/84.

The total size of imported inputs for agricultural cash crops in 1983/84 may have been constrained somewhat by the shortage of foreign exchange as Central Bank reserves were well below the average for 1978-81. The scarcity of foreign exchange which immediately followed the attempted coup of August 1982 markedly altered the speed with which applications for import licences were approved by the Central Bank, but by the latter half of 1983 the backlog of pending import licences had been reduced to normal proportions. In the process, priority had been given to the allocation of import licences for intermediate and capital goods rather than consumption items, and key agricultural inputs such as fertiliser and agro-chemicals, had been well protected. In December 1982, the Kenyan shilling was devalued against the SDR by around 18 per cent and it would appear that throughout most of the 1983/84 financial year, the currency was not seriously overvalued. According to figures published in *Pick's Currency Yearbook* [1984:44], at the end of December 1983 the official exchange rate was only 15 per cent lower than the black market rate of exchange for US dollars.

Following the failure of the long rains over parts of the country in April-June 1984, drought conditions affected the level of agricultural production in the latter part of 1984. On the world market, tea prices reached record levels in 1983/84, but the estimates in Table 1 have been corrected for this temporary boom, and the foreign exchange inputs for the production,

Table 1

Summary — Imported Inputs used in Selected Agricultural Commodities 1983/84

	<i>K shillings million</i>						<i>US\$ million^a</i>
	<i>Export Crops</i>	<i>Cereal Production</i>	<i>Milling^g</i>	<i>Other Domestic Crops</i>	<i>Dairy and Livestock Products</i>	<i>GRAND TOTAL K shs million</i>	
Fertiliser	196.2	204.1		77.0		477.3	34.6
Agro chemicals	288.7	92.9		47.7	200.0	629.3	45.6
Hand tools	13.2			0.5		13.7	1.0
Tractors	156.6	101.5		175.4		433.5	31.4
Farm machinery							
Farm vehicles							
Petrol and oils							
Bags	15.0	37.7				52.7	3.8
Seeds		31.6				31.6	2.3
Production sub-total	669.6	467.9		300.6	200.0	1,638.1	118.7
Processing machinery	65.7		48.4	106.9	17.2	238.2	17.3
Fuel oil	81.5		3.2	30.6	8.9	124.2	9.0
Electricity	44.0		9.0	6.3	6.5	65.8	4.8
Processing inputs	14.0		30.6	3.6	11.0	59.2	4.3
Packaging inputs	197.5		53.2	31.8	94.0	376.5	27.3
Storage	5.2		NA			5.2	0.4
Other	6.8					6.8	0.5
Processing sub-total	414.7		144.2	179.1	137.6	875.6	63.4
Trucks/lorries	30.9			187.2	12.0		
Railways	44.8	173.1		2.2	5.1	455.3	33.0
Transport sub-total	75.6	173.1	NA	189.5	17.1	455.3	33.0
Total imported inputs	1,160.0	641.0	144.2	669.1	354.7	2,969.1	215.1
Value of commodities	8,545.1^b	1,902.0^c	2,407.0^d	2,276.6^e	NA^f	NA	NA
Average import content	14%	34%	6%	30%	NA	NA	NA

Notes:

Columns may not tally due to Rounding

^a Exchange Rate end December 1983 K Sh 13.80 = US\$ 1.0.

^b Value fob: coffee, tea, horticulture, tinned pineapples, sisal, pyrethrum, cashewnuts, wattle extract.

^c Value ex-store NCPB maize; value into-store/mill wheat, barley, rice.

^d Value ex-factory.

^e Value ex-factory: sugar; oilseeds; tobacco; cotton.

^f Animal drugs and medicines, hides and skins imported; canned meat (KMC); milk products (KCC).

^g Includes milling of both domestic production and imported cereals for human and animal consumption.

Table 2

Major Imported Inputs in Agricultural Commodities 1983/84

Item	Value of Imported Inputs		
	Selected Cash Crops ^a	All Cash Crops ^b	Coverage per cent ^{a/b}
	K shillings million		per cent
Fertilizer			
Maize	117.5		
Coffee	85.6		
Wheat	77.1		
Tea	74.2		
Sugar	55.0		
Total	409.4	477.3	85.8
Agro-chemicals			
Coffee	242.0		
Dairy and livestock	200.0		
Wheat	50.0		
Total	492.0	629.3	78.2
Farm machinery and vehicles, petrol and oil			
Sugar	168.7		
Coffee	73.9		
Wheat	41.6		
Maize	45.8		
Total	330.0	433.5	76.1
Processing machinery			
Sugar	93.5		
Maize milling	33.7		
Coffee	22.1		
Tea	25.2		
Total	174.5	238.2	73.3
Fuel oil			
Tea factories	58.6		
Sugar factories	27.4		
Total	86.0	124.2	69.2

Packaging			
Canned pineapples	131.4		
Milk — KCC	81.7		
Maize milling	32.0		
Horticulture	21.0		
Total	266.1	376.5	70.7
Transport			
Sugar cane to factories	170.7		
Maize — farm to NCPB depot	26.2		
Maize — between NCPB depots and NCPB stores	116.0		
Coffee	35.7		
Total	348.6	455.3	76.6
Grand Total	2,106.6	2,969.1	71.0

Source: Table 1.

processing and transport of tea, have been expressed as a share of the value of smallholder and estate tea production valued at the Mombasa auction price averaged over the three previous years, 1980/81, 1981/82 and 1982/83.

Throughout the study, all imported inputs were estimated at domestic prices using the official exchange rate, and not at world prices or using a shadow exchange rate. This approach has the advantage that it is much easier to calculate imported input costs in domestic prices than 'world prices', and estimates measured in local prices at the official exchange rate can be readily checked by those familiar with local suppliers and producers. It has already been noted that the Kenyan exchange rate was not seriously overvalued in 1983/84.

Although this direct approach is helpful in identifying the major imported inputs and measuring the average import content of agricultural commodities, it does not purport to measure the opportunity cost of saving or earning foreign exchange.

From the summary of imported inputs in Table 1, we see that around 40 per cent of all fertiliser was used on export crops, and the remaining 60 per cent went for cereals and other domestic cash crops. Further information provided in Table 2 indicates that maize accounted for one-quarter of all foreign exchange spent on fertiliser. For those readers particularly interested in the quantity and pattern of fertiliser consumption in Kenya, details are provided in Appendix Table 1.

Among the imported agricultural inputs covered in the study, the largest single item was agro-chemicals, of which two-thirds was used on crops and one-third was spent on animal drugs and medicines. Domestic crops were not major users of agro-chemicals, and coffee exports accounted for over half of all foreign exchange spent on agro-chemicals. This estimate is based on annual field surveys of coffee cooperatives and estates carried out by the Coffee Research Foundation. A survey of agro-chemicals sales conducted by a leading distributor also found that coffee accounted for over half the total value of agro-chemical sales in Kenya.

Turning to the foreign exchange costs of farm machinery, spare parts, depreciation, petrol and oil, it was estimated that the imported inputs used in the production of sugar cane and its transportation to the sugar factories far exceeded the combined costs of farm machinery for maize, wheat and coffee production.

The packaging of agricultural commodities is a major foreign exchange item, due partly to the generally high average import content of metal tins (65 per cent), plastic containers and sacks (55 per cent), paper cartons (50 per cent) and jute gunny bags (36 per cent). From Table 2 we find that the largest packaging items were tin cans for pineapple exports and plastic coated paper used in KCC milk packaging.

Transportation is clearly a major foreign exchange item, with the cost of movement of all agricultural commodities placed at around Shs 455 mn, a figure

which includes rail and road transport into-store, to the factory, and to the port. Important for policy purpose was the finding that transport cost for shipping domestic cereals and other crops into-store and into-factory were *five times* greater than the costs of transporting all export crops from the factory to the port. Moreover, one quarter of the total transport bill stemmed from the cost of transferring maize between National Cereals and Produce Board depots in surplus and deficit areas. Maize and other domestic food crops are relatively bulky and have a low value per ton. This fact underlies the importance of moving away from a pan-territorial system of official producer prices towards a regional pricing system where price differentials would encourage the free movement of crops between food surplus and food deficit areas.

3. The Average Import Content of Food and Non-food Crops

For policy purposes we are interested not only in the absolute size of agricultural foreign exchange inputs, but also in their size relative to the value of production. The average import intensity shows the value of foreign exchange inputs expressed as a percentage of the value of each commodity, and is a concept more readily understood than the notion of domestic resource costs. It is straightforward to calculate using local financial data, and does not involve spurious world price comparisons or questionable shadow price assumptions.

Table 3 provides details of the average foreign exchange content of imported inputs used in export crops, cereals, milling, other domestic crops, dairy and livestock. Smallholder export crops predominated among those cash crops with the lowest average import content, with smallholder coffee, processed cashewnuts and pyrethrum extract having an average import content of around six to seven per cent of the ex-factory value. However, three estate crops — wattle extract, sisal and tea — were also low in terms of their relative use of foreign exchange inputs. Excluding foreign profits and dividends, the average import content of these three estate export commodities was around 8-10 per cent of the ex-factory value. Estate coffee and smallholder tea were similar in terms of their import content — both had an average import intensity of 15 per cent of the ex-factory value.

Consequently, there remains some ambiguity as to whether or not the average import content is generally lower for commodities grown on smallholdings than on estates, and much depends upon whether the estates are locally or foreign-owned. Among the export crops, canned pineapples, which are grown on a large foreign-owned estate, had the highest import intensity, estimated at around 34 per cent of the ex-factory value, excluding export compensation subsidies

and the repatriation of profits and dividend. At a considerable distance followed horticultural exports from large holdings, with an import content of around 22 per cent of the ex-store value. Surprisingly, the import content of smallholder tea was higher than that of estate tea and also noticeably higher than that of smallholder coffee, which had the lowest average import content of all commodities listed in Table 1. Whereas the tea estates used eucalyptus firewood from their forests to provide most of the fuel energy required for tea processing, the Kenya Tea Development Authority (KTDA) smallholder tea factories spent some Shs47 mn on imported oil for fuel energy in 1983/84. This raises a number of policy issues, among them the total acreage that should be licensed for tea planting in smallholder areas and on estates, and the opportunity cost of land for growing firewood or crops.

One of the major findings to emerge from the study was the big difference between export crops and domestic food crops in terms of the average import content. Overall, the import content of export crops was found to be much smaller (13 per cent of the ex-store value) than that of domestic crops (32 per cent of the ex-store or ex-factory value). Wheat, barley and sunflower oil had the highest import intensities. The foreign exchange inputs for processing and transporting wheat and barley accounted for 40 per cent and 38 per cent respectively of the into-store value, while imported inputs for the production, transport and processing of sunflower oil formed 37 per cent of the ex-factory value. All three are domestic crops grown on large-scale mechanised farms in areas of high-potential land.

Other domestic food crops were also found to have a relatively high import content. Foreign exchange inputs used in the production, transport to factory and processing of sugar cane accounted for 32 per cent of the ex-factory value of sugar, excluding excise duties. The import content of maize purchases by the National Cereals and Produce Board from large scale mechanised farms was considerably higher than those from smallholdings. The large scale farming areas of Uasin Gishu, Trans Nzoia, parts of Nakuru, Nandi and Kericho were estimated to produce around 45 per cent of all NCPB maize purchases in 1983/84, and the average import content, assuming a generous yield of 60 bags per hectare, was estimated at 35 per cent of the into-store price. Purchases from small mechanised farms, with a high yield of 45 bags per hectare, had an import content estimated at 32 per cent of the into-store value; and for small non-mechanised farms producing the national average of around 24 bags per hectare, the average import content fell to 20 per cent of the into-store value. Overall, maize purchases by the NCPB were estimated to have an average import intensity of 32 per cent of the ex-store price.

Table 3

**Average Import Content and Value of Imported Inputs for Selected Agricultural Commodities
1983/84**

Commodities	Value of Imported Inputs	Value of Agricultural Commodity	Average Import Content	
	K shs million	K shs million	per cent	per cent
Export crops	<i>fob</i> ^a	<i>fob</i>	<i>fob</i>	<i>ex-store</i>
Coffee smallholders	190.5	2,737.4	7	6
estates	322.9	1,988.8	16	15
total	513.3	4,726.2	11	10
Tea smallholders	147.5	932.5	16	15
estates	129.9	1,161.4	11	10
total	277.4	2,093.9 ^b	13	12
Horticulture				
Cut flowers	25.4	111.6	23	22
French beans	16.6	78.0	21	20
total	83.8	383.0	22	21
Canned pineapples	219.0	619.9	35	34
Sisal	37.6	356.9	11	10
Pyrethrum extract	15.1	200.7	8	7
Cashewnuts	8.2	102.1	8	7
Wattle extract	5.6	62.4	9	4
Total export crops	1,160.0	8,545.1	14	13
Cereal production	<i>in-store</i> ^c	<i>in-store</i>		<i>in-store</i>
Wheat	230.3	575.0		40
Barley	27.7	72.0		38
Rice	12.1	103.0		12
Maize purchases by NCPB ^d				
large farms	138.7	398.2		35
small mechanised	54.9	171.9		32
small unmechanised	61.2	303.4		20
total — into store	254.8	873.5		29
total — ex-store	370.9	1,152.0		32
Total cereals	641.0 ^e	1,902.0		34
Cereal milling	<i>ex-mill</i> ^f	<i>ex-mill</i>		<i>ex-mill</i>
Maize	69.7	1,000.0		7
Wheat	39.0	978.0		4
Animal feeds	35.5	240.0		15
Total cereal milling	144.2	2,407.0		6

Other domestic crops	<i>ex-store</i> ^g	<i>ex-store</i>	<i>ex-store</i>
Sugar	561.2	1,781.0	32
Oil seeds			
maize oil	10.6	46.0	23
sunflower oil	17.9	48.6	37
total	28.5	94.6	30
Tobacco	37.4	192.0	19
Cotton lint	42.0	209.0	20
Total other domestic crops	669.1	2,276.6	29
Dairy and livestock			
Animal drugs and medicines	200.0 ^h	NA	NA
Milk products — KCC	110.8 ⁱ	1,186.1	ex-store 9
Canned meat — KMC	32.9 ^j	192.2	fob 17
Hides and skins exported	11.0 ^j	68.0	fob 16
Total dairy and livestock	354.1	NA	NA
Grand total	2,969.1	NA	NA

Notes:

- a production, processing and transport from store to fob
- b average fob price of tea 1980/81, 1981/82, 1982/83
- c production and transport into store
- d National Cereals and Produce Board purchases estimated:
 - large farms (2.520 million bags)
 - small mechanised farms (1.088 million bags)
 - small unmechanised (1.920 million bags)
- e includes transport between NCPB stores estimated at Kshs 116 mn
- f transport from NCPB store to mill; and processing
- g production, transport into factory and processing
- h production
- i transport and processing
- j processing and transport fob

Source: Table 1

Finally, not only was the average import content of export crops far lower than that of domestic food crops, but the gross income per hectare from export crops was considerably higher than that from domestic cereals and sugar. The average value per hectare of smallholder coffee and smallholder tea was around Shs27,000 in 1983/84, whereas domestic sugarcane outgrowers received only around Shs13,000 per hectare per year, and maize farms yielding the national average of 24 bags per hectare would have earned a gross value of only Shs3,800 per hectare. Similar conclusions as to the higher average value per hectare of export crops than domestic food crops emerge from Table 4, which includes marketed and non-marketed agricultural production and covers not only smallholders but also estates and other large

farms. It shows that export crops accounted for around 35 per cent of the total value of agricultural production, and the average value per hectare was *ten times* greater than for domestic food crops.

4. The Net Foreign Exchange Earnings of the Agricultural Sector

The net foreign exchange contribution of the agricultural sector towards the balance of payments, shown in Table 5, is a useful concept around which to discuss macro management and the interdependence between cash crops for export and domestic use. Agricultural exports provided two-thirds of total visible export earnings in 1983/84, boosted by record

Table 4

Estimated Value and Value per Hectare for Selected Commodities 1983/84

Commodity	Value ^a		Rank
	% of total	K shs/HA	
Export crops			
coffee	21.6	29,780	(1)
tea	11.9	26,500	(2)
pyrethrum	0.4	8,380	(6)
cashewnuts	0.4	3,240	(11)
sisal	1.1	2,740	(14)
total export crops	35.4	27,295	
Other export and domestic crops^b			
vegetables	3.4	18,260	(3)
tobacco	0.5	17,700	(4)
fruits	3.1	5,920	(7)
cotton	0.4	640	(18)
total other crops	7.4	12,100	
Domestic food crops			
rice	0.5	10,380	(5)
barley	0.4	4,980	(8)
root crops ^c	8.1	4,100	(9)
wheat	2.1	3,820	(10)
maize and beans ^d	16.6	3,060	(12)
sunflower	0.2	2,820	(13)
groundnuts	0.2	1,680	(15)
milk	16.3	1,460	(16)
sorghum and millet	1.5	960	(17)
total food crops	45.9	2,730	
sugar	} 11.2	} NA	
beef			
sheep and goats			
others			
Total	100.0	13,315 ^e	

Notes:

a Total value of Kshs 20,700 mn

b vegetables and fruits are both for export and domestic food consumption; tobacco and cotton are domestic non-food crops

c includes potatoes

d because beans are typically interplanted with maize

e excludes sugar, beef, sheep and goats and others

Source: Republic of Kenya, *Sessional Paper No. 1 of 1986*, on 'Economic Management for Renewed Growth', Government Printer, Nairobi, 1986, Table 5.1, page 64.

Table 5

Net Foreign Exchange Earnings of the Agricultural Sector 1983/84

	K shillings million
Visible exports	
agriculture	9,410
non-agriculture	4,200
total	13,910
Visible imports	
agriculture — inputs	-2,696
— food	-1,853
— total	-4,822
non-agriculture	-15,630
total	-20,451
Visible balance	
agriculture — net foreign exchange surplus	4,588
non-agriculture — net foreign exchange deficit	-11,430
total — Balance of Trade	-6,842
Invisible balance	4,671
of which: Tourism and travel	2,591
Government transfers and foreign grants	1,838
Capital movements (net)	
short term borrowing	591
private long term borrowing	1,246
government long term borrowing	1,289
government corporations	267
total	3,393
Summary items	
1 Net foreign exchange surplus of agriculture as percent of non-agriculture imports	29.3%
2 Gap to be funded from: manufacturing exports and tourism; foreign grants; private inflows; external borrowing; change in reserves	70.7%

Source: Table 1 *Statistical Abstract*

	Area	Quantity Used			Value of Imports
	'000 hectares ^a	1982/83 ^b	'000 metric tonnes 1982/83 ^a 1983/84 ^c		K Shs million 1983/84 ^c
Export crops					
Coffee	150	40.7	35.0	35.0	85.6
Tea	85	27.9	28.0	25.0	74.2
Horticulture	60	3.2	4.0	4.5	13.8
Pineapples	6	2.0	2.0	4.0	19.0
Sisal		NA	NA	1.0	2.4
Pyrethrum		NA	NA		
Sub-total		73.8	69.0	69.0	196.2
Cereals					
Maize	1,100	30.0	35.0	35.5	117.5
Wheat	115	12.0	14.0	14.5	77.0
Barley	18	4.7	3.0	2.0	5.2
Rice	6	2.5	2.0	2.0	4.3
Sub-total		49.2	54.0	52.0	204.0
Other domestic crops					
Sugar	85	26.5	24.0	23.5	55.0
Oil seeds	12	1.8	3.0	1.0	3.0
Potatoes	40	2.5	3.0	NA	NA
Tobacco	5	2.5	3.0	2.7	14.1
Cotton	177	1.6	3.0	1.6	4.9
Sub-total		35.0	35.0	29.0	77.0
Total used		158.0	158.0	150.0	477.3

Notes/Sources:

- a Chemical Engineering Consultants (1984)
- b Michael Schluter and George Riugu (1985)
- c Own calculations — Table 1

prices for tea, and a record level of coffee production. On the other hand, imported inputs for the production, processing and transport of all agricultural commodities totalled Kshs 2,696 mn and the cost of food imports was Ksha 1,853 mn, a figure which was unusually high on account of the drought which affected parts of the country in the latter part of 1984. Nevertheless, in 1983/84 the largest imported single food item was not maize, but animal and vegetable oils used in domestic cooking.

After deducting imported agricultural inputs and food items from the value of agricultural earnings, the net foreign exchange surplus of agriculture was estimated at Shs 4,588 mn in 1983/84. This financed only 29 per cent of visible imports by the rest of the economy, and left 71 per cent of the non-agricultural import bill to be financed from elsewhere. The manufacturing sector is not a net earner of foreign exchange in the accounting sense, and as Table 5 shows, the net foreign exchange deficit of the non-agricultural sector in 1983/84 was Kshas 11,430 mn. Kenya's balance of payments is heavily dependent upon foreign exchange inflows from tourism, foreign aid, private capital inflows and external borrowing which can be more unreliable than the weather, and are less responsive to government policies than is the pattern and level of production from agriculture and agro-processing activities. If the production of basic food stuffs, such as maize, milk and meat is to keep pace with the rapid growth of population, Kenya must earn more foreign exchange

with which to finance imported inputs needed for the production, processing and transport of agricultural commodities. Moreover, as real incomes rise, the demand for imported items by the non-agricultural sector tends to rise more than proportionately, and it is to agricultural and processed agricultural exports that Kenya is likely to turn for the foreign exchange earnings needed to finance the balance of payments [Sharpley and Lewis, 1988].

References

- Chemical Engineering Consultants Nairobi (1984), *Proceedings of Workshop on the Fertilizer Infrastructure Support Project*, November, (mimeo)
- Pick's Currency Year Book* 1984
- Republic of Kenya, *Statistical Abstract*, (annual) Government Printer, Nairobi
- Schluter, Michael and George Riugu, 1985, 'Fertilizer and Seed Requirements in Kenya from 1982/83 to 1990/91', IBRD, *Agricultural Inputs Review*, Annex 1, (mimeo)
- Sharpley, Jennifer, 1986, *Economic Policies and Agricultural Performance: the case of Kenya*, OECD Development Centre Papers, Paris
- Sharpley, Jennifer and Stephen R. Lewis Jr, 1988, 'Kenya's Industrialisation, 1964-84', *IDS Discussion Paper* No 242, February