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INDUSTRY AND DEVELOPMENT

IN UGANDA

VOLUME II

prepared for

THE GOVERNMENT OF THE REPUBLIC OF UGANDA

on behalf of

THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

L. H. MANDERSTAM AND PARTNERS LIMITED

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LONDON, S.W.1

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APPENDIX A - SUMMARY

There is a need to be read in conjunction with the following notes. In many instances, many data, time and elements discussed under one section could well have been back again in other sections. This possible repetition the report has been considered very short and, given more space.

Prices: All prices are based in Current Values. It has been assumed that selling prices will keep pace with inflation.

A Normal Year: In some sections reference is made to a Normal Year which should be taken to mean the target production after rehabilitation, assuming that all inputs have been available. A Normal Year could well be the average of the three Crop seasons from 1970 to 1972.

Agricultural Inputs:

Reference has often been made for the need of fertilizers and pesticides but no attempt has been made to assess the optimum requirements for maximum yields. Where estimates have been made these are based on the levels of usage prior to the extreme shortages currently being encountered.

Loan Periods:

Three periods of loan have been used; namely 4½ years (for transport), 7 years (African Development Bank etc) and 10 years (all others).

In each case the appropriate period has been selected for the sake of realism, and to suit the circumstances of each project.

Interest Rates:

Where a loan has been already negotiated at a specific rate of interest (usually 7 per cent) it has been used in the financial calculations. Otherwise 12 per cent has been taken for all other cases.

Finally attention should be drawn to the fact that with major Commodity Crops - cotton, coffee, tea, tobacco and sugar - the foreign exchange evaluations represent the national situation and not just one component unless specifically stated otherwise.

THE COFFEE INDUSTRY

1. THE COFFEE INDUSTRY

1.1 Introduction

Currently, coffee accounts for 72 per cent of Uganda's foreign exchange earnings. In absolute terms, the value of coffee exports has increased by 20 per cent since 1970, and the relative importance of coffee in the whole country's economy is immeasurable.

In spite of world over-production of coffee during the past few years, resulting in low market prices and voluntary international controls in the volume of exports, Uganda was able to maintain production.

The recent virtual collapse of Brazilian coffee production has resulted in a rapid escalation in prices.

The main problem now facing Uganda's coffee industry is that of quality maintenance, which is becoming increasingly difficult as many of the trees have grown old. The very low coffee prices paid to the grower in recent years did not encourage investment in planting or in the future of the industry.

There are problems of organisation in processing and marketing but these are of relatively minor importance compared with those of maintaining a high level of production of good quality beans.

1.2 Production

The production of coffee has settled down to approximately 200,000 tonnes per annum. The highest recorded yield was in 1969 when some 247,000 tonnes were harvested. (Table D1.I p.15). Since 1973, production has declined and there is now serious concern in the country that this trend will continue unless steps are taken to restore the confidence of growers in the crop.

In spite of a small but steady rise in open market prices, payment to growers was held at the same level for four years after 1970/71 @ 134 cents per kg. However, the price was increased to 136 cents per kg in 1974/75. (Table D1.II p.16) It is unfortunate that past disincentives to produce are now having their effects. There has been little new planting and quality standards could become seriously eroded as a result. The coffee industry is well served by research facilities, however, and provided that the necessary inputs are available renovation should present no serious problems.

Both Arabica and Robusta coffees are grown, the latter accounting for over 90 per cent of the total production. The higher valued Arabica coffees are grown mainly in the Eastern and Western Regions, on the slopes of Mt Elgon and also in the West Nile, Kigezi and Ankole regions.

5. The 1974/75 crop (1974/75) is grown around Lake Victoria from which it is exported.

I.3 Processing

The farmers take their coffee to one of about 155 processing units, licensed by the Ministry of Agriculture. Only about 70 of these units are of significance with outputs of 1,000 tons per annum or over (See Table III.11 P.17).

In numbers the division between 'wet' and 'dry' plants are equal; however, in capacity, the 'dry' plants are about ten times greater. The majority of the Robusta coffees are dry processed. With Arabica the 'wet' process predominates. This is clearly shown in data for the 1974/75 crop season:

		Wet Processed		Dry Processed		Total (tonnes)
Robusta	92.5%	4,749	(3%)	178,701	(97%)	183,450 (100%)
Arabica	7.5%	11,145	(74%)	3,862	(26%)	15,007 (100%)
Total	100.0%	15,894	-	182,563	(-)	198,457 (-)

In the same year, only 33 per cent of the 'wet' capacity was used as opposed to 81% of the 'dry' capacity. Currently, performance at the factories has been declining; three large units are in need of total rehabilitation and equipping. In certain production areas, there is said to be insufficient capacity and therefore that two further 'dry plants' are required.

Although the requirement for new dry plant seems reasonable, there is no information available by which to judge the true position. There are no data from detailed surveys on the structure of the industry, although the F.A.O. have recommended that a survey should be made. The same difficulty arises in considering storage facilities at the processing factories. Currently, there is storage capacity for some 51,750 tonnes. This is said to be totally inadequate. To what extent the shortage claimed is real is not easy to determine. However, it is said that growers have had to take their coffee back to their farms because of the shortage in storage facilities.

There is one other significant reason for supporting an increase in the storage capacity of the fresh processed coffee. If the farmers can deliver the crop at the right time it will be easier to maintain quality standards. The international coffee market is always highly competitive and quality-conscious. Subject to a detailed appraisal of the situation on the ground, the provision for such investment seems sensible.

One problem which affects the whole running of the industry would seem to be the bottle-necks that occur regularly at the Central Processing Unit (CPU) at Kampala. The cause is said to be over-stocking with coffee because of shortage of rail wagons. Elsewhere in this report we comment on the rail and transport system but improvements are unlikely to take place in the immediate future.

I.4 Exports

The importance of exported coffee as a foreign exchange earner has already been mentioned. The quantity has grown steadily from around 100,000 tonnes in the late 1960's to 190,000 tonnes in the early 70's. In the last three years, exports have declined by about ten per cent mainly because of the lower production.

In the late 1960's, Uganda's export quota under international agreement was only 120,000 tonnes, thus effectively limiting up to 75-80 per cent of the total sales. The main quota countries used to be the UK (25%) and USA (36%). There were no large non-quota markets although the Sudan, Thailand and Saudi Arabia bought regularly.

Currently, the USA takes about one third of the exports; Britain's demand has declined to about 12 per cent. Japan's purchases show every sign of increasing; France, West Germany, Sudan, Australia, Spain, USSR and Hungary each buy about 3 to 4 per cent annually.

In the early 1970's export prices were of the order of 5000 to 6000 Shs. per tonne and have risen to about 8000 Shs. per tonne. Currently, spot prices of 20,000 Shs. per tonne are being quoted in the international commodity markets. In the calculations of foreign exchange, 11,500 Shs. has been taken as the base. Any higher level would be entirely speculative.

I.5 The Organisation of Exports

The full responsibility for finding export markets and for shipping the coffee rests with the Coffee Marketing Board (CMB) which has headquarters in Kampala.

The CMB has two sales offices overseas. The largest is in London and services the European trade. The New York office looks after North America. Agents have been appointed in other countries which are considered to be growing markets: Australia, New Zealand and Japan. The offices and agents telex Kampala with details of prices, offers, bids etc. Reports from the markets are discussed by the CMB Sales Committee which meets every Tuesday. After this meeting, offers are accepted and arrangements confirmed for shipping.

All the coffee is exported in 60 kg Hessian Gunny bags. Robusta coffee is normally sold in consignments of 100-150 tonnes. Consignments of Arabica tend to be smaller at 100-250 tonnes. (See Appendix D7, pp 115-117).

The country's main ports for handling coffee are likely to be the port of Mombasa and the port of Lamu. The port of Mombasa is the main port for coffee exports from the CMB. Coffee is transported to the port of Mombasa by road and by rail. The port of Mombasa is a busy port, at a cost of about 90 cents per metric ton.

At the Central Processing Unit, the coffee either undergoes further washing, polishing, grading and colour sorting or is just packaged and stored, ready for export. The highest processing capacity recorded was in 1973, when 143,000 tonnes were handled. Since then output has fallen to 105,336 tonnes. The CPU has a normal in-take capacity of 160 tonnes/hr and a maximum cleaning and grading capacity of 72 tonnes/hr; other specialist operations are undertaken but these take longer. Drying 25 tonnes/hr, polishing 10 tonnes/hr and colour-sorting 5 tonnes/hr. The capacity of the reception piles is 3,000 tonnes while that of the bagging-out piles is 2,000 tonnes.

The operation of the CPU has not been without its technical problems. During the team's six week visit to Mombasa there was a major bottleneck at the in-take point. Although rated at 160 tonnes per hour nothing like this capacity was being achieved. The reason was that owing to storage problems, 500 tonnes of coffee in sacks had been placed in the in-take bay. Therefore every sack into the plant had to be manually handled over this stack before being emptied. It was hardly surprising that often more than 20 lorries could be seen waiting to unload, thus adding to the country's already severe shortage of transport.

The technical maintenance of the plant appeared to be under control but the general standard of 'house-keeping' and cleanliness was poor, especially when there appeared many unemployed persons waiting for something to do.

The stores at the CPU can hold 1.5 million bags of coffee, which can be stored up to three years if necessary. The stores are adjacent to a rail siding for easy loading. However, there is said to be a constant shortage of wagons. As a result, it is difficult to build up stocks at the godown in Mombasa where theoretically up to 750,000 bags can be stored for immediate shipping. The real problem is that the CPU becomes over-congested because of insufficient rail capacity. Some new bulk stores are now being built, which will help to overcome the problem. The long term objective should be to improve the rail service.

The CMB office in Mombasa makes all the loading and shipping arrangements directly as well as overseeing the 1,000 employees at the godown.

I.6 Foreign Exchange Inputs

I.6.1 General

The last accounts for the CMB were published in 1969. Those for 1970, 1971, 1972 do not appear to be available and at the time of the Consultants' visit accounts for 1973/74 and 1974/75 were either being prepared or audited. It will therefore be understood that many estimates have had to be made.

The CMB is acutely aware of the need for trained accountants, particularly cost accountants, capable of installing new costing systems. Technical assistance in this field would be very much appreciated.

I.6.2 Production

The output from the industry shown in Table 11.12 (P.18) has been based on a norm of 30,000 tonnes annual production. Although it is always possible to increase production, past experience suggests that it might be wiser to concentrate on improving quality rather than on output.

The home market makes little contribution to the organised part of the industry and therefore financial estimates have been based on total export values.

Provision has been made for 6.95 million Shs. per year for improving production of farms. Primarily, the main inputs will be fertilisers and pesticides but provision will have to be made for equipping extension workers with bicycles, cars etc. Training of researchers and indeed of senior advisers should be undertaken and therefore provision has been made for overseas facilities to be utilised.

No assessment has been made of the farmers' requirements for local transportation but this matter is said to require urgent attention.

I.6.3 Processing Factories and Stores

The sum provided covers the foreign exchange requirements both for the additional new plants and the reconstruction of existing plants, together with the increased facilities for storage. However, as responsibility for the coffee crop is shared between two Ministries some confusion seems inevitable, a matter which might require attention. As yet the CMB has not prepared in detail a full specification of the improvements now required for the coffee industry.

I.6.4 Central Processing Unit

The Central Processing Unit was built in 1968 and many of the components are now showing their age. The pneumatic conveying system, in particular, is in need of replacement and the blowers require a major overhaul or actual replacement.

The air lock valves have also served their useful life and can no longer be maintained.

There are 50 Gunson Sortex series 423 Colour Sorters with an individual output of 300 lbs per hour each, i.e. a standard capacity of 5 tons per hour for the whole installation. At present, only 40 of the original units are working and these have lost their colour sensitivity.

On a 7 1/2 hour shift basis, the theoretical output should be 37 1/2 tonnes per day; currently output is estimated at 12/15 tonnes per day.

The actual output for the last three years has been as follows:

1972/73	4,345 tonnes
1973/74	4,256 tonnes
1974/75	3,017 tonnes

Plant of this sophistication should be worked for a minimum of two shifts per day. For a six day week, 50 weeks in the year, the output should have been

$$37\frac{1}{2} \times 2 \times 6 \times 50 = 22,500 \text{ tons}$$

This quantity could be expected to make some impact on the market. The original design anticipated 100 units and therefore twice the output.

The present units have passed their useful life and should be replaced. In the space now occupied by fifty 423 units, 25 Ganson Sortex 962 units could be installed. Each unit has an hourly output of 500 kgs making 12 1/2 tonnes for the installation. If all the space available for colour sorting at the CPU were utilized a total of 50 "962" units could be installed. In this case, the annual capacity would be

$$7\frac{1}{2} \times 2 \times 6 \times 50 \times 25 = 112,500 \text{ tons}$$

This would be about 59 per cent of total exports.

The total cost of fifty 962 Sortex units would be in the order of 10 million Shs; however on the above throughput the total depreciation and loan interest for 7 years would be in the order of 20 Shs per tonne. In view of the paramount need for Uganda to offer a premium quality product this investment would seem to be highly prudent.

The price history of colour-sorted coffee is set out below.

Average Price, Cents per lb.

Year	Robusta (Plain)	Robusta (Colour-sorted)
1972/73	34.38	51.72
1973/74	51.73	54.01
1974/75	45.05	47.83

The minimum difference of 1.9 cents per lb represents 45.85 Shs. per tonne which provides a margin of more than 24 Shs. per tonne to cover operating costs and maintenance of the colour sorting equipment.

In the past, colour-sorting has been offered as an 'extra'. In our view all the higher quality parcels should be so graded, to ensure uniformity and confirm Uganda's position as a quality coffee producer.

I.6.5 Transport

In connection with other services in the country transport to move coffee from farms to processing factories and from there on to the Central Processing Unit is totally inadequate.

The Cooperative Transport Union provides the service for a charge of 90 shils per tonne km. However, there are never enough lorries to keep an even flow of coffee from farm to the CPU.

It would therefore seem essential to increase the number of vehicles available to the industry as follows:

	Million Shs.
140 - 8 tonne lorries @ say Shs. 200,000 =	28.0
(30 - 20 tonne lorries (@ say Shs. 375,000 =	11.25
(30 - 10 tonne trailers	
Total Say	40.0 million Shs.

I.6.6 Operating Costs/Spares

It will never be feasible to manufacture all spares locally. In order to keep the CPU and processing factories operating at maximum capacities, it is essential that sufficient stocks of spares are available.

No detailed survey has been made of the annual maintenance costs and therefore a provision of 10 million Shs. has been included.

I.6.7 Coffee Marketing Board Expenses

The annual costs of maintaining the CMB overseas facilities are estimated as follows:

	Mill Shs.
London Office	5.00
New York Office	4.50
Mombasa Office, Godown and Shipping	50.00
Market Intelligence	1.90
	<hr/>
	61.40

Costs at Mombasa will vary according to the quantities handled in any one year.

1.6.3 Foreign Exchange Evaluation

The total foreign exchange requirements are for an immediate capital loan of 76.0 million Shs. and an annual provision of 78.35 million Shs. to cover operating costs. (See Table DL.IV p.18).

On the assumption that a 7-year loan can be negotiated at 12 per cent, the total cost of interest and repayments will be 10.65 million Shs. making a total annual foreign exchange requirement of 90 million Shs.

In pure accounting terms, further provision to replace the transport vehicles should be made after the fourth project year. However, it is thought that a once and for all loan should put the industry on its feet and that thereafter the Cooperative Transport Union could be responsible for its own financing.

In a full year the 'standard crop' of 200,000 tonnes (191,200 tonnes exported) should yield a minimum of 2,200 million Shs. in hard currency. At this level, the net foreign exchange benefit will be 2,105 mill Shs. The import coefficient will be 0.043.

In Table DL.IV, (p.18) the effects of higher coffee prices are evaluated. At a price of 20,000 Shs. per tonne the net foreign exchange benefit would be 3,729 mill Shs. Conversely, if all costs were doubled on an annual base at the lower rate of return of 11,500 Shs. tonne the net foreign exchange benefit falls to be 2,010 million Shs. with a corresponding import coefficient of 0.086.

II THE WORLD SITUATION

II. 1. Production and Exports

World production has historically been in a position of chronic surplus, to such an extent that Brazil resorted to burning excess requirements for domestic and export markets. Since 1957 Brazil's share of world production has declined from 50% to just over 30%. Her influence, however, on the world situation can still be dramatic as seen by the effect of frosts, in July, 1975, in the Parana, Sao Paulo and Southern Minas Gerais plantations which decimated the 1976/77 crop. Expectations are that this crop will be only 8.2 million bags (each of 60 kilos), 13 million less than might otherwise have been expected. The effect on world prices was a doubling within two weeks.

World production in 1975/76 is expected to be 72.8 million bags as presented in Table D1.V (p.19) where world data since 1968 are recorded. This is 7 million bags less than last year which provided a bumper crop. The main concern, however, is to determine the effect that the Brazilian frosts will have on the future world supply and the position in which other supplying countries find themselves. Tables D1.VI to VII detail by country producer stock positions, exports for 1968/69 to 1974/75 and projections of exportable production up to 1980/81. (Pp.20-22).

Brazil, with well organised warehousing to carry stocks for the leaner years, possessed nearly 60% of world producer stocks in 1974/75 (Table D1.VI). This will enable her to make available a certain level of exports, though a drastically reduced one. Table D1. VIII shows export availability will be only 3.6 million bags in 1976/77 and will not return to former levels until 1979/80. As Brazil accounts for over a quarter of world exports (55 million bags in 1974/75) a supply gap will be apparent in the next four years. Attempts may be made to supplement Brazilian availability to a certain extent by purchasing supplies from robusta growers in Africa as evidenced by her recent purchases from Angola and Ivory Coast.

The position facing other producers who are important suppliers to the world market is one of dilemma; whether to maintain existing production levels and take advantage of high world prices, or to increase production and secure a foothold in markets where a shortfall in supply is evident. Colombia, the world's second largest producer and exporter, is in such a position. One faction within the country favours the former course while another has pressed for an expansion of output by 200 to 300,000 bags to fill the gap left by Brazil. Should Colombia not expand output, it is possible that African growers may be willing to take the opportunity of establishing themselves in new markets.

II.2. Consumption

World consumption of coffee is considered to be static at about 45 million bags per annum. The two major importing areas, as seen in Table D.IX. (p.23) are the E.E.C. and the U.S.A. accounting for 75% of total imports. The main potential for increased consumption possibly lies in the rising incomes in E. Europe and the U.S.S.R. It is significant that rising incomes in Japan over the last decade have had a considerable impact on consumption. Imports are currently over double the level of 1968/69.

The main uncertainty, however, is what will happen to consumption now that prices have risen so dramatically and might be expected to rise still further with a major shortfall not expected until the 1977/78 crops. There must be a point at which consumer resistance to prices will appear. If it can happen in the case of sugar it will probably happen to coffee, especially as tea is a readily available and cheaper substitute, susceptible to a violent fluctuation in price. The tea 'habit' has been increasing in the U.S.A. and even in Brazil, where domestic prices have been pushed up to make more available for export, coffee consumption is reported to have fallen and switched to mate tea.

II.3. Prices

Coffee prices are charted in figures D1. I to III (Pp 21-26) covering average London weekly prices between April 1971 and April 1976; International Coffee Organisation indicator prices 1971 - 1976 (February) for different coffees; and average export values for all varieties plus that of Ugandan origin between 1962 and 1974.

All varieties of coffee appear generally to have moved in unison, with differentials between the grades being maintained. It is noticeable, however, that the effect of frosts has put a premium on the price of unwashed arabicas, Brazil's principal variety. In relation to Ugandan coffee, it seems that export prices have previously moved closely with the average export values of all robusta producers, never differing by more or less than a few cents/lb.

The course of coffee prices over the last few years has not experienced such a boom as was enjoyed by other commodities. The Brazilian frosts, however, partly reinforced by the Angolan situation pushed prices up to £800 per ton, but they faltered back towards £700. Early 1976 saw an increasing trend, following the earth quake in Guatemala. Prices rocketed in April 1976, up to an all time peak of £1400 per ton. The increase is apparently attributable to insufficient supplies for shipment (though this might be construed as strategy on the part of the producers).

It is expected that prices will recede somewhat, to a possible range of \$1,000 - \$1,050 during the latter half of 1976. A fall to below \$900 on the margin of that is considered unlikely - this level being consistent with world inflation. In 1977 and 1978, prices should remain high and probably rising as and when the likely shortfall in production appears. Should prices rise to above the current \$1,400 - \$1,500 range, consumer resistance may become apparent. In the longer term considerable oversupply will probably return after 1979, with consequent falling prices.

III TECHNICAL ASSISTANCE AND PROJECT IDENTIFICATION

III.1 General

The two major requirements for new production capacity have already been discussed (i.e. two processing plants and new storage capacity). Until further data have been assembled, it is not possible to prepare a detailed feasibility study.

Attention has been drawn to two factors which may require careful consideration. The structure of the coffee industry is not, apparently, coordinated by any one Government department or organisation. The current range of producer prices may not provide sufficient incentive for growers to improve production in quality and quantity.

It is considered that a major economic study of the Ugandan Coffee industry should be undertaken. Such a detailed cost benefit/ economic appraisal covering all stages of handling the crop from production through to marketing would be essential to the future planning and re-organisation of the industry.

It is suggested that the study would be conducted in three separate phases.

III.2 Phase I - Production and Primary Processing

F.A.O. have recommended that a major study should be undertaken to assist the Ugandan Government on the vertical integration of the agro industrial sector which includes coffee. F.A.O. have also recommended that a longer term project be undertaken to improve coffee quality; and finally the third recommendation is that a census of coffee production should be carried out to establish the health and condition of the coffee trees in the country so that the full scope of production and replanting can be assessed.

In parallel with the F.A.O programme of investigation the study would include a survey of the primary processing and storage facilities in the country to determine suitability of location, the condition of buildings and plant, the present operating capacities and what in-puts will be required in the future to meet various levels of planned expansion. Special attention should be given to evaluating costs and efficiencies to ensure that in the future the industry is in a position to return the highest possible price to the grower.

III.3 Phase II - Marketing Development Study

The terms of reference for this part of the study might include:-

- To investigate and report on the present world situation with regard to coffee production and consumption and to evaluate future trends in the demand for fresh coffee and processed products.
- To investigate and report on the prices received in the main markets vis a vis those obtained by countries competing directly with Uganda.
- To survey major and potential customers; to determine requirements and to evaluate customer attitudes towards the product, the quality of service and any other matters pertinent to the improvement of Ugandan trade.
- To identify and evaluate current sources of market intelligence and information and to prepare recommendations on the systems most suited to Uganda's circumstances.

The essential purpose of this part of the study is to find out what has been going on in the market place, and to identify the steps which should be taken to improve prices, stabilise markets and enhance Uganda's reputation as a major world exporter of good quality coffee.

III.4 Phase III - Organisational Study of Coffee Marketing Board

In the light of the findings of the first two phases, the work in this phase would attempt to determine the responsibilities and functions the Coffee Marketing Board should perform.

Having established and agreed firm objectives for the future the final part of the study will be concerned with drawing up in detail the management structure best suited to meet future needs.

The report will set out in detail how the following functions should be organised; administration, commercial, technical, personnel, management development and training and finally general business planning.

At the outset it should be appreciated that this study will involve a great deal of research and investigation. In the current situation many relevant facts and figures are not available as few co-operatives or indeed marketing boards have been able to prepare and publish comprehensive annual reports and accounts. It goes without saying that before major policy decisions can be taken on the future reorganisation of the industry, much time and effort will have to be spent in collecting, identifying and evaluating, basic data. It is also likely that much of the cost data will have to be synthesised.

III.5 Coordination of Projects

F.A.O. has suggested that its proposed comprehensive study of the agro industry sector of Uganda (cotton, coffee, tea, tobacco, sugar etc) should be undertaken by one management consultant working in the country for 2-3 months and assisted by three industry experts (tea, coffee and tobacco) for one month each. While such a mission can no doubt define the broad organisational structures of the agro industry sector, much detailed work is likely to remain in establishing how far the existing infrastructure is adequate to implement the proposals.

It is unlikely that the programme of research outlined in this report will cost less than US \$ 100,000 in view of the extensive fieldwork involved. Ideally the same consultant team should be jointly concerned in the marketing and management aspects of the study to ensure continuity of thought and purpose.

As regards timing there would seem much to be gained if the proposed marketing and management study was started while the F.A.O. team was still in the field and before report preparation was started.

IV PROPOSED PROJECTS

IV.1 Manufacture of Dehydrated Coffee

The East African Development Bank commissioned a feasibility study to investigate the possibility of instant coffee manufacture in Uganda in 1972. The project was undertaken by the Central Organisation for Applied Scientific Research in the Netherlands.

The basic recommendation was that a 2,000 tonne/annum spray-dried plant at 12.7 million Shs was likely to be more advantageous than an A.F.D. plant which was expected to cost 56.6 million Shs.

There are obvious advantages to Uganda in pursuing this project in greater detail. However we recommend that no further action is taken until the Marketing Survey proposed in the previous section has been undertaken. This study should provide essential basic data about the marketing opportunities for Instant Coffee.

Table D1.1
Uganda Coffee Production and Exports, Quantity and Value, 1966-1975

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	'NORMAL' SEASON
Production											
Arabica			14,212	14,794	14,100	16,200	20,825	16,083	15,007	14,000	
Robusta			119,171	232,459	187,400	159,500	162,886	198,368	183,450	171,000	
TOTAL			133,383	247,243	201,500	175,700	183,711	214,452	198,457	185,000	
Calendar Year											
(Tonnes)	164,674	157,580	151,542	228,610	215,971	171,964	175,140	212,630	199,102	189,000	200,000
Coffee Exports:-											
Arabica	17,549	14,008	23,452	17,559	11,399	14,258	24,089				16,000
Robusta	149,638	145,470	128,220	163,007	179,846	160,337	190,094	196,308	187,230	176,609	175,200
TOTAL	167,187	159,478	151,672	180,566	191,245	174,595	214,183		(171,684)(1)		191,200
(Tonnes)											
Exports	105.6	77.8	138.8	97.6	88.3	103.1	167.2				
Arabica	589.8	614.3	575.3	682.5	926.1	879.2	961.1	1,261.7	1,567.8	1,398.1	2198.8
Robusta	695.4	692.1	714.1	780.1	1,014.4	932.3	1,128.3		(1,252.4)(1)		
TOTAL											
Average Price											
Per Tonne	6.02	5.55	5.92	5.56	7.75	7.23	6.94				
Arabica	3.94	4.22	4.49	4.19	5.15	5.48	5.06				
Robusta	4.16	4.34	4.71	4.32	5.30	5.63	5.27	6.43	8.37	7.92	11.5
TOTAL									(7.29)(1)		
THROUGHPUT OF											
CENTRAL PROCESS UNIT (tonnes)				124,715	124,633	136,651	143,769	112,681	105,226		

SOURCE: Coffee Marketing Board
1973 Statistical Abstract

(1) Ministry of Planning

Table 11. II

Prices Paid to Growers for Coffee in Uganda
U. cents/kg

	ARABICA DRIED CHERRY	ROBUSTA DRIED CHERRY
1967/68	154	88
68/69	154	103
69/70	90	106
70/71	134	119
71/72	134	119
72/73	134	119
73/74	134	119
74/75	136	125

SOURCE: Coffee Marketing Board

Table D1 III
 Uganda Coffee - Distribution and Capacity of Coffee Factories and Storage with
 Est. Rates of new Capacity required

	LICENSED UNITS		CAPACITY		1974/75		UTILIZED CAPACITY		NEW CAPACITY		STORAGE		FUTURE CAPACITY	
	NET	DRY	WET	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
EAST MENGO	29	25	7,500	75,000	2,487	74,146	6,400	20,000	20,000	20,000	20,000	37,000		
WEST MENGO	17	14	4,250	32,800	764	24,165		8,000	8,000	8,000	14,500			
MASAKA	20	16	5,000	49,500	997	33,030		15,000	15,000	12,000	22,000			
ANKOLE	3	4	1,000	11,200	848	9,003		4,200	4,200	3,000	5,500			
TOPO	1	3	300	7,200	-	5,250		750	750	3,000	5,500			
MUBENDE	4	9	800	23,200	368	22,985	6,400	800	800	7,000	13,000			
KIGEZI	3	4	750	5,600	28	1,387		1,000	1,000					
BUNNYOPO	NIL	2	-	4,800	-	807		1,400	1,400					
WEST NILE	(HAND)	1	-	2,400	915	-		600	600	300	700			
TOTAL	77	78	19,600	211,800	6,407	170,773	NIL	51,750	51,750	53,500	93,000			
					33	813								

SOURCE: COFFEE MARKETING BOARD.

Table D1. V

World Production of Coffee: 1968/69-1975/76

(thousand bags)

	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76
Kenya	821	904	983	1,020	1,266	1,184	1,102	1,200
Tanzania	859	769	828	764	1,004	706	800	800
Uganda	4,121	3,358	3,184	3,063	3,850	3,200	3,000	2,800
Ghana	85	95	75	80	80	60	90	70
Nigeria	28	49	90	80	80	70	70	50
Sierra Leone	136	100	158	125	200	53	100	80
India	1,224	1,060	1,631	1,132	1,506	1,500	1,529	1,500
Papua New Guinea	353	458	449	500	600	600	600	600
Trinidad and Tobago	53	38	65	55	45	32	40	40
Other Commonwealth ¹	175	85	80	100	100	100	100	150
Brazil	16,642	20,600	10,709	24,600	23,500	14,500	27,500	23,300
Colombia	7,900	8,500	7,800	6,500	8,900	8,000	9,000	7,700
Costa Rica	1,156	1,400	1,250	1,350	1,350	1,600	1,400	1,500
Guatemala	1,750	2,000	1,950	2,200	2,200	2,200	2,400	2,400
Mexico	2,865	3,082	3,200	3,500	3,800	3,400	3,900	4,000
El Salvador	1,925	2,400	2,160	2,660	2,100	2,400	3,100	2,100
Other Latin America	5,800	5,700	6,500	6,600	6,700	6,400	6,300	6,400
Angola	3,300	3,600	3,400	3,800	3,900	3,200	3,000	1,500
Burundi	376	242	368	419	325	358	400	400
Cameroun	1,219	1,54	1,085	1,155	1,477	1,393	1,816	1,700
Ethiopia	2,000	3,000	2,600	2,300	2,600	2,200	2,500	2,600
Ivory Coast	3,502	4,661	3,995	4,484	5,030	3,253	4,485	4,800
Malagasy Republic	1,100	850	1,300	1,000	1,000	1,200	1,400	1,200
Malawi	1,200	1,300	1,300	1,300	1,400	1,300	1,200	1,100
Other Africa	1,050	1,000	1,000	950	1,000	900	1,000	900
Indonesia	2,600	2,700	2,800	2,300	2,800	2,900	3,000	2,800
Other Asia and Oceania ²	900	1,050	1,000	1,050	1,050	1,050	1,100	1,100
TOTAL	63,300	70,200	60,200	73,100	77,800	63,600	80,900	72,800

1. Jamaica, Guyana, Malawi and Malaysia.

2. Hawaii, New Caledonia, Philippines, Timor, Vietnam and Yemen.

SOURCE: Commonwealth Secretariat

Table D1. VI

Total Carry-Over Stocks of Coffee in Exporting Member Countries*
At the Close of Each Year 1969/70 to 1974/75

'000 bags

Exporting Member	Carry-over stocks as at	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
TOTAL		65,336	54,637	54,867	55,895	40,896	49,277
Colombian Milsa		5,936	6,258	4,946	6,136	4,215	3,500
Colombia	30 September	5,583	5,635	4,216	5,434	3,839	3,000
Kenya	30 September	286	346	235	209	236	240
Tanzania	30 June	67	277	495	493	140	260
Other Milsa		2,933	5,021	5,977	4,330	4,667	3,365
Burundi	31 March	0	12	4	18	5	36
Costa Rica	30 September	206	337	523	180	224	105
Dominican Republic	30 June	68	319	324	173	233	197
Ecuador	31 March	89	241	292	413	413	300
El Salvador	30 September	793	1,048	1,427	1,072	993	370
Guatemala	30 September	92	187	297	120	295	10
Haiti	30 June	47	63	55	62	73	156
Honduras	30 September	89	165	98	76	190	48
India	30 September	342	998	768	736	679	598
Jamaica	30 September	0	0	0	0	0	0
Mexico	30 September	407	574	892	761	796	675
Nicaragua	30 September	86	182	309	12	92	48
Panama	30 September	0	8	17	6	27	15
Papua New Guinea	30 September	85	136	195	45	88	70
Peru	31 December	423	591	595	544	422	570
Rwanda	31 March	0	2	0	0	0	47
Venezuela	30 September	206	168	181	112	137	120
Non-Arabica		46,736	32,770	32,562	32,553	21,371	28,700
Bolivia	31 December	4	5	11	10	5	10
Brazil	31 March	45,664	31,611	31,753	31,804	20,780	28,192
Ethiopia	30 September	1,062	1,149	788	706	563	468
Paraguay	31 March	6	5	10	33	3	30
Robustas		9,731	10,588	11,382	12,376	10,643	13,712
Ghana	30 September	72	52	33	20	28	25
Guinea	30 September	33	51	56	27	2	20
Indonesia	31 March	513	762	619	457	550	500
Liberia	30 September	43	47	36	13	4	10
Nigeria	30 September	28	38	16	10	17	91
OAMCAF*		2,757	3,314	3,982	4,203	2,762	1,103
Angola	31 March	3,559	4,016	4,785	5,619	4,698	5,812
Timor	31 December	3	3	12	0	0	51
Sierra Leone	30 September	53	113	2	0	0	0
Trinidad & Tobago	30 September	0	0	0	0	0	0
Uganda	30 September	1,913	1,530	1,254	1,801	1,759	1,800
Zaire	30 September	753	657	587	726	823	1,100

* Includes Cameroon, Central African Rep., Congo, Dahomey, Gabon, Ivory Coast, Malawi and Togo.

* International Coffee Organisation.

Table B1 VII

21

Report on Coffee Exports by Exporting Member* To All Destinations

1968/69 - 1974/75

'000 bags

Exporting Member	October-September						
	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75 preliminary
TOTAL	52,859	53,585	52,814	52,054	59,779	57,050	54,818
Colombian Milder	3,174	3,390	7,944	8,366	8,540	9,312	9,452
Colombia	6,534	6,874	6,351	6,487	6,255	7,408	7,542
Kenya	777	799	953	1,079	1,200	1,224	1,088
Tanzania	863	717	660	800	1,091	680	802
Other Milds	10,599	11,122	10,798	12,761	15,292	13,267	15,951
Burundi	249	260	319	398	380	277	544
Costa Rica	1,112	1,067	1,020	1,240	1,456	1,337	1,385
Dominican Republic	403	479	447	492	619	534	486
Ecuador	749	750	727	921	1,051	945	927
El Salvador	1,819	1,874	1,621	2,196	2,425	2,278	3,509
Guatemala	1,541	1,697	1,563	1,812	2,051	1,909	2,284
Haiti	308	275	358	398	323	310	291
Honduras	364	470	379	560	686	477	857
India	580	389	635	668	941	826	1,013
Jamaica	9	13	16	17	16	16	17
Mexico	1,478	1,627	1,511	1,664	2,409	1,855	2,172
Nicaragua	459	508	473	523	758	525	566
Panama	27	30	27	32	41	24	18
Papua New Guinea	348	399	416	470	667	587	663
Peru	689	779	731	820	1,010	511	684
Rwanda	199	217	229	232	245	508	411
Venezuela	270	288	325	318	214	348	133
Unwashed Arabicas	20,539	19,574	19,467	21,011	19,850	16,340	15,885
Bolivia	53	62	54	65	77	61	77
Brazil	19,137	18,149	18,068	19,460	18,316	15,273	14,808
Ethiopia	1,321	1,341	1,332	1,426	1,392	964	910
Paraguay	28	22	13	60	65	42	90
Robustas	13,547	14,499	14,605	15,916	16,091	18,131	13,530
Ghana	46	56	49	66	61	40	60
Guinea	132	173	103	86	122	40	50
Indonesia	1,558	1,435	1,302	1,329	1,566	1,890	1,647
Liberia	64	78	78	84	104	71	69
Nigeria	65	42	63	70	36	19	21
OAMCAF +	5,114	5,497	5,711	6,413	6,278	7,729	5,777
Angola	2,779	2,677	2,756	2,993	2,919	3,647	1,903
Timor	43	58	65	82	80	65	76
Sierra Leone	80	102	95	238	194	53	106
Trinidad and Tobago	45	42	69	51	46	17	47
Uganda	2,670	3,197	3,032	3,140	3,611	3,283	3,035
Zaire	951	1,142	1,282	1,364	1,074	1,277	739

* International Coffee Organization.

+ Includes Cameroon, Central African Rep, Congo, Dahomey, Gabon, Ivory Coast, Madagascar and Togo.

Table DL VIII

22

Report on Production of Coffee by Exporting Members*
 Projections For Crop Years 1974/75 to 1980/81

*000 bags

Exporting Member	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
TOTAL	61,247	53,689	46,749	53,822	60,045	67,904	70,183
Colombian Milds	9,417	9,390	9,572	9,712	9,852	9,970	10,106
Colombia	7,458	7,312	7,395	7,487	7,567	7,666	7,753
Kenya	1,063	1,158	1,188	1,217	1,247	1,276	1,306
Tanzania	896	920	989	1,008	1,018	1,028	1,047
Other Milds	14,535	13,856	15,074	15,498	15,919	16,351	16,614
Burundi	463	277	467	482	496	516	541
Costa Rica	1,288	1,380	1,456	1,489	1,526	1,563	1,595
Dominican Republic	546	556	565	575	584	593	602
Ecuador	1,080	601	1,112	1,153	1,194	1,235	1,276
El Salvador	2,573	2,218	2,472	2,537	2,591	2,656	2,720
Guatemala	2,000	2,188	2,130	2,210	2,225	2,250	2,300
Haiti	306	375	380	385	390	396	402
Honduras	715	615	640	661	686	705	730
India	932	992	930	965	1,010	1,045	1,080
Jamaica	12	15	15	15	15	15	15
Mexico	2,050	2,093	2,136	2,230	2,323	2,416	2,510
Nicaragua	570	638	656	674	692	710	728
Panama	29	40	40	45	45	45	45
Papua New Guinea	641	695	655	680	705	730	755
Peru	592	580	768	805	843	880	918
Rwanda	318	328	338	347	357	367	377
Venezuela	420	265	254	245	237	229	220
Unwashed Arabicas	20,500	14,820	5,089	10,623	15,551	22,394	23,622
Bolivia	54	80	80	85	85	90	90
Brazil	19,688	13,700	3,600	9,100	14,000	20,800	22,000
Ethiopia	713	1,000	1,369	1,398	1,426	1,464	1,492
Paraguay	45	40	40	40	40	40	40
Robustas	16,795	15,623	17,014	17,989	18,743	19,189	19,646
Ghana	59	60	60	60	60	60	60
Guinea	92	95	100	105	110	110	115
Indonesia	1,665	1,760	1,797	1,838	1,879	1,920	1,961
Liberia	75	73	74	74	75	75	77
Nigeria	50	60	60	65	65	70	70
OAMCAF +	7,289	7,316	7,640	7,830	8,019	8,219	8,408
Angola	2,820	1,900	2,400	3,000	3,400	3,470	3,510
Timor	74	59	74	84	84	90	90
Sierra Leone	130	155	160	170	174	184	190
Trinidad & Tobago	63	45	45	45	45	45	45
Uganda	3,071	2,970	3,439	3,518	3,597	3,676	3,765
Zaire	1,007	1,130	1,165	1,200	1,235	1,270	1,355

* International Coffee Organization.

+ Includes Cameroon, Central African Rep., Congo, Dahomey, Gabon, Ivory Coast, Madagascar and Togo.

Table D1. IX
Report on Coffee Imports by Member* From All Sources
1968/69 - 1974/75

*000 Bags

Member	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75 est.
Total All Members	48,795	51,935	54,358	51,784	57,392	56,900	52,540
U.S.A.	20,751	21,952	24,252	20,369	23,682	22,715	19,710
E.C.A.C.	17,846	18,715	19,258	20,506	21,300	21,776	20,364
Belgium	1,190	1,271	1,189	1,303	1,382	1,373	1,485
Denmark	1,012	1,057	1,001	1,136	1,037	1,066	1,007
West Germany	5,242	5,429	5,603	5,323	5,824	5,474	5,670
France	4,040	4,132	4,275	4,509	4,716	5,065	4,922
Ireland	25	32	30	37	38	36	36
Italy	2,610	2,680	2,901	3,071	3,236	3,519	3,118
Netherlands	1,967	2,133	2,148	2,315	2,357	2,691	2,350
United Kingdom	1,760	1,969	2,111	2,212	2,710	2,552	1,767
Other Members	10,195	11,257	10,830	10,896	12,389	12,383	12,445
Australia	344	386	379	354	448	440	478
Austria	411	417	437	537	517	517	567
Canada	1,445	1,497	1,663	1,528	1,585	1,587	1,496
Cyprus	20	29	25	28	31	21	26
Czechoslovakia	270	282	243	239	342	299	348
Finland	878	1,009	772	828	975	1,143	1,029
Hong Kong	652	528	487	96	343	445	279
Israel	140	129	118	116	123	179	175
Japan	980	1,432	1,306	1,432	2,318	1,795	1,853
New Zealand	66	107	108	118	77	91	110
Norway	605	682	561	701	651	654	601
Spain	1,111	1,294	1,312	1,251	1,330	1,444	1,467
Sweden	1,788	1,817	1,740	1,848	1,852	1,885	1,805
Switzerland	867	1,041	1,078	1,203	1,110	1,071	1,156
Yugoslavia	618	607	601	617	687	812	1,055
Exporting Members	13	11	18	13	11	26	21

* International Coffee Organization.

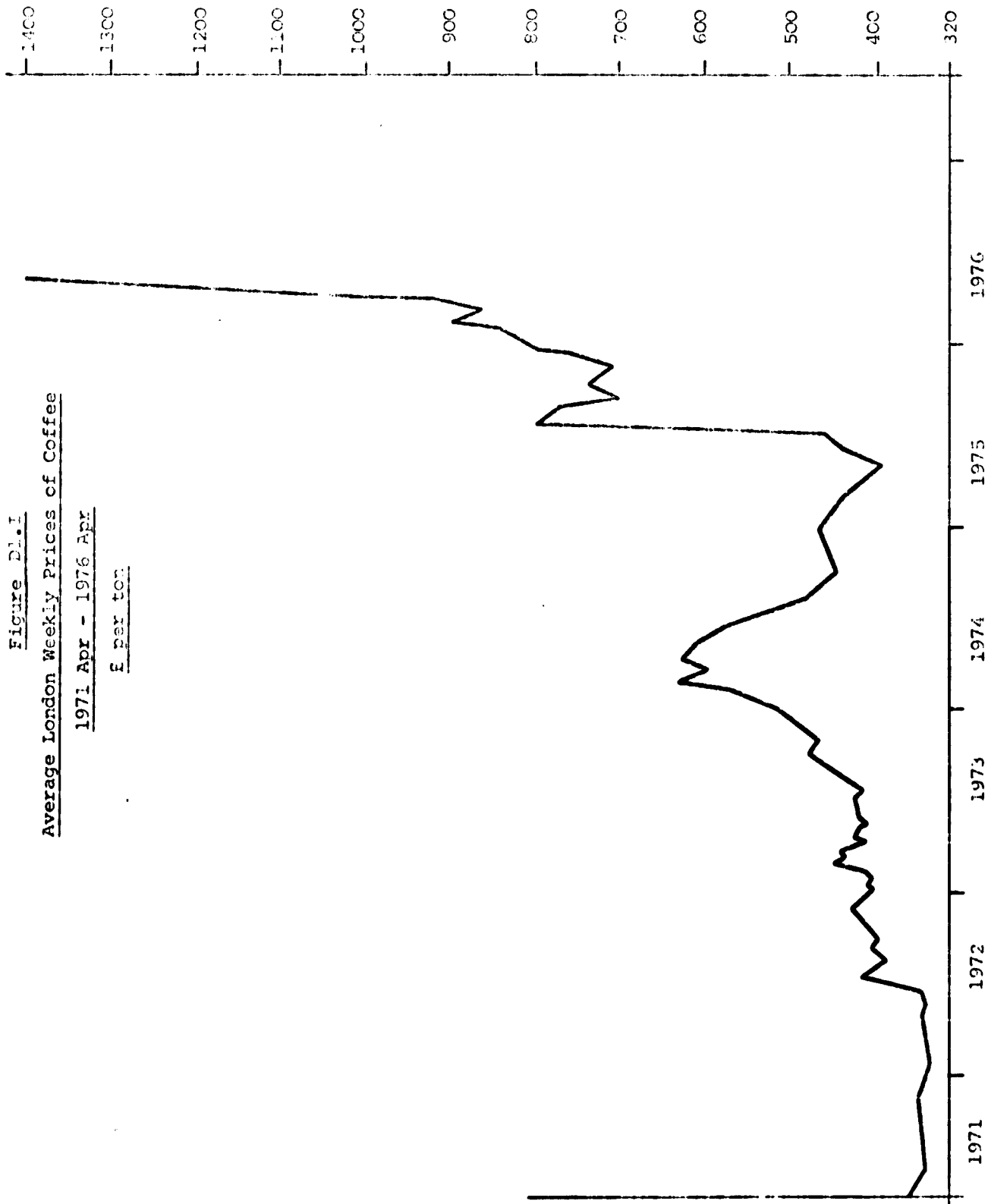


Figure D1.1
Average London Weekly Prices of Coffee
1971 Apr - 1976 Apr
£ per ton

Figure D-III
ICO Indicator Prices of Coffee, CIF New York
1971 Apr - 1976 Feb
U.S. cents/lb

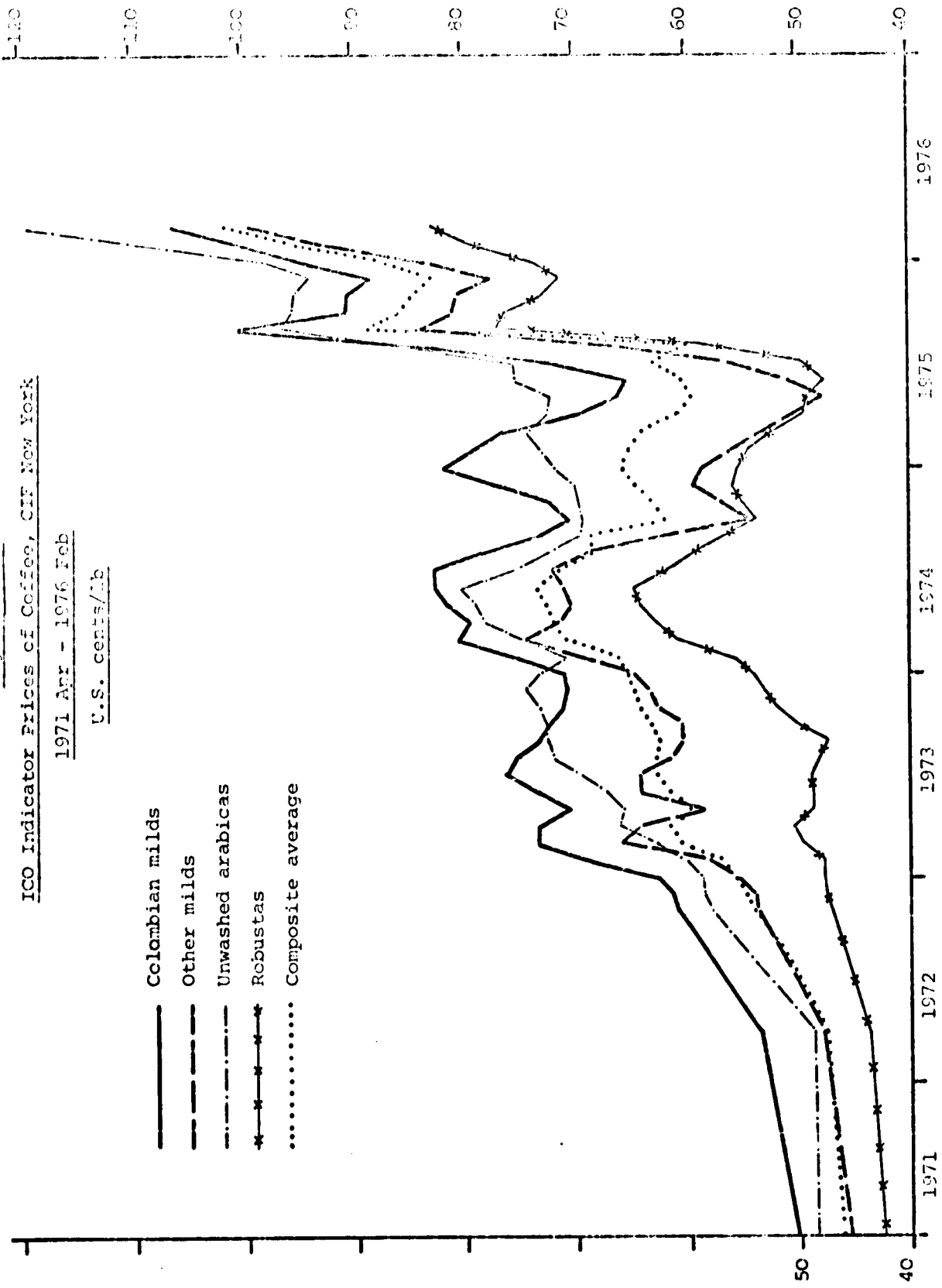
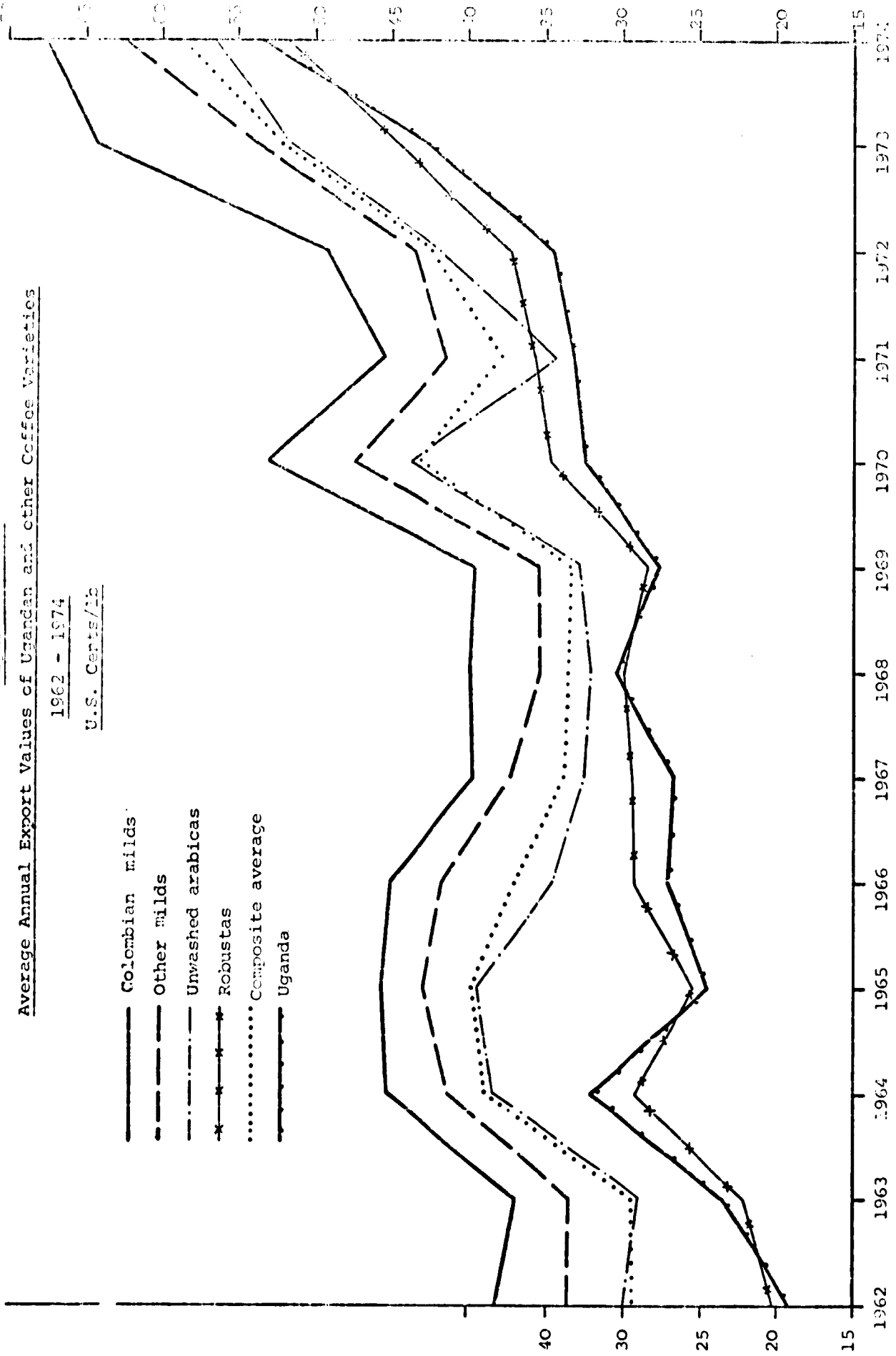


Figure D1. III
Average Annual Export Values of Ugandan and other Coffee Varieties
 1962 - 1974
 U.S. Cents/lb



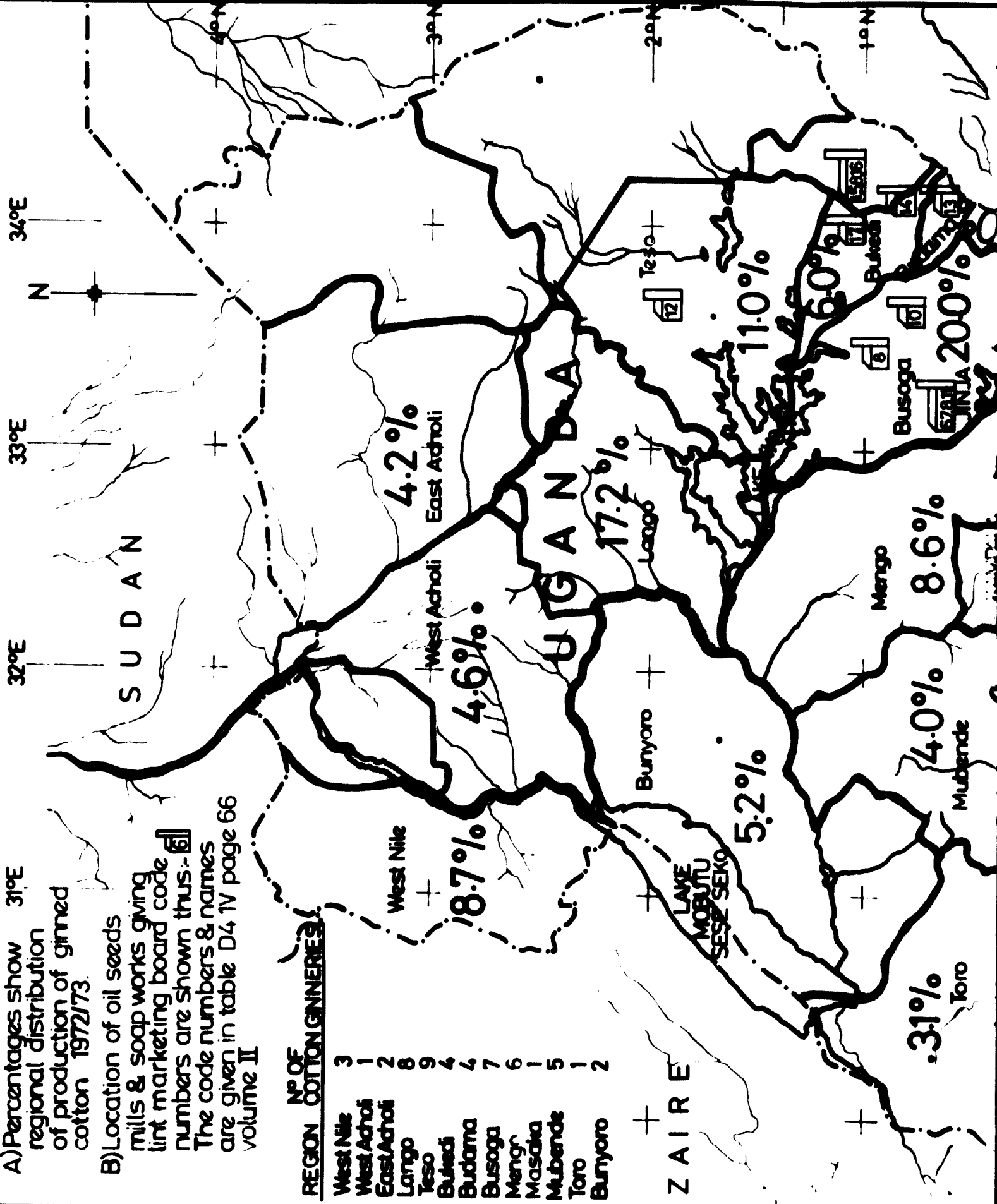
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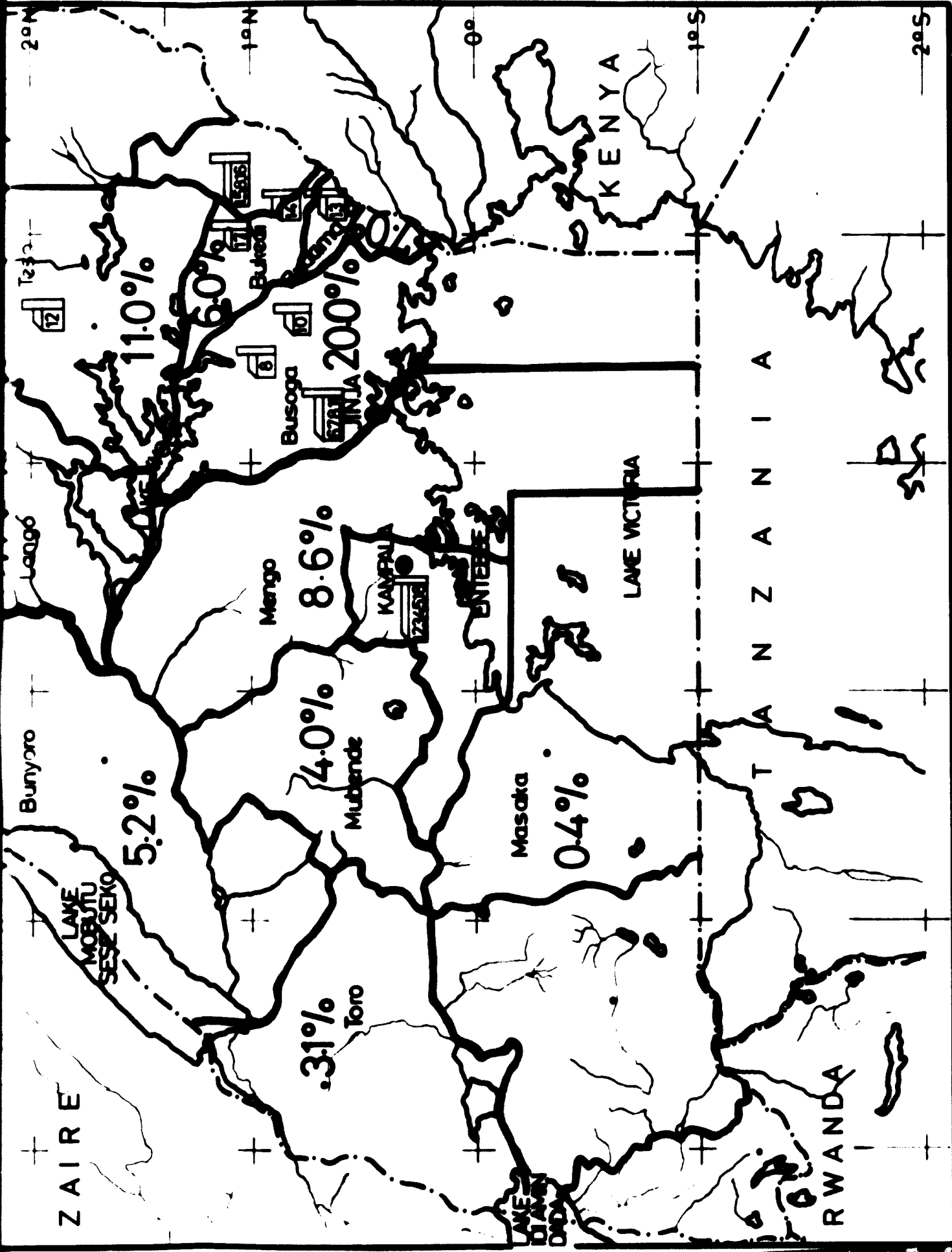
A) Percentages show regional distribution of production of ginned cotton 1972/73.

B) Location of oil seeds mills & soap works giving lint marketing board code numbers are shown thus: [6]. The code numbers & names are given in table D4 IV page 66 volume II

REGION **Nº OF COTTONGINNERS**

West Nile	3
West Acholi	1
East Acholi	2
Lango	8
Teso	9
Bukedi	4
Budama	4
Busoga	7
Mengr	6
Masaka	1
Mubende	5
Toro	1
Bunyoro	2





MAP 3.

UGANDA
COTTON GINNING, VEGETABLE OIL & SOAP MILLS

COTTON

I THE PRESENT SITUATION

Cotton was first introduced to Uganda in 1903 and was destined to be the crop to make the country rich. Most of the crop area is made up of very small production units, with perhaps as many as 2½ million growers.

Exports in the past have often exceeded 80 per cent of production with an annual value usually in excess of 250 million Shs. Uganda's cotton is not of the highest quality in relation to world production, but staple length, good grading and presentation give it a position of high regard among the leading buyers.

Since 1972/73, cotton production has fallen by 60 per cent mainly owing to low growers' prices, lack of inputs, disorganisation at the ginneries and, above all, the current move of growers towards cash crops for food.

Until the production problems in the industry are resolved, it is difficult to see how output can be increased. Currently ginning capacity is being raised which should reduce the 'apparent' congestion at the ginneries. As a result the cooperatives will have greater flexibility in their delivery. Price is likely to remain the major constraint to increasing production.

1.1 Production and Trade

1.1.1 Variety and Quality Grades

The varieties of cotton grown are BPA and SATU. Both are similar to American Upland Cotton.

BPA is longer with a staple length ranging from 1 1/8" - 1 13/16" SATU variety is a bit shorter having a staple length of 1 1/16" - 1 3/32". SATU is shorter and coarser and easily mixes with artificial fibres. BPA is finer and therefore produces a finer yarn.

There are two Grade Classifications, one for internal use only, and the other for grading exports. The internal standards are "AR" and "BR" and cover both BPA and SATU varieties. The essential purpose of the scheme is to control quality upon which payment is made at the ginneries, "BR" being for waste and faulty material.

The export grades, which are equal or superior to the internal "AR" grades, are as follows:-

<u>BPA</u>	<u>SATU</u>
UGAN	UGAX
UGAB	UGAT
UGAP	UGAS
UGAA	UGAD
UGAC	UGAC

Average Micronaire values are as follows. BPA is 3.8 to 4.0; SATU is 4.0 - 4.2. Usually count depends on the requirements of the year but the standard count for Uganda BPA cotton is about 60 counts and for SATU 50 counts.

1.1.2 Trends in Production

During the 1940's to 1950's, production of cotton slowly increased, reaching more than 400,000 bales* for the first time in 1958/59. The highest production recorded was in 1969/70, when nearly 467,000 bales were packed. In recent years production has seriously fallen to an estimated 160,000/170,000 bales a year. (Table D2.1 p.39).

The last 'normal' year for the industry can be taken as 1972/73 when the production was 429,146 bales. The average for the preceding five years was 428,443 bales and the 10-year average 417,625. Over the whole of this period there were no years of abnormally low production. Only in 1961/62 had there ever been a dramatic reduction in crop.

The 1973, production fell to 270,000 bales and again the following year to 171,000 bales. Estimates for the crop currently being harvested put it at no higher than 160,000 bales and it could well be less.

The reasons for the decline are numerous. The price paid to the grower is considered to be the main problem. As a result, growers have turned to more profitable cash crops, particularly as it is often possible to double crop land by doing so. Lack of fertilizers and pesticides has also been a problem, with growers finding their yields uneconomically low. In some areas yields of 370 kg of seed cotton per hectare have become the norm.

The following producer prices have been paid in recent years.

Season	AR	(Shs/kg)	BR
1967/68	1.10		0.55
68/69	1.10		0.55
69/70	1.10		0.55
70/71	1.20		0.55
71/72	1.25		0.55
72/73	1.25		0.55
73/74	1.25		0.55
74/75	1.35		0.55
75/76	1.75		0.55
76/77	1.90		0.55

It can be seen that between 1967/68 and 1974/75 prices paid to producers only increased by 22 per cent which lends substance to the contention that low growers' prices have been responsible for the decline in the crop.

* Bale weight 185 kg.

1.1.3 Distribution of Production

Details of the distribution of cotton production by ginnery are set out in Table D2.II (p.40). In the preceding section, the crop in 1972/73 was shown to be reasonably representative of the normal production until the recent collapse and therefore provides a base for comparison.

The variety SATU was planted on about 46 per cent of the area and the remainder was LPA. LANGO followed by TESO are the regions with the largest production of SATU while BUSOGA not only produces more LPA than any other region but has the highest output of all regions.

The long-term production trends in the individual areas are not so easy to identify as some reports have indicated. For example, the immediate trends before 1972/73 are in many instances directly opposite to those which were apparent in (say) the 1950's and early 1960's. Such a situation makes it difficult to match ginning capacity to regional production.

The current fall in production might be expected to create two particular situations. First, the apparent distribution might become considerably distorted. Table D2.III (p.41) suggests that the fall in SATU production has been offset by an increase in BPA. Both have in fact fallen considerably, but least severely in the more important (traditional and other) production areas. The second possibility is that the quality of the cotton might have declined. Table D2.III also shows the percentage of AR bales (export quality) in the total production. In both SATU and BPA quality standards have actually increased as perhaps the more professional growers have been reluctant to reduce their plantings.

Ginning performance for the years 1970/71 to 1974/75 is summarised in Table D2.IV (p.42). It will be seen that the coefficient of ginning has remained very constant over the years. The main faults upon which the cotton has been graded have not increased in spite of the difficulty in maintaining the ginning equipment.

1.1.4 Installed Ginning Capacity

In 1972/73 there were 53 Ginneries (See Table D2.IV P.42) with a total of 1736 rollers. The estimated production capacity for that year was 421,000 bales although in fact more than 429,000 bales were processed.

By 1973/74 the actual number of ginning rollers had fallen to 1212, mainly because gins were out of commission. Also the lack of cotton to process meant that many ginneries were working well below capacity.

In the last two years most of the ginneries have been chronically short of spares and this has badly affected production. There are some instances in which the output of the ginneries was so low that local farmers were not able to get their cotton processed. Together with the severe shortage of local transport, many crops have been lost altogether. These factors alone would influence the differences in regional production outputs previously referred to.

1.1.5 Increasing Ginning Capacity

It is the Ugandan Government's desire that the total ginning capacity in the country should be increased to process 500,000 bales per annum.

A scheme has been drawn up to build three new ginneries and to rehabilitate 6 others; four old ginneries will be increased in size. As shown in Table D2.V (p.43) the estimated national capacity resulting from these developments will be in the order of 483,000 bales per annum which is not significantly short of the target of 500,000 bales.

One of the purposes behind this development is to increase the ginning capacity in those areas where it is hoped the cotton crop will be developed in the future. Without a detailed survey of each production area and the ginneries servicing them, it is not possible to determine if capacity is in balance with production. The impression however can only be that present capacity is sufficient to meet all reasonable demands, and that it is unlikely that the new capacity will be required for some time to come.

1.1.6 Exports

Exports of raw cotton since 1966 are set out in Table D2.I (p.39). It will be seen that on average, 65,500 tonnes of cotton have been exported each year; in other words about 83 per cent of production.

Uganda exports cotton all over the world. Japan is the most important customer and absorbed 22 per cent of the total export in 1973. Japan has therefore superseded India who has bought nothing since 1972. In recent years, Hong Kong has increased her interest taking about 12 per cent of the total export. West Germany and the United Kingdom have both been regular purchasers.

The average export f.o.b. prices for lint have been as follows

1971/72	77.84	US Cents per Kg.
72/73	74.90	
73/74	115.54	
74/75	129.98	
75/76	130.65	

Since 1971/72, prices have risen by 68 per cent; producer prices in the same period rose by only 40 per cent. This indicates that internal funds were available to keep the industry healthy from self generated sources.

The prospects for the future in the export market are discussed in Section II. pp 36-37.

1.1.7 Home Market

The home market for baled lint has fluctuated between 10,000 and 18,000 tonnes but on average 14,000 tonnes (75,000 bales) of lint have been bought for local manufacture although recent requirements have been lower.

The plans of the National Textiles Board assume that demand will increase at possibly around 8 per cent per annum. Therefore for the next five years a requirement of well over 20,000 tonnes can be forecast.

The local mills have paid the following prices for lint.

1971/72	538.57	Uganda Cents/Kg
72/73	632.50	(f.o.r.)
73/74	941.98	
74/75	736.00	
75/76	830.00	(AR SATU)

These prices are subject to a rebate of 1.08 Shs. per Kg for non-incurred export duty which is otherwise chargeable. The National Textiles Board maintains that these prices make it difficult for a mill to export competitively, although this claim seems difficult to justify. Perhaps the opportunity could exist for the mills to enter into longer term fixed price contracts which would help to guarantee producers a fair return and at the same time safeguard the interests of the mills.

1.2 Structure and Organisation of the Industry

1.2.1 Production

Most cotton growers have been grouped into cooperative societies who are responsible for the distribution of seeds, fertilizers, pesticides and working capital. At harvest time the society collects the cotton and transports it to the ginnery.

The ginnery itself will also be part of a larger cooperative which will pay the Society who will in turn pay the grower. This is apparently the theory, but evidence is coming to light that not only have there been considerable delays in paying the growers but that for one reason or another both the societies and the cooperatives have come into deficit situations. At the present time, the banks are very hesitant to give extended credit in any way whatsoever. In this situation, there seems to be an urgent need to identify and rectify the shortcomings in the present structure.

In presenting a crop, extension services provide an essential vehicle for development. Not only is the establishment now reduced, but those staff in service are almost without any field transport whatsoever.

1.2.2 Marketing

The Lint Marketing Board came into being in 1959/60, but it was not given total responsibility for marketing the crop abroad until 1970.

The Board provides an inspection service at each ginnery to ensure that every batch of 50 bales conforms to the stated grade and weight. This high level of quality control has been very largely responsible for the reputation Ugandan cotton has established in export market.

The Board sells mainly 'on sight' ie. bids are made after samples have been inspected. The sale contract makes provision for arbitration should dispute arise over quality.

The Lint Marketing Board has telex facilities but has no official representation in the main importing countries, other than the cotton brokers. Bearing in mind that in a full year exports are valued at over US \$ 40 million, some attention should be given to strengthening the information base.

The total absence of world commodity press reports and economic journals would seem to make it difficult if not impossible, for a marketing manager to prepare forward plans.

The market for cotton is highly competitive and Uganda must do all she can to compete on equal terms with the opposition. One area for effort is long term economic planning but this cannot be done without information obtained from all over the world.

1.3. Foreign Exchange Requirements

1.3.1. Production

No one organisation in Uganda takes total responsibility for the development of the cotton crop and its marketing. Therefore the total foreign exchange requirement has not been accurately identified and evaluated.

The following assessment assumes that (a) realistic farm prices are paid (b) the inputs in chemicals and fertilizers are available and (c) there is no hold up in transport or at the ginneries themselves. Subject to these conditions the present level of production could be raised to the 1972/73 'norm' of 430,000 bales within three years.

The following minimum inputs would be required, say,

825,000 tins of DDT Powder @ 33 Shs. say = 28,000,000 Shs.

5000 tons of compound fertilizer @ US \$ 100/tonne
 800 Shs./tonne = 4,000,000 Shs.

(Total say = 32,000,000 Shs.)

The base production area has been taken at 825,000 Ha. It seems that at this level further increase in output could be best achieved by (a) greater usage of fertilizer and (b) better cultivations etc.

1.3.2 Ginneries

Currently a major programme of ginnery reconstruction and rehabilitation is being undertaken. A loan of Shs. 52 million has been raised through the African Development Bank at 7 per cent interest. The foreign exchange component is 39 million Shs. and the scheme is expected to be completed in 4 years. Supervision of the loan is by the Cooperative Bank.

The project involves the construction of 3 new ginneries in TORORO, KASESE and KEME; the rehabilitation of 6 old ginneries at KASANO, KACHURNBALE, NGETHER, KITGORM, GULU and RIENO CAMP; raising the capacity of 4 other ginneries - IKI-IKI, KABOLE, KABULUBULU and JERBER.

The estimated requirement for foreign exchange for annual operating expenses are as follows.

- Spares say	5,400,000 Shs.
- Other Consumables	2,000,000 Shs.
Total	7,400,000 Shs.

It is understood that there are virtually no lorries to service the ginneries. Provision for 2 6/8 ton lorries per ginnery has therefore been made. 108 lorries at say 200,000 Shs. each would cost 21.6 million Shs. The total life is put at four years; therefore a further 15 per cent is added to cover spares making 25 million Shs. in total.

1.3.3 Lint Marketing Board

The Lint Marketing Board incurs the following expenses which are payable in hard currency.

Expenses at Mombasa	-	Administration
	-	Godown

In a full year 2 million Shs. have been allowed.

Selling expenses including sea transport are estimated to be not less than 10 million Shs.

To cover these costs, 12 million Shs. have been allowed. Provision of 3 million Shs. for contingencies raises the total to 15 million Shs.

1.3.4. Foreign Exchange Evaluation

On the basis of the estimates made in the previous sections a full analysis of the current and future foreign exchange position is set out in Table DE-VI (p.44).

The calculations are based on constant prices as from 1976/77. Financial data obtained from previous years have been inflated to provide a common basis for comparison.

It has been assumed that it will take some three years to reach 1972/73 production levels and that 500,000 bales a year are achieved by the fifth year. Production inputs have been adjusted accordingly.

Capital inputs are based on annual repayments over the stated period taking into account the 7 per cent loan interest terms of African Development Bank Loan. At the end of the write-off period it is assumed that the goods are repurchased on the same basis. Future inflation has not been evaluated on the assumption that increased costs will be offset by increased income.

Domestic Added Value (Col 16) is calculated at the ex-factory local price for cotton in Uganda. A pessimistic export price of Shs. 1700 per bale has been used. However this gives a net foreign exchange benefit of 613 million Shs. in a full year. Should the price fall by 10 per cent the Import Coefficient falls from 0.08 to 0.10 and the Net Foreign Exchange Benefit to 537 million Shs.

In purely foreign exchange terms, it is immediately apparent that a very satisfactory return can be obtained for a minimal investment. In view of the country's extreme shortage of hard currency, foreign exchange for the cotton crop must be given the highest order of priority.

1.3.5. Constraints

In looking at the future of the cotton industry one question above all others has to be answered. If the necessary inputs are made available to the farmers and the purchase price is raised, will production increase?

Attention has already been drawn to the fact that many farmers are currently finding it more profitable to grow other cash crops and therefore it may be very difficult, if not impossible, to induce them to return to cotton production.

In this situation, it may be necessary for Government to consider growing cotton on large plantations, making the fullest use of mechanisation. While the cost of mechanisation would be offset against the cost of labour, other problems must be considered.

Plantation farming as such has not been widely practiced in Uganda and, until more is known about the subject under local conditions, the control of soil erosion will almost certainly be costly. It may be hoped that the Government will take note of the dangers of soil erosion and immediately put in hand a programme of research to evaluate agronomic and other control measures.

In the meantime, the productivity of the smaller farmers should be increased with the help of the extension services. Tractor or power hoes, fertilizers and herbicides all have a part to play in increasing yields and in enabling the farmer to make better use of his time.

II. THE WORLD SITUATION

II. 1. Production and Exports

World production in 1974/75 is estimated to have been a record 63 million bales (approximately 14 million tonnes), though showing only a marginal increase over the previous year. Table D2. VII (p.45) details world production by major producing countries since 1968/69. Over 55% of world output emanates from just three producing centres - the U.S.S.R., U.S.A. and China respectively.

The main trend discernible in the developing world is towards increasing production. India and Mexico have both recently increased plantings, though Brazil has turned some areas over to soybeans. Ghana has instigated a successful pilot cotton growing scheme and expanded the programme last year. Despite increases in output, the 1975/76 crop is expected to be low owing to poor harvests. The U.S output will be only 8.3 million bales; floods have reduced Pakistan's crop by a possible 0.8 million bales; poor weather is believed to have affected the U.S.S.R. crop and crop failures are evident in parts of Africa and Australia. Production is expected by the cotton trade to be about four a five million bales below consumption, reducing high stock levels that built up the previous year.

The U.S.A. and U.S.S.R. dominate the world export trade with a joint share approaching 50% of the total, (See Table D2.VIII p.46). These two countries were the only ones to increase their exports significantly in the period 1969 - 1974. A marked increase was evident from Iran but this was small by comparison. In developing areas of the world, exports fell during the period as rising quantities were diverted to the expansion of domestic textile industries.

Prospects are that exports will be extremely tight in the current year because of the shortfalls in the major producing centres, referred to previously. Sources of exports have been further reduced by the following factors: application of export quotas in India; support for domestic prices in Turkey above world market levels; China's buying has reportedly left Central America with supplies of negligible proportions; high domestic prices in Brazil have competed for available supplies.

II.2. Consumption and Imports

Data on world consumption of cotton contained in Table D2.IX (p.47) show that consumption has been steadily increasing, the biggest individual increase occurring in China. Other significant increases were also apparent in Pakistan, Brazil and India, respectively, as well as in other countries not listed, but mainly in Asia. These increases are all associated with rapid development in the textile industry, especially in Asia, to the detriment of those in Europe. Consumption of cotton amongst the four major E.E.C. textile producers has declined, though of course artificial yarns have also been responsible in part for that decline.

The above pattern is even more discernible in relation to world imports listed by country of destination/area in Table D2.X (p.48). Imports into East and West Europe declined during the period. Those into Asia rose by over 600,000 tonnes between 1969 and 1974. Total world imports increased by 400,000 tonnes.

II.3 Prices

The Liverpool index of prices is charted from 1971 to 1976 April in Figure D2.1 (p.49) as an indication of the movement in cotton prices. It is compiled on the basis of the five cheapest grades of SM 1-1/16" length. In comparison, Ugandan supplies regarded by the trade as of good quality, currently stand at 15 cents/lb above the index.

Expected supply shortages, described above, and recovery of the world economy and increased prices of artificial yarns could well be the causes of a price explosion. The U.S. textile industry's requirement is thought to be 1 million bales above last year's level and many industries in the developing world are expanding requirements. Prices already rose appreciably in early 1976 from the depressed levels of 1975.

European buyers, however, may not be so enthusiastic over increasing supplies. Their own cotton textile industries have suffered from the competition of exports from the developing world and output is not expected to increase in areas where they are uncompetitive. Prices in the spring of 1976 have fallen abruptly after the initial surge and may be evidence of European buyers holding back. Opinion in industry is that prices will rise to a range of 75 - 80 cents/lb. by the end of 1976. The possibility of more dramatic increases will be tempered by European buying patterns and the questionable ability of the developing world to finance expensive imports.

III FUTURE PROJECTS

III. 1 Ginneries

Other than the present African Development Bank loan for the rehabilitation of the ginneries, no other projects are known to be under consideration.

III.2 Manufacture of Spares

There was a serious shortage of spares at the ginneries and there is little doubt that some local manufacture could be undertaken.

Ginning rollers consist of discs of rough cured leather threaded into the drive shafts. As and when a local tannery is established these discs could be manufactured. All that would be required by way of equipment would be heavy duty stitching machines and hydraulic presses with the necessary cutting dies.

The local manufacture of the metallic components presents a more difficult problem. One major unit, a gear driven crank shaft, was wearing out, more quickly than expected. This was owing to worn out bearings preventing the correct meshing of the gear teeth. While it is questionable whether the design should have allowed such extreme differences in pitch diameters, replacement of the bearings at the same time as the shaft would probably ensure an adequate working life.

Table D2.1

Uganda - Production and Exports of Cotton

1966 - 1975

YEAR	PRODUCTION +		EXPORTS *		PERCENTAGE EXPORTED
	BALES x	TONNES	TONNES	SHS.	
1966	426,677	78,935	69,802	306,892	-
1967	344,813	63,790	71,959	303,224	-
1968	422,876	78,232	61,653	29,673	-
1969	466,775	86,353	52,903	250,955	-
1970	412,675	76,344	78,117	350,985	85.4
1971	410,742	75,987	68,717	351,898	88.3
1972	429,121	79,387	66,095	368,484	86.8
1973	270,165	49,980	64,092	366,010	77.4
1974	171,254	31,681	36,238	272,300	83.4
1975	160,000	29,600	25,360	210,900	-

Source : 1973 Statistical Abstract
Lint Marketing Board

+ Crop Season

* For The Year

x 185 Kg

Table D2 II
Uganda Production of Cotton Bales (185 kg) by Type and Region for 1972/73 to 1974/75

TYPE AND REGION (SATU)	AR BALES		BR BALES		STRIPPER DAMAGED BALES ETC.			TOTAL PRODUCTION				
	72/73	73/74	74/75	72/73	73/74	74/75	72/73	73/74	74/75	72/73	73/74	74/75
WEST MTFE, TOTAL	34,017	19,019	11,163	3,216	2,443	826	4	8	-	37,237	21,470	11,989
ACHOLI WEST	19,398	6,777	7,415	45	425	158	34	13	12	19,477	7,215	7,585
ACHOLI EAST	18,012	6,822	5,449	61	394	117	4	3	4	18,077	7,219	5,570
ACHOLI TOTAL	37,410	13,599	12,864	106	819	275	38	16	16	37,554	14,434	13,155
LANGO NORTH	65,229	37,501	25,353	2,255	945	112	24	11	9	67,503	38,457	25,474
LANGO SOUTH	5,557	3,789	2,381	724	472	134	-	2	1	6,281	4,263	2,516
LANGO TOTAL	70,786	41,290	27,734	2,979	1,417	246	24	13	10	73,789	42,720	27,990
TESO NORTH	16,653	8,785	4,310	3,364	1,248	302	3	-	-	20,020	10,063	4,612
TESO SOUTH	7,584	4,729	2,808	2,834	921	107	-	-	-	10,418	5,650	2,815
TESO SECRETED	6,375	4,738	2,972	2,001	843	284	1	2	-	8,377	5,583	3,231
TESO BUKEDA (USUKU)	4,793	3,576	2,773	710	793	107	-	-	-	5,503	4,369	2,635
	2,559	-	613	528	-	95	-	-	-	3,087	-	708
TESO TOTAL	37,964	21,838	13,481	9,436	3,805	895	4	2	2	47,404	25,645	14,376
SATS TOTAL (B.P.A.)	160,177	95,746	65,242	8,484	15,738	2,242	70	39	26	195,985	104,269	67,510
BUKEDI	20,162	16,088	10,071	5,730	3,289	1,504	22	20	5	25,915	19,397	11,575
RUDAMA	25,916	27,179	20,025	4,098	2,814	1,364	10	6	5	30,024	29,999	21,394
BUSOGO	73,887	64,622	41,598	11,768	7,895	4,239	40	11	11	85,695	72,528	45,848
BENGO	33,209	15,124	8,297	3,258	1,004	297	446	16	5	36,913	16,144	8,529
MASAKA	1,217	554	-	413	52	-	-	-	-	1,630	506	-
MURENDE/ITYANA	14,702	7,856	4,560	2,610	763	385	11	8	6	17,323	8,627	1,951
TORO	12,046	6,798	6,329	1,464	600	370	-	-	-	13,510	7,393	6,599
BUNYORO	19,836	10,114	5,350	2,312	1,077	338	2	6	-	22,150	11,197	5,588
BPA TOTAL	200,975	143,335	96,230	31,653	17,494	8,497	533	67	27	233,161	165,896	104,754
OVERALL TOTAL	381,152	244,081	161,472	47,391	25,978	10,759	603	106	53	429,146	270,165	172,264

Source : Lint Marketing Board

Table D2. III

Uganda Regional Distribution of Production and Percentage
of AR Bales for 1972/73 to 1974/75

TYPE AND MAIN REGION	TOTAL PRODUCTION		PERCENTAGE FALL	PERCENTAGE OF AR		
	1972/73	1974/75		1973/74	1973/74	1974/75
(SATU)	%	%				
WEST NILE	8.7	7.0	67.8	91.4	88.6	93.1
ACHOLI	8.8	7.5	65.0	99.6	94.2	97.8
LANGO	17.2	16.3	62.1	95.9	96.7	99.1
TESO	11.0	8.4	69.7	80.1	85.2	93.8
TOTAL SATU (BPA)	45.7	39.2	66.1	91.9	91.8	98.1
BUKEDI	6.0	6.7	55.3	77.8	82.9	87.0
BUJAMA	7.0	12.4	28.7	86.3	90.6	93.6
BUSOGA	20.0	26.6	46.5	86.2	89.1	90.7
MENGO	8.6	5.0	76.7	90.0	93.7	96.5
MASAKA	0.4	-	-	74.7	91.4	-
MJIBENDE	4.0	2.9	71.4	84.9	91.1	92.1
TURO	3.1	3.9	50.4	89.2	91.9	94.5
BUNYORO	5.2	3.3	74.3	89.6	90.3	94.1
TOTAL BPA	54.3	60.8	55.1	86.2	89.4	91.9
TOTAL	100.0	100.0	60.1	88.8	90.3	93.2

SOURCE : Lint Marketing Board

Table D2 IV

Final Ginning Classing Analysis Summary for
all Uganda Districts from 1970/71 to 1974/75

SEASON	1970/71	1971/72	1972/73	1973/74	1974/75 *
Total Working Ginneries	53	51	53	46	42
" Ginning Rollers	1,736	1,689	1,736	1,594	1,588
" Lots Classed AR	7,398	7,303	7,623	4,866	3,065
" Bales Classed AR	367,169	365,168	381,152	244,081	153,250
" Bales Produced AR and BR	412,673	410,744	429,146	270,165	171,254
Average Bales Per Roller	237.7	243.2	247.2	169.5	115.1
<u>GINNING PERCENTAGE</u>					
GOOD	-	-	-	-	-
VERY FAIR	91	88	89	93	96
FAIR	9	12	11	7	4
POOR	-	-	-	-	-
COEFFICIENT OF GINNING	64	63	63	64	64
<u>GINNING DEFECTS PERCENTAGE</u>					
Stripper	1	1	1	-	-
Preparation	10	11	6	3	2
Seed	1	1	1	1	1
Crushed Seed	1	1	1	1	-
Broken Seed	3	4	3	2	1
Oil	-	-	-	-	-
Extraneous Matter	1	1	1	-	-

* Provisional

Source : Lint Marketing Board

Table D2 V

Ghana Ginnery: Installed Capacity, 1972/73, together with Estimated Future Capacity

TYPE AND REGION	NUMBER OF GINNRIES 1972/73	NUMBER OF ROLLERS	AVERAGE PRODUCTION PER ROLLER (BALES)	ANNUAL PRODUCTION BALES 1972/73	ACTUAL ROLLERS AVAILABLE 1972/73	NEW ROLLERS TO BE INSTALLED	TOTAL FUTURE ROLLERS	FUTURE ANNUAL CAPACITY (BALES)	CAPACITY	
									SURPLUS +	DEFICIT -
(SATU)										
<u>WEST NILE TOTAL</u>	3	140	140	36,000	120	20	160	48,000	12,000	
ACHOLI WEST	1	54	54	19,000	54	26	80	28,000		
ACHOLI EAST	2	72	72	18,000	72	36	100	25,000		
<u>ACHOLI TOTAL</u>	3	126	126	37,000	126	42	180	53,000	16,000	
LANGO NORTH	7	222	222	67,000	196	54*	240*	90,000		
LANGO SOUTH	1	20	20	6,000	20	-	20	6,000		
<u>LANGO TOTAL</u>	8	242	242	73,000	216	54*	260*	96,000	23,000	
TESO NORTH	3	68	68	20,000	68	8	76	15,000		
TESO SOUTH	2	66	66	10,000	36	-	36	10,000		
TESO SEGREGED	2	40	40	8,000	40	-	40	8,000		
TESO BUKEDA	1	40	40	6,000	40	30	60	9,000		
USUKU	1	20	20	3,000	20	-	20	3,000		
<u>TESO TOTAL</u>	9	234	234	47,000	204	38	232	45,000		2,000
<u>SATU TOTAL</u>	23	742	742	193,000	666	154	832	242,000	49,000	
(DPA)										
BUKEDI	4	100	100	22,000	100	20	120	26,000	4,000	
BUNAMA	4	160	160	29,000	120	20	180	33,000	1,000	
BURUGA	7	358	337	87,000	268	-	308	84,000		3,000
MUNGO	6	158	158	37,000	112	20	178	42,000	5,000	
MASAYA	1	20	20	2,000	-	-	20	2,000		
MURBINE	5	96	86	16,000	54	-	86	16,000		
MUNO	1	48	48	13,000	48	60	60	16,000	3,000	
MUNORO	2	64	64	22,000	64	-	64	22,000		
<u>DPA TOTAL</u>	30	994	994	228,000	546	120	1,016	241,000	13,000	
<u>GRAND TOTAL</u>	53	1,736	1,736	421,000	1,212	274	1,808	513,000	62,000	

* Includes Two Saw Gins

Source: Lint Marketing Board

Table 22. VI
Uganda Cotton Industry Financial Returns and Benefits (Foreign Exchange)

PROJECT YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	Production Bales '000	Price '000 Bales	Price Sh/Bale	Revenue Mill Sh	Exports Bales '000	Export Price Sh/Bale	Export Revenue Mill Sh	Total Revenue Mill Sh	Factory Revenue Mill Sh	Production Costs Mill Sh	Ginney Costs Mill Sh	Ginney Operating Costs Mill Sh	Transport Costs Mill Sh	Lint Costs Mill Sh	Total Foreign Exchange Mill Sh	Domestic Added Value Mill Sh	Export Coefficients	Net for Project
PRODUCTION SCHEM SEP 1972/73	430	73			357								25 Mill Sh for 12 years					
Project Year 1	170	40	(1000)	56.0	130	(1700)	277.0	238.0	13.0	5.6	7.4	7.4	7.4	15.0	70.4	177.5	0.19	17.0
2	340	40		56.0	300		556.0	476.0	20.0	5.6	7.4	7.4	7.4	15.0	75.4	420.6	0.10	454.6
3	470	70		98.0	300		710.0	602.0	32.0	5.6	7.4	7.4	7.4	15.0	77.4	524.6	0.31	540.6
4	400	70		98.0	370		781.0	644.0	32.0	5.6	7.4	7.4	7.4	15.0	77.4	576.6	0.37	577.6
5	530	100		140	400		700.0	700.0	32.0	5.6	7.4	7.4	7.4	15.0	77.4	632.6	0.34	632.6
6	530	100		140	400		700.0	700.0	32.0	5.6	7.4	7.4	7.4	15.0	77.4	632.6	0.34	632.6
7																		
8																		
9																		
10																		

Notes (1) "Factory Revenue" Col. 9 Assumes all the cotton could be sold in Uganda
(2) Cols 10-15 are solely concerned with foreign exchange.

Table D2 VII

World Production of Cotton: 1968/69 - 1974/75Thousands of bales*

	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
U.S.A.	11,030	9,950	10,269	10,270	13,890	13,300	11,900
Argentina	520	670	390	400	575	545	600
Brazil	3,320	3 100	2,300	3,100	2,950	2,600	n/a
Colombia	640	590	540	590	630	620	700
Mexico	2,450	1,750	1,440	1,715	1,780	1,500	1,900
Peru	515	393	410	400	315	370	400
Egypt	2,013	2,497	2,346	2,351	2,369	2,258	n/a
Sudan	1,050	1,135	1,130	1,125	920	1,000	n/a
India	4,900	4,850	4,400	5,800	5,370	5,500	5,600
Iran	770	760	710	680	955	920	920
Pakistan	2,440	2,485	2,570	3,265	3,235	3,040	2,950
Turkey	2,005	1,845	1,845	2,400	2,505	2,365	2,700
China	8,300	8,100	9,200	9,600	8,200	9,900	9,900
U.S.S.R.	9,200	8,850	10,800	11,000	11,400	12,000	12,900
Others	5,986	6,037	5,575	6,260	6,667	6,666	n/a
TOTAL	55,139	53,012	53,925	58,956	61,761	62,584	62,650

* 478 lbs. net, except for U.S.A. 500 lbs.

SOURCE : International Cotton Advisory Committee

Table D2 VIII

World Exports of Raw Cotton 1969-74

'000 tonnes

Region/Country	1969	1970	1971	1972	1973	1974
Africa :	787	968	981	929	920	679
- Egypt	253	285	333	295	285	232
- Mozambique	48	44	36	34	49	41
- Sudan	172	230	239	247	225	120
- Tanzania	57	61	55	65	60	50
- Uganda	53	78	69	67	65	36
- Others	204	270	249	221	236	200
North & Central America	1,121	1,053	1,278	1,142	1,675	1,629
- Nicaragua	91	67	78	102	100	132
- Mexico	370	214	166	204	179	166
- U.S.A.	544	676	936	701	1,246	1,173
- Other	116	96	98	135	150	158
S. America	596	547	334	397	410	227
- Brazil	439	343	227	284	283	88
- Peru	88	67	52	50	49	48
- Others	69	137	55	63	78	91
Asia	689	748	777	864	854	598
- India	32	11	32	68	40	45
- Iran	91	108	102	116	125	140
- Pakistan	196	135	192	260	196	37
- Syria	124	136	119	116	119	110
- Turkey	203	310	283	252	322	200
- Others	43	48	49	52	52	66
Europe	75	98	99	75	101	80
- Greece	48	68	77	49	71	31
- Other	27	30	22	26	30	51
U.S.C.R.	452	517	547	652	728	739
Oceania	4	12	7	2	22	3
Total World	3,725	3,943	4,025	4,061	4,711	3,955

Source : FAO

Table D2 IX

World Consumption of Cotton : 1967/68-1973/74

'000 bales*

Country/Region	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74
China	8,500	8,700	8,900	9,300	9,700	10,000	10,500
U.S.S.R	7,800	7,900	8,100	8,500	8,000	8,850	9,000
U.S.A.	8,982	8,242	7,991	8,068	8,039	7,800	7,500
India	5,335	5,370	5,520	5,200	5,500	5,700	5,800
Pakistan	1,550	1,750	1,950	2,025	2,020	2,500	2,600
Japan	3,350	3,476	3,392	3,541	3,614	3,724	3,700
Brazil	1,250	1,330	1,350	1,380	1,500	1,700	1,750
Mexico	710	685	685	675	750	800	830
Argentina	433	475	477	492	500	465	515
W. Germany	1,189	1,177	1,170	1,078	1,109	1,074	1,075
France	1,120	1,123	1,143	1,095	1,085	1,064	1,075
Italy	1,028	1,021	1,021	925	924	862	900
U.K.	831	816	792	741	638	650	560
E. Europe	2,632	2,620	2,687	2,757	2,785	2,800	2,835
Others	9,274	9,707	10,050	10,479	10,872	11,328	12,563
TOTAL	53,984	54,392	55,228	56,256	57,836	59,317	61,203

* 478 lbs net, except for U.S.A. 500 lbs

SOURCE: International Cotton Advisory Committee

Table D2 X

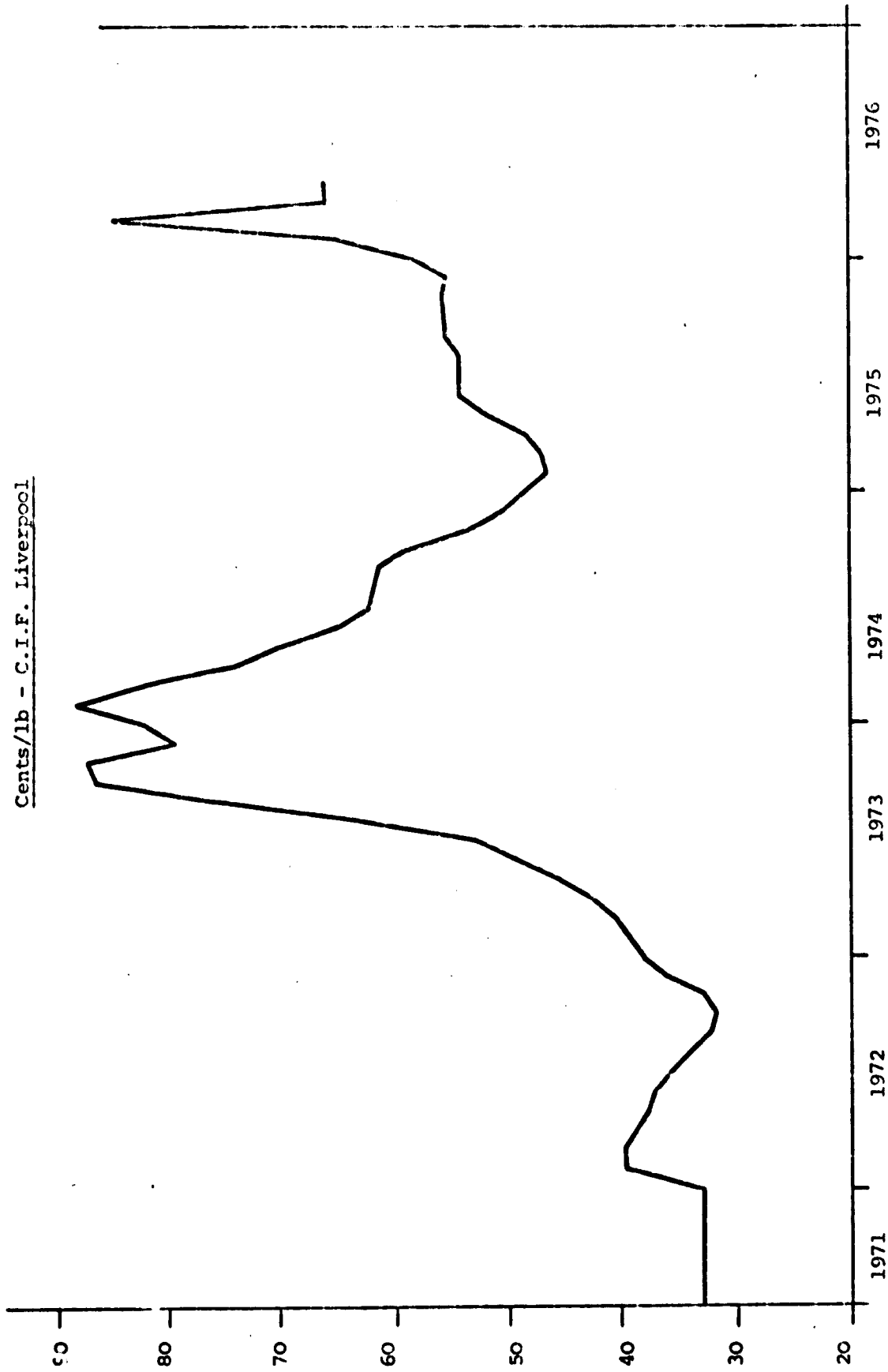
World Imports of Raw Cotton: 1969-1974

'000 Tonnes

Region/Country	1969	1970	1971	1972	1973	1974
Africa	55	60	63	73	88	69
- S.Africa	27	30	36	40	48	30
- Other	28	30	27	33	40	39
North & Central America	114	100	113	115	107	93
- Canada	79	69	81	77	78	62
- Other	35	31	32	38	29	31
S.America	55	51	61	63	56	59
Asia	1,385	1,582	1,660	1,700	2,176	2,046
- Bangladesh	53	51	25	40	46	53
- China	185	194	250	303	561	610
- Hong Kong	144	163	163	133	189	165
- India	107	136	156	130	134	27
- Japan	677	769	755	802	855	799
- Korea Rep	94	106	124	103	136	168
- Others	125	163	187	189	255	224
E & W Europe	1,942	1,961	1,823	1,858	2,121	1,753
- Czechoslovakia	82	114	106	108	104	119
- France	254	241	227	230	263	222
- W.Germany	253	254	228	219	268	199
- Italy	243	232	192	197	256	185
- Poland	132	150	145	157	145	152
- Romania	84	83	91	97	108	110
- U.K	162	167	142	136	171	93
- Yugoslavia	111	70	79	86	94	108
- Others	621	650	613	628	712	565
USSR	170	258	243	166	131	140
Oceania	6	5	7	9	4	7
Total World	3,727	4,017	3,970	3,985	4,682	4,167

SOURCE: FAO

Figure D2. I
Index of Prices of Selected Cotton Growths & Qualities: 1971-1976 Apr
Cents/lb - C.I.F. Liverpool



THE LIVESTOCK SECTOR**I.1 The Present Situation**

The problems facing the country concerning the animal and livestock sector, shortages of meat, eggs, butter, milk, etc, reflect the problems of the crop sector.

Production statistics in the livestock sector are only available up to 1974. General opinion is that shortages have increased very dramatically during the last year.

The solution to the present situation will be increasing in-puts of animal health products, much extension work at farm level and the concentration of livestock into intensive production units where modern technology and management can be best applied.

There does not appear to be any widespread need for major capital investment, involving foreign exchange, for the further processing of animal products or their preparation for market.

There are at present a number of capital intensive facilities which are totally under-utilised. The first consideration must be the reorganisation of production. In the following paragraphs, each major factor affecting the industry is briefly summarised.

I.2 Production

In Table D3.I (p.54) it will be seen that from 1970 there has been a steady increase in cattle population, to just under five million head. The statistics include beef and dairy cattle under the same heading. Data on slaughter of cattle in abattoirs, supported by data based on hides counts, shows that since 1970/71 there has been a steady increase in killing. In 1974, 185,000 cattle were killed in abattoirs and a further 547,000 were slaughtered elsewhere, as estimated by hides count.

Sheep have been the only livestock to show any real growth over the period and this is reflected in the higher levels of killings.

Details of poultry production are set out in Table D3.II (p.54). After 1971 the number of "commercial" production units increased sixfold, but by 1974 the total had almost returned to pre-1971 levels. Currently, because of the shortage of feedstuffs (mainly protein concentrates) the organised part of the industry has collapsed. Also until domestic grain can be increased, most livestock feeds have to be imported.

I.3 Government Expenditure

The development of livestock production in Uganda has entirely depended upon government assistance for disease eradication schemes. These entail very considerable expenditure not only for long term capital development (land clearance) but also for a continuous programme of vaccination, disinfection and inspection.

From 1973/74 to 1975/76 there was a drastic reduction of 50 per cent in the budgets for development expenditure on animal resources (See Table D3. III p.55). On the other hand, current expenditure was increased from 44.8 million Shs. to 60.9 million Shs. The cost of animal health products imported by the Government cost over 20 million Shs. in 1975 alone.

It is understood that shortage of spares for vehicles used for extension and veterinary services has severely limited the depth of field work which can be undertaken. There is no doubt that, without a very considerable increase in expenditure on these essential inputs, it will be impossible for livestock production to be developed, particularly if greater reliance is to be placed on improved breeds.

I.4 Meat Processing

The Uganda Development Corporation was mainly responsible for promoting the beef cattle ranches in the mid 1960's. This development was followed by a bilateral aid project involving the construction of a modern abattoir in Kampala and a meat packing station in Soroti.

The Soroti factory has been closed for some time as in use it was found too large. The installed capacity was 500 head of cattle per day. Because of the highly specialised nature of the equipment, no alternative use has been found for the factory during the last few years.

The abattoir in Kampala is soundly constructed, but recently its operation has become totally uneconomic. The prime reason is the general shortage of cattle in the country, and the levels of Government controlled meat prices which brought matters to a head in 1975. Cattle could not be bought for the controlled price and the margin between purchase price and controlled market price was totally insufficient to cover overheads and operating costs. Currently, the abattoir is killing on contract but useage is said to be very low.

It is understood that a Saudi Arabian loan agreement is under consideration and 148.7 Mill Shs. are said to have been allocated for beef ranching developments.

1.5 Milk Production

In 1967, the Dairy Corporation was established and subsequently took over the operation of the whole industry. There are two major centres of processing. In Kampala, a major dairy complex has been built, capable of handling 135,000 litres of milk a day. There are also facilities for making butter, fresh cream, ghee, ice cream and youghurt. A smaller dairy of 35,000 litres a day capacity has been built in Mbale.

There are about 60 milk collecting stations in the Country each with a bulk chilled collecting tank. Farmers take their milk to these centres where it is tested and stored for collection. Bulk lorries are no longer being used as the quantities involved are too small. The milk is therefore put into churns for transportation to the dairies.

It is said that at least 85 per cent of the milk in the country comes from "free range" herds. Not only does this mean that hygiene is a major problem but that there is no intensive production upon which future growth can be based.

The Dairy Corporation has made every effort to increase production but through no fault of its own to no avail. The Corporation itself is an effective organisation but, through force of circumstances, is currently operating at only 30 per cent of its rated capacity.

It must be accepted that when only 4,000 litres a day of fresh milk are being processed, the industry is virtually at a standstill. However, full milk powder is being reconstituted and a total of 50/60,000 litres a day are being packed and distributed to local shops. Supplies of fresh milk which used to be imported in bulk from Kenya are no longer available.

In 1975, purchases of imported milk and milk powder cost Uganda about 45.0 million Shs. in foreign exchange. The industry currently requires large quantities of spares for the coolers at the collecting centres and total replacement of the Dairy Corporation transport. The total cost would be in the order of 10.0 million Shs.

The Dairy Corporation is soundly managed and it is unfortunate that its full potential cannot be realised at the present time. It is understood that a loan from the Saudi Arabian fund is being considered, to establish commercial dairy production at a cost said to be 181.2 million Shs. This could do much to stimulate production.

1.6 Animal Feeding Stuffs

There is an excellent animal feeding stuff plant at Jinja. However because no wheat has been imported recently the plant has ceased operation from lack of raw materials.

The rated capacity of the plant is 30,000 tons per annum and is sufficient to meet the foreseeable demand. The plant is in excellent condition. When supplies of raw material again become available it is suggested that Government should give priority to the commercial feeders.

Distribution of animal feed is through retail outlets and not direct to the production units. Therefore the larger and potentially more productive commercial feeder has to compete on an equal footing with the smaller farmer for his feed. It would be a relatively simple matter for the grain mill to deliver direct to the more important production units.

Table D.3.IUGANDA - Livestock Population 1970-1974

('000 Head)

	CATTLE	GOATS	SHEEP	PIGS	DONKEYS	CAMELS	DOMESTIC BUFFALOES
YEAR 1970	4,280.5	1,801.3	827.4	63.5	17.3	1.7	-
1971	4,161.7	2,211.7	920.8	87.1	10.3	1.6	92
1972	4,418.9	2,008.4	887.9	17.4	17.4	1.7	22
1973	4,762.5	2,033.1	1,196.8	158.1	-	1.6	22
1974	4,867.3	2,077.9	1,223.1	70.9	-	1.6	27

SOURCE: Department of Veterinary Services and Animal Industry

Table D.3.IIUGANDA - Commercial Poultry Production 1969-1974

	Number of Production Units	LAYERS	BROILERS	CHICKS	TURKEYS	DUCKS	GEESE
		'000	'000				
YEAR 1969	993	277.2	47.9	161.0	1.5	3.5	0.2
1970	1,602	423.7	94.3	166.9	2.9	3.3	0.1
1971	1,618	197.0	86.5	135.1	2.5	5.6	0.3
1972	8,981	1,077.4	949.2	813.4	14.1	4.7	1.3
1973	2,471	292.6	68.3	246.5	-	-	-
1974	1,785	208.4	49.6	125.6	-	5.9	3.5

SOURCE: Department of Veterinary Services and Animal Industry

Table D.3.IIIEstimated Development Expenditure on Animal Resources in 1973/74 and 1975/76.

'000 Shs.

	1973/74	1975/76
Livestock Improvements	5,001	2,340
Ranch Development	7,868	4,500
Disease Control	14,317	8,625
Veterinary Research	9,905	13,292
Expansion of Farms	1,729	1,560
Livestock Industry Development	3,772	1,064
	42,592	21,381

SOURCE: Estimates of Development Expenditure 1973-74 and 1975-76

OIL MILLS AND SOAP FACTORIES

I. THE PRESENT SITUATION

There are some 17 oil mills in Uganda with a total capacity to process 126,000 tonnes of seeds. Shortages of seed, poor plant maintenance and a lack of spares have reduced current output to about 40 per cent of capacity.

Three of the mills are already 'silent' and more are likely to be closed in the near future. General opinion is that all the existing mills should be closed and new capacity installed.

The foreign exchange implications of this possible investment have been assessed. The social need to provide oil for cooking is likely to carry more weight than any other factor.

I.1 Production

Production of cotton seed oil and cake has never been accurately recorded though several estimates have been made. The most recent were prepared by the EADB, and are set out in Tables D4 I and II (pp.63, 64). In each case, useful estimates have been made. They could well be on the optimistic side.

In the same report, details of cotton seed for 1972 and 1973 were recorded together with estimates for 1979/1980. These are not now likely to be achieved (Table D4 III p.65).

The most likely situation is that within the next 5-6 years as much as 75,000 tonnes of cotton seed could be available for crushing.

The capacities of the 17 mills have been set out in Table D4 IV (p.66). It will be seen that only three mills are of any consequence and that the growth of the industry has been highly fragmented.

The equipment in almost every case is very old and is now past its useful working life. Oil extraction rates are poor with often as much as 12 per cent oil left in the cake. Much of the preparation equipment is out of order and more oil is lost in the husks. Most of the oil is 'double refined' but there is currently an acute shortage of chemicals to maintain production.

In ten of the factories an attempt is made to turn the soap stock into a low quality laundry soap.

The two largest factories could meet the entire national demand for soap Table D4.V (p.67) if sufficient inputs of palm oil and tallow were available.

An attempt has been made to evaluate the foreign exchange requirements, for spares and for raw materials. The total comes to 92.5 mill Shs; the greatest requirement is for raw materials. It is considered that an expenditure of 10 mill Shs. on spares alone would make little difference to the overall position. If such finance was made available, it should be concentrated in one or two areas in order to achieve the maximum benefit (See Table D4.VI p.68).

1.2 Trade

In spite of possible inaccuracies in statistics, exports from the mills have been fairly good earners of foreign currency. Oil cake exports seem to have averaged about 60-70,000 tons a year, most of it going outside the East African Community.

The size of the market for vegetable oils in the Community is given in Table D4 VII. (p.69).

These figures indicate that Uganda will probably continue to find a useful market for oil within the Community once production is resumed.

1.3 Other Vegetable Oils

Small quantities of sesame and groundnuts are purchased for expelling but the quantities have declined greatly.

It is understood then in the north of Uganda some 440 gallons of shea nut oil are produced. Although this oil would attract a good export price it is at present mainly used for soap manufacture. Shea oil has some unusual physical properties which make it popular in the production of hydrogenised fats. It is also used in the textile industry.

Soya beans are grown in the country on a very small scale. The crop is said to yield well and its production should be encouraged. Soya meal is one of the finest protein supplements for poultry and pig feeds. Production of soya meal would stimulate the currently ailing poultry industry to supply urgently needed eggs and poultry meat. Uganda is slowly sliding towards a situation where the national diet may become seriously short of essential proteins.

1.4 Organisation of the Industry

All the oil mills and soap works have now been brought under the control of the Lint Marketing Board who have had an immense task evaluating the potential of each plant.

The Lint Marketing Board is under no illusion about the problems it faces in trying to rehabilitate the industry and has already seen the need for the industry to be re-equipped with new plant.

The Board appreciates the need to train maintenance staff. It also urgently required the services of fully qualified cost and works accountants.

II PROPOSED COTTON SEED PROCESSING PROJECT

In 1975, the East African Development Bank undertook a study entitled "Proposal to set up a Cotton Seed Process Plant in Uganda". The study was based on a 600 tonnes per day plant with a capital cost of 38.68 mill Shs. and a further 54.1 mill Shs. for working capital.

The economic evaluation indicated an economic rate of return of 22% and was assessed as viable.

The actual siting of the plant was not studied in depth but the costings were based on a plant established at Gulu.

This report has provided an immense amount of background data upon which further work can be carried out. The report showed what new technology together with concentration of effort could achieve.

The existing situation and prospects in Uganda suggest that the maximum foreseeable output of cotton seed cannot be in excess of 75,000 tonnes per annum or equivalent to a plant capacity of 300 TPD.

Although sesame seed, sunflower seed or even soya may be available in small quantities now, there is very little likelihood of (say) 75,000 tonnes per annum being produced within the next five years or so.

The present situation demands that Uganda should not over capitalise in fixed equipment and therefore developments should be conservative. Nevertheless, the value should not be underestimated of encouraging the production of (say) soya which not only can provide oil but essential protein for poultry and pigs.

II.1 Proposed Development for Oil Seeds

All the data on current trends point to the fact that cotton and other oil seed production could not possibly supply a 600 tonne per day oil seed mill.

There is also a major reason why one single oil seed mill would not be advisable and that is the transport costs involved. While it is impossible to estimate the additional cost of distribution from a single mill with any accuracy without undertaking a detailed site location study, it is estimated that a plant situated in the north of the country could well involve additional transport costs amounting to 7 mill.Shs. per year. This cost if capitalised would amount to 40 mill Shs.

It is, therefore, recommended that instead of a single 600 tonnes per day plant, as proposed in the EADB Report, three smaller plants of 100 tonnes per day capacity should be built. In order to minimise transport costs the three plants should be built in the main cotton producing areas. This would mean plants at Jinja, Kampala and Lira. If production in the north of the country expands, it has been suggested a fourth plant could be built in Gulu.

II.2 Process Selection

Each mill would have a capacity of 100 tonnes of seed per day. At this scale of operation solvent extraction is not economic. It is only when plants are built of 750 - 2000 tonnes per day that the solvent extraction process shows major cost savings; in labour, management and spare parts. Furthermore, the main solvent used, hexane, is highly inflammable and solvent extraction plants require very high standards of operation if safety standards are to be maintained.

The proposed mills should be installed with full pressing equipment which, if correctly operated, and maintained, should reduce the residual oil level in the cake to less than 5 per cent. The higher oil contents of expeller cake tend to attract a price premium which can compensate for the economies of scale of larger solvent extraction plants. With such a plant, the following is an example of cost comparisons of the relative market values of the end products:

Basic Assumptions :

Seed Composition	Oil	20%
	Oil free meats	42%
	Oil free meal	38%
		<hr/>
		100%

Prices		US\$/tonne
	Expeller Cake (45% Oil and Protein)	200
	Meal Solvent Extraction (41% Oil and Protein)	176
	Crude Oil	700
A.	Expeller Process say 100 tonnes of seed -	US\$/tonne
	Hulls 36 tonnes	Nil Value
	Expeller Cake 46.8 tonnes x 200	9,360
	Crude Oil 17.2 tonnes x 700	12,040
	Totals 100.0	21,400 US\$/tonne
B.	Solvent Process say 100 tonnes of seed -	US\$/tonne
	Hulls 36 tonnes	Nil Value
	Extracted Meal 45 tonnes x 176	7,920
	Crude Oil 19 tonnes x 700	13,300
	Totals 100.0	21,220 US\$/tonne

Therefore for 100 tonnes seed the difference in product value owing to process is US \$ 180 in favour of the expeller process (A). The price advantage is in spite of the fact that "Full Press" expelling leaves 5% of oil in the cake. Therefore, prima facie, there appears to be no advantage in solvent extraction. This last factor assumes that the operating costs and depreciation are equal. If, however, the cost of maintaining expeller plants or the cost of hexane (solvent) was exceptionally high the comparison would no longer be valid.

Operating experience gained in other countries helps to provide added insight. In the USA, oil mills based on mechanical expelling consistently maintain oil residues of between 3 and 3.5 per cent in the expeller cake.

To summarise, the advantages of full press methods over solvent extraction are :

- safer to operate because of absence of hexane;
- hexane costs are rising;
- only small quantities of cooling water and steam required;
- installation is quicker and easier;
- lower capital cost for the capacity under consideration.

To this should be added the fact that operating experience is already available in Uganda.

The major disadvantages are: first, the higher wear of expeller parts which calls for a relatively high standard of maintenance expertise, together with good workshop facilities. Second, but of less consequence, the higher power requirements. However, power in Uganda is relatively cheap.

The oil residues in the cake will be higher than with a solvent plant but this will not adversely affect the economies of operation. The calculation above was based on a 5 per cent residue but there should be little difficulty bringing this down to 4 per cent.

11.3 Project Costs

The basic data of each unit are shown below:

Capacity	-	100 tonnes per day of cotton seed, delinted basis.	
Main Process	-	Delinting, dehulling Full press expelling, oil neutralising and double washing, continuous batch bleaching and deodorising.	
Storage	-	3 months Seed Storage 1 months Meal Storage 2 months Oil Storage	
Plant and Buildings			
Costs :	-		mill Shs.
		Mill	11.6
		Refinery	1.0
		Utilities	0.7
		Storage (Seed and Oil)	3.3
		Sub total	16.6
		Transport	0.8
		Erection	5.0
		Design and Contingency	1.7
		Buildings	6.5
		Spares and Contingency	3.4
		Sub total	17.4
		GRAND TOTAL	34.0 Mill Shs.

The cost of three mills would be 102 mill Shs.

II.4 Foreign Exchange Evaluation

In making the foreign exchange evaluation the following assumptions have been made.

The existing plants are closed down as the three new mills are commissioned with a total seed capacity of 75,000 tonnes per annum.

Out-turn Hulls	36.0%
Cake	46.8%
Crude Oil	17.2%

(It is estimated that 25% of the oil is lost in refinery but a credit is given for soap stock at 5,310 Shs./tonne)

The domestic market for cake is evaluated on past data and the prices of both cake and oil are as currently quoted in the country. It has been assumed that the domestic market for oil takes priority over the export market.

From Table D4 VIII (p.70) it will be seen that the net foreign exchange benefit is marginal although there is an appreciable gain in domestic added value. It has been assumed that a ten year loan at 12 per cent interest could be negotiated.

The import coefficient levels out at 0.5 and would deteriorate significantly if the cost of foreign imports increased.

The basic needs are oil for cooking and for soap. The project would be judged more by social than by economic pressures.

Table D4.1

UGANDA - Cotton Seed Oil: Production and Consumption 1964-73
(tonnes)

YEAR	E X P O R T S			Domestic Consump- tion	Total Production
	Outside E.A.C.	Within E.A.C.	Total		
1968	46	5,535	5,581	12,419	18,000
1969	58	5,560	5,618	14,382	20,000
1970	190	3,908	4,098	12,902	17,000
1971	8	4,416	4,424	12,576	17,000
1972	3	2,207	2,210	13,790	16,000
1973	2	848	850	12,150	13,000

- SOURCES:
1. E. A. Customs and Excise Annual Report
 2. Lint Marketing Board Annual Reports

Table D4 IIUganda: Cotton Seed Cake production and consumptionTonnes

Y E A R	Ex E A C	Exports to E A C	TOTAL	Domestic Consumption of Stocks	TOTAL production
1968	50,619	1,050	51,669	16,331	68,000
1969	69,628	1,118	70,746	4,254	75,000
1970	75,384	2,006	77,390	(12,390)	65,000
1971	55,287	3,958	59,245	5,755	65,000
1972	47,794	2,811	50,605	11,395	62,000
1973	37,752	3,115	40,867	8,133	49,000

SOURCE: E A D B Report - Proposal to set-up Cotton Seed processing plant in Uganda. 1975

Table D4 III

Uganda: Available Supplies of Cotton Seed

Tonnes

REGION	1972/1973			1979/1980		
	Production	For Seed	For Oil	Production	For Seed	For Oil
Lango/Acholi	38,000	1,100	36,700	70,000	2,000	68,000
West/Nile/Wadi	13,500	700	12,800	22,200	1,100	21,100
Teso	20,000	5,500	14,500	56,400	6,600	49,800
Bunyoro	8,200	1,100	7,100	9,400	1,500	7,900
TOTAL	79,700	8,400	71,300	158,000	11,200	146,800

SOURCE: E A D B Report. "Proposal to set up Cotton seed processing plant in Uganda 1975"

Table D4 IV

Uganda: Estimated Capacity of Oil & Cake Mills together with actual output for 16 month periods 1974/1976

Number	Mill - Number & NAME	Estimated Capacity		A Semi-Oil B Double Oil	Actual Output for 16 months period		Operating Capacity Annual Base	
		Seed Tonnes	Cans Oil 20 litres		Tonnes Cake	Cans Oil 20 litres	Cake Tonnes	Oil %
1.	Supersonic Mill	4,600	32,200	A	21,459	2,076	50	68
2.	East African Oil Industries	1,680	11,760	B	10,562	990	67	88
3.	Oil & Manufacturing Industry	3,300	22,100	A	19,830	1,789	67	81
4.	Peter Kiruwira	SILENT		A				
5.	Anguruma	1,760	12,320	A	627	55	4	6
6.	Iganga Industry Ltd	15,840	110,880	B	44,540	3,275	30	31
7.	O.K. Oil Mill Ltd	24,640	172,480	B	98,149	7,090	43	43
8.	Kaliro	SILENT						
9.	Busuro	SILENT						
10.	Busembatia	13,200	92,400	B	35,763	2,635	29	32
11.	Kakira	31,680	221,760	B	76,647	6,324	26	30
12.	Arapai	2,112	14,784	A	6,230	576	32	41
13.	Tororo	2,640	18,480	B	26,229	2,086	106	119
14.	Magodes	1,760	12,320	A	8,520	559	52	48
15.	New Budaka	7,920	55,440	B	35,389	3,448	48	65
16.	New Alliance Oil Industries	7,920	55,440	B	37,525	2,932	51	56
17.	Bulacira	6,600	46,200	A	28,320	2,541	45	58
	TOTALS	125,652	878,564		449,790	36,376	38	44

SOURCE: Lint Marketing Board, Oil Seeds Division

Table D4 V

Uganda: Estimated Capacity of Soap Production together with actual production for 16 months 1974 to 1976

MILL	Estimated Capacity		Actual Output	
	Laundry	Toilet	Laundry	Toilet
East African Oil Industries	Tonnes 20	Cartons	Tonnes 11	Cartons
Anguruma Soap Factory	171		73	
Iganga Industries	1,560		201	
O.K. Oil Mill	100		43	
Kakira Oil Mill	2,704	10,000	196	4,602*
Tororo Oil and Soap	730		375	
Magodes	35		44	
New Budaka	1,560		403	
Nakasero Soap Works	6,000	60,000	208	23,000*
TOTAL say	13,000	70,000	1,554	27,602*

SOURCE: Lint Marketing Board, Oil Seeds Division

* 6 months only

Table D4 VI

UGANDA - Estimated Foreign Exchange Requirement for Oil Mills and Soap Factories as at 1975

'000 Shs.

MILL/WORKS	SPARES		RAW MATERIALS		TINPLATE OIL	TOTAL	
	OIL	SOAP	OIL	SOAP		OIL	SOAP
1.	100		230			330	330
2.	110		153.5			263.5	263.5
3.	130		123			253	253
4.	100	20	300	75		400	95
5.	150	100	6,975	1,274		7,125	1,374
6.	250	200	655.4	465	1,233	2,138.4	665
7.							
8.							
9.	59		234.5			293.5	293.5
10.	3000	2500	9,860	18,654.4	9,607.5	22,467.5	21,154.4
11.	100		200.5			300.5	300.5
12.	150		1,844.5			1,994.5	1,994.5
13.	200		235.0			435	435
14.	130		305.5			435.5	435.5
15.	150		230.7			380.7	380.7
16.	100		140.6			240.6	240.6
17.		2000		30,150			32,150
18.							
TOTALS	4729	4820	21,488.2	50,618.4	10,840.5	37,057.7	55,438.4

TOTAL SPARES 9,549 Shs.

TOTAL RAW

MATERIALS 72,106.6 Shs.

TOTAL TIN-

PLATE 10,840.5 Shs.

TOTAL 92,496.1 Shs.

SOURCE: Lint Marketing Board - Oil and Soap Division

Table D4 VII

Estimated size of E A C Market for Vegetable and Animal Fats and Oils - 1973

Tonnes

ITEM	KENYA	UGANDA	TANZANIA	TOTAL	PER CENT
Butter	800	400	700	1,900	4.1
Margarine & Shortening	3,000	1,700	1,800	6,500	14.1
Vegetable Oils	11,200	11,900	14,500	37,600	81.8
TOTAL	15,000	14,000	17,000	46,000	100.0

SOURCE: E A D B Report "Proposal to set up Cotton Seed Processing Plant in Uganda 1975"

THE SUGAR INDUSTRY

I. PRESENT SITUATION

Possibly no other sector of the Ugandan economy has caused the Government such obvious concern as the sugar industry. This once thriving activity has experienced a dramatic decline in output during the last few years.

The sensitivity of the Government to the present state of the industry is understandable and can only be increased by the awareness of most consumers of the almost total absence of sugar on the free market. Under-counter supplies of sugar are said to be available in Kampala at 30 Shs. per pound, thus emphasising the acute shortage.

During the course of the team's stay in Uganda it was reported in the press that Government had signed an agreement with an Italian nationalised concern for the rehabilitation of the Kakira factory. One of the Arab Investment Funds was looking at the possibility of supporting a second factory. The Consultants did not have an opportunity to see the outline agreements.

At the present time it is understood that little progress has been made in either matter. This appendix briefly examines the present situation of the sugar industry and, on the basis of figures currently being quoted, attempts to analyse the foreign exchange situation.

I.1.1 Production

The sugar industry in Uganda grew out of "jaggery" production which in itself was the major source of "enguli", the base used for the distillation of "Uganda Waragi".

Sugar was first refined in the 1920's. Production steadily increased to a maximum of 152,000 tons in 1968. Since 1971, production has fallen dramatically to an estimated 20,000 - 25,000 tons at the present time. (See Table D5.1. p.79)

One factory failed to produce any sugar during 1974. A second factory is in critical need of attention. Although a major new production complex will come on stream during the next few months, it is difficult to see any substantial return to original production levels for some considerable time.

I.1.2 Consumption

In the 1960's, domestic sugar consumption was estimated to be in the order of 10 kg per capita per annum. By 1971 consumption had risen to an all-time high of 14.9 kg/capita. In 1974, a report was prepared which contained forecasts of future levels of consumption; this report made a forecast of 17.1 kg/capita for 1980 and a further increase to 27.3 kg/capita by 1985.

The present shortage in the country will almost certainly affect the long term growth in consumption. Comparisons with other countries may give some indications toward future trends, but it should be borne in mind that carbohydrate consumption increases northwards from the equator. Therefore consumption is higher in Northern Europe than in Southern Europe.

In 1971/72, per capita consumption in the original six E.E.C countries was 34.0 kg per annum but for the extended nine E.E.C. countries the level rises substantially to 37.0 kg per capita per annum. This is largely because consumption levels in Ireland and Denmark are very high, being further to the north.

All the available evidence indicates that consumption per capita is unlikely ever to approach European levels as has been suggested.

Until 1968, Uganda was a substantial exporter of sugar and had a mean surplus of about 35,000 tonnes a year. In 1969, following a sudden increase in consumption, the country had a sugar deficit of over 6,000 tonnes. The next year there was again a surplus, but the country has since been in deficit.

It is now almost impossible to forecast future levels of per capita consumption in view of the substantial change in the national demographic structure since 1971. Ultimately, price elasticity will control consumption and therefore a return to the levels of the early 1970's will take time. On the other hand, the population will have to be in excess of 170,000 tonnes if an annual per capita consumption of even 13 kg is to be supported.

Taking into account the present state of the industry and the planned developments, there is little possibility of surplus capacity for export before 1985 if the domestic demand is to be satisfied.

I.2 Organisation of the Industry

I.2.1 Production Facilities

There were formerly three major sugar production complexes. These were:

KAKIRA SUGAR WORKS - KAKIRA
(part of the MAHDVANI GROUP)

UGANDA SUGAR FACTORY LTD - LUGAZI
(part of the MEHTA GROUP)

SANGO BAY LTD
(private company)

The three units are now combined into the Uganda Sugar Corporation. It started operation at the beginning of this year.

There is some confusion about the capacities of the original plants. The estimated standard capacities are as follows, but in brackets are other figures for capacities which have been quoted:

KAKIRA	90,000 tonnes	(80,000)	(100,000)
LUGAZI	60,000 tonnes	(80,000)	(80,000)
SANGO BAY	15,000 tonnes	(20,000)	(10,000)
TOTALS	165,000 tonnes	(180,000)	(190,000)

A new sugar refinery is under construction in the north of country at KINYALA. Initial capacity will be 45,000 tonnes per annum but this will be raised to 60,000 tonnes after three years. This factory is being established and operated through a bilateral agreement with the Government of India.

I.2.2 Present State of the Industry

During the team's stay in Uganda, the two main factories were visited and discussions held with the senior staff. Extensive reports which have been prepared on the state of the industry were made available and were studied in detail. The Consultants' opinion is that the reports underestimated the seriousness of the position. The basic problem with both plants is that the original design was prepared in the late 1920's and since then extensions have been made on an ad-hoc basis. There is, therefore, no uniformity in design or layout. To add to the confusion, there is much old pipe work and, in many cases, services are totally unmarked.

All the fixed plant is made from mild steel and, as a result of the corrosive action of sugar, many of the plates are wearing dangerously thin. Welding cannot now be freely undertaken on a cut out and re-weld basis as patches are everywhere.

In view of Kakira's prospects of early rehabilitation the following comments refer to the Lugazi plant. In the team's opinion, this plant is in a highly dangerous condition and the likelihood of a boiler explosion is now very real. This factory is undoubtedly in a far worse condition than Kakira.

Despite almost insurmountable obstacles, the staff of the Lugazi factory have managed to keep some sugar production going. In spite of the efforts of the technical staff, the position has now been reached that, at each point in the flow process, standby capacity in case of breakdown is totally absent. Even the smallest breakdown can bring the plant to a halt.

The question is no longer about the extent of rehabilitation but, in our view, it is when should the plant be closed for complete reconstruction.

It is important to emphasise that the present factory has provided a most valuable training ground for all levels of the technical staff, particularly the production and maintenance staff. Perhaps many of the lessons have been learnt on a trial and error basis but the level of ingenuity and quality of workmanship seen during the tour of the factory promise well for the future.

Given the new equipment and shown how to operate it, the Lugazi team should be able to attain high levels of plant operation. However, even they admit that training is urgently needed in the management and costing of production and in maintenance.

1.2.3 Agricultural Problems

Attention should be drawn to the fact that much of the standing cane is now over age and beyond recovery, particularly at Lugazi. It is therefore essential that efforts to renovate the factories go hand-in-hand with the necessary attention to the plantations.

It is understood that, because there has been little work on the plantations, workers have moved away and that recruitment may prove difficult. Sugar cane harvesting can be efficiently mechanised, however, and it could well be that by reducing the high employment of labour on sugar plantations, labour could be switched to the tea plantations to help in solving the chronic labour problems there.

1.2.4 Sango Bay Ltd

As stated earlier, there was no opportunity to inspect the Sango Bay Factory. It is understood that the plantation is subject to flooding and the site is not the easiest to work. To increase the investment in such circumstances might be imprudent, especially when easier working conditions could be found elsewhere.

One possibility might be to replace or renovate the crushing equipment, and to transport the raw juice, possibly by barge across the Lake to Kakira for refining.

I.3 Estimated Foreign Exchange Requirements

The total foreign exchange currency required for the sugar industry both for rehabilitation and for new capacity, has been estimated as follows:

Factory	Capital Mill. Shs.
KAKIRA	240
LUGAZI	200
SANGO BAY (part only)	50
KINYALA	210
	—
TOTAL (say)	700

It has been assumed that two 10-year loans of 250 mill. Shs. each would be negotiated at an interest rate of 12%. The second loan starts in the 4th project year.

Operating expenses have been based on those stated by the Kakira management and adjusted to the other factories on a pro rata basis at 730 Shs. per tonne of output. This figure assumes almost 100 per cent self-sufficiency in fuel.

The home market and export prices are set at 1,700 and 2,700 Shs. per tonne respectively. Both figures could be subject to considerable variation.

An estimate has been made of the likely quantity of sugar available for (a) home consumption and (b) export. It is shown in Table D5 III. p.81.

It has been assumed that, during 1977 and 1978, both Kakira and Lugazi are being reconstructed and that Kinyala comes on line during 1977. Sango Bay's contribution will only be minor. Provision has been made in the project for the juice to be extracted on site and to be finished at Kakira.

Domestic sugar consumption is estimated to remain relatively constant during the period and the increase in demand attributed to population growth.

At the earliest, a small quantity of sugar could be exported in 1982, but it is highly unlikely that any substantial quantity will be available before 1985. Even then, it is possible that total production could be absorbed by the local market.

The foreign exchange analysis at Table D5.IV (p.82) immediately makes it clear that the industry is a net consumer of foreign exchange for the foreseeable future. The cost of buying the total sugar requirement for the country would be in the order of 525 million Shs. For a maximum annual expenditure of 288.3 million Shs. a foreign exchange saving of nearly 240 million shillings is theoretically practicable.

The potential saving has to be judged alongside the present situation in the country, where available supplies are possibly no more than 25,000 tonnes a year.

On this basis, the decision whether or not investment in sugar is justified and, if indeed it is, what priority should be given to it must depend of socio - economic and political consideration rather than financial.

II WORLD SITUATION

II.1 Production

Between 1968 and 1973 world production of sugar had been increasing at an average of 2.25 million tonnes per annum. Poor harvests, however, in 1974, the result of adverse growing conditions in Europe, produced an increase of only 600,000 tonnes in the world crop and consequent spiralling prices with concern over supply availability.

World production by region is shown in Table D5.V p.83 for the period 1968-1974. Though more recent complete data are not available, it is expected that world crop in 1976 will be in the range of 82.5 to 83.5 million tonnes, assuming that the E.E.C and Eastern Europe do not suffer three successive years of bad crops. Even an average yield would give an extra two million tonnes in the E.E.C. alone, with growers prepared to retain or increase beet plantings.

Approximately 60% of world production is accounted for by cane sugar and 40% by beet. The main centres of production are central and South America and Asia for cane and East and Western Europe for beet production. Largest increases in cane production over the period have been evident in S. America, particularly in Brazil, where production is said to be increasing at 12% per annum. Elsewhere, much investment in cane production appears to be directed towards keeping pace with demand, especially in Asia.

Among the main incentives to become involved in domestic sugar production are reduced dependence on imports, thus saving foreign exchange, and a provision of a high proportion of employment. However, the creation and installation of sugar plants is capital intensive, requiring increasingly large sums of money. To establish a plant for production of 100,000 tonnes of sugar is reckoned to cost \$60 - 90 million, including costs to prepare and cultivate land, establish ancillary transport and field machinery and erection of plant. Interest and amortization costs alone have been estimated by the FAO at 3 £/lb, or over £30/tonne (not much above the price of sugar in 1971). Also a cane industry requires a few years before target yields are reached and the project can pay its way. The current world price of sugar though not disastrously low (at £170/ton) does not provide the incentive needed to become involved in such high cost projects.

II.2 Consumption

Data on world consumption between 1968 and 1974 are summarized by region in Table D5 VI.p.84. World consumption increased from 66.3 to 79.8 million tonnes over the period. In 1976, it is expected that world consumption will reach 81 million tonnes. Europe (including the U.S.S.R.) and N. America, the major import markets, have displayed a growth in consumption well below world average. Their share declined from 58% to 54% in the period.

Historically, sugar has been considered to be fairly inelastic in demand, but the shocks of 1974 and changes in traditional supply agreements, such as the Commonwealth Sugar Agreement and the U.S. Sugar Act, had more impact than anticipated. Consumption in the Western World fell in 1975. The surge in prices between August and November 1974, resulting from concern for supplies, saw a sharp cutback in demand in the U.K., the position changing from a shortage to over-supply very rapidly. The fall in U.S. consumption was accompanied by increased competition from substitute maize-based sweeteners. The latter, possessing the advantage of being a natural product not subject to the criticism against synthetic substitutes, could possibly make further inroads into the sugar market.

The demand for sugar in the developed countries appears to have little potential for growth and it may prove difficult to maintain present levels. Better growth opportunities for consumption are evident in the developing world. Apart from population increases, sugar is very much linked with the improvement in the standard of living. Asia, Africa and Latin America have all experienced significant growths in consumption in recent years.

II.3 World Trade

Table D5 VII to IX (pp.85 - 86) show world exports, imports and balance of trade by region for the period 1968 - 1974.

World trade in sugar was estimated to be over 21.5 million tonnes in 1974. A large proportion of this trade has formerly been conducted under special agreements. In 1973, Cuban supplies to Comecon equalled 3.7 million tonnes, Commonwealth to U.K. were 1.8 million tonnes, African States to the E.E.C., 0.4 million tonnes and various supplying countries to the U.S.A. were 5.3 million tonnes under the U.S. Sugar Act. This left only a little more than 50% of world exports to the free world markets. The ending of the U.S. Sugar Act and the Commonwealth Agreement means that unsecured supplies on the world market are now 16 to 17 million tonnes; N.America and Asia have the largest import requirements.

II.4 Prices

Average weekly sugar prices quoted in London between April 1971 and April 1976 are charted in Figure D5.I p.87. The peak price of £620/tonne was reached in November 1974, when beet crops were poor both in East and West Europe and the restraining influence of the former trading agreements came to an end. Another factor was the entry of the USSR into the world market as a buyer to supplement low yields in the Ukraine. Consumer resistance saw the price fall to well below £150/tonne in mid 1975; this is believed to be near the production cost in many countries. London prices have improved slightly to a range of £160-£180/tonne and this is expected to continue during 1976. It has been suggested that the rise may continue to £220 by the end of 1977, assuming an average crop. In 1976, world production is expected to exceed consumption by 2 million tonnes. There could be a rise above this price range, however, if the USSR had again to enter the world market as a buyer or if a major exporter had a crop failure.

Table D5.I
Uganda: Production of Sugar by Factories and Exports 1968-1975
Tonnes

Production Year	Sango Bay	Lugazi	Kakira	Total (1)	Total (2)	Production by Quarter				Value of Production Shs Million
						Qtr 1	Qtr 2	Qtr 3	Qtr 4	
1968					152,418					121,9
1969					139,914					111,9
1970					143,975					115,0
1971	5,818	53,000	81,500	140,318	141,266					113,7
1972	5,500	59,620	67,500	132,500	121,414					142,8
1973	1,600	25,449	41,398	68,447	68,597	18,190	19,670	16,190	14,547	54,729
1974	-	18,223	21,810	40,033	40,033	13,414	10,165	-	-	85,788
1975										

SOURCE: (1) Ministry of Industry and Power (Year Jan/Dec)

(2) 1973 Statistical Abstract (Year July/June)

	1968	1969	1970	1971	1972	1973
Exports (tonnes)						
Overseas	2,926	28,034	4,916	5	-	-
E.A.C.	34,162	19,842	18,401	363	105	-
TOTAL	37,088	47,876	23,318	368	105	-

SOURCE: Quarterly Economic and Statistical Bulletin

Table D5.II

Uganda: Consumption of Sugar with estimates to 1985

YEAR	Consumption		Surplus or Deficit in Supply
	Total (Tonnes)	Per Capita (Kg)	
1960	64,486	9.5	29,985
1961	72,064	10.7	25,059
1962	65,749	9.4	40,236
1963	72,717	10.1	51,284
1964	83,221	11.3	42,314
1965	97,464	12.9	20,067
1966	106,722	13.9	20,771
1967	102,521	12.9	34,364
1968	101,076	12.4	48,501
1969	142,498	14.9	6,096
1970	132,915	13.6	11,009
1971	143,740	14.2	2,589
1972	144,740	13.8	23,216
1973	NA	NA	(Population Base)
Estimate for:- 1975	154,100	13.4	11.5 million
- 1980	230,900	17.1	13.5 million
- 1985	431,300	27.3	15.8 million

SOURCE: Sugar Industry Report for E.A.D.B. Dec 1974

Table D5 III
Uganda **Estimated Output of Sugar 1976 - 1985 compared with**
Estimated consumption of Sugar ('000 tonnes)

FACTORY	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
KAKIRA	15	-	-	20	40	60	80	90	90	90
LUGAZI	10	-	-	10	20	30	40	50	60	60
SANGO BAY	-	-	-	5	10	15	15	15	15	15
KINYALA	-	10	15	20	40	40	50	60	60	60
ESTIMATED TOTAL OUTPUT	25	10	15	55	110	145	185	215	225	225
ESTIMATED DOMESTIC CONSUMPTION ASSUMING FREE SUPPLIES	150	155	160	165	170	175	180	190	195	195
SURPLUS +							+ 5	+25	+30	+30
DEFICIT -	-125	-145	-145	-110	-60	-30				

Table D5.IV

Uganda Sugar - Estimated Foreign Exchange Requirement and Analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	PRODUCTION	HOME CONSUMPTION	HOME PRICE	HOME REVENUE	EXPORTS	EXPORT PRICE	EXPORT REVENUE	TOTAL REVENUE	FACTORY REVENUE	CAPITAL COST	OPERATING COST	TOTAL FOREIGN EXCHANGE	DOMESTIC ADDED VALUE	IMPORT COEFFICIENT	NET F/E BENEFIT
	'000 Tonnes	'000 Tonnes	Shs/Tonnes	Mill Shs	'000 Tonnes	Shs/Tonne	Mill Shs	Mill Shs	Mill Shs (1x3)	Mill Shs (700)	Mill Shs (730 Shs/Tonne)	Mill Shs	Mill Shs (9-12)		Mill Shs.
1976	25	25	1700	42.5			42.5	42.5	42.5	62	18.3	80.3	(-37.80)	1.89	(- 80.3)
1977	10	10		17.0			17.0	17.0	17.0	62	7.3	69.3	(-52.30)	4.08	(- 69.3)
1978	15	15		25.5			25.5	25.5	25.5	62	11.0	73.0	(-47.50)	2.86	(- 73.0)
1979	55	55		93.5			93.5	93.5	93.5	124	40.2	164.2	(-70.70)	1.76	(- 164.2)
1980	110	110		187.0			187.0	187.0	187.0	124	80.3	204.3	(-17.30)	1.09	(- 204.3)
1981	145	145		246.5			246.5	246.5	246.5	124	105.9	229.9	16.60	0.93	(- 229.9)
1982	185	180		306.0	5	2700	13.5	319.5	314.50	124	135.1	259.1	55.40	0.81	(- 245.6)
1983	215	190		323.0	25		67.5	390.5	365.50	124	157.0	281.0	84.50	0.72	(- 213.5)
1984	225	185		331.5	30		81.0	412.50	382.50	124	164.3	288.3	94.20	0.70	(- 207.3)
1985	225	195		331.5	30		81.0	412.5	382.50	124	164.3	288.3	94.20	0.70	(- 207.3)
1986							81.0	412.5		62	164.3	226.3	94.20	0.70	(- 207.3)
1987							81.0	412.5		62	164.3	226.3	94.20	0.70	(- 207.3)
1988							81.0	412.5		62	164.3	226.3	94.20	0.70	(- 207.3)

Table D5 V

World Production of Centrifugal Sugar: 1968-1974

'000 tonnes - raw value

Region		1968	1969	1970	1971	1972	1973	1974
C A N E S U G A R	Europe	508	522	468	436	393	441	388
	N.America	1,230	954	1,088	1,048	1,236	1,432	1,268
	Central America	10,616	11,069	13,056	11,643	10,595	11,401	12,289
	S.America	7,845	7,693	8,076	9,257	10,548	11,618	11,791
	Asia	8,582	10,614	11,936	11,738	11,344	12,263	13,771
	Africa	4,266	4,171	4,441	4,693	5,124	5,059	5,106
	Oceania	4,297	3,703	3,911	4,221	4,205	3,911	4,181
	Total Cane Production	37,344	38,726	43,576	43,036	43,445	46,125	48,794
Cane Sugar as % of Total	55.9%	55.6%	59.8%	58.2%	57.4%	59%	62%	
B E E T S U G A R	E.E.C	8,285	9,107	8,664	9,898	9,579	9,768	8,880
	Other W.Europe	2,195	2,154	2,353	2,698	2,675	2,555	2,524
	E.Europe (inc. USSR)	14,453	14,576	12,870	12,766	14,399	14,244	13,145
	N.America	2,886	3,088	3,297	3,252	3,339	3,158	3,020
	S.America	229	234	267	241	204	132	184
	Asia	1,338	1,553	1,707	1,820	1,836	1,888	1,879
	Africa	101	159	164	248	269	260	289
	Total Beet Production	29,487	30,871	29,322	30,923	32,301	32,005	29,921
Beet Sugar as % of Total	44.1%	44.4%	40.2%	41.8%	42.6%	41.0%	38.0%	
TOTAL - Cane & Beet	66,831	69,597	72,898	73,959	75,746	78,130	78,715	

SOURCE: International Sugar Organisation

Table D5 VIWorld Consumption of Centrifugal Sugar 1968-1974

'000 tonnes - raw value

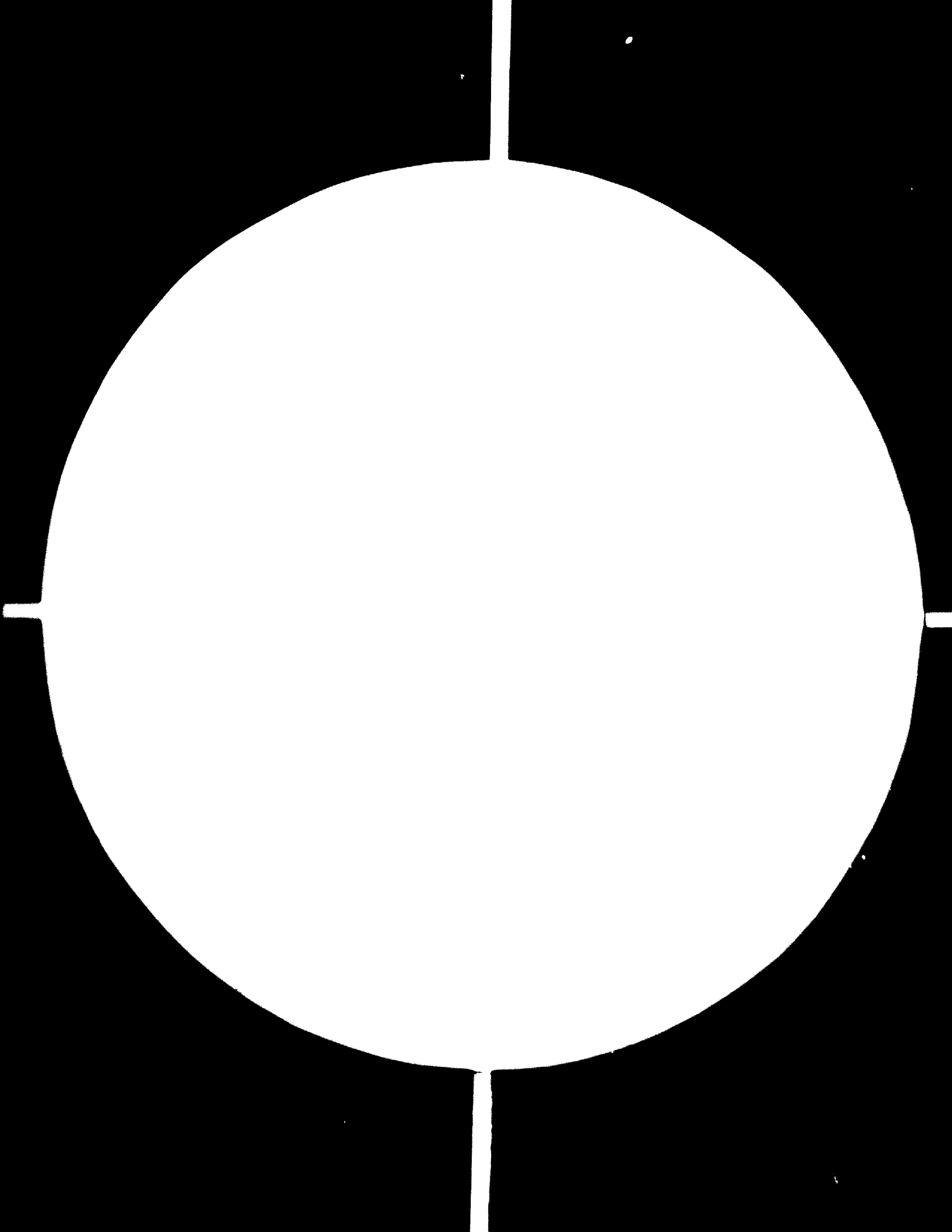
Region	1968	1969	1970	1971	1972	1973	1974
E.E.C	10,544	10,445	10,692	10,461	10,475	11,116	11,698
Other Europe	3,338	3,368	3,537	3,649	3,848	4,053	3,952
E.Europe (inc. USSR)	14,089	14,490	14,925	15,231	15,792	16,411	16,479
N.America	11,088	10,874	11,475	11,431	11,493	11,675	11,149
Central America	3,308	3,411	3,507	3,503	3,580	3,857	4,011
S.America	6,369	6,340	6,592	7,180	7,646	7,823	8,347
Asia	13,070	14,744	16,327	17,518	17,586	17,905	18,139
Africa	3,585	3,822	4,118	4,449	4,616	4,856	4,946
Oceania	905	918	951	965	971	1,019	1,044
TOTAL	66,296	68,412	72,124	74,567	76,007	78,715	79,765

SOURCE: International Sugar Organisation

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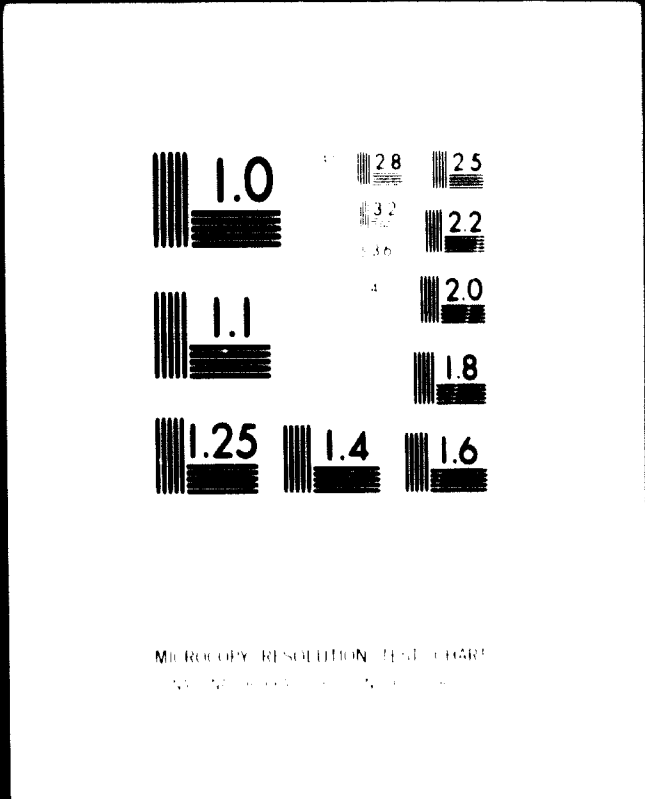


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Table D5 VII

World Exports of Centrifugal Sugar: 1969-1974

'000 tonnes - raw value

Region	1968	1969	1970	1971	1972	1973	1974
E.E.C	1,242	808	1,179	1,288	1,920	1,916	1,128
Other W.Europe	115	268	126	110	231	148	55
E.Europe (inc USSR)	2,759	2,411	2,551	2,045	952	918	733
N.America	25	16	16	13	19	69	105
Central America	7,079	7,120	9,333	8,166	7,073	7,539	8,195
S.America	2,369	2,027	2,224	2,431	4,081	4,379	3,983
Asia	2,184	1,951	2,259	2,722	2,580	2,656	3,320
Africa	2,156	1,971	2,011	2,043	2,312	2,296	2,132
Oceania	2,553	1,867	1,991	2,116	2,588	2,379	2,075
TOTAL	20,482	18,439	21,695	20,934	21,756	22,300	21,726

Table D5 VIII

World Imports of Centrifugal Sugar: 1968-1974

'000 tonnes - raw value

Region	1968	1969	1970	1971	1972	1973	1974
E.E.C	2,359	2,508	2,221	2,297	2,294	2,228	2,164
Other W. Europe	1,428	1,244	1,150	1,176	1,289	1,317	1,678
E. Europe (inc USSR)	2,814	2,273	4,325	3,010	3,110	3,952	2,918
N. America	5,562	5,428	5,803	6,016	5,910	5,852	6,198
Central America	21	43	36	26	38	49	24
S. America	162	261	134	221	328	354	243
Asia	5,199	5,578	5,893	6,034	6,357	6,781	6,379
Africa	1,517	1,240	1,535	1,658	1,708	1,738	1,761
Oceania	150	165	176	185	170	174	197
TOTAL	19,212	18,740	21,273	20,623	21,204	22,445	21,562

Table D5 IX

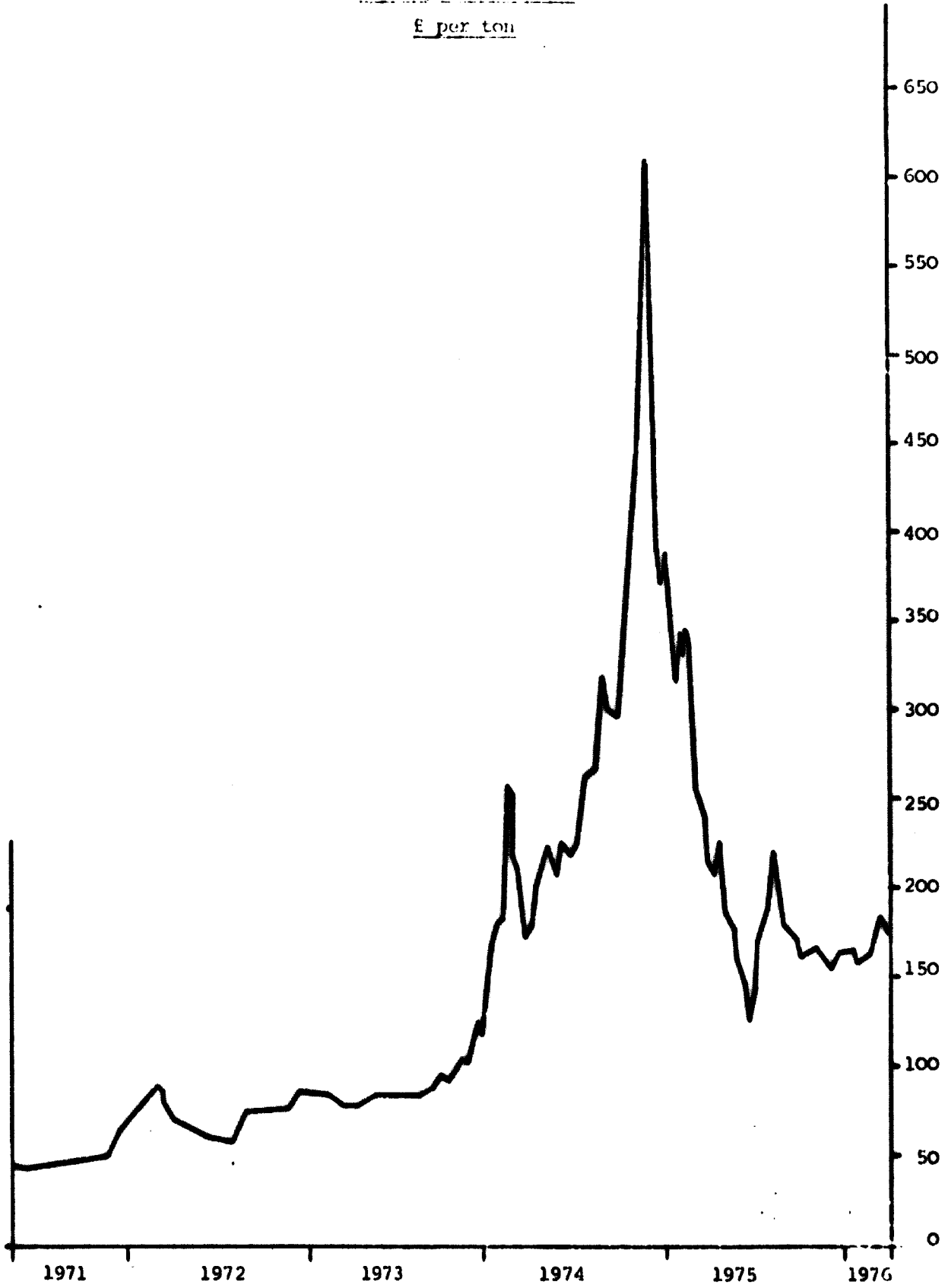
Balance of World Trade in Centrifugal Sugar: 1968-1974

'000 tonnes - raw value

Region	1968	1969	1970	1971	1972	1973	1974
E.E.C	- 1,117	- 1,700	- 1,042	- 1,009	- 374	- 312	- 1,036
Other W. Europe	- 1,313	- 976	- 1,024	- 1,066	- 1,058	- 1,169	- 1,623
E. Europe (inc USSR)	- 55	+ 138	- 1,774	- 965	- 2,158	- 3,034	- 2,185
N. America	- 5,537	- 5,412	- 5,787	- 6,003	- 5,891	- 5,783	- 6,093
Central America	+ 7,058	+ 7,077	+ 9,302	+ 8,140	+ 7,035	+ 7,490	+ 8,171
S. America	+ 2,207	+ 1,766	+ 2,090	+ 2,210	+ 3,753	+ 4,025	+ 3,740
Asia	- 3,015	- 3,627	- 3,634	- 3,312	- 3,777	- 4,125	- 3,059
Africa	+ 639	+ 731	+ 476	+ 385	+ 604	+ 558	+ 371
Oceania	+ 2,403	+ 1,702	+ 1,815	+ 1,931	+ 2,418	+ 2,205	+ 1,878

Surplus +
Deficit -

Figure D5.1
Average London weekly Prices of Sugar
1971 Apr - 1976 Mar
£ per ton



APPENDIX D6THE TEA INDUSTRY

1. THE PRESENT SITUATION

I.1. Introduction

Tea is not only one of the most important crops grown in Uganda but it is also the third highest earner of foreign currency.

Although the future of the crop gives some immediate cause for concern, the problems do not seem so acute as those in other sectors. For example, production has levelled but not declined to anything like the extent of cotton and coffee. Quality has fallen seriously, mainly due to lack of inputs (fertilizers and spares for the factories) and a shortage of pluckers.

Currently the most serious problem is the fall in profits on growing tea. For a long time, growers have been paid very low prices. However, the problem was brought to a head early in 1976 when the minimum labour rates were increased, thus firmly putting the industry into a loss position.

I.2 Production

The largest area reported under tea was in 1970, when some 18,200 tonnes of tea were produced. Thereafter, the area under tea declined but has since shown some increase although judging from the yield figures some of the reported statistics for total growing area seem suspect. (Table D6 I p.94).

The production reached an all-time peak in 1972, at 23,400 tonnes, but has since declined to 18,400 tonnes in 1975. As will be seen tea is grown and processed in some 35 estates. (Table D6.II p.95). The maximum recorded output of each factory over a six-year period shows that the 1972 high was virtually 100 per cent capacity.

In Table D6.III (p.96) details of the structure of production are set out. It can be seen that 'out-growers' had 45 per cent of the tea-growing area. The private estates now only account for 17 per cent of the area. While the Uganda Tea Authority has now been given responsibility for handling the whole crop, it only produces some 12 per cent of the tea.

The same table shows that the industry employs a total of 25,600 workers out of which some 21,000 are employed in tea plucking.

It will be seen that on average there are only 1.23 workers per Ha of tea planted. Ideally there should be at least 2.5. The result is that tea which should be plucked every 5/6 days is being left for as long as 15 days. The immediate effect is that tea quality has been falling as can be seen from the grading results of a large factory (Table D6 IV p.97).

It is unfortunate that the export quality has also fallen; a fact which is currently being reflected in lower prices. Before 1971, the price of Kenya tea used to be 20 - 30 cents/kg above Uganda tea; now there is often more than 1 Sh. per kg difference.

Because of the shortage of spares, many of the factories can no longer produce a good quality sample, no matter how much they try. When foreign exchange is made available, there are considerable delays in getting deliveries. For example, spares used to be purchased from agents in Kenya; but now the Government has decreed that all spares must be bought from the manufacturers, in this case from India.

The problems facing the tea growers were multiplied earlier this year when Government increased the basic wage from 130 Shs. to 240 Shs. per month. The effect of the increase on the industry's projected returns can be seen in Table D6 V p.98.

Overall the cost of production has risen from 6.20 Shs/kg to 7.15 Shs/kg., i.e. a 15 per cent increase. If there were a fall in auction prices in Mombasa, tea will no longer be profitable to grow.

1.3 Exports

Exports of tea amount on average to about 86 per cent of production and over the past five years have been in the order of 17,750 tonnes (against average production of 20,680 tonnes over the same period). In terms of value, in 1975, exports produced 120.8 million Shs. The return was some ten per cent higher in the previous year mainly owing to firmer prices. (Table D6 VI. p.99).

In 1970, the United Kingdom bought 68 per cent by value of Uganda's tea exports. This high level has now fallen to 34 per cent. In the same period, demand from the Netherlands gained very considerably in significance and that country now takes 32 per cent of the crop.

Exports are made through Mombasa. A few years ago when the quality of tea was higher, a large proportion was sold through four brokers in London. At present, much greater use is being made of the tea auction in Mombasa although the London brokers are still used when the higher qualities are available.

I.4 Organisation of the Industry

Although the Uganda Tea Authority is nominally responsible for the whole industry, it is in fact mainly preoccupied with exporting the tea and running the six or so tea estates/factories under its care and control.

The Uganda Tea Growers Corporation which was set up with World Bank funds to promote and coordinate small-holder tea production has now run out of funds. In any case the Corporation was not able to take up the second phase of the project loan.

The FAO project team thought that there was urgent need for closer coordination and planning of the different sectors of the industry to ensure that vital requirements were identified and resolved.

I.5 Industry Inputs for Foreign Exchange

No comprehensive schedule of the total foreign exchange requirements for the industry seems to be available. The following details are based on various estimates of current production inputs and future capital requirements. A major World Bank loan was to have been made to the Uganda Tea Growers Corporation, as a result of a full appraisal. It seems sensible that provision should be made for this possible investment in the evaluation.

- a) Funds for four new factories and inputs to increase planting by 6,280 ha (this will raise total production to 29,000 tonnes of which 26,000 tonnes will be available for export). Capital Provision, say 150.0 million Shs.
- b) For transport which is a chronic problem particularly at local level, say 150 lorries (3 tonnes) at 175,000 Shs. each say 26.25 million Shs.
- c) For rehabilitation of existing factories say 8.0 million Shs.
- d) Annual Cost of factory spares and consumables; currently all tea chests are being imported at 34 Shs. each from Kenya because home production has stopped; say 9.0 million Shs. To this should also be added the annual cost of Uganda Tea Authority's export programme, of land and sea freight etc. say 12.0 million Shs. The total will be 21.0 million Shs.
- e) Annual Cost of agricultural inputs fertilizer chemicals, say 6.0 million Shs.

I.6 Foreign Exchange Evaluation

From Table DG VII p.100, it will be seen that the cost of foreign exchange is estimated at 69.55 million Shs. per year. The initial capital and reconstruction costs amount to 184.25 million Shs. and annual operating costs to 27.0 million Shs.

While the country's production norm has been 22,000 tonnes per year, inputs of fertilizers and pesticides are estimated to increase production to 24,000 tonnes in the first project year.

Export prices have been kept down but recognition of improved quality is given as the project proceeds.

The Domestic Added Value reaches a maximum of 89.95 million Shs. on the basis of a firm price for tea of 5.50 Shs/kg.

At an export market price of 9 Shs/Kg the Net Foreign Exchange benefit rises to 138.45 million Shs. but the Import Coefficient is higher than the other agricultural crops at 0.31.

I.7 Constraints

It is considered that once the price of tea to the grower is increased, interest in the crop will return.

Reconstruction of the factories will remove a major cause responsible for quality problems. Nevertheless the extension services will have a great deal of work to do giving advice to out-growers.

Finally the provision of transport at all levels is essential, if quality is to be maintained. While local transport has been costed on the basis of lorries it could well be that tractors and trailers would be more suitable. It is said that on the larger estates managers are unable to give adequate supervision because they no longer have transport. Obviously such a situation can no longer be permitted.

II WORLD SITUATION

II.1 Production

World production of tea was 1.53 million tonnes in 1974, according to FAO data, and has been increasing slowly at under 1% p.a. Nearly one third of world production originates from India. Apart from China the other main producing countries are Sri Lanka, Japan, the USSR, Kenya and Indonesia. Table D6.VIII (p.101) gives production data for all the main producing countries between 1968 and 1974. Production confronted with a relatively inelastic world demand is not expected to increase significantly. It is reported though that Kenya intends to raise the area harvested by 50% for 1978.

Average yields of tea per hectare in the major growing regions between 1972 and 1974 were as follows:

	kilos/hectare		
	<u>1972</u>	<u>1973</u>	<u>1974</u>
Asia	1007	1036	1056
Africa	1097	1060	1064
World	1013	1038	1050

II.2 Consumption

Consumption of tea over the last five years has been levelling out. The largest consumer is India with the U.K. second. India is reported to have consumed 237,000 tonnes in 1972. Though the potential market is much greater official policy is to export as much tea as possible. In 1974, the U.K. and Ireland imported 220,000 tonnes for consumption but it appears that per capita consumption in the U.K. is now declining and more effort will be required in developing other markets.

The predominance of the U.K. as a market for tea exports may be seen in Table D6.IX (p.102) where world imports for consumption by region are presented for 1968 to 1974. In 1974, the U.K. consumed over 30% of world imports, 60% of which originated from India, Sri Lanka and Kenya. The main markets offering potential growth appear to be U.S.A. and the U.S.S.R. where per capita consumption increased by 12.5% and 40% respectively between 1967 and 1972. Some producing countries, notably Japan, are also becoming significant importers. A further expanding market but of minor importance is the Middle East. Rising incomes appear to have contributed to a growth in consumption in the Arabian peninsular.

II.3 Exports

World exports of tea by country of origin are recorded for 1968-1974 in Table D6.X (p.103). India and Sri Lanka, the two major exporters, accounted for approximately 57% of the world total. Their combined share, however, has slipped during the period from 66% in 1968 owing mainly to rising exports from East African producers.

II.4 Prices

Average annual prices at London auctions of all tea (of various origins and qualities) are charted over the last decade in Figure D6 I. (p.104). In the short term it is expected that prices will increase through 1976. During 1968, the average price received for Ugandan tea has been within 2 pence/kilo above or below the average. Its price prior to 1968 had been consistently a few pence above the average. Recently, the average price of all tea from Sri Lanka and Kenya has commanded the highest average prices with a premium of 4 to 5 pence per kilo.

The London auction price gives an indication for fixing the price of a private contract and to an extent may influence prices at other auction centres.

London, however, is no longer the main auction centre; it has now been overtaken by Calcutta and Colombo. Historically, much of the tea which came to London was re-exported, but owing to escalating docking costs London has now become a terminal market. Producing countries also realized that because of the distance and time involved to receive payment it is quicker and cheaper to send their teas for sale at their own auctions. A further cause has been the recession and liquidity problems facing buyers which left mounting unsold stocks in London warehouses. The net result is that producers are considering sending less tea for sale at the London auctions.

Table D6.I

Uganda - Tea Area, Production, and Average Yield

1966 - 1975

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Tea Production '000 Hectares	12.2	14.3	14.9	15.8	17.5	10.0	10.6	11.0	13.0	-
'000 Tonnes	11.2	11.2	15.2	17.6	18.2	18.0	23.4	21.9	21.7	18.4
Average Yield Kg per Ha	918	.783	1,020	1,114	1,040	1,880	2,208	1,991	1,669	-

SOURCES: Department of Agriculture

Table D.VII

Uganda - Tea Production: Increase/Decrease From 1970 to 1975 Together With Highest Recorded Output

ESTATE ('000 Kg)	1970	1971	1972	1973	1974	1975	INCREASE	DECREASE	MAXIMUM RECORDED OUTPUT
		+	+	+	+	+	%	%	
1. Ankole	1,104.4					743.8		36.8	743.8
2. Igara	138.8				1,239.4	889.4	540.8		1,239.4
3. Gugamba	1,152.7			1,222.2		893.0		22.5	1,222.2
4. Muzizi	508.5				654.4	471.3		7.3	654.4
5. Kisaru	81.0		228.7			146.1	80.4		228.7
6. Kigezi-Kayonza	368.0				682.9	643.7	74.6		682.9
7. Samaliya	61.9	293.9				77.0	24.4		293.9
8. Kako	105.8					210.3	98.8		210.3
9. Maru Maru	68.3					82.3	20.5		82.3
10. Mityana	1,138.1			1,547.6		1,184.9	4.1		1,547.6
11. Kakonda	798.7		1,064.2			904.2	13.2		1,064.2
12. Namutamba	243.1				282.2	232.3		4.4	282.2
13. Nwera	212.2			338.3		183.5		13.5	338.8
14. Kibulala	234.9		283.5			194.5		17.2	283.5
15. Kibulala	520.7	592.2				328.5		36.9	592.2
16. Kiwatu	427.6		542.7			382.3		10.6	542.7
17. Mabira	96.4				207.0	175.9	82.5		207.0
18. Nakiqalala	213.5		256.6			132.4		38.0	256.6
19. Salama	830.0			946.7		768.3		7.4	946.7
20. Luwala	455.0					500.7	10.0		500.7
21. Tamangala	13.4	15.2				-			-
22. Uganda	-					-			-
23. Kyaterekere	108.0	152.4				96.7		10.5	96.7
24. Bucerere	79.6		94.8			36.9		53.6	94.8
25. Nakalana	285.3		309.6			226.0		20.6	309.6
26. Kiamara	1,157.8			1,419.3		1,115.4		3.7	1,419.3
27. Toro/Somuliki	3,135.4		3,358.9			2,393.8		23.7	3,358.9
28. Buzirumagama	160.2		174.1			154.9		3.3	174.1
29. Kijura	295.1					576.6	95.4		576.6
30. Kiko	827.5		896.4			706.6		14.6	896.4
31. Mabale	74.3				1,275.8	826.2	+		1,275.8
32. Munabwa	1,096.5		1,237.2			750.7		31.5	1,237.2
33. Mwenge	1,439.0			1,702.4		1,433.0		0.4	1,702.4
34. Ruwanzori	100.4				245.2	308.3	+		245.2
35. Kabarale	432.4				516.2	558.0		29.1	516.2
COUNTRY TOTAL	18,217.2	18,004.7	23,376.2	21,880.2	21,687.7	18,367.6			23,823.3

+ The figures in the column for the years 1971, 1972, 1973, 1974 indicate the highest recorded output over the 1970 to 1975 period.

SOURCE: Uganda Tea Authority

Uganda - Tea - Total Area and Numbers of Workers Employed on Tea Estates
in 1975/76

GROWER	TOTAL AREA		TOTAL WORKERS EMPLOYED		WORKERS EMPLOYED ON TEA PLUCKING		
	HA	%	NOS	%	PER HA	NOS	%
Private Estates	3.583	17.2	6.000	23.4	1.67	4.800	22.9
Uganda Tea Authority	2.619	12.5	6.000	23.4	2.29	4.800	22.9
Agricultural Enterprises Ltd	3.389	16.2	7.000	27.4	2.07	5.600	26.6
Uganda Tea Growers Corporation	1.870	9.0	4.000	15.6	2.14	3.200	15.2
Out-growers	9.410	45.1	2.600	10.2	0.28	2.600	12.4
TOTALS	20.871	100.1	25.600	100.0	1.23	21.000	100.0

SOURCE: Ministry of Agriculture

Uganda Tea: Igara Tea Factory Tea Grades (Per Cent)

YEAR	TOP GRADES			FANNINGS	DI	F ₂
	BP1	PF	PD			
1971	8.5	70.2	14.7	1.3	2.8	2.0
1972	11.0	68.9	13.7	3.1	2.0	1.3
1973	12.2	67.4	13.4	3.0	2.1	1.6
1974	17.3	61.2	12.7	0.2	3.6	5.0
1975 (OCT)	18.8	62.3	8.7	5.9	3.3	1.0

SOURCE: Igara Tea Factory Uganda/Tea Growers Corporation

Table D6.V

Uganda; Cost and Returns on Tea (Dried)

1975/76

ITEM OF COST	Average rates for 1975		Increased rates for 1976		Per Cent increase in Cost
	Shs/ Kg	%	Shs/ Kg	%	
Cultivation	0.20	3.2	0.23	3.2	15
Fertilization	0.92	14.8	0.95	13.3	3
Lucking & Green Leaf Collection	1.98	31.9	2.48	34.6	25
Manufacture	0.87	14.1	0.97	13.6	11
Overheads	0.83	13.4	1.10	15.4	33
Depreciation	0.20	3.2	0.20	2.8	-
Packing & Distribution	1.20	19.4	1.22	17.1	10
TOTAL	6.20	100.0	7.15	100.0	15
F.O.B. Mombasa Estimated	7.29		7.00		- 4
Profit +	+1.09				
Loss -			- 0.15		-113.76*

SOURCE: Ministry of Agriculture

* Note Original figure -86.2 incorrect

Uganda Annual Tea Exports 1966 to 1975, and Trends in Distribution of Receiving Countries

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Exports (Tonnes)	8,943	9,617	11,387	15,927	15,052	15,265	20,676	19,146	16,662	16,930
Exports (Million Shs)	62.4	69.5	75.4	93.5	95.0	95.4	125.9	111.8	109.5	120.8
Average Price Shs/Kg	6.98	7.22	6.49	5.75	6.18	6.29	6.10	5.73	6.58	7.14
Main Receiving Countries (%)										
United Kingdom					68			87		34
Canada					10			7		3
USA					7			4		4
Netherlands					6			31		32
Eire					5			2		3
Australia					2			1		-
Somalia					1			4		3
Pakistan					NIL			9		10
Others					1			5		11
Total					100			100		100

SOURCE: Uganda Tea Authority

Table DG.VIII

Production of Tea in Main Producing Countries 1968-1974

Tonnes

	1968	1969	1970	1971	1972	1973	1974
India :							
Assam, Bengal, Bihar, Tripura, Punjab, U.P. & H.P. South India	303,712 1,545 97,232	296,194 1,369 96,025	315,807 1,541 101,169	330,753 1,578 103,137	350,816 1,871 103,300	366,194 1,967 103,791	390,033 2,000 100,083
Total	402,489	393,588	418,517	435,468	455,996	471,952	492,116
Pakistan	28,302	29,939	31,381	12,449			
Bangladesh					23,836	27,550	31,774
Sri Lanka :							
High-grown	86,022	84,911	81,110	84,569	81,393	80,571	80,286
Medium-grown	80,927	77,520	72,199	75,958	74,922	70,423	70,510
Low-grown	57,853	57,209	58,900	57,246	57,160	60,278	53,242
Total	224,802	219,640	212,209	217,773	213,475	211,272	204,038
Indonesia :							
Estates (Java) (Sumatra)	27,957 11,580	27,758 11,767	29,901 13,016	33,571 13,933	34,795 13,479		
Plantations (Java)	2,159	1,207	1,131	703	1,503		
Total	41,696	40,732	44,048	48,207	49,777	54,546	66,319
Kenya	29,762	36,060	41,077	36,290	53,322	56,578	53,440
Uganda	15,163	17,627	18,217	17,966	23,376	21,944	21,688
Tanzania	7,923	8,777	8,492	10,457	12,706	12,658	12,974
Malawi	15,812	16,916	18,731	18,615	20,682	23,553	23,318
Cameroon	1,071	978	1,179	1,222	1,438	1,478	1,597
Zaire	6,050	7,859	8,759	6,047	6,797	6,387	6,329
Mauritius	2,288	3,191	3,258	4,089	4,678	4,079	3,971
Mozambique	14,251	16,034	16,974	16,536	18,678	18,795	17,639
Rwanda	830	976	1,245	1,819	2,522	2,741	3,433
Burundi	79	92	146	322	481	656	909
South Africa	-	-	-	-	-	-	-
China				259,984	291,229	307,000	
Taiwan	24,418	26,248	27,648	26,924	26,229	28,639	24,173
Japan	84,971	89,604	91,198	92,911	94,832	100,968	
Malaysia	3,468	3,482	3,381	3,321	3,364	3,355	
Viet-Nam Rep	4,770	4,900	5,545	5,800	5,100	6,250	6,000
Viet-Nam DR							3,000
Iran	19,200	17,500	16,000	24,000	39,000	41,000	
Turkey	27,557	34,373	33,431	32,260	46,500	43,302	41,893
U.S.S.R.	56,100	59,900	66,800	68,600	71,300	74,800	80,850
Argentina	19,610	23,310	27,090	27,510	27,010	18,290	
Brazil	4,589	4,568	5,848	6,547	6,500	6,471	
Peru	1,570	1,830	1,520	2,020			
Papua & New Guinea	71	365	971	1,402	2,689	3,577	

Table DG.1X

Tea Imports for Consumption* 1968-1974'000 tonnes

COUNTRY/AREA	1968	1969	1970	1971	1972	1973	1974
UK & Ireland	262.5	201.1	244.7	215.4	204.8	195.3	220.4
Rest of W. Europe	31.6	32.5	32.9	34.2	36.7	41.0	39.4
U.S.S.R. & E. Europe	22.7	30.7	32.0	49.6	56.2	47.0	59.0
North America	92.4	84.7	81.5	101.8	91.0	100.1	103.6
Latin America	8.5	11.8	10.4	9.2	10.7	10.3	10.3
Asia	70.0	88.9	76.6	83.6	127.3	119.2	129.0
Africa	96.1	101.6	110.2	92.3	100.9	90.3	93.5
Oceania	38.7	35.6	33.4	37.2	35.6	36.0	35.4
Major Producing Countries ¹	5.6	13.8	16.0	14.6	20.5	22.3	16.1
TOTAL	628.1	600.7	637.7	637.9	683.7	661.5	706.7

* Imports adjusted for re-exports

1. virtually all imports into Japan.

Source : International Tea Committee.

Table D6.X

World Exports of Tea 1968-1974

'000 tonnes

COUNTRY	1968	1969	1970	1971	1972	1973	1974
India	208.4	168.7	200.2	204.4	209.8	188.2	205.9
Bangladesh	-	-	-	-	13.2	20.3	21.2
Sri Lanka	208.7	201.4	208.3	200.8	190.1	205.5	175.2
Indonesia	36.3	32.5	36.9	40.2	38.5	35.6	50.2
Kenya	28.4	33.8	36.1	34.3	47.3	51.5	49.7
Uganda	11.4	15.9	15.1	15.3	20.7	19.2	16.7
Tanzania	7.1	7.7	7.1	8.4	9.2	9.5	9.7
Malawi	15.8	17.3	17.7	18.2	19.9	22.1	23.8
Mauritius	1.7	2.6	2.6	3.1	3.9	3.7	3.0
Zaire	4.3	4.1	6.0	6.0	7.1	4.9	n/a
Mozambique	14.2	15.4	16.7	17.5	18.4	17.9	17.2
Rwanda	0.6	1.0	1.3	1.7	2.3	2.7	3.1
Burundi	-	.1	.1	.3	.5	.6	.7
China	35.0	31.0	30.0	41.0	39.0	33.0	43.0
Taiwan	18.4	21.3	20.4	22.8	21.3	21.1	17.2
Japan	2.0	1.6	1.5	1.4	1.9	2.2	1.8
Malaysia	1.5	1.3	1.0	.8	-	-	-
Turkey	7.4	8.3	7.8	17.5	14.9	18.8	11.5
S. Vietnam	.7	.2	.1	.1	.6	-	-
N. Vietnam	1.7	1.5	1.7	1.7	1.8	1.6	n/a
Iran	1.2	.2	1.3	.6	.5	.6	n/a
Argentina	14.7	14.6	19.1	22.4	18.9	18.0	n/a
Brazil	3.0	2.8	4.0	5.3	4.2	5.7	5.2
Peru	.1	.1	-	-	-	-	-
Papua & New Guinea	.3	.7	1.2	1.8	2.8	4.0	4.4
Others	.9	.8	.7	.7	n/a	n/a	n/a
Total	623.8	584.9	637.4	666.3	686.8	686.7	

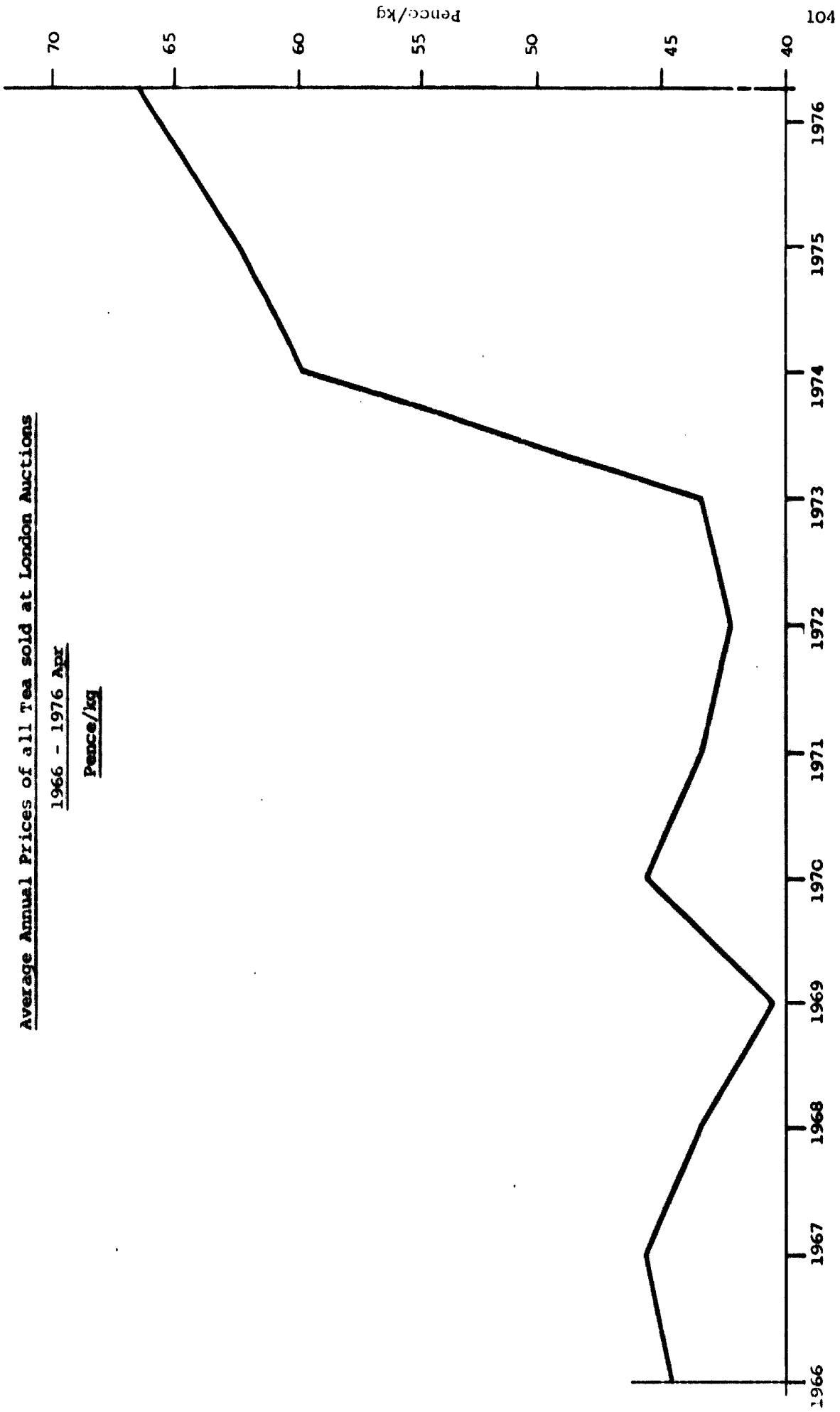
Source : International Tea Committee

Figure D6.I

Average Annual Prices of all Tea sold at London Auctions

1966 - 1976 Apr

Pence/kg



APPENDIX D.7THE TEXTILE INDUSTRY

I. THE PRESENT SITUATION

The National Textiles Board was established by decree on 7 October, 1974. It was intended that all units concerned with the spinning or weaving, of cotton and the manufacture of clothes should be brought under one major organisation. One other factory for making jute gunny bags and hessian cloth was also to be included in the new organisation.

The National Textiles Board now oversees some ten production units and two marketing services companies which deal with exports and home sales respectively. Overall the Board is responsible for some 15,000 persons.

Uganda has never been a large exporter of finished textile products but, because of the current decline in production, there is said to be an insatiable home demand for the supplies available.

The industry is suffering from a chronic shortage of foreign exchange inputs, mainly dyestuff chemicals and spare parts for the ageing machinery.

There is very little organised training at the present time, despite the severe shortage of skilled technical staff.

For the foreseeable future the industry will remain a major consumer of foreign exchange on rather a large scale.

In the following sections a brief description is given of each major production unit. However this report should not be considered as a comprehensive examination of the industry. In Table D7.I (p.122) details of the capacities and current outputs of the major enterprises in the industry have been summarised.

In the final section on future developments some suggestions for the future organisation of the industry are set out.

II. TEXTILE PRODUCTION UNITS

II.1 Nyanza Textile Industries Ltd., - Jinja

II.1.1 General

The Nyanza Textile Factory or 'NYTIL' factory as it is more commonly referred to was built by the British company, - English Calico Ltd., in 1956. The project was heavily financed by the Uganda Development Corporation on a loan and equity basis.

The factory is the largest textile manufacturing unit in East Africa and currently employs some 3,900 persons with an executive staff of 170. The factory normally works on a three shift per day basis.

Much of the output is bought direct by the company's sister organisation, United Garment Factory.

II.1.2. Production

The factory was originally equipped with 34,500 spindles, and nearly 1000 Northrop looms. The Northrop looms which are said to be ageing are slowly being replaced by Sulzer looms. There are now 866 looms of which 104 are Sulzer and 762 Northrop.

The factory uses locally grown cotton and buys some 33,000 bales a year. Small quantities of ready spun yarn have been purchased from the new mill at LIRA.

In 1970, the company exported just under 5 per cent of output. This has now fallen to negligible quantities, and there is little prospect of major exports.

Low production efficiency is attributed to the irregular supply of spares and other inputs.

Details of the recorded production since 1970 are set out in Table D7.II (p.123). It will be seen that weaving production fell by 34 per cent between 1970 and 1975. The decline in yarn production was even greater at 39 per cent. The current output of approximately 20,000,000 linear metres has to be compared with an installed capacity of 36,000,000 linear metres, i.e. 56 per cent utilisation.

II.1.3 Future Developments

The current programme of re-equipment has already cost the company some 25 million Shs. in the last five years. It is intended to buy a further 58 new Sulzer looms to replace some more of the older Northrop looms.

New machinery already bought and installed includes a wrapper and a sizing machine.

II.1.4 Foreign Exchange Requirements

Details of the main foreign exchange inputs for 1975 are listed below:

	<u>Mill Shs.</u>
Dyes	4.5
Chemicals	7.2
Slashing	3.0
Packing	.5
Fuel Oils etc.	8.7
Spinning/Weaving	2.7
Electrical/Mechanical	1.2
Engraving and Printing	1.9
	<u>29.7</u>

Allowing for the difficulties in obtaining supplies in 1975, the foreign exchange requirements to meet the total needs of the factory operating at standard capacity would be not less than 50.0 mill Shs.

Together with the service charge to cover the 25 mill Shs. loan some 55 mill Shs. in foreign exchange is required each year.

The 1974/75 financial accounts gave the following information :

	Mill Shs.
Total Sales etc.	148.4
Total Factory Costs	101.5
Total Foreign Exchange requirement say	55.0
Exports	2.4

On the basis of these figures the following evaluation can be made

	Mill Shs.
Domestic Added Value	93.0
Import Co-efficient	0.5
Net Foreign Exchange Benefit	-52.6

Because of the low level of exports the foreign exchange rating is bound to be very low. On the other hand the Domestic Added Value amounts to 93.0 mill Shs.

II.2 Pamba Textiles Ltd., Jinja.

II.2.1 General

Pamba Textiles was originally called MULCO and first started production in 1962. The Mulcc Company was the textile division of the Madhavani Group. From the start, the Company has specialised in the production of printed fabrics. Printing was carried out by hand at first. However demand was so great that a fully automatic screen printing machine was installed. This unit has a rated capacity of 6 million metres per annum.

The Company employs some 1800 workers who work in three shifts 6 days a week. The management has taken every possible care of the factory staff even ensuring that supplies of soap and sugar are available in the factory shops. As a result a very good relationship has been built up at all levels within the factory.

The manager was in the process of appointing a full time Training Officer when the team visited the factory. Some 11 graduates have been trained abroad on such subjects as spinning, weaving and process chemistry.

The Company makes a wide range of products and, as well as printed fabrics, produces towels (excellent quality) bedspreads, shirting material, bed-ticking cloth etc. It has a contract with the Uganda Army for camouflage smocks and drill uniforms.

II.2.2 Production

The factory's installed capacity is 15 million linear metres per annum but it is only achieving 11 million linear metres at the moment. It is estimated that with new machinery there is sufficient space in the plant to raise the daily capacity from 40 to 50,000 metres per day. This is the current objective of Pamba management.

The spinning mill uses about 1,100 bales of local cotton a month. However, full capacity is not being worked because of a bottle neck in the weaving shed. 480 looms were originally installed but fewer than 80 per cent are currently working because of the shortage of spare parts.

II.2.3 Future Developments

Many of the machines in the factory are secondhand but not quite so old as has been previously reported. All plant is in fact of 20th century manufacture, but with some dating from 1925.

The Company has embarked on a programme of modernisation. One stenter machine and a fabric printer are already on site awaiting to be installed together with a new sizing machine in a new process block. Although the building has been completed there are no engineering foundation drawings, halting further work. This fairly simple task should not be beyond the capacity of a qualified civil engineer. The design of an effective and labour saving layout will require some technical expertise which does not appear to be readily available.

It is understood that the new equipment has been standing outside the factory for some six months. Deterioration seems unavoidable, and it is very important that this project is completed as soon as possible.

The following additional items of equipment are to be bought :

- 40 Ruti wide looms
- 4 Pirn winding machines
- 1 Sizing machine
- 12 Sulzer looms

It is said that orders have been placed but no indication of capital cost was given to the Consultants.

II.2.3 Foreign Exchange

The following foreign exchange requirements were identified for 1975:

	Mill Shs
Chemicals & Dyestuffs	3.6
Spares	0.3
Miscellaneous Parts	0.4
	—
	4.3

This figure seems quite inadequate to meet the needs of existing installed capacity. It emphasises the care which has to be taken in making foreign exchange evaluations. Estimates need to be calculated from actual production needs.

II.3 Uganda Rayon Textile Manufacturers Ltd., Kampala

II.3.1 General

The team did not visit this factory which was originally built in 1966. As its name implies the factory imports rayon (mainly from France) and blends it with locally produced cotton. The factory has a reputation for its wide range of local African woven materials which are bought principally for making dresses.

About 1,100 workers are now employed but it is intended that the number will increase in the future when the size of the plant is expanded.

II.2.3.2 Production

About 160 bales of cotton a month are used, producing about 2.2 million linear metres per annum. Installed capacity is rated at 3 million linear metres per annum.

Much of the machinery is said to be old and requires special attention, although no unit is out of order.

II.3.3 Foreign Exchange Requirement

No indication of the future cost of development has been given. However annual operating requirements for foreign exchange have been identified :

	Mill Shs.
Rayon	0.5
Chemicals etc.	1.5
Spares	1.0
	—
	3.0

This expenditure is probably in order for the size of the factory, but the cost of raw rayon will have substantially increased since last year.

II.4 Uganda Spinning Mill Ltd., Lira

II.4.1 General

This mill was built in 1974 by the U.S.S.R. under a bilateral trade agreement. As its name implies only spun yarn is produced, mainly for sale to local industry, although some exports have been effected. It is hoped that exports will grow and become of major importance.

At present, only 960 workers are employed in two shifts.

II.4.2 Production

Present production is said to amount to no more than 1200 tonnes, although the rated capacity of the plant is 3600 tonnes. The reasons for the short-fall are insufficient electric power and water, poor sewage facilities and, as yet, poor marketing conditions.

The mill produces both corded and combed yarn ranging from 17/1 to 85/2. The installation comprises 64,000 spindles and 23,808 twisting spindles.

No other information is available.

II.5 African Textile Mill Ltd., (ATM), Mbale

II.5.1 General

The ATM factory was first commissioned in 1968. Much, however, of the original equipment was supplied secondhand.

The factory is a completely integrated unit with its own spinning, weaving and processing plants. The main products are cotton prints, plain dyes, bedsheets and hand towels.

Sited not far from the main process block is a small production unit making PVC 'Rexine' cloth which is used in the furniture industry.

The factory employs some 2000 persons.

II.5.2. Production

Details of production from 1971 to 1975 are set out in Table D7.III (p.124). It can be seen that production of cloth, after falling to a low of just over 4 million linear metres in 1974, now shows every sign of recovery in spite of the current problems.

The plant was designed to produce 15 million metres of cloth a year. It is understood, however, that only equipment to meet a maximum output of 10 million metres was in fact installed. On this basis the plant is operating at 50 per cent capacity.

The spinning machines are old, and only 13,000 of the 22,000 spindles installed are at work. Nor do quality standards appear good.

The major constraint, however, is the weaving department, where maximum daily output is 22,000 metres.

The management propose that 240 new looms should be purchased together with some pirn winding machines. The company is however in a poor state financially, having inherited a very large accumulated deficit, said to be in the order of 13 million Shs. from the previous owners making financing difficult. The East African Development Bank has been approached for a loan of 20 million Shs. The new looms alone are estimated to cost not less than 25 million Shs. and would increase weaving capacity to 50,000 metres per day.

Production of 'REXINE' on the other hand makes a small but useful contribution to the Company's sales at 12 million Shs. per annum. This plant is said to be in reasonable working order.

II.5.3

No details were available of the foreign exchange requirements for either capital equipment or operating costs.

II.6 United Garment Industry Ltd., Kampala

II.6.1 General

United Garment Industry or UGIL, as it is better known, is the major producer of clothes in the country.

The company is particularly well known for its range of shirts. New departments have been established for the production of knitted underwear, trousers and jackets and ladies' wear.

The Company employs some 1,000 workers. Recruitment of staff is mainly from local schools and training is given on the job. There are three scales of payment depending on ability and experience.

Grade A	500 Shs. per month
Grade B	350 Shs. per month
Grade C	250 Shs. per month

The average period of employment is about five years. The factory experiences little problem in finding new staff.

The factory only works one shift a day, as it has been found that quality is difficult to maintain under artificial light.

II.6.2 Production

The standard capacity of the plant rated in terms of inputs is

Shirts	96,000	metres
Trousers	36,000	metres
Knitted wear	120,000	metric tonnes
Ladies' wear	432,000	metres.

Since 1971 sales have risen very considerably.

	Mill Shs.
1971	9.9
1972	11.2
1973	19.7
1974	38.5
1975	71.1

The cost of production is estimated as follows:

	Mill Shs.
1971	7.7
1972	8.1
1973	11.0
1974	24.5
1975	50.0

In 1975 the total cost of imported inputs amounted to more than 40 million Shs.

The factory was designed and equipped by a Japanese concern, which is understood to provide the majority of inputs under a bilateral agreement.

As far as could be gathered this factory was free from foreign exchange limitations and was therefore operating at full capacity.

II.6.3

No foreign exchange calculations have been made because all plans for future development are being encompassed within the present bilateral aid agreement.

II.7 Uganda Bag and Hessian Mills Ltd., Tororo

II.7.1 General

The Company was first built in 1969 by the Birla Group of India, who maintain a 50 per cent share of the equity and retain the responsibility for providing technical management and training personnel.

The factory can supply at least 75 per cent of the country's total requirement of gunny bags and hessian cloth. These two items have been considered essential for the export of coffee and cotton.

The factory employs about 1,000 workers but is said to have difficulty in recruitment. The average period of employment is only a matter of months.

II.7.2 Production

The production of gunny bags and hessian cloth is as follows:

Production	Gunny Bags Tonnes	Hessian Cloth Tonnes	Total Tonnes
1971	2,357	376	2,733
1972	4,090	637	4,727
1973	3,252	547	3,799
1974	3,275	364	3,639
1975	1,505	161	1,666

These outputs must be seen against a rated capacity of 5,520 tonnes for gunny bags and 960 tonnes for hessian cloth. (7 million gunny bags and 5 million metres of hessian cloth).

The very disappointing results are reflected in the levels of past annual sales

	Mill Shs
1971	8.3
1972	20.3
1973	18.0
1974	23.4
1975	15.7

The main reason for the very low level of output in 1975 was the lack of foreign exchange to purchase raw jute.

	Quantity of Jute Purchased (Tonnes)	Value mill. Shs.	Unit Value Shs. per Tonne
1974	4,419	10.2	2.315
1975	1,936	0.7	3.809

The shortage of raw jute caused a serious shortage of hessian products for the coffee and cotton industries. In order to meet the needs of bags for coffee exports some 120,000 polypropylene bags had to be flown in at very high cost.

II.7.3 Foreign Exchange Assessment

In a full year, the factory can process some 6,500 tonnes of jute which at 1975 levels would cost 24.8 million Shs. A further 3 million Shs. would be required to purchase spares making a total annual foreign exchange requirement of about 28 million Shs.

In theory, at 100 per cent capacity these inputs would generate some 60 million Shs. in sales.

The Domestic Added Value would be in the order of 32 million Shs.

Import Coefficient can then be calculated as 0.47.

As there are no exports the Net Foreign Exchange Benefit is negative at 32 million Shs.

II.7.4 New Projects

Under a Saudi Arabian loan agreement a provision of 91.8 million Shs. has been set aside to promote the development of a kenaf and jute industry in Uganda.

The programme is to produce some 15,750 acres of kenaf on a commercial scale together with a further 3,000 acres by outgrowers in 1979.

Total output by 1979 will be 8,500 tonnes and it is expected that the project will eventually reach 12,800 tonnes. It is estimated that home production should replace 80-85 per cent of imports. An import saving of 20 million Shs. a year is forecast.

At present, only 50 tonnes of inferior grade kenaf are being produced, on two prison farms.

Two production areas are likely to be selected for development. Detailed surveys have not yet been undertaken and there is no financial evaluation based on site data.

The first site at Namalu is very close to the Tororo Cement works. It is possible that the cement dust which covers a considerable area around the plant could contain toxic substances harmful to kenaf. As yet no tests have been undertaken.

The second site at Rwimi is said to be subject to severe flooding at certain times of the year. The cost of drainage and stable roadways for carting the crops could prove to be very expensive. These are essential factors in evaluating the feasibility of the project.

II.8 Polypropylene Versus Jute

II.8.1 General

It has been estimated that the coffee industry alone requires some 6 million gunny bags a year, possibly the total quantity required in the country could be as many as 12 million. Hessian cloth is also used for wrapping cotton bales at the ginneries, and for wrapping woven cloth in the textile industry.

In a previous section reference was made to the fact that 120,000 polypropylene bags had to be flown into the country at short notice because of the shortage of gunny bags for the export of coffee. The cost of these bags was about US \$ 24 cents each excluding the cost of transport, which was borne by the Government.

Because of the difficulty of obtaining local supplies, quotations were obtained from Bangladesh for gunny bags at US \$ 42 cents each, delivered Kampala.

These prices have to be seen against the prices currently being quoted by the Uganda Bags and Hessian Mills Ltd., at 8.5 Uganda Shs. each (say US \$ 1.0 each).

In view of these very wide cost differences it is considered that large scale production of woven polypropylene bags and cloth should be evaluated on the basis of foreign exchange earnings.

11.8.2 Cost Comparison

It is proposed to compare the import costs of a 5 million polypropylene woven bag plant against the equivalent cost of gunny bags made in the country from imported jute.

A) Cost of Gunny bags

Unit weight	1.13 kg.
Cost of Jute	3,800 Shs. per ton.

$$\frac{\text{Total Import Cost} = 5,000,000 \times 1.13 \times 3,800}{1,000} = 21.5 \text{ mill. Shs.}$$

Therefore, the total cost of raw material input is 21.5 mill Shs. To this would have to be added the cost of spares to keep the plant in operation, say, another 2.5 mill Shs. making a total foreign exchange cost of 24.0 mill Shs.

B) Cost of Polypropylene bags

Unit weight	0.15 kg.
Cost of Polypropylene Granules	- US \$ 900 (7,560 Shs.) per tonne.

$$\frac{\text{Total Import Cost} = 5,000,000 \times 0.15 \times 7,560}{1,000} = 5.7 \text{ mill. Shs.}$$

In the above example, a total unit bag weight of 150 gm was taken, but it is considered that a bag weight of 120 gm would be more than sufficient. In this case the total import cost would be :

$$\frac{5,000,000 \times 0.12 \times 7,560}{1,000} = 4.5 \text{ mill. Shs}$$

The capital cost of extrusion and weaving machinery including buildings is estimated to be US \$ 1.2 Million (10.0 Mill. Shs.). If it was assumed that a ten year loan at 12 per cent interest was negotiated the annual foreign exchange outgoings would be 1.5 Mill. Shs. The foreign exchange outgoings for the polypropylene plant would then be 7.5 Mill. Shs. on the basis of 150 gm. sack.

This evaluation suggests that a new polypropylene plant could save some 14.0 Mill.Shs. of foreign exchange annually compared with the total manufacture of jute bags.

The Domestic Added Value is about 2.5 Mill.Shs. if total sales price is taken at US \$ 24 cents.

The costs of production are estimated at US \$ 20 cents and therefore the Import Coefficient is :

$$\frac{7.5}{8.4} = 0.89$$

It is unlikely that the plant would require more than 72 workers excluding management.

III. Future Developments

III.1 The Maintenance Problem

Requirements for maintenance at the textile plants need further examination.

Those Managements who have prepared future investment programmes for their factories have all indicated that they intend to purchase highly complex automatic equipment. These decisions are being taken in the knowledge that at present the Sulzer looms can only be fully serviced by the manufacturer if a major breakdown should occur. It could therefore be argued that the industry is seeking prematurely an unnecessary level of sophistication. Labour costs are lower in Uganda than in some other textile producing countries and therefore a higher level of labour intensity may be desirable to promote employment.

Many of the older looms now in operation were originally manufactured with very simple process technology. Even this technology is not available in Uganda at the present time but with proper planning, organisation and training it could be fairly quickly developed.

Rather than incur the heavy expenses of new capital equipment the alternative would be to develop the necessary process technology to manufacture the key components completely to renovate the existing plant locally.

III.2 The Production of Spares

During visits to the many factories in Uganda it was noted that spare parts (when available) were often fitted without ascertaining the reason for the failure.

In the textile industry as a whole, it was apparent that the practice of methodical planning for the maintenance and major overhaul of machinery was not widespread. There was a marked difference in efficiency in comparison with, for example, the tobacco industry, where each major item of plant was regularly given thorough overhaul and reconditioning.

It is recommended that the following steps should be taken to organise an effective system of spares manufacture.

- (i) The first step is to examine each machine in detail and to assess the total consumption of spares. The survey should cover spares for those parts which have already failed and should assess the requirement for spares to be fitted to units renovated during a period of programmed maintenance.
- (ii) The next step would be the production of engineering drawings from which patterns can be made. A metallurgist will also be required to specify the material used and subsequent treatments.
- (iii) A survey should be carried out of the machine tools available at the different factories of the National Textile Board. Brief examination of some of the factories indicated that a properly trained and organised cadre of operators could manufacture almost any component required.
- (iv) From this data a production engineer could prepare a schedule of (a) the total number of components required and (b) the casting, and machining operations required to produce spares of equivalent quality to the manufacturer's original specifications.
- (v) In sequence with these operations plant maintenance schedules should be prepared. In the case of plant which can be moved from the floor, total strip down and replacement regimes should be installed.

Unless the programme is organised on an industry basis, scale of operation is unlikely to be large enough. Ultimately, it may be desirable to move certain machine tools to centres where a comprehensive production programme can be established.

This 'do-it-yourself' approach would have the added value of training tool operators and maintenance engineers to work at the levels of precision which the sophisticated plant that one day may be installed will demand. Such a programme will do much to speed the technological base in the country.

We noted that in some cases no attempt has been made to consult local industries about the production of specialist components. For example, a large number of timber based spares are currently being imported from India, yet no approach has been made to the Wood Industries Corporation for assistance.

III.3 Electric Motors

Throughout Uganda's industry the failure rate with electric motors appears to have reached excessive proportions. The Textile industry was busy rewinding its own motors and in many cases essential inputs were in very short supply. No electrical workshop had the proper test equipment to ensure that an effective repair had been carried out. Some centralisation is indicated but this is more of a national problem than one for the textile industry above.

III.4 Market Prospects

III.4.1 Home Market

The majority of those working in the textile industry in Uganda were of the opinion that home demand would absorb all production for the foreseeable future. It is possible that this does not take into account the likelihood that some stockpiling is currently taking place at retail level, as a hedge against future inflation.

Knowledge of the structure of the home market is fairly superficial. Whereas preferences for colours and weaves are reasonably defined, little statistical data exist on individual per capita consumption.

It seems reasonable to assume that the National Textile Board will have to examine the future supply and demand situation in considerable detail. This is of particular importance at the present time when each of the major textile factories is preparing plans for future expansion.

III.4.2 Export Market

The assumption that unlimited export markets exist for excess production could prove to be highly dangerous. It is therefore considered that a careful examination of the future investment proposals in the textile industries of the other two member states of the East African Community should be undertaken immediately.

Taking the Community as a whole there are indications that a surplus of a specific fabric in one country could potentially find a ready market in another.

On the other hand, it seems reasonable to suggest that certain product sectors could well be over supplied.

Future investment in the Community's Textile Industry must be based on a full knowledge of market requirements. Even without this information in detail the following indications for 1980 are becoming apparent.

Dyed linen, shirtings and poplins are likely to be in balance over the E.A.C. On the other hand, twills, twists and satins are likely to be in surplus, estimated by some to be in excess of 20 million sq. metres. In all three countries there is likely to be a shortage of sheetings (surfis and bleached), greys, and various sorts of synthetics. The potential shortfall is not easy to assess but 40 million sq. metres would be of the right magnitude.

There seems to be an urgent need for further cooperation amongst the E.A.C. states to ensure that future investment can be placed in those market sectors where there are the greatest opportunities. Such discussions should also include future export potentials and how to organise exports for the mutual benefit of all three countries.

III.5 Programme of the National Textile Board

III.5.1

Since becoming operational in early 1975, the National Textiles Board has set itself three main objectives for the future development of the industry. They are as follows :

- (i) to rehabilitate the existing plant to its present full capacity;
- (ii) to bring all the mills up to 'licensed' full capacity;
- (iii) to expand existing mills and to establish new ones;

III.5.2 Rehabilitation (Phase I)

The National Textiles Board is fully aware that availability of spares will not alone increase production and therefore it is proposed to phase out ancient plant and equipment in all departments and to re-equip the factories with modern units.

The Board holds the view that the greatest constraints to increased production are in the preparation and spinning departments. The consultants noted problems leading to many bottlenecks in the weaving halls.

Finance for these new investments will come from the Board's own foreign exchange allocations but external assistance is being actively sought. Bilateral aid from a friendly country is one obvious source, but the Board is also interested in discussing joint ventures with commercial organisations.

The Board is acutely aware that the introduction of more sophisticated modern equipment will require highly trained staff to operate and maintain it. This then is the second major component in the rehabilitation phase.

It is proposed that training should be undertaken at two levels; formal study courses at schools, technical colleges, etc., and on the job training. The current problem is that there is no centre of education in Uganda capable of providing the necessary facilities and guidance. If such a centre were established, it is considered that Jinja would provide the most suitable location.

In the meantime, a number of UNIDO sponsored courses have provided valuable intermediate assistance and have been particularly useful in giving 'refreshers' to personnel who are already trained. The current need is to provide one year full time courses for beginners, to bring fresh blood into the industry.

The National Textiles Board has set itself a target of 2 - 3 years in which to complete the rehabilitation phase.

III.5.3 Achievement of Licensed Capacity (Phase II)

Before the Economic War, the East African Licensing Development Board in Arusha used to allocate maximum permitted capacities for each mill. The object was to coordinate regional capacity in textile production.

The effective increases in capacity necessary for each mill to reach 'Licensed' level are as follows :

African Textile Mills	+ 67 per cent
Pamba Textile Mill	+ 100 per cent
Nytil	+ 83 per cent
Uganda Rayon	+ 100 per cent

The draft proposals currently being prepared by the mills to increase capacity particularly emphasise the need for increased weaving capacity.

III.5.4 Expansion (Phase III)

The final development is to expand the manufacturing side of the industry, thus increasing the domestic added value over the export of raw cotton.

As yet no detailed plans have been prepared but it is unlikely that this phase will be started for 8 to 10 years from now.

III.5.5 Conclusion

The National Textiles Board has already made considerable progress during its short existence. Its senior management have a deep knowledge of the textile industry and are aware of most of the problems currently facing it. The Board's proposals, outlined in this Section show a realistic and methodical approach to resolving what is, by any standard, a difficult situation.

Table D7.1
Textile Factories

M I L L	NO. OF SPINDLES		NO. OF LOOMS		LABOUR FORCE		PRODUCTION IN 000 METRES	
	INSTALLED	UTILIZED	INSTALLED	UTILIZED	PRESENT	FULL CAPACITY	CURRENT	
Nyanza Textile Ind. Ltd.	34,500	20,775	944	897	3,972	36,000	22,000	
Pamba Textiles Ltd.	41,075	25,466	454	374	1,836	15,000	10,000	
African Textile Mill	23,380	11,480	468	350	1,853	10,000	6,000	
Uganda Rayon Textile Mfgs., Ltd.	2,800	2,800	200	199	1,121	3,000	2,000	
Uganda Spinning Mill	64,000 Spinning	16,000 Per Shift	-	-	989	3,615 tons	1,000 tons	
	23,808 Spinning	3,800 Per Shift						

Table D7.II
Nyanza Textile Industries Ltd - Production
Million Units

A. WEAVING YEAR	ACTUAL LIN. MTS	50 MTS	IMPORTED GREY CLOTH	TOTAL LIN. MTS	SQ MTS	LOOM ALLOCATIONS		TOTAL
						NORTROP	SULZER	
1970	33.064	31.081	-	33.064	31.081	946	36	982
1971	27.414	25.793	-	27.414	25.769	932	36	968
1972	28.395	26.692	1,359	29.754	27.969	930	38	963
1973	23.648	22.229	2,972	26.620	25.023	824	100	924
1974	22.572	21.218	0.274	22.847	21.476	762	104	866
1975	21.801	20.493	1.826	23.628	22.210	762	104	866
B. YARN YEAR	NYTIL Mill Kg		LIRA Mill Kg		TOTAL Mill Kg	RING SPINDLES IN USE		
1970	6.311		-		6.311	34,516		
1971	5.134		-		5.134	34,516		
1972	5.596		-		5.596	34,516		
1973	5.261		-		5.261	34,516		
1974	4.953		-		4.953	29,456		
1975	3.846		0.276		4.122	29,456		

SOURCE: Nyanza Textiles Industries Ltd

Table D7.III
African Textile Mills Ltd - Sales and Production
Shs. Million

SALES	1971	1972	1973	1974	1975
Textiles	(22.885)	18.016	21.223	24.931	34.916
Rexine Cloth		0.084	0.429	.667	1.220
Yarn			-	.126	.091
Misc			0.066	.049	.640
TOTAL	22.885	18.100	21.652	25.773	36.867
Production in Million Metres					
Cloth	9.079	8.929	5.282	4.115	5.354

SOURCE: African Textile Mills Ltd

THE TOBACCO INDUSTRY

I. BACKGROUND TO THE PRESENT SITUATION

The tobacco industry in Uganda was first started by the British American Tobacco Company who foresaw the need to control every section of the industry, if development was going to be economically viable.

At first tobacco production was programmed to meet the needs of a local cigarette factory built in Jinja in 1928. This objective was maintained until 1968, when Government decided to promote the export of cured tobacco. The project has been very successful with total exports reaching 15 million Shs. in 1974.

The main problem about the production of flue dried tobacco of higher quality and value has been the virtual collapse of the I.D.A. sponsored Small Holders Tobacco Project. The reasons were the total absence of hard currency allocation to purchase essential inputs fertilizers and pesticides. Transport had also become a premium service. The project now seems in need of financial restructuring to take inflation into account as well as other problems.

Both the processing factory in Kampala and the cigarette factory in Jinja are excellently managed by a hard core of Ugandans who had been well trained through extensive managerial training programmes, organised on an international basis.

The basic strength of the management lies, to a great extent, in the team approach to the solution of problems together with an intensive programme of in-house training.

During the last few years, both factories have had their share of difficulties in obtaining spares. A comprehensive, planned maintenance programme has, nevertheless, kept machinery working virtually at full capacity though other factories would have been re-equipped many years ago.

There can be little doubt that the Uganda National Tobacco Company is amongst the very best industrial complexes the country has to offer. The only cloud on the horizon is the decline in production of tobacco. This could destroy what is, by any standard, a sound and financially successful operation.

I.1 Production

Production of both flue and fire cured tobacco is set out in Table D8.1 (p.133). The flue cured crop is the higher in value and is grown mainly through the support of the Small Holders Tobacco Project. The scheme was originally awarded a US \$4.0 mill. I.D.A. loan. Local finance subscribed through the Cooperative Bank was 52 mill Shs.

Production has slowly declined because of the absence of inputs in fertilizers and pesticides. Transport for carting fuel wood for the drying kilns is no longer available. This alone is said to be responsible for the loss of at least one third of production.

The Small Holders Tobacco Project originally provided for a full and comprehensive extension programme. Unfortunately, the extension workers no longer have cars or even bicycles to make their rounds.

Since 1970 the Small Holders Tobacco Project maintains that there has been no increase in the average prices paid to growers. Prices are said to have been in the region of 4.70 to 5.75 Shs./kg. To break even on current production costs, it is more likely that a minimum of 8.0 to 9.0 Shs./kg would be required. Therefore, to give a profit plus an incentive to grow more tobacco of higher quality, a price range of 9.0 to 10.0 Shs. per kg would be necessary.

Fire cured tobacco attracts a much lower price but the product is important for blending into the stronger tobaccos required for the local market.

I.2 Processing

All the tobacco for export and for cigarette making is processed centrally at the plant in Kampala. Between curing and manufacture, the tobacco matures through slow-acting enzymic activity.

The Kampala processing plant has an output of 7 million kgs per annum. However, owing to the shortage of tobacco, utilisation has now fallen to about 40 per cent. (Table D8.II. p.134).

The tobacco for export is packed in wooden boxes (all imported from Kenya). Tobacco for the local market and for export to Kenya is packed in cheaper packaging.

The processing plant was initially very soundly engineered and has since been maintained to a very high standard. The whole complex appears to be excellently managed, with a very high standard of 'house-keeping'.

It was obvious to the consultants that everyone in the factory took a great interest in their work. Labour relations are said to be excellent and staff turnover is minimal.

I.3 Consumption

Details of the domestic consumption of tobacco are set out in Table D8.III (p.135). Since 1971, tobacco for cigarette manufacture has been allocated by Government and has fallen short of the basic 3 million kgs normally required.

There is a great shortage of cigarettes on the local market and those available tend to be sold at highly inflated prices.

I.4 Exports

In 1974, total exports amounted to 15 millions Shs (Table D8.IV. p.136). Great Britain and Ireland were the leading markets. Growth has depended upon supply of raw tobacco. Theoretically, there is adequate plant and equipment available not only to keep the home market satisfied but also to export some 4 millions kgs. a year. Whether or not the international market could absorb this production is not certain. Detailed market research on export markets has not been undertaken and there are many unknowns.

I.5 Cigarette Production

The cigarette factory in Jinja was first built in 1928. In 1947, a major programme of expansion was undertaken and most of the present buildings date from this period. A new godown is currently under construction.

The capacity of the plant is rated at 500 million cigarettes per month but shortage of tobacco and now other inputs has limited production to around 150 million per month.

Annual production (million cigarettes) for the last five years has been as follows:

1970	128,038
1971	131,898
1972	137,681
1973	155,145
1974	167,405
1975	146,131

The plant and equipment were mostly installed between 1954/55. In spite of an excellent maintenance programme, they will have to be replaced in the not too distant future.

A German Hauni Werk cigarette packer has been purchased, but there is a shortage of skilled electronic expertise to service the equipment.

At present there is only one hinged lid filler in the factory. It is now 27 years old and it is becoming very difficult to keep it going. If the de-luxe brands of cigarettes currently being made are to continue to be packed in hinged packets, a new unit will have to be installed. The cost will not be less than US \$ 300,000 (2.5 mill Shs.).

Cigarettes are not exported although the management thinks that good markets could be found in Rwanda, South Sudan, Zaire, Burundi, and Congo.

At the present time the question is academic. Production is too low to meet more demand. If the past is any precedent, export to Rwanda would be paid for in Belgian francs thus earning hard currency.

The cigarette factory is totally dependent on a wide range of imported products including:

- cigarette paper
- cork tips
- filters
- inks
- glues (3 to 4 types required)
- metallic foil
- viscose film
- packaging.

In order to meet production a minimum of 2 million Shs. per month is required for these imports. There can be little hope that any of these items can be made in Uganda. The total requirement is too small for economic production. It is equally unlikely that a sufficient export of tobacco could be generated in the near future to cover the costs in foreign currency. Nevertheless, depending on price structures, it is not impossible that the added value obtained through cigarette manufacture would produce more foreign exchange than exports of plain tobacco. This matter deserves detailed examination and especially a full appraisal of the potential markets in each of the possible countries to which exports might be made.

I.6 Organisation of the Industry

As already stated, the production of flue cured tobacco is controlled by the Small Holders Tobacco Project. The export orders for tobacco are solicited and confirmed through the Produce Marketing Board. The Board does not physically handle the tobacco; this is done by the Uganda National Tobacco Company under contract.

It is suggested that the role of the Produce Marketing Board in the tobacco industry should be critically examined. Ideally the Small Holder Tobacco Project should be brought into much tighter control with the processing operations of the Uganda National Tobacco Company.

The "export services" provided by the Board are basically the responsibility of one executive who, no doubt, could be transferred to the Uganda National Tobacco Company. The Company is already fulfilling ninety per cent of the export function and would require little other input.

The accounts of the Produce Marketing Board were not available for detailed inspection but there was a strong indication that the export surplus created from the tobacco industry was meeting more than a proportional share of the Board's overheads. There is a case for concentrating the Board's functions entirely within the food industry and severing its historical association with the tobacco industry.

1.7 Evaluation of Foreign Exchange Inputs

The foreign exchange evaluation of the tobacco industry purposely excludes the operation of the cigarette factory. This is not to suggest that the cigarette factory's operations should be scaled down or indeed terminated. It is thought that by looking at the two parts of the industry as separate entities future attention will be better focussed on those areas where significant progress can be made.

It was stated that cigarette production requires 24 million Shs. per annum minimum to meet current production levels. This investment yields Government 84 million Shs. excise duty and a further 24 million Shs. in sales tax. It is therefore a significant revenue earner. If cigarette production were doubled and the extra output exported, it is more than possible that the whole foreign exchange input could be recovered. Government would then maintain revenue without incurring the cost of foreign exchange. This is an added reason why decision making on the future of the industry should be concentrated under one management, whose sole concern is to maximise the overall return to the industry without the pressures of other vested interests.

Details of the foreign exchange calculations are set out in Table D8.V (p.137). The following assumptions have been made.

Production of flue cured tobacco rises to 5 mill kg and fire cured to 2 mill kg by the tenth year, enabling process plant to operate at full capacity.

The averaged price of domestic tobacco is 12 Shs./kg and 15 Shs./kg for export tobacco.

Home consumption rises to 3 mill kg and exports to 4 mill kg.

Only processed tobacco is exported, as at present.

To increase agricultural production 4 mill Shs. per annum have been provided for consumables, mainly fertilizers. 10 million Shs. go to refinancing transport requirements and rehabilitating the Small Holders Tobacco Project.

To maintain the Kampala Plant, 1 mill Shs. capital has been provided and 2 mill Shs. per annum for operating costs and external transport for exports.

It has been assumed that capital is loaned at 12 per cent and repaid over ten years.

On these assumptions, the industry's total foreign exchange requirement is 8.0 mill Shs. and even if this figure were doubled, a very large surplus of foreign exchange could be generated.

From all appearances, this industry is quite capable of financing its future development out of foreign exchange earned. Investment should be made in market research to determine whether cigarettes could be exported to other neighbouring countries for foreign exchange.

I. 8 Constraints

Again farm production is the major limitation to output. The break-up of the industry structure from that originally formulated by B.A.T. caused many problems and much would be gained by reorganising the whole industry under the Uganda National Tobacco Corporation. Tobacco growing tends to be more a way of life than with other agricultural crops. The rather philosophical attitude is easier to nurture and encourage within a closely integrated industry, as now proposed.

The senior management of the Uganda National Tobacco Company considers that further training programmes are required both at senior and junior levels. The early problem would be the selection and subsequent training of training officers. UNIDO might well be asked to give assistance.

The training of senior officers is not easy. The most important requirement is know-how, which can only be obtained by working within industrial complexes where commercial secrets tend to be closely guarded. Government could possibly consider making a formal approach to the Board of the British American Tobacco Company for assistance. Now that the valuation of expatriate company assets is nearing completion such discussions could prove rewarding. In order to open former channels of communication, Government might also give consideration to the offer of equity participation in lieu of compensation. Maintenance of quality is important and the tobacco industry is in sore need of a quality control and development laboratory. In the present exercise, provision has not been made for these facilities. The cost, in any case, would be small and the necessary expertise might be attracted by suitable measures. In the long term, it would seem essential for a tobacco laboratory to be established in Uganda, but practical commercial experience in its design layout and operation would be necessary.

II. THE WORLD SITUATION

II.1 Production

World production of leaf tobacco between 1970 and 1974 increased from 4.7 to 5.2 million tonnes, an increase of 11%. Indications are that production in 1975 rose by 1.5%. Table D8.VI (p.138) details world production according to major producers, Asia and the American continent being the main centres of production. Nearly 60% of world production is contained within six countries - China, U.S.A., India, the U.S.S.R. Brazil and Turkey.

The main trend discernible in production has been the switch from dark leaf tobacco. Before the last war, dark leaf tobacco had been responsible for 50% of world production, but now its share is less than 30%. This was owing to the popularity of the American blend cigarette, containing mainly flue-cured burley and oriental tobaccos. Average yields of leaf tobacco, by selected regions for 1972-1974, are reported by the FAO as follows in kilos/hectare:

	<u>1972</u>	<u>1973</u>	<u>1974</u>
Africa	808	754	739
N.C. America	2012	1959	2023
S. America	1073	1057	1091
Asia	1018	1029	1057
World	1201	1203	1230

II.2 World Trade

World exports and imports of unmanufactured tobacco by major participating countries and regions are presented in Tables D8.VII and VIII (pp.139-140).

The U.S.A. accounted for nearly 12% of world exports; at 1.4 million tonnes over two and a half times more than the next largest exporter, Turkey. World trade in unmanufactured tobacco appears to have been increasing at a pace substantially in excess of the growth in production. In absolute terms, nearly 80% of the increase in production between 1970 and 1974 has entered the world export market. Throughout the world, several countries have become prominent exporters during the period: Malawi and Rhodesia in Africa; notably Brazil, the Dominican Republic and Mexico in Latin America; India and Korean Republic in Asia; and Italy in Europe.

The focal import market for world trade continues to be Europe, which accounted for 56% of all imports in unmanufactured tobacco in 1974, though this has declined from 62% in 1969. A faster rate of growth in imports was to be found amongst the minor European imports not listed in Tables D8.VIII (p.140). Significant individual importers experiencing a rapid intake were the U.S., Japan and the U.S.S.R., who jointly increased their imports by over 110,000 tonnes.

Preliminary data for 1975 have suggested that world imports increased by 4%. This is surprising, as this increase is substantially greater than that recorded during the previous two years and occurred during a recession. The main reasons appear to be manufacturers taking advantage of heavier crops, in the last few years, to replenish their leaf stocks and, more importantly, a reduction from Jan. 1975 in the rates of E.E.C. customs duty on imports of high value flue-cured and burley leaf.

II.3 Prices

U.S and U.K. average annual prices of tobacco between 1969 and 1974 are compared in Figure D8.I (p.141). Prices, though annual averages, do not display the wide variations shown amongst the other 'soft' commodities and overall have steadily increased, apart from the 4% fall experienced in 1975 at U.S. auctions. Premiums above the average U.K. import price in 1975 were : 50% for U.S. flue cured, and 10% for Canadian flue cured and Greek oriental tobaccos. Lowest prices related to Brazilian supplies of unstripped-flue cured at 30% below the average.

Table D8.J

Uganda: Production of Flue and Fire Cured Tobacco(a) Flue-cured Tobacco Production and Value

	<u>Quantity (Kgs)</u>	<u>Value (Shs)</u>	<u>Farmer's Average Price</u>
1970	2,816,835½	13,487,214.65	4.79
1971	2,983,397	13,752,807.40	4.61
1972	3,166,663	15,730,178.00	4.97
1973	2,233,104½	10,629,791.30	4.76
1974	2,635,358	15,632,760.25	5.93
*1975	2,462,913	17,278,224.90	7.01

*Excluding Kigezi tobacco

(b) Fire-cured Tobacco Production and Value

1970	596,888½	1,550,005.70	2.65
1971	1,436,335½	3,634,285.75	2.52
1972	1,879,836½	5,034,820.50	2.66
1973	1,696,046	4,463,958.30	2.63
1974	1,224,361	3,510,076.35	2.87
1975	1,061,846	3,429,287.05	3.23

SOURCE: Produce Marketing Board

Table DG II

Uganda: Tobacco leaf processed at Kampala Plant 1971-75'000 kg

	DOMESTIC	KENYA	EXPORT	TOTAL
1971	1,539.3	1,196.1	1,107.1	3,842.5
1972	1,609.4	1,293.7	1,646.4	4,549.5
1973	1,860.1	517.7	783.8	3,161.7
1974	2,173.7	92.7	1,178.5	3,444.7
1975 (PART)	1,587.1	213.0	1,062.5	2,880.6

SOURCE: Uganda National Tobacco Co., Ltd.

Table D8.111Uganda: Domestic Consumption of Flue Cured and Fire Cured Tobacco 1971-75'000 kg

	FLUE CURED	FIRE CURED	TOTAL
1971	782.1	748.3	1,539.3
1972	1,103.9	505.4	1,609.4
1973	1,312.2	547.9	1,860.1
1974	1,629.0	526.2	2,193.7
1975 (Part)	1,341.9	202.1	1,543.9

SOURCE: Uganda National Tobacco Co., Ltd

Table PB. IV.

Uganda: Exports of Flue and Fire Cured Tobacco 1970-1974

(a) Flue-cured Tobacco

<u>Year</u>	<u>Quantity (Kgs)</u>	<u>Value (Shs)</u>	<u>Destination</u>
1970	807,589	8,856,035	G. Britain, Ireland
1971	950,702	11,034,164.15	G. Britain, Ireland Belgium
1972	1,001,655	11,583,189.40	B. Britain
1973	527,444	6,856,422.90	G. Britain & Ireland
1974	712,545	11,078,678.55	G. Britain, Ireland & Holland
*1975 (Total quantity not yet completed)			

(b) Fire-cured Tobacco

1970	10,200	49,854.70	Austria
1971	109,183	682,461.25	Austria, Netherland & Britain
1972	626,425	4,428,628.00	Austria, Switzerland Netherlands (Holland)
1973	588,485	4,182,896.00	W. Germany
1974	455,118	4,030,505.45	-do-
*1975 (Total quantity not yet completed)			

SOURCE: Produce Marketing Board

Table D8.V
 Uganda: Processed Tobacco - Financial Returns and Benefits (Foreign Exchange)

PROJECT YEAR	PRODUCTION FLUE FINE		TOTAL	DOMESTIC CONSUMPTION	DOMESTIC VALUE	EXPORTS	EXPORT VALUE	TOTAL REVENUE	EX-FACTORY REVENUE	CAPITAL PRODUCTION	COSTS PROCESS	OPERATING PRODUCTION	COSTS PROCESS	TOTAL FIVE	DOMESTIC ADDED VALUE	IMPORT COEFFICIENT	NET BENEFIT
	(Mill Kg)	(Mill Kg)															
1	2.0	1.0	3.0	(Mill Kg)	at 12 sh/Kg	(Mill Kg)	at 15 Sh/Kg	(Mill Shs)	(Mill Shs)	10 Mill Shs	1.0 Mill Shs	4 Mill Shs	(Mill Shs)	(Mill Shs)	(Mill Shs)	(1.0)	Mill Shs
2	2.5	1.0	3.5	2.0	24.0	1.0	15.0	39.0	36.0	2.0	2.0	4.0	2.0	8.0	28.0	0.21	7.0
3	3.0	1.0	4.0	2.0	24.0	1.5	22.5	46.5	42.0						34.0	0.17	14.5
4	3.5	1.0	4.5	2.0	24.0	2.0	30.0	54.0	48.0						40.0	0.15	22.0
5	4.0	1.0	5.0	2.0	24.0	2.5	37.5	61.5	54.0						46.0	0.13	29.5
6	4.5	1.0	5.5	2.0	24.0	3.0	45.0	69.0	60.0						52.0	0.12	37.0
7	4.5	1.5	6.0	2.5	30.0	3.0	45.0	75.0	66.0						58.0	0.11	37.0
8	4.75	1.75	6.5	2.5	30.0	3.5	52.5	82.5	72.0						64.0	0.10	44.5
9	4.75	1.75	6.5	2.5	30.0	4.0	60.0	90.0	78.0						70.0	0.09	52.0
10	5.0	2.0	7.0	3.0	36.0	4.0	60.0	96.0	84.0	2.0	2.0	4.0	2.0	8.0	76.0	0.08	52.0
COSTS AT 2008	5.0	2.0	7.0	3.0	36.0	4.0	60.0	96.0	84.0	-	-	-	-	16.0	68.0	0.17	44.0

Table DB, VI

World Production of Tobacco: 1970-1974

'000 tonnes

	1970	1971	1972	1973	1974
Africa:	202	214	226	211	240
- Malawi	19	27	32	30	31
- Nigeria	16	17	13	12	12
- Rhodesia	62	65	73	56	85
- S. Africa	34	32	30	31	30
- Tanzania	14	12	14	16	15
- Others	57	61	64	67	67
North & Central America:	1,134	1,015	1,054	1,084	1,186
- Canada	101	102	85	117	117
- Cuba	45	27	45	46	46
- Dominican Rep	23	26	28	44	37
- Mexico	80	65	82	65	71
- U.S.A.	865	773	793	790	888
- Others	20	22	21	22	27
S. America:					
- Argentina	66	62	74	71	98
- Brazil	244	254	263	235	226
- Colombia	42	38	36	39	50
- Others	45	43	43	49	53
Asia:	2,077	2,048	2,275	2,283	2,411
- Burma	61	41	52	73	52
- China	806	802	856	968	983
- India	337	362	419	372	441
- Indonesia	78	60	127	120	122
- Japan	151	150	144	153	139
- Korea Rep	56	63	116	112	112
- Pakistan	120	113	87	63	66
- Philippines	61	56	56	65	79
- Turkey	138	174	180	130	190
- Others	269	227	238	227	227
E & W. Europe:	581	564	647	656	632
- Bulgaria	122	120	158	141	140
- France	46	43	50	50	49
- Greece	90	88	86	90	70
- Italy	78	79	84	96	96
- Poland	85	70	75	78	78
- Romania	23	30	38	38	50
- Others	137	134	156	163	149
USSR	266	262	302	312	308
Oceania	23	23	19	20	19
World Total	4,680	4,523	4,939	4,960	5,223

SOURCE: FAO

Table D8.VII

World Exports of Unmanufactured Tobacco: 1969-1974

'000 tonnes

Region/Country	1969	1970	1971	1972	1973	1974
Africa:	77	87	102	119	136	141
- Malawi	19	20	25	27	31	27
- Rhodesia	23	32	45	55	65	70
- Tanzania	5	8	7	7	7	12
- Others	30	27	25	30	33	32
North & Central America:	344	305	292	366	383	423
- Dominican Rep	18	20	26	33	32	41
- Mexico	8	11	11	15	18	26
- U.S.A.	262	231	215	275	278	295
- Others	46	43	40	43	55	61
S. America	95	102	109	121	113	163
- Brazil	48	54	61	65	65	91
- Others	47	48	38	56	48	72
Asia	286	280	314	358	347	360
- India	55	48	55	80	83	78
- Korea Rep	20	19	14	13	22	41
- Philippines	33	38	46	38	34	34
- Turkey	70	74	84	124	108	112
- Others	108	101	115	103	100	95
Europe	203	208	212	244	238	294
- Bulgaria	60	58	62	63	69	69
- Greece	71	63	59	74	46	67
- Italy	9	11	15	22	31	65
- Yugoslavia	14	19	20	17	17	19
- Others	49	57	56	68	75	74
USSR	4	4	3	2	1	1
Oceania	1	1	1	-	-	-
Total World	1,000	987	1,033	1,210	1,218	1,382

SOURCE: FAO

Table D8.VIII

World Imports of Unmanufactured Tobacco: 1969-1974

'000 Tonnes

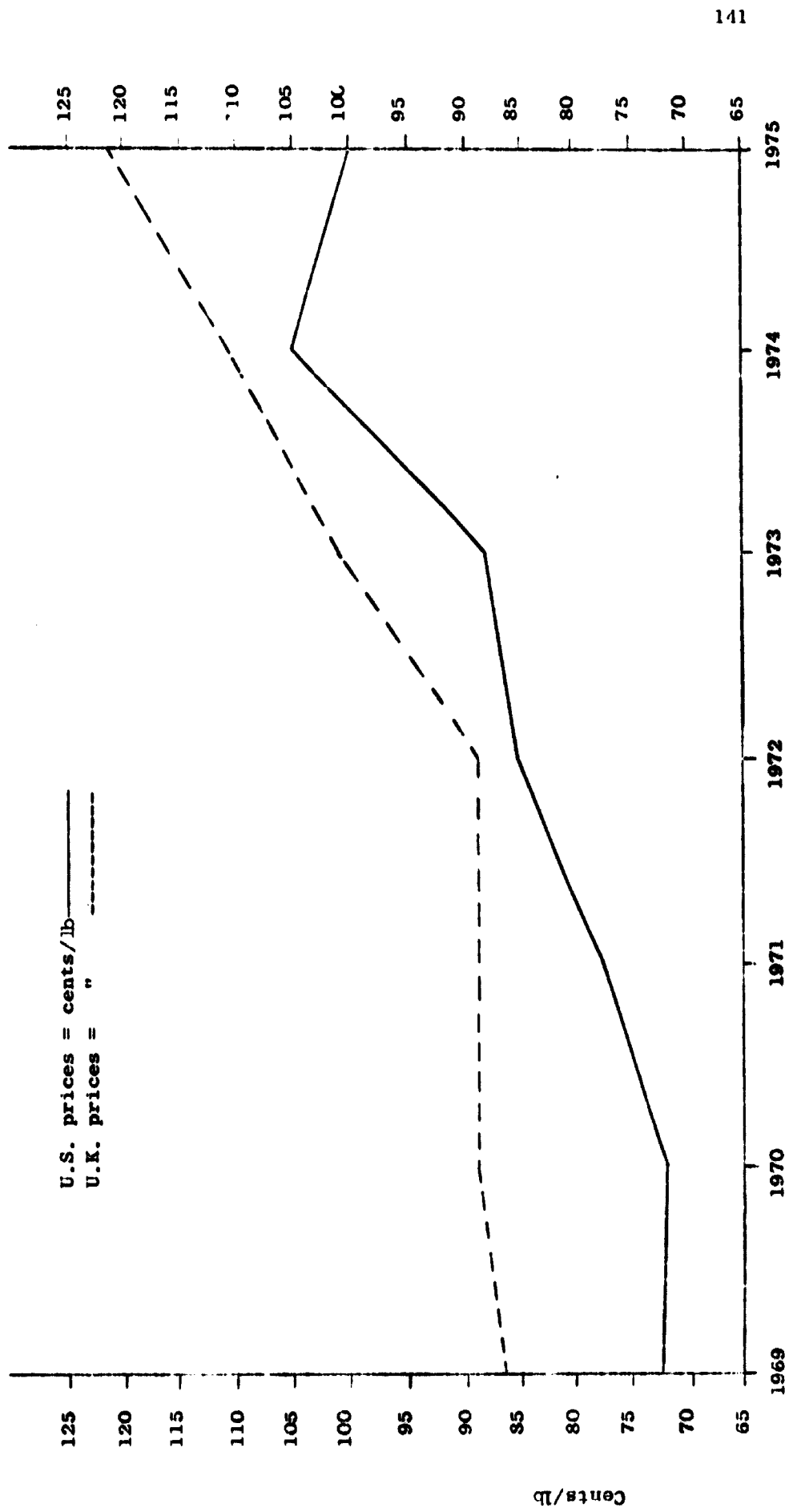
Importing Region/Country	1969	1970	1971	1972	1973	1974
Africa:	47	59	60	70	80	89
- Algeria	4	4	3	6	10	16
- Egypt	14	14	15	18	21	24
- S.Africa	4	9	6	11	13	10
- Others	25	32	36	35	36	39
North & Central America:	112	107	92	158	164	171
- U.S.A.	105	100	85	151	155	159
- Others	7	7	7	7	9	12
S. America	15	8	7	5	12	14
Asia:	162	122	138	169	153	198
- Bangladesh	29	27	27	27	27	27
- Japan	33	36	45	60	58	77
- Others	101	59	66	82	68	94
Europe:	625	631	685	719	739	727
- Belgium	33	33	33	35	38	40
- France	44	63	76	81	80	81
- W.Germany	154	123	155	146	145	86
- Netherlands	48	55	57	62	69	73
- Spain	49	54	70	55	53	71
- U.K	139	128	122	135	148	164
- Others	158	175	172	205	206	212
USSR	55	70	72	90	93	79
Oceania	18	19	19	17	15	18
Total World	1,035	1,016	1,073	1,228	1,256	1,296

SOURCE: FAO

Figure D8.I

Average Annual Prices of Tobacco in U.S.A. and U.K. 1969-1975

1. U.S. average prices at auctions of flue-cured tobacco
2. U.K. average value of leaf tobacco imports of all types



WOOD INDUSTRIES AND FORESTRY

I BACKGROUND TO THE PRESENT SITUATION

The producing and consuming sectors of the forestry industry are closely interdependent but, for convenience in presentation, each is separately discussed and evaluated.

At present, there seems to be fairly general agreement among experts in the timber industry that Uganda urgently needs a new plan for the management of the natural forests and detailed proposals for the establishment of soft and hard wood plantations, to meet potential demands for fuel wood or charcoal.

Currently, two projects under consideration, steel and cement production, could need significant quantities of timber, quite beyond the productive capacity of the natural forests. Remembering that eucalyptus for charcoal takes some 6 years to grow, forward planning is essential, and future objectives must be established. Conservation plans must be enforced otherwise one of Uganda's major natural resources will be wasted.

Up to about 1969, the country's imports and exports of timber and wood products were almost in balance. Imports have since fallen by only 38 per cent but exports have fallen by almost twice as much, by 71 per cent.

In 1974, the greater part of the saw milling capacity in Uganda was handed over to the newly formed Wood Industries Corporation (W.I.C) As a result there are encouraging indications that output is increasing, in spite of a chronic shortage of spare parts. Plywood manufacture has increased since 1973 and a new factory is being established for the production of parquet flooring.

The furniture industry in Uganda is highly fragmented among many small local carpenters. The W.I.C. owns two factories making furniture and another factory with joinery workshops for making lorry bodies, soft drink boxes, etc.

The saw mills are in need of a large quantity of spares as well as timber extraction equipment and road transport.

I.1 Forestry Production

Uganda's Reserved Forestry land is said to total more than 1.5 million hectares. Of this, 48 per cent is tropical high forest, 51 per cent is savannah woodland including some 26,000 hectares of plantations.

The savannah wood land is important as by far the largest source of round wood for fuel and poles, in the non-monetary sector of the economy.

The sources of commercial timber are virtually limited to the tropical high forests and plantations of soft wood and eucalyptus hardwoods. It has been estimated that about 37% of the forests have not been fully utilised because of problems of access and long haulage.

One method of "improving" forest yields has been to eliminate "undesirable" tree species by the use of arboricides or, indeed, physically by charcoaling and then to enrich the forest by planting "desirable" species. Evidence is now coming to light which suggests this process can cause ecological imbalance and perhaps should be discouraged. This view supports a belief held by some that there is no such thing as an "undesirable" tree, and that a profitable use can be found for all timber.

Various plans have been prepared to promote increase in the area of plantation establishments. For example both the first and second National Economic Development Plans provided for a total area of 20,000 hectares by 1970. This objective was not achieved and less than half the area was planted. The Third Plan proposed that a further 10,000 hectares should be planted by 1975. The cancellation of a Norwegian bilateral loan agreement prevented more than half the area being planted.

Currently, about 11 million cubic metres of fuelwood and poles are utilised by the non-monetary sector of the economy. Population growth will increase this demand quite considerably. One estimate indicates a demand of 15 million cubic metres by 1980, with a year 2,000 projection at 30 million cubic meters.

The capacity of the natural forest to meet major industrial requirements for fuelwood and charcoal is strictly limited. In Table D9.I (p.151) an exercise shows that, in order to meet an industrial consumption of 100,000 tonnes of charcoal plus a domestic/household consumption of 170,000 tonnes per year, plantation must be established right at the start. Natural forest charcoal starts to be phased out after the 7th year. The total area to be planted exceeds 40,000 hectares and the area to be cut in any one year reaches a maximum of 6750 hectares.

The table assumes that the wood chosen would be eucalyptus which takes a full 6 years to mature. The yield should then be not less than 40 tonnes per hectare.

Currently the cost of planting is put at 2100 shillings per hectare, and the cost of logging and charcoal production is said to be 100 Shs. per tonne of charcoal.

Most of the Charcoal is made in Missouri Kilns which yield 1 tonne of charcoal per 5 tonnes of wood.

The cost of each kiln is about 12,000 Shs. In this example, the total capital and operating costs would be as follows:

total planting costs		
40,500 x 2100	=	85.0 mill Shs
kiln, tools and vehicles	=	15.0 mill Shs
TOTAL	=	100.0 mill Shs

Annual operating cost to include logging and charcoal making will amount to a maximum of 27.0 mill shs.

The problem facing the Forestry Department is not so much one of foreign currency, 1.5 million Shs. a year would meet overhead costs, but of the local investment capital needed to employ labour to plant the trees. There is no evident reason why this finance cannot be raised by the Government from internal sources.

The greatest demand for foreign exchange is for the saw mills and the processing sector of the industry.

1.3 Production of Processed wood

The projected demand for industrial wood has been estimated by the authorities as follows:

ITEM	('000 M ³)			
	1970 (Actual)	1980	1990	2000
Sawn timber	71.8	101.1	185.2	339.2
Tea chest plywood	5.1	4.3	5.2	6.3
Other plywood	9.4	17.5	28.2	40.9
Matches	16.9	29.3	43.2	42.2
TOTAL	103.1	152.3	261.8	435.6

The extent to which production can meet the forecast of demand depends on the speed with which finance can be made available. Already additional plywood manufacturing capacity is being installed which should meet demand in 1980.

The production of processed wood products since 1964 is set out in Table D9.II (p.152). Figures after 1970/71 are not complete and those for 1974 and 1975 are based only on the 16 saw mills and factories operated by the Wood Industries Corporation. The private sector of the industry is said to be of minor significance at the present time.

The volume of timber harvested in the two most recent years reported by W.I.C. is as follows:

	'000 M ³
1973	79.2
1974	106.3

These figures compare well with those for 1970/71, when 70,000 M³ were felled.

W.I.C. reported that in 1973-74 the saw mills were operating at about 40-50 per cent of their rated capacity. Production then was:

	'000 M ³	Mill Shs.
1973	23.1	10.300
1974	30.1	20.972

The underlying reasons for the low production have been first a shortage of logs; second a means of transporting them; and third a shortage of spares in the mills themselves.

Plywood production, which reached an all time high of over 2 million square metres in 1969/70 has fallen disastrously, to just over 500,000 square metres.

	'000 sq Metres	Mill Shs.
1973	422.4	4.402
1974	515.4	6.231

The major fallback has been in the production of plywood for tea chests with the result that last year the Tea Authority had to import virtually all its requirements. If plywood production does not recover, the foreign exchange requirement for tea chests could well run into 1 Million Shs. a year.

The particle board industry has been working at about 1/3 of rated capacity. Production for 1973 and 1974 was as follows:

	'000 M ³	Mill Shs.
1973	0.789	0.884
1974	0.464	0.524

This part of the industry also has been held up for lack of essential inputs.

Very little can be said about the furniture and joinery industries. General production has been low, because of the shortage of finishing materials such as varnish, P.V.C. and form sheeting. However, as a guide to the potential size of the industry, in 1969, some 1300 workers were employed with a gross output of 20.3 million Shs. The domestic value added was 7.7 million Shs.

1.4 External Trade

Details of the development of the import and export of all forest based products have been set out in Table D9.11T (p.153). The range of products is obviously considerably larger than could reasonably be contemplated for manufacture in Uganda. However, between 1969 (the highest export year before 1971) and 1974, imports almost doubled and exports fell by 70 per cent. In 1969, the ratio of exports to imports was 1:4. By 1974 it had widened to 1:38.

If only those products for which manufacturing facilities exist are considered, a very different situation comes to light. Exports and imports for 1969 and 1974 are set out below:

	('000 Shs.)		
	1969	1974	Per Cent Change
Imports	10,250.3	6,349.8	(-38)
Exports	9,729.3	2,846.4	(-70)

Before 1971, exports and imports of wood products were virtually in balance. However, while imports have only fallen by 38% exports have declined by 70% making an imbalance for 1974 of 1 to 2.2.

It is almost certain, however, that exports of log timber have been grossly underestimated. It is generally said that unofficial and under-recorded movements of timber take place across Uganda's various borders. The number of roads capable of taking the weight of a timber lorry is so small that it is surprising these border crossings have not been subject to the usual border controls.

Prospects for increasing exports look good. Plans for the future are concentrating on the greater proportion of finished products i.e. parquet flooring of high quality, plywood and veneers. There is little doubt that the range could be extended to ready-to-assemble joinery products and perhaps a range of Knock-down Do-it-Yourself (DIY) furniture of good quality hard wood.

In making its plans W.I.C. is handicapped by the almost total lack of market data and there is little evidence to identify those products which could yield the highest benefit in Uganda.

We recommend that appropriate market surveys should be initiated.

1.5 Structure of the Industry

After 1972, the Forestry Department was charged with the management and operation of the saw mills. In 1974, further re-organisation took place; the Wood Industries Corporation was then formed and took over the responsibility for the saw mills and for all wood processing.

Even during the short life of W.I.C. considerable progress has been made in spite of the many difficulties which it has had to face. The senior staff have a wide experience of the industry. They have been quick to identify weaknesses in the present situation and to draw up plans for the future development of the industry.

The current proposals for the industry seem well founded. Provided that the inputs which have been requested are made available, there is every reason to think that the industry will be put onto a sound commercial footing.

There is a close relationship between the Forestry Department and the Corporation. It is essential that it should be maintained. Possibly so relatively small an industry might be represented not by two administrations but by one integrated body.

In order to meet the forecast demand, the following proposals have been made. Whether or not the plans are implemented will depend on the availability of external finance.

Softwood Production

Plant up to 4,000 hectares per year at a cost of 2,100 Shs. per hectare say 8.4 million Shs. per year local currency. A further 1.5 million Shs. are required by the Forestry Department to purchase essential equipment. Foreign exchange is required.

Hardwood Production

Encourage the non-monetary sector to increase plantings through added extension and technical assistance.

Improve forest management by employing adequately trained staff

Improve extraction methods

Increase saw mill capacity and relocate other mills as necessary.

The cost of these improvements is put at 55 million Shs. per year but this also includes the cost of wood processing. Already a sum of 10.0 million Shs. has been raised for the parquet floor factory.

1.6 Foreign Exchange Requirements

A number of assumptions have had to be made in the preparation of this evaluation.

Forestry production inputs have been costed at 1.5 mill Shs. per year in foreign exchange. No provision has been made for local finance, nor external aid for planting as has been given in the past.

55 Mill Shs. have been estimated as the capital requirement for the wood processing sector. This is probably on the high side, but as stocks of all spares have been run down to a very low level it is of the right order. The annual charge for a 10 year loan at 12% interest is 9.73 million Shs. The annual operating costs for the saw mills and factories are estimated at 16 mill Shs.

In 1968 and 1969, total output from the industry was 48.3 mill Shs, and 58.6 mill Shs. respectively. The total sales from the start of the 'project' are estimated to increase by 5 mill Shs a year from a base of 35 mill Shs.

It is very difficult to assess the external trade position. From a deficit of 2 mill Shs a year at the beginning of rehabilitation a total surplus of 5 mill Shs is however, forecast by the end of the project.

In Table D9.IV (p.154) it will be seen that throughout the period of the evaluation there is a negative net foreign exchange benefit.

The import coefficient, in the latter stages reduces to 0.30 from an initial 0.83.

II FUTURE PROSPECTS

II.1

The forestry industry is likely to be a very heavy consumer of foreign exchange, at any rate for the foreseeable future. The cost of foreign exchange has to be offset against the overall benefits to the economy i.e. provision of fuel wood and more important building materials.

It is possible that the export potential could be increased; but this will require major investment in market research to seek out opportunities. Superficially, it looks as though the more likely market sectors would be for semi-finished or finished products with a high added value.

In spite of the currently pessimistic outlook, there seems no reason to doubt that given effort new markets could be found for products made from high value woods.

II.2 Furniture Manufacture

II.2.1 General

In the preceding section, reference has been made to the small and fragmented nature of the Ugandan furniture industry. It has already been seen that manufacture of wood products substantially increases the domestic added value of the timber and also increases the likelihood of earning invaluable foreign exchange.

Little information is available on the Ugandan furniture market but, as a general rule, furniture is a highly income elastic commodity.

Before an export market could be developed it would be essential to establish a soundly based home market. Nevertheless, it is axiomatic that before a factory layout can be determined, detailed note must be taken of all likely market requirements.

As regards potential exports of furniture, Uganda has two major advantages, a wealth of high quality hard woods and a source of labour which is cheaper than in many potential export markets. The major disadvantage is the high cost of transport, because of the large volume of the products. This could be overcome by exporting knock-down components for Do-it-Yourself assembly and finishing.

The product range might include tables, chairs, chests, wardrobes, side boards, cupboards, beds, doors, architraves, windows and window frames and perhaps kitchen fittings.

II.2.2 Proposed Plant Operations

(1) Converting.

Incoming timber will be planed and edged ready for cutting into sizes.

(2) Shaping.

This department takes the sawn pieces of wood and performs various operations on them, moulding, planing, routing, drilling, morticing, turning, sanding amongst others.

(3) Assembly.

Only furniture for the domestic market would be assembled.

(4) Finishing

Again only domestic market furniture would be finished. This would involve final sanding, then oiling, varnishing or painting.

11.2.3 Capital Costs

The capital cost of a plant employing 200 men with an anticipated sales revenue of over 12.0 million Shs. would be about 3.2 million Shs. about 60 per cent of the cost being for plant. The value of sales would be in the order of 10.5 million Shs. with sawn timber inputs at 6.3 million Shs.

The total annual foreign exchange requirement including amortisation of a loan at 12 per cent over 10 years would be about 2.0 million Shs.

These estimates would indicate a Domestic Added Value of not less than 10.0 million Shs., with a corresponding Import Coefficient of 0.19.

Export earnings only have to exceed 2.0 million Shs. a year to produce a positive foreign exchange cash flow.

Table D9.I

Uganda - Charcoal Planting Programme to produce 270,000 tons of Charcoal (170,000 Domestic use and 100,000 Commercial Use)

PROJECT YEAR	Charcoal Requirement '000 Tonnes		Charcoal Supply '000 Tonnes		Planting		1st Yield (1st Year)		Purchase 1st Year Yield
	Domestic	Commercial	Forest	Plantation	Ha	ha	Ha	ha	
1	80	-	80		-				
2	85	10	95		4750				
3	90	20	110		5125				
4	95	40	135		5500				
5	100	45	145		5875				
6	110	50	160		6250				
7	115	60	175		6500				
8	120	70	190	190	2000		4750		4750
9	125	80	205	205	1625		5125		5125
10	130	90	220	220	1250		5500		5500
11	140	95	235	235	875		5875		5875
12	150	100	250	250	500		6250		6250
13	160	100	260	260	250		6500		6500
14	170	100	270	270	-		2000	4750	6750
15							1625	5125	6750
16							1250	5500	6750
17							875	5875	6750
18							500	6250	6750
19							250	6500	6750

SOURCE Forestry Department.

Table D9.II

Uganda: Production of Sawn Timber and Processed Woods

YEAR	SPAWN		PLYWOOD		PARTICLE BOARD		MATCHES		TOTAL	
	Cu. M	Shs	Sq. M	Shs	Sq. M	Shs	Boxes	Shs		Shs
1964/65	0.05	18.9	0.60	3.5	-	-	3.30	0.3	-	22.7
1965/66	0.06	20.9	0.72	4.9	-	-	41.00	4.0	-	29.8
1966/67	0.06	21.2	0.83	6.1	0.04	0.4	59.80	6.0	-	33.7
1967/68	0.06	20.2	0.79	5.7	0.08	0.7	63.20	6.3	-	32.9
1968/69	0.06	26.0	1.08	8.8	0.17	1.4	59.00	8.0	-	44.2
1969/70	0.06	20.5	2.03	16.7	0.16	1.4	57.00	14.9	-	53.5
1970/71	0.07	26.2	1.17	9.6	0.11	1.0	75.05	15.0	-	51.8
1971/72			1.16				59.43			
1972/73			1.07				49.62			
1973/74			0.65				44.24			
1974/75			0.46				-			

SOURCE: 1973 Statistical Abstract
 Quarterly economic and statistical bulletin September 1974

Table B-11

Exports: Details of Change in Imports/Exports Between 1969/74 for Forest Based Products
 '000 \$us. and %

ITEM	1969	1974	PER CENT CHANGE	1969	1974	PERCENT CHANGE	1969	1974	PERCENT CHANGE	1968-1974
TOTAL EXPORTS	5.8	-	-	-	-	-	-	-	-	-
NON-FERROUS METALS	2,114.6	164.1	92.2	-	-	-	3.3	-	-	-
ROUND WOOD CONIFER	2.8	-	-	-	-	-	104.0	79.7	87.4	-
ROUND WOOD NON CONIFER	-	-	-	-	-	-	-	13.4	-	-
PULP WOOD	252.7	243.9	3.5	-	-	-	36.5	17.5	-	-
PAPER	3,947.0	204.6	94.3	-	-	-	350.6	799.0	126.6	-
TEXTILES	60.1	94.8	57.7	-	-	-	4,370.2	1,898.0	56.57	-
OTHER LEAN CONIFER	2.4	7.9	229.2	-	-	-	-	-	-	-
OTHER LEAN NON CONIFER	2,777.9	13,969.1	635.7	-	-	-	26.6	-	-	-
LEAF LAM AND WASTE	2,531.3	1,703.9	32.7	-	-	-	340.8	-	-	-
LEAF WASTE PAPER	107.1	104.5	4.8	-	-	-	421.3	-	-	-
LEAF WASTE	496.1	23.2	53.2	-	-	-	13.5	-	-	-
LEAF WASTE WOOD	2,166.0	3,600.7	66.7	-	-	-	4,019.1	251.5	99.4	-
LEAF WASTE PAPER	175.1	33.9	80.3	-	-	-	-	-	-	-
LEAF WASTE WOOD	962.4	7,030.6	636.7	-	-	-	-	-	-	-
LEAF WASTE WOOD AND BOARDS	12,196.9	20,531.1	68.3	-	-	-	30.8	41.9	36	-
LEAF WASTE WOOD AND THIN PAPER	1,210.0	2,803.0	131.7	-	-	-	40.6	1.2	97.0	-
LEAF WASTE WOOD AND THIN PAPER	58.0	752.3	1,196.6	-	-	-	-	-	-	-
LEAF WASTE WOOD AND THIN PAPER	6,004.0	11,018.0	83.5	-	-	-	1,544.0	22.3	98.6	-
LEAF WASTE WOOD AND THIN PAPER	9,652.3	11,617.9	0.8	-	-	-	162.4	4.1	97.8	-
LEAF WASTE WOOD AND THIN PAPER	852.0	80.7	50.6	-	-	-	1,523.0	-	-	-
LEAF WASTE WOOD AND THIN PAPER	52,215.7	108,269.3	107.4	-	-	-	13,074.5	2,372.9	78.0	-
TOTAL EXPORTS	11,839.0	13,074.5	13,621.1	1970	1971	1972	1973	1974	-	1968-1974
TOTAL EXPORTS	45,694.7	52,215.7	51,204.9	12,635.4	9,782.8	3,849.6	2,372.9	-	75.7	-
TOTAL EXPORTS	34,055.7	39,139.2	37,585.8	67,737.0	40,706.0	51,500.0	108,269.3	+ 135.9	-	-
TOTAL EXPORTS				54,901.6	30,925.2	47,650.2	105,396.4	+ 209.5	-	-

NOTE: 1969 IS TAKEN AS HIGHEST YEAR OF EXPORT PRIOR TO 1970

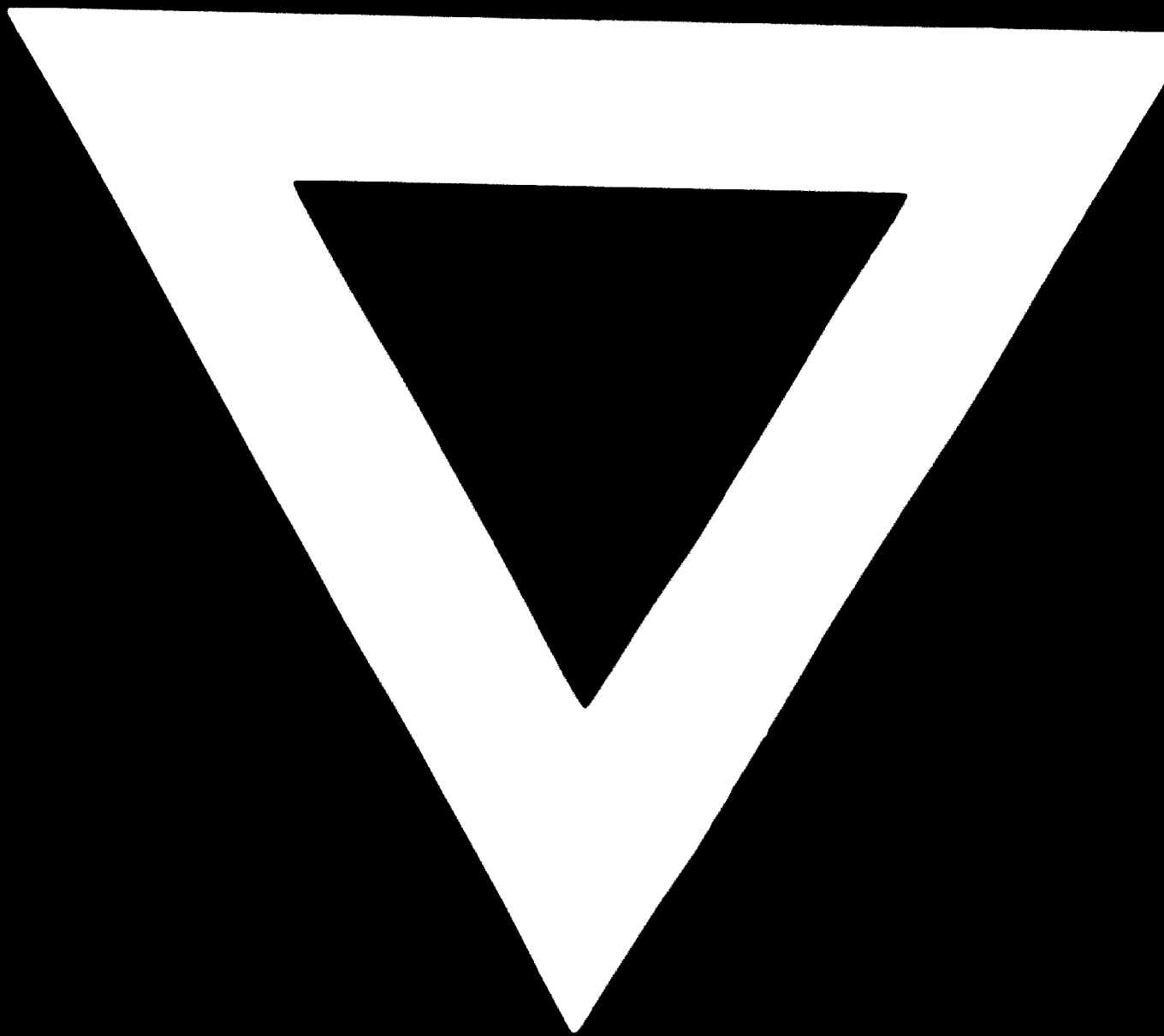
COMPILED BY WOOD INDUSTRIES CORPORATION FROM ANNUAL TRADE REPORT

Table D9.IV

Uganda: Forestry Financial Returns and Benefits

PROJECT YEAR	TOTAL SALES	TRADE DEFICIT	BALANCE SURPLUS	PRODUCTION COSTS ANNUAL	CAPITAL COSTS 55 MILL SRS	ANNUAL PROCESS COSTS	TOTAL FOREIGN EXCHANGE	TOTAL EFFECTIVE FOREIGN EXCHANGE	DOMESTIC ADDED VALUE	IMPORT COEFFICIENT	NET FOREIGN EXCHANGE BENEFIT
1	35	-2		1.5	9.7	16	27.2	29.2	5.8	0.83	-29.2
2	40	-1						26.2	11.8	0.71	-23.2
3	45	-	-					27.2	17.8	0.60	-27.2
4	50		1					26.2	23.8	0.52	-26.2
5	55		2					25.2	29.8	0.46	-25.2
6	60		3					24.2	35.8	0.40	-24.2
7	65		4					23.2	41.8	0.36	-23.2
8	70		5					22.2	47.8	0.32	-22.2
9	75		5					22.2	52.8	0.30	-22.2
10	75		5	1.5	9.7	16	27.2	22.2	52.8	0.30	-22.2

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