OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

2problem.ans

21762

UNIDO
REP/RES
21 January 1997

INTERNAL WORKING DRAFT

for discussion

Agro-Industrial Linkages in Africa

Key Issues and Potential

BACKGROUND PAPER

Prepared by the
Industrial Sector Surveys Team

CONTENTS

I Introduction

II Structure of agro related branches at global level

III Structure and performance of Agro Related branches in Africa

a. Growth and structure

b. Productivity employment, gross margins and investment

c. Agricultural machinery and fertilizer

d. Net exports and compasation advantage in agro related branches

IV Branch profile

a. Food manufacturing

i) Grain

ii) Meat

iii) Sugar

iv) Cocoa, coffee and tea

v) Vegetable oils

vi) Fish

vii) Fruits and vegetable processing

viii) Animal Feed

ix) Packaging, paper and wood

b. Textiles and clothing

c. Leather and footwear

d. Agricultural machinery

e. Building Material

f. Fertilizer

V Conclusion

LIST OF TABLES

1.1 Agro related industries : coverage

2.1 Africa's share of MVA of related branches of developing countries 1986 and 1992.

2.2 Share of Agro related industrial branches of interest to Africa in total MVA.

2.3 Rates of growth of agro related branches in developing countries 1975 - 1992.

2.4 Characteristics of agro related branches : Germany and India 1992.

3.1 Index of gross output: Agro Related Branches 1995

3.2 Index of gross output 1995 : selected countries.

3.3 Share of each branch in MVA 1990, 1995.

3.4 Share of each branch in MVA : selected countries 1990-1995.

3.5 Share of each branch in employment 1990-1995.

3.6 Labour productivity indices of agro related branches 1995.

3.7 Index of labour productivity, selected countries 1995.

3.8 Employment elasticities : agro related branch 1990-1995.

3.9 Index of gross capital formation : selected countries 1995

3.10 Branch share of gross capital formation in manufacturing 1990, 1995

3.11 Gross margin rates for agro related branches 1990, 1995.

3.12 Agro Related branches : RCA Index 1975, 1980, 1994.

3.13 Ranges of positive RCA, 1975, 1980, 1994.

3.14 Food manufacturing branches : transition matrix 1980-1994.

3.15 Leather and Footwear : transition matrix 1980, 1994.

3.16 Wood products and furniture : transition matrix 1980-194.

3.17 Textiles and clothing : transition matrix 1980, 1994.

3.18 Co relation of factor intensities.

3.19 Broad classification of agro related manufactured products of interest to Africa.

3.20 Factor intensity of manufacturing branches in Africa Rankings 1994.

4.1 Production and consumption of major staples : Kenya

4.2 Production of grain miling products : Kenya

4.3 Production of paper products : Kenya

4.4 Market demand for cereals in 2025 : global

4.5 Maize area planted to improved varieties, sub saharan Africa 1990

4.6 Products obtaining from molasses

4.7 Growth of textile and clothing zimbabwe

4.8 Mauratius : EPZ Trade

4.9 FDI in textile and clothing : Mauratius
4.10 Production of textiles and garments : Kenya
4.11 Production of textiles : Egypt
4.12 Egypt's quota of cotton yarn and fabrics to USA and Eu.
4.13 Structure and performance of the textiles and clothing industries in Morocco
4.14 Investment in textile and clothing in Morocco
4.15 The structure of EC external trade in clothing
4.16 GATT estimates of trade liberalisation in clothing 2005
4.17 Production of leather and footwear : Kenya
4.18 Production capacities of leather and footwear production : Ethiopia
4.19 Production and sale of Karakul products : Namibia
4.20 World consumption of shoes 1990
4.21 Per capita consumption of shoes 1990
4.22 Cement production and utilisation : Kenya
4.23 Share of production, consumption and trade in fertilizer Africa's share : 1989-90 to 1993-94

Agro Related Industrial Development
In Africa
Structures, Problems and Potential

I *INTRODUCTION*

This paper is concerned to sketch the structure and performance of the agro related industries in as many African countries for which data could be processed at UNIDO head office in October 1996. Agriculture related industries are defined as those the main raw material used by which is an agricultural product and those whose main output is used us an agricultural input. These are listed in table 1.1

Table 1.1 : Agro Related Industries : Coverage

ISIC CODE	NAME OF BRANCHES
3111	Meat processing
3112	Dairy products
3113	Fruit and vegetable preservation and processing
3114	Fish processing
3115	Oils and fats
3116	Grain mill products
3117	Bakery products
3118	Sugar products
3119	Cocoa, Chocolates, Confectionery
3121	Other food products
3122	Animal feed
3131/32	Distilling and wine
3133	Malt liquor
3134	Soft drinks
3140	Tobacco
3200	Wearing apparel and leather
3211	Spinning, Weaving and finishing textiles
3212	Manufacture of made-up textile goods except footwear
2241	Footwear

ISIC CODE	NAME OF INDUSTRY

3311	Sawmills, planing and other wood mills
3312	Manufacture of wooden and cane containers
3319	Manufacture of wood and cork products not elsewhere classified
3320	Manufacture of furniture and fixtures, except primarily of metal
3411	Manufacture of pulp, paper and paperboard
3412	Boxes of paper and paperboard
3559	Rubber product input indentive
3512	Fertilizer and pesticides
369	Non metallic minerals
3811	Hand tools
3821	Engines and turbines
3822	Agricultural machinery and equipment

The paper is divided into four parts. The second section describes the structure of agro related industries in which Africa's share of developing country MVA exceeds four percent with a viers providing a bench mark for assesting the development of these branches in Africa; it is assumed that where Africa's share is less than four percent of the developing countries international standards do not provide the relevant reference and the development of such branches should be based on African socio economic characteristics (such as agricultural machinery and fertilizer) and for be given lower priority.

Section three analysis the structure and performance of agro related industries in a sample of about 40 African countries for time series data available at an ISIC three digit level and section four presents industry profiles of branches, the development of which is considered important for achieving the objectives of food security, higher productivity gain and increased international competitiveness.

ISTRUCTURE OF AGRO RELATED INDUSTRIES AT INTERNATIONAL LEVEL

Table 2.1 presents Africa's share in value added of major industrial branches in the developing countries in 1985 and 1992 (the latest year for which such data is available)

Table 2.1 Africa's share MVA of selected branches in developing countries 1985 and 1992 (per cent)

Africa's Share of Developing Countries		
(at constant 1980 prices)	**Value Added**	
	1985	**1992**

Food products	10.7			10.0		
Beverages	16.6			16.1		
Tobacco	13.5			14.2		
Textiles	11.3			10.8		
Wearing apparel	6.5			6.3		
Leather products	7.6			7.0		
Footwear	10.3			10.4		
Wood		9.3			8.4	
Paper		6.3			5.1	
Industrial chemical 3.1			2.2			
Other chemicals	8.0			6.7		
Petroleum	6.2			5.9		
Rubber		4.8			4.5	
Pollery	5.3			5.2		
Glass		5.1			4.7	
Other non metallic-material	7.8			7.9		
Iron & Steel	3.9			2.9		
Non persons metals	7.8			7.9		
Metal products	7.7			7.2		
Non Elec. Machinery	2.4			1.8		
Electric Machinery 3.2			1.4			
Transport equipments	4.5			2.2		

Source UNIDO Statistical Data Bar

Africa's share exceeds five per cent in the following agro related industrial branch.

(a) food processing.
(b) Beverages
(c) Tobacco
(d) Textiles
(e) Wearing apparel
(f) Leather products
(g) Footwear
(h) Paper
(I) Wood

All of these are "user" industries. None of the input industries quality on this criteria. A case may be made for including non metallic minerals, in which Africa's share exceeded 7.9 per cent in 1992, as cement is likely to be a major African input in the construction of irrigation and drainage systems.

The only agro related branches in which Africa's share increased during 1985-1992 were tobacco, footwear and non metallic minerals, the only significant increase was in tobacco (surely un conscious sign given the threat from international health campaigns).

African countries with shares exceeding 1 per cent of total developing country production in the agro related branches in 1993 were (UNIDO 1996).

a) Textile - Egypt 2.1 per cent, Morocco 1.6 per cent
b) Wearing apparel - Algeria 1.7 per cent, Morocco 1.1 per cent
c) Leather - Algeria 1.4 per cent, Morocco 1.2 per cent
d) Footwear - Algeria 1.6 per cent, Morocco 1.6 per cent

There were no major SSA countries in any of these branches. Moreover the situation scene to have deteriorated since 1985 when Egypt was a major producer of food products and Algeria of paper. Egypt also had a significant share of developing country agricultural machinery production in 1985. Africa is thus clearly losing ground in agro related branches.

Table 2.2 presents the share of agro related branches selected for this study in the total MVA of industrialised and developing countries. It is cleat that these are declining branches in both groups. No branch increased its MVA share during 1980 to 1993 and the only branch which maintained its shares was

TABLE 2.2

SHARE OF AGRO RELATED BRANCHES & INTEREST TO AFRICA IN TOTAL MVA (percentage 1)

	INDUSTRIALISED COUNTRIES		DEVELOPING COUNTRIES	
	1980	1993	1980	1993
Food products	10.1	9.9	15.5	14.8
Beverages	2.3	2.0	3.3	3.3
Tobacco	0.7	0.6	2.2	2.1
Textiles	5.0	3.7	9.8	8.1
Wearing apparel	3.0	2.1	3.6	2.9

Leather	0.5		0.3		0.7		0.6		
Footwear	0.8		0.5		1.2		0.7		
Wood		2.2		2.1		2.6		2.2	
Non metallic	3.0		2.4		4.4		4.1		
									27.623.6
43.3	38.8								

SOURCE UNIDO STATISTICAL DATA BASE

beverages in the developing country group. These branches now account for less than a quarter of industrialised country group MVA where the most pronounced decline has been in the case of the textile weaving apparel and footwear branches - with a thirty per cent reduction in MVA share of all three branches. As against this the fall in the share of the food products branch is minimal by only 0.2 per centage points reflecting the persistence of QRs and NTBs in the area.

In developing countries these agro related branches account for almost two fifths of MVA- although their share has declined by about 10 per cent during the 1980-93 period. The greatest decline has been in the footwear and textile sectors. As noted earlier the beverages branch has maintained its share and the decline in the share of food products is also relatively small. In 1993 as in 1980 food productivity is by far the largest branch in the developing country group - the share of the second largest branch in MVA, electrical machinery - is still only 8.8 per cent. Even in the developed countries food products is the third largest branch in 1993 - behind only non electrical machinery (14.8 per cent) and electric machinery (11.8 per cent). Table 2.3 presents the rate of growth of selected agro related industries in the developing

TABLE 2.3

RATES OF GROWTH OF SELECTED AGRO RELATED BRANCHES IN DEVELOPING COUNTRIES 1980 - 1993

ANNUAL AVERAGE RATES OF GROWTH (PER CENT)

	1980-1990	1990-1993
Food products	2.6	2.9
Beverages	2.9	6.0
Tobacco	2.8	0.3
Textile	2.3	1.2
Wearing apparel	3.1	-1.5

Leather	2.0		-3.0	
Footwear	1.0		-4.3	
Wood		2.8		----
Non metallic	3.1		3.8	
MVA		4.5		3.1

SOURCEUNIDOSTATISTICAL DATA BASE

country group over 1980-90 and 1990-93. None of the branches had a higher growth rate than that of MVA during 1980-90 but all branches had positive growth rates. In 1990-93 wearing apparel, leather and footwear branches contracted, food products increased its growth rate from 2.6 per cent per annum during 1980-90 to almost 3 per cent per annum during 1990-93. Growth of the beverage branch improved markedly and non metallic minerals also grew fasten their overall MVA.

The overall message seems to be that both industrialised and developing countries are "structuring out" of the agro related branches of primary interest to Africa. The re-structuring is least pronounced in food products - beverages is in fact expanding and most obvious in textiles, wearing apparel, leather products and footwear. It is these branches in which a market niche is being vacated which can be filled in by producers from Africa. On the other hand the expansion of food processing with an eye on international markets seems not to have bright prospects.

This review of the aggregate data on selected agro related industries at the global level indicates that they are declining branches in both developed and developing countries but export porpects vary being least bright for food manufacturing (except perhaps for some horticultural products) and must promising for wearing apparel, leather products, footwear and (to a laser extent) textiles. This is not to argue against investment in food manufacturing and non metallic minerals but to point out that this investment should be driven by domestic demand - primarily the need to process, preserve and store food for augmenting food security and the need for increasing cement production for the construction of irrigation and water storage system and for the establishment of permanent villages nd associated market tours. A case may also be made for orienting a major portion of textile investment towards catering to the demand for low price cloth. Finally it may be noted that the range of efficient technologies available in each branch is quite wide but the basic advantage which the African countries have in these branches emanate essentially from the raw material intensity of production (which normally approaches sixty per cent even in a industrialised economy such as Germany) except in the case of clothing- and not from the use of unskilled labour (the weighted average share of labour costs in value of output in India in 1992 of these branches was 5.3 per cent). With the exception of wearing apparel technologel employed appears to be relatively standard and not subject to rapid change. Efficient use of raw materials and of energy seems to be important in maintaining competitiveness vis-a-vis imports as well as in international market.

III STRUCTURE AND PERFORMANCE OF AGRO RELATED INDUSTRIES IN AFRICA

This section will present data on the size and performance of the agro-related industrial branches for all African countries for which date is available at UNIDO. The tables have been built using data at the three digit level for the year 1990 and 1995, the latest figure being estimations. The 38 countries for which data
is available have been grouped into five regions: North, West, East, Central and South. Figures are in US dollars of 1990.

III.1) GROWTH AND STRUCTURE

The period covered by this study has seen very slow growth of manufacturing output in Africa. By 1995 total manufacturing output was only 3.13% higher in real terms than in 1990, and this increase was mostly concentrated in the Nort-h (Table 3.1)

TABLE 3.1

INDEX OF GROSS OUTPUT IN 1995
(1990 = 100) AGRO RELATED BRANCHES

	300	311	313	314	321	322	323	324	331	332	369
Africa	103.1	105.6	105.5	113.0	95.7	111.6	92.3	91.8	97.6	102.6	111.7
North	106.4	104.8	117.5	116.0	102.5	111.0	91.3	88.3	86.4	103.8	112.8
West	95.7	101.4	97.1	110.3	85.7	107.0	89.4	96.2	115.4	99.2	99.8
East	102.1	108.5	108.1	102.3	86.6	134.3	85.3	90.6	58.5	107.9	130.1
Central	94.2	90.2	92.2	88.2	58.4	50.5	68.7	85.4	75.9	82.5	149.2
South	101.8	118.8	104.9	113.2	85.0	72.3	136.1	89.6	100.8	100.1	106.1

Value of gross output has declined in four of the ten branches in Africa as a whole - textile, leather, footwear and wood products. These are the branches in which Africa has the highest comparative advantage as section III.4 shows. Moreover the decline in output has been most significant in the major African countries Nigeria, Cameroon, Kenya and Zambia. Table 3.2, shows that North Africa's performance is clearly superior to SSA - although both Egypt and Morocco have experienced a decline in gross industrial output during 1990-95. Within SSA the countries with the strongest growth performance are Uganda, Lesotho, Botswana, Seychelles, Ghana and Mauritius - each has had an annual rate of growth in excess of 5 per cent. If Kenya is omitted from the analysis there is a significant difference between the performance

of East Africa and all the SSA region.

Most countries in Southern Africa are growing significantly although Zambia is decreasing in every sector but one. Central Africa is the region with the greatest regression.

Table 3.2

Index of Output in 1995. (1990=100) : Agro Related Industries

Within this general decay, the agro-related industries have increased their already important share of manufacturing value added (table 3.3). They represent 60% of value added and 70% of employment in manufacturing in 1995. This shows strong variations, and while the North African countries produce in these industries between 40% and 50% of their industrial value added, many Sub Saharan countries, especially small ones, have figures of 80% or more.

Food processing industries have the largest single share, and have an important presence in every country (lowest coefficient of variation). In Sub Saharan Africa (SSA) food processing and beverages represented over 30% of the MVA, and their share has grown in the past five years. The second largest sector, textiles, is decreasing in importance.

TABLE 3.3

Share of each branch value added into total manufacturing value added. Regions.

TABLE 3.4

Share of each industry value added into
total manufacturing value added by countries

Tobacco manufacturing increases its share and is very important in some selected countries like Cape Vere (21%) and Central African Republic (20%). Also highly concentrated is wood manufacturing, obviously dependent on natural resources, very important in Cameroon, Gabon and Central African Republic.

Once against is apparent that branches with good export prospects have a relatively low share of MVA - the confined share of the leather, footwear, wood, furniture and clothing branches in Africa MVA declined from 10.0 per cent in 1990 to 9.6 per cent in 1995. Leather, footwear and wood products have defined during the period and growth in furniture production has been very low.

The share of textile has remained vertically constant but this conceals large in the country difference. There have been sharp declined in Algeria, Sudan, Nigeria, Cameroon, Madagascar, Kenya, Zambia and Zimbabwe balanced by significant increases in Egypt, Morocco, Tunisia, Somalia, Tanzania and Botswana, see table 3.4.

Tobacco and other non-metallic minerals are the sectors growing faster, though the later is growing strongly in some places and contracting in others. Wearing apparel is also increasing rapidly, but not so much in value added terms (Table 3.2), which may suggest predomination of assembling activities in this sector.

III.2) PRODUCTIVITY EMPLOYMENT GROSS MARGINS AND INVESTMENT

The employment share of the food manufacturing textile and clothing branches expanded during 1990-95. It rose from 45.77 per cent of total manufacturing employment in Africa in 1990 to 50.85 per cent in 1995 (Table 3.5)

Table 3.5

Share of each branch employment into total manufacturing employment.Regions

As we have seen food manufacturing and textile have been stagnant - the former growing at an annual average rate of less than 0.5 per cent per annum and the later recording negative output growth during 1990-95. On the other hand the rapidly growing branches - tobacco, wearing apparel and building materials exhibited diverse trend. Employment grew rapidly in the clothing branch and its share of total manufacturing employment in Africa rose from 8 to 11 per cent during 1990-95. Employment share of the tobacco sector declined there was no significant above average growth in building material. Employment growth thus rankness concentrated mainly in the declining industries in Africa.

TABLE 3.6

Labour Productivity Indices of
Agro Related Industries 1995

	Africa	North	West	Central	East	South	
300	93.4	101.0	92.1	93.7	87.3		80.6
311-12	96.0	110.8	79.8	86.2	80.9		112.0
313	101.3	166.5	75.5	103.4	86.8		84.9
314	142.8	130.4	109.6	89.7	100.4		
321	98.1	153.2	73.6	79.5	84.2		77.2
322	80.2	76.8	129.2	99.1	128.5	37.1	
323	87.5	79.1	94.1	64.7	68.3	112.9	
324	84.5	72.5	97.0	60.3	64.3	81.7	
331	94.3	92.1	117.3	49.0	67.6	84.6	
332	87.9	75.5	130.2	79.0	77.8	81.1	
369	107.2	93.1	88.4	153.7	81.9		87.6

1. Measured as change in value added over labour employed during 1990-95 in constant 1990 US $

Source UNIDO

Table 3.6 presents estimates of labour productivity indices for Africa and the four region for the agro related industries. While the overall picture is glossy there are indication of sustained productivity growth in the North in food manufacturing, beverages and textiles - there is a major decline in productivity in the wearing apparel sector of the North which is a come of service concern. In the West productivity has grown significantly in wearing apparel, furniture and wood product branches. Productivity has also grown in the clothing branch of the Eastern region and in the South food manufacturing and leather products have exhibited significant productivity growth. In general there are very wide variations in productivity growth

across branches and across countries but it is probably reasonable to claim that branches of export interest have not in general experienced positive productivity growth and in general there has been a significant decline in terms of productivity as far as the major agro related industries are concerned. The only exception is tobacco - which has experienced significant productivity in the northern and western region and has declined only in Central Africa. But this has mainly been due to a stagnate of employment growth.

Table 3.7 present data on productivity growth on a country basis. Here countries with significant productivity growth during 1990-95 are as follows.

1. Food Manufacturing - Algeria, Morocco, Ghana, Senegal, Togo, Botswana and Zimbabwe.

2. Beverages - Algeria, Egypt, Tunisia, Benin, Ghana, Senegal, Togo, Seychelles, Uganda, Lesotho and Swaziland.

3. Tobacco - Algeria, Egypt, Sudan, Tunisia, Cape Verd, Ghana, Mauritius, Seychelles.

4. Textiles - Egypt, Tunisia, Benin, Uganda, Botswana, Lesotho.

5. Clothing - Benin, Ghana, Senegal, Mauritius, Seychelles, Botswana and Lesotho.

6. Leather - Egypt, Burkina Foso, Cote d'Ivoire, Ghana, Uganda, Botswana, Lesotho.

7. Footwear - Egypt, Cameroon, Ghana, Seychelles, CAR, Congo, Botswana, Lesotho.

8. Wood Products - Tunisia, Cameroon, Ghana, Botswana

9. Furniture - Benin, Cote d'Ivoire, Ganbia, Ghana, Senegal, Mauritius, Rewanda, Lesotho, Tanzania.

10. Building material - Tunisia, Benin, Ghana, Morocco, Rawanda, Lesotho.

Table 3.7

Index of labour productivity in 1995 (1990=100)

This list shows that productivity growth has remaind concentrated in a relatively small number of countries - Egypt, Tunisia, Benin, Ghana, Senegal, Mauritius, Seychelles, Botswana, and Lesotho. The three SSA economics, generally regarded as having great promise - Kenya, Nigeria and Zimbabwe are conopicuous by their absence in the list. The performance of Cote d'Ivoire, Cameroon and Morocco is also disappointing. On the other hand the performance of Benin, Lesotho, Senegal and Seychelles has been good. Sectoraly productivity growth has been concentrated in tobacco, beverages, wood products and non-metallic minerals. With the exception of wood products non of there are categories in which Africa is likely to have a comparative cost advantage in International market.

Table 3.8 presents employment elasticities for the agro related industries. In the manufacturing sector as a whole employment elasticities are high but employment elasticities for most agro related branches are lower than that for the

TABLE 3.8

Employed Elasticities : Agro Related Industries 1990-95

manufacturing sector as a whole. Exceptionally high employment elasticities are estimated for wearing apparel, wood products and furniture - highly labour intensive branches (as shown in table 3.3). Employment elasticities are negative for the tobacco branch and for building material (where employment has fallen despite out put growth) and low for beverages, the negative estimate for leather products reflects the fall in output. The low value of the employment elasticities co-efficient in this branch shows that employment has contracted by much less than output - hence leather products is a labour intensive branch. The relatively low employment elasticity estimate for footwear is also explained mainly by the decline in output growth in as many as four of the five African regions. In every region except Central Africa, output in the footwear branch contracted by more than employment. Overall the employment generating potential of the agro related branches in Africa remains to be fully developed.

Gross fixed capital formation estimates are available for only 18 countries. The extremely high growth estimates for countries such as Zambia and Tanzania reflect the very low level of gross investment in 1990. Nevertheless it is encouraging that gross investment has increased throughout Southern Africa. Three North African countries (with the exception of Egypt) record growth although Morocco is low. In the other regions the picture is glomy particularly for Cameroon, Nigeria and Senegal.

Investment growth has been strongest in the food manufacturing branch - with gross fixed investment rising in 11 of the 18 countries - and in building materials where 10 countries recorded substantial investment growth. In the North African countries investment also grew in the leather products and footwear branches but there was a significant fall in both textiles and wearing apparel. Investment in these branches appears to have fallen in every region except Southern Africa. In Southern African countries investment in the leather and footwear branches has also increased. Investment in wood products and furniture has tended to decline in most countries.

The share of the agro related branches in gross fixed manufacturing capital formation has fallen from 58.3 per cent in 1990 to 54.6 per cent in 1995 with major declines in textile, wearing apparel, leather, footwear and wood product. Investment has remained stable in food manufacturing and has increased significantly in beverages and tobacco. Increases in investment in the building material branch has remained concentrated in North Africa.

Some aspects of the financial structure of the agro related branches for the entire sample of the 38 African countries are summarized in table 111.11. Gross margins have risen by all three measures although modestly. There is decor evidence of a decline in wages share of value added. (The (value added - wages)/wages ratio has risen by 7.5 per cent during 1990-95). This may reflect a substation of capital for labour and or a fall in real wages. There is no indication of rising industrial cost and during the period the value added to gross output ratio increased marginally. Decline in productivity has thus not been caused by a increased costs of production on the basis of the aggregate evidence presented in table 3.11.

Beverage and tobacco are the most capital intensive branches and have the highest gross margin ratios. During 1990-95 gross margin rose significantly for these branches as well as for textile

TABLE 3.9

Index of gross capital formation in 1995. (1990=100)

Table 3.10

Gross fixed capital formation.

Shares of each branch into total manufacturing.

Table 3.11

Branch : Africa 1990-95

	Value added-wages		Value added-wages		Value added/output	
	1990	1995	1990	1995	1990	1995
Total Manuf.	67.3	68.9	206.4	221.7	34.7	35.0
Food	60.7	65.3	154.9	188.4	23.7	25.5
Beverages	83.9	84.2	523.5	534.0	61.2	60.8
Tobacco	79.5	84.7	390.1	556.2	50.2	41.4
Textile	57.3	72.4	134.2	263.3	35.6	38.4
Wearing App.	48.2	43.1	93.3	75.8	34.0	32.8
Leather	64.1	61.8	178.8	162.2	39.6	38.7
Footware	59.2	55.4	147.2	124.3	42.1	37.8
Wood	55.4	55.8	124.5	126.2	39.0	39.7
Furniture	60.4	60.5	153.8	153.1	39.5	39.5
Bldg. Material	70.4	67.1	237.9	204.0	46.6	42.8

Source UNIDO Data base

and food manufacturing. Gross margin ratios are lowest for clothing, wood products, footwear and furniture, gross margins declined for the leather products branch and for building materials. In these branches the share of wages in value added is relatively high reflecting their greater labour intensity.

In general there is no evidence of an overall improvement in the position of the agro related industries during the 1990-95 period. While their share in output and employment has increased, their share in investment has fallen. Growth in output and labour productivity has been low and the most labour intensive branches - clothing, footwear, leather products, wood products have not done well. This does not anger well for Africa's export prospects - a quarter to which we turn in the section III.4.

III.3 AGRICULTURAL MACHINERY AND FERTILIZER

Data on these branches available at UNIDO is extremely scarce available upto only 1991. Agricultural machinery production and value added estimations exist for only four countries - Egypt, Nigeria, Senegal and Zambia with Egypt alone accounting for about 70 per cent of gross output. Of the branch fertilizer and pesticide data are available for only Egypt, Mauritius, Tunisia, Zambia and Zimbabwe. No figures are reported even for Morocco which is a large producer of phosphatic fertilizers. Estimates for Tunisia are also clearly not accurate. On the basis of this data no generalization on the structure and performance of these branches is possible.

III.4 NET EXPORTS OF AGRO RELATED INDUSTRY

This section seeks to estimates Africa's competitive advantage in agro related industries. The approach followed in estimating revealed comparative advantage (RCA) indices and factor intensities is that developed by Forstner and Balance (1990) and first presented in UNIDO (1986). The major limitations of the approach as adopted in this paper are:

a) RCA should ideally be calculated for products (ISIC six digit level). Data availability made this impossible and estimates presented are of three digit level only.

b) Estimates presented relate to inter industry trade only. Intra industry trade flows are not accounted for.

c) Since the RCA concept reflects the conceptual framework of the hecksher - ohlin model, trade patterns so identified fail to take account of factors such as scale economies, product diffrentiation and market concentration. The so called new theory of international trade - stresses the importance of these factors in determining trade pattern (Kingman 1983, Leumor 1984).

The Hecksher - Ohlin approach distinguishes between countries in terms of differences in relative factor abundance and predicts that countries will produce and export commodities the production of which intensively utilizes the relatively abundant factor. Using data from 38 African Table 3.12 summarizes the evidence on dynamic comparative advantage in Africa during the period 1975-1994. The RCA index is defined as

$$RCAij = (Xij - Mij) / (Ti) (Tiw/T.w)$$

Where RCA is the revealed comparative advantage index of sector i in the country j.

X = exports M = imports
. = total manufacturing exports
W = World
T = (X+M)/2

Net exports of a particular branch of a country are thus "normalised" both with respect to the value of the country's trade in manufactures and the weight of the branch in world trade in manufacture.

TABLE 3.12

AGRO RELATED BRANCH RCA INDEX 1976 - 1994

(PER CENT) AFRICA EXCEPT S. AFRICA

		1970	1986	1994
Food Manufacturing (311-12)	37.1	13.7	-0.8	
Beverages (313)		-22.7	-33.4	-49.5
Tobacco (314)		-61.8	-64.9	-72.4
Textiles (321)		-59.5	-55.3	-66.6
Wearing Apparel (322)		-20.6	25.0	72.1
Leather products (323)		-8.4	6.1	22.9
Footware (324)		-26.4	-11.2	5.3
Wood products (331)		-26.8	-32.8	-23.8
Furniture (332)		-36.7	-32.9	-23.0
Other Chemicals (352) (ferilizer proxy)		-81.5	-100.9	-88.9
Other non metallic (369) minerals	-167.5	-199.9	-98.4	
Total manufacturing		-57.7	-45.1	-43.6

Source UNIDO Data base

The overall picture looks glomy. In 1976 the only agriculture related branch with a positive value of the revealed comparative advantage index was food manufacturing. Leather products and wearing apparel were marginal cases. By 1986 both leather products and wearing apparel had improved their RCA indices considerably but food manufacturing had declined - its RCA value falling from 37 per cent to 13.7 per cent. By 1994 the food manufacturing RCA value had turned negative. The international competitiveness of wearing apparel and leather products both improved significantly - RCA values tripling in each case. A small positive value for the footwear sector RCA value was also apparent in 1994. The position of textile and beverages continued to deteriorate but some encouragement can be taken from the fact that the RCA index for the entire manufacturing sector rise from - 57.7 per cent in 1976 to 43.6 per cent (i.e. improved by about a quarter of its original value). African industry while still highly uncompetitive by international standard is less so now than it was in the 1970s. Lets be thankful for small merceis.

Moreover the aggregate picture as defected in table 3.12 conceals many variations. Table 3.13

presents a relatively desegregated picture. It is evident that :

a) The branches in which most African countries have position comparative cost advantages are food manufacturing (more than half the countries for which data was available bad position RCA values in this branch), leather products and footwear and wood products and furniture. By 1994 almost half the countries in the sample had positive RCA values for either the leather and footwear or the wood and furniture branch.

b) International competitiveness in leather wood and furniture industries had increased during 1976 - 1994 - maximum RCA had risen for several countries and the number of countries with position RCA's had risen significantly in leather, footwear and wood products branches. Maximum RCA values had increased moderately for the food manufacturing branch but the number of countries with positive RCA values had fallen.

c) The declining branches in terms of international competitiveness are beverages, tobacco and textiles. RCA values have fallen drastically in each industry and in beverages and tobacco there had also been a significant fall in the number of countries with positive RCA values. By 1994 only Algeria, Nambia, Tunisia and Zambia had positive RCA values and the value of RCA was less than ten per cent for the first three countries. The decline in tobacco was even sharper. In textile the number of countries with positive RCA values had increased consistently throughout the period but there were in 1994 still only five African countries which had positive RCA values in this branch - Cote d'Ivore, Egypt, Madagascar, Tanzania and Uganda - and except for Egypt - the RCA value is less than 15 per cent for every country in the group. The maximum RCA value had declined sharply in textile for 1976 - 1994.

d) Maximum RCA values had risen sharply for wearing apparel specially during 1986 - 1990 but only seven countries - Egypt, Madgascar, Mauritius, Morocco, Nambia, Tunisia and Zambia had positive RCA values in this branch. The performance of the African countries in both clothing and footwear is on the whole disappointing. Very few countries have developed competitiveness and in the case of footwear maximum RCA values have actually fallen showing a decline in competitiveness during both 1976-80 and 1980-94.

Transition metrics are presented for the food manufacturing, leather and footwear, wood and furniture and textile and clothing industries. They try to estimate upward and downward movements of exporting countries over 1986 - 1994. Thus for example the food manufacturing matrix shows that Guinea - Bisean which had a negative RCA in 1986 moved up considerably and by 1994 the value of its RCA in food manufacturing exceeded 100 per cent. As against this equatorial turea moved down - it had an RCA of over 100 per cent in 1986 but this had become negative by 1994.

Upward movements include movements from lower to higher cells as well as significant improvement in RCA while remaining in the same cell in both years. For food manufacturing such positive movements total 11 out of 29 transitions recorded during 1986 - 94. Negative transitions totalled 12 - i.e 12 countries moved from a higher to a lower RCA value while remaining in the same category. The position of six countries remained broadly unchanged. We conclude that thee is no tendering towards a general upgrading of competitiveness by the majority of African countries in the food manufacturing branch during 1980 -1994.

In leather and footwear positive transition numbered 18 out of a total of 26 cases while negative transitions were 6. There is thus clear evidence that more than two thirds of the countries increased their international competitiveness in the leather and footwear branches during 1986 - 94. In wood and furniture positive

TABLE 3.13

RANGE OF POSITION RCAs AFRICAN 1976 - 1990

TABLE 3.14

FOOD MANUFACTURING TRANSITION MATRIX 1986 - 1994

transition heavily outnumber negative ones 15 as against 5. This once again indicates a general improvement of international competitiveness. In textiles and wearing apparel there are only 14 cases - but of these only four countries experienced a negative transition and ten moved up and / or significantly improved their RCA value while remaining in the same category. It is clear that the major gains were in the apparel rather than in the textile sub-sector and these are confined to a relating small number of countries.

It is thus evident that there are a number of branches in which many African countries have international comparative advantage (RCAs > 100 per cent) and in which their competitiveness over time is improving. The question is whether these are the "right" product groups in which to specialise in terms of their potential for growth particularly in terms of their income elasticity of demand.

Fostner and Ballance (1990) have classified product groups into three broad categories, ricardian H-O and product cycle goods. Manufacturer based essentially upon the processing of natural resources - agricultural or mineral - are disrobed, as "ricardian". Resource endorsement pattern change over time and the international competitiveness of ricardian goods is influenced by this change. Resource endorsements change by new dis coverers, changes in production technology, development of transparlation system and development of non resource based substitutes for ricardian goods. Resource richness is often a "area: (James 1996). in that resource rich countries fail to develops the exports of HO good having a relatively standard production technology intensive in the use of either labour (physical or human) or capital. Product cycle goods utilise rapidly evolving specific technologies that are not universally available.

TABLE 3.15

Leather and Footware : Transition Matrix 1980-94

TABLE 3.16

Wood Products and Furniture Transition Matrix 1986-1994

TABLE 3.17

Textile and Wearing Apparel Transition Matrix 1980-1994

These goods are intensive in the use of skilled labour. As specific technology standardise product cycle goods are transformed into H-O goods. This is the theoretical expectation the actual empirical observation of which is the exception rather than the rule.

Table 3.19 presents a classification of the products of the food manufacturing, textile and wearing apparel, leather and footwear and wood and furniture industries and agricultural input branches according to this classification. As expected the product of the food product industry are almost entirely resource based (ricardian). Non synthetic textile and clothing, leather and footwear and wood products are classified as H-O (labour intensive). Fertilizer and synthetic textile and clothing products are assigned to the H-O capital intensive category and agricultural machinery is defined as a product cycle good. These data are drawn from a large sample of developing and developed countries (46) and represent average aggregate technology use patterns. It may be argued that production function in specific product group areas may differ significantly in Africa relative to that in even other developing countries. In fact as shows the correlation of industry

TABLE 3.18

Correlation of factor intensity ranking, 1975-94

TABLE 3.19

BROAD CLASSES OF AGRO RELATED GOODS OF INTEREST TO AFRICA

Class of goods	SITC code	Description of goods
Resource-based	011	Meat, fresh, chilled or frozen
	012	Meat, dried, salted or smoked, whether or not in airtight containers.
	013	Meat in airtight containers, n.e.s.,and meat preparations, whether are not in airtight containers.
	022	Milk and cream.
	023	Butter.
	024	Cheese and curd.
	025	Eggs
	032	Fish, in airtight containers, n.e.s., and fish preparation whether or not in airtight containers (including crustacea and molluscs).
	047	Meal of flour of cereals, except meal and flour of wheat or of meslin.
	048	Cereal preparations and preparations of flour and starch of fruits and vegetables.
	052	Dried fruit (including artificially dehydrated).
	053	Fruit, preserved and fruit preparation.
	055	Vegetables, roots and tubers, preserved or prepared n.e.s., whether or not in airtight containers.
	061	Sugar and honey
	062	Sugar confectionery and other sugar preparations (except chocolate confectionery)
	0713	Coffee extracts, essences, concentrates and similar preparations of coffee
	0722	Cocoa power, unsweetened
	0723	Cocoa butter and cocoa paste
	073	Chocolate and other food preparations containing cocoa or chocolate, n.e.s.
	074	Tea and mate
	081	Feeding-stuff for animals (not including unmilled cereals).
	091	Margarine and shortening

		099	Food preparations, n.e.s
		122	Tobacco manufactures
		2219	Flour and meal of oil-seeds, oil nuts and oil kernels, non-defatted (excluding mustard flour)
		2312	Synthetic rubber and rubber substitute
		2313	Reclaimed rubber
		2314	Waste and scrap of unhardened rubber
		243	Wood, shaped or simply worked
		2626	Wool shoddy
		2627	Wool or other animal hair, carded or combed (excluding tops)
		2628	Wool tops
		2629	Waste of wool and of other animal hair, n.e.s.
		263	Cotton
		267	Waste materials from textile fabrics (including rags)
		411	Animal oils and fats
		421	Fixed vegetable oils, soft
		422	Other fixed vegetable oils
		431	Animal and vegetable oils and fats, precessed, and waxes of animal of vegetable origin
		633	Cork manufactures
Labour-Intensive	611	Leather	
		612	Manufactures of leather or of artificial or reconstituted leather, n.e.s.
		613	Fur skins, tanned or dressed (including dyed)
		621	Materials of rubber
		631	Veneers, plywood boards, "improved" or reconstituted wood and other wood, worked, n.e.s.
		632	Wood manufactures n.e.s.
		651	Textile yarn and thread less
		6516	Yarn and thread of synthetic fibre
		6517	Yarn and thread of regenerated (artificial) fibre
		652	Cotton fabrics, woven (not including narrow or special fabrics), other than cotton fabrics
		654	Tulle, lace, embroidery, ribbons, trimmings and other small wares
		655	Special textile fabrics and related products
		656	Made-up articles, wholly or chiefly of textile materials, n.e.s.

		657	Floor coverings tapestries, etc.
		662	Clay construction materials and refractory construction materials
		666	Pottery
		821	Furniture
		831	Travel goods, hand bags and similar articles
		841	Clothing (except fur clothing)
		842	Fur clothing (not including headgear) and other articles made of furskins; artificial fur and articles thereof
		851	Footwear
Capital-intensive	111		Non-alcoholic beverages, n.e.s.
		112	alcoholic beverages
		551	Essential oils, perfume and flavour materials
		561	Fertilizers and manufactured
		6517	Yarn and thread of regenerated (artificial) fibre
		892	Printed matter
Product-cycle	266		Synthetic and regenerated (artificial fibre)
		531	Synthetic organic dyestuffs, natural indigo and color lakes
		532	Dyeing tanning extracts, and synthetic tanning materials
		6516	Yarn and thread of synthetic fibre
		695	Tools for use in the hand or in machines
		697	Household equipment of base metals
		712	Agricultural machinery and implements
		715	Metalworking machinery
		717	Textile and leather machinery
		735	Ships and boats

rankings by factor intensity between Africa and developing countries is quite low (though position). This is specially true for SSA and labour intensive industries. The most obvious cause of this difference lies probability in the fact that the product mix of African exports in the branches is significantly different from that of the other developing countries (e.g. cocoa and coffee preparations do not account for so large a proportion of the export earnings for the developing country group as they do for several African countries). Most successful developing country exports have moved out of ricardian goods - which represent a declining share of developing countries net exports (Forstner and Ballance 1990 p 55) - and into labour intensive H-O goods. In this sense successful developing country exports have "created" their comparative advantage structure in international markets. This has invariably involved an upgrading of production technology to international "best practice" norms in the relevant product groups. In this process developing countries normally experience a change in factor endorsements. The data presented by Forstnor and Ballance, shows that over the period 1970 to 1985 the share of the newly industrialising economies defined by them to include Argentina, Brazil, Hong Kong, Mexico, Republic of Korea and Singapore in world physical capital rose from 3.68 per cent to 6.46 per cent while their share of skilled labour rose from 8.5 per cent to 10.9 per cent in this period. On the other hand the NIEs share of unskilled labour fall from 7.1 per cent to 5.7 per cent during this period (1990 78-79). Thus changes in factor endorsements are required if comparative advantages are to be exploited. Every country starts of with a relative abundance of natural resources and unskilled labour, it is investment in physical and human capital which determines its export success.

Table 3.20 presents estimates of the factor intensity of agro related industrial branches in relation to other industries for the African countries for 1994. Assuming unskilled labour to be the abundant factor in the African countries. (Measuring footnote factor abundance require date on net capital stock and number of professional workers which is not available for a sizeable number of countries in Africa. For Egypt where such data is available it is seen that in 1985 unskilled labour was much more abundant than any other factor (Forstner and Ballance 77-79) it is clear the Africa's export comparative advantage should be in:

a) Furniture
b) Leather
c) Clothing
d) Glass (recall that we included non metallic minerals among the category of agro related industries)
e) Textile
f) Footwear
g) Wood products.

Food manufacturing ranks 13th out of 26 in the use of unskilled labour and also has a middling rank (14th and 15th) in terms of use of physical and human capital. This probably reflects a wide divergence of factor intensity pattern within the food manufacturing branch and there are likely to be at least some product

groups within this branch which are labour intensive. Beverages and tobacco are unabigously capital intensive activate ranking second and fourth in terms of physical capital intensity. This is a strong argument against seeking export markets in these product groups although fruit juices need further investigation.

Table 3.20 broadly confirms the trends shown in table 3.13. Labour intensive branches have positive RCA values and these are the branches in which most African countries have improved their international competitive position during 1986-94 (as shown in the transition metrics). The maximum RCA value has gone up from 18.1 per cent in 1986 to 109.8 in 1994, furniture being the most labour intensive branch according to table 3.20. The maximum RCA value for leather products the second ranking labour intensive branch rose from 490 per cent to 585 per cent over this period. As against this maximum RCA value for both wearing apparel and textiles declined (though both remained over 100 per cent)

Moreover the number of countries with positive RCA values in 1994 were only five in the case of textiles and seven in the case of clothing. Clearly factor intensities are not the only determinants of RCA patterns. Ability to export also depends on the market structural and demand characteristics identified by the new trade theory.

There is a strong need to desegregate data within the food manufacturing branch to identify relatively labour intensive product groups. It must be emphasize that demand factors are as important as supply. It price and income elasticity of demand are low, market barriers are high reflecting strong industrial concentration, product deffentition is pronounced comparative cost advantage can not be translated into rising export earnings. African countries should specialise in those product groups in which they have comparative lost advantage (in the sense that these products intensively use the factors that are relatively abundant in African countries) and in which elasticities are high, and product diffentions and industrial concentration is relatively low. Identifying such product groups require a major study which is beyond scope of this paper but the urgency of which is self evident.

Table 3.20

Factor Intensities of Manufacturing Branch

Africa 1994 Ranking

	Intensity in the use a		
	Physical Capital (b)	Human Capital (c)	Labour (d)
Food products	14	15	13
Beverages	2	17	25
Tobbaco	4	23	23
Textiles	22	22	5
Wearing Apparel	26	16	3
Leather products	24	26	2
Footware	19	24	6
Wood products	20	21	6
Furniture	25	25	1
Paper	11	7	17
Krinting	18	8	9
Industrial chess	5	3	22
Over chemicals	12	11	14
Pct. ref	1	5	26
Rubbor	8	14	18
Plastic	15	19	11
Glass	23	20	4
Non Met. Min.	9	13	15
Iron and Steel	6	4	21
Non ferous Metal	3	1	24
Metal prod	17	10	12
Non elec. mach.	21	12	8
Electric Machinery	7	6	20
Transport	16	18	10
S - eq	13	2	19
Others	10	9	16

Note: a) Averages were taken over a sample of 44 African countries. Industries were ranked by factor intensity byfor each factor for each country. The group rank is grown by $r = I/n$

Where i = industry, j = country, n = number of countries

b) Physical capital intensity is given by nex wage value add per employes.

c) Human capital intensity is measured by wage per employee.

d) Labour intensity is measured by the reaprocal of total value added per employee.

Justification for these measures is given in Forstner and Ballance (1990 p.95 and note p.112). Source UNIDO.

Evidence reviewed in various parts of this section has been of a general nature and throughout we have seen wide vocations in country and branch experience. The next section details the pattern of development of the major agro related branches in Africa.

IV BRANCH PROFILES

IV.1 FOOD MANUFACTURING

CHARACTERISTICS

Food manufacturing is usually the largest industrial branch is most African countries. Its main subdivisions include:

a) Grain milling
b) Meat and Fish processing
c) Fruit and Vegetable processing
d) Animal feed manufacturing
e) Vegetable oil milling
f) The packaging materials industry which should also be considered as an important associated industry.

a) Grain milling

Grain milling is widespread throughout the continent but is more important in the rice and wheat producing countries. Relatively low proportions of coarse grain - maize, millet, sorghum, cassava - are processed although the manufacture of maize products is increasing. Egypt produces about 5 million tones of wheat and a similar quantity of maize on an annual basis.

Egypt is self sufficient in rice but imports large quantities of wheat and maize. Rice milling capacity has expanded since the early 1990s and modernisation of equipment (largely imported) has also taken place. Water scarcity is a major constraint on grain processing in Egypt. Milling capacity in the wheat sector has not kept pace with increase in population and equipment employed is often obselets. Egypt is one of the world's largest flour importers and there is an urgent need to upgrade production technology.

In Southern Africa the scale and complerity of grain milling technology varies widely. Large mills predominate in the case of maize meal and wheat flour but hammer mills and dehuskers are used on a decentralised basis in many rural areas. Wheat production is very restricted and the milling of course crops is very little development (with the exception of Zimbabwe). It is therefore probable that there is significant underutilisation of capacity in the grain milling sub sector in many Southern Africa countries. Grain milling product range has however been expanding in Botswana and Zimbabwe but in Botswana this expansion is import based. The

development of the grain milling industry in Zambia has been affected by the nationalisation of the sector in 1986 and a subsequent virtually complete suspension of modernisation and re equipment plans.

In West African wheat flour milling is very under developed because of low levels of wheat production. Thus despite the very rapid growth of demand for wheat in Liberia there is only one milling enterprise entirely dependent on imported source. In Nigeria the grain milling industry has been affected by frequent changes in government grain import policy - in the 1980s imports of wheat, rice, maize and barley were banned leading to an increase in domestic sourcing by the maize mills but also to growth in utilisation of capacity. There are about 30 large wheat - cum-maize mills in Nigeria - many have been induced to switch over to maize milling in response to the wheat import bans and the generally greater domestic availability of maize. This re switching has led to an increase in capital investment by the milling sector. Acceptability of maize as a wheat substitute has increased very slowly. There has been a fall in demand for maize based products leading to substantial job losses in the Nigerian milling and bakery industries. Profitability of mills which switched to maize in response to the wheat bans have declined because of the widespread smuggling of wheat into the Nigerian markets. In Mauritania cereal processing has traditionally been largely household based artisanal activity with hand powered small flour mills serving both rural and urban areas. A large flour mill was established in the late 1980s as a joint venture company. Flour processing has been discontinued however and the mill concentrates on the production of pasta from imported flour. Local production of wheat is low and the bakery industry also relies on wheat imports.

In East Africa the main grains produced are maize, wheat, rice, sorghum, and milled. Maize is the main staple crop, accounting for example for 50 per cent of coloric intake in Kenya which has since 1993 been self sufficient in maize. Demand for wheat has in recent year grown more rapidly than maize and demand for the other traditional crops - milled and sorghun - have been declining.

TABLE 4.1

PRODUCTION AND CONSUMPTION OF MAJOR STAPLES, 1988/89 - 1993/94: KENYA

In Kenya maize milling has remained the largest industrial activity under the grains and grain products subsector. The product of maize milling is sifted maize flour and the by products are maize bran (used in animal feed), maize germ (used in oil extraction), and semolina used in breakfast foods and the brewery industry.

TABLE 4.2

PRODUCTION OF GRAIN MILLING PRODUCTS, 1990-94: KENYA

Product			1990	1991	1992	1993	1994	Index 1994 (1990=100)
Maize meal	241,411	227,350	119,614	168,123	233,185	97		
Wheat flour	171,870	185,545	222,457	143,068	191,435	111		
Wheat offal	31,408	45,156	51,900	38,124	49,990	159		
Maize germ	28,335	35,047	15,110	19,643	25,535	90		
Maize offal and bran	22,537	—	11,501	15,603	16,716	74		
Rice		20,004	15,207	18,206	13,609	10,999	65	

Source: Republic of Kenya, Central Bureau of Statistics.

Almost all rural markets in Kenya have milling facilities commonly referred to as "Posho Mills", which literally means flour mills. Most of them are operated by local entrepreneurs and self-help groups or cooperative societies. There are, however, major maize millers such as Jambo Flour Millers, Nairobi Flour Mills, Unga Maize Millers, Bakery Millers, the National Milling Corporation, Mombasa Maize Millers and Kirinyaga Flour Mills. These enterprises are located in the urban centers of the country.

Between 1963 and 1980, maize production increased at a growth rate of 2.5 per cent per annum. From 1980 to 1990, the rate picked up to reach 5.9 per cent per annum. However, the above trend was reversed in the 1990s during which production has recorded a negative growth rate of nearly 9.0 per cent per annum. This reduction in output is attributed to unfavourable weather, a decline in the use of fertilizer due to high prices and to some extent, the low quality of seeds.

Capacity utilization of the mills rose in 1994 when the maize market was liberalized and the production of maize flour increased to 232.2 thousand tones form 120.0 thousand tones in 1992.

Despite the effort government has made in such areas as providing credit support for increased production, the country remains a net importer of grain. Demand from the bakery industry alone is six million bags of wheat flour and only two million bags are produced locally. The rest of the wheat requirement is met from imports which include all the durum wheat required for the manufacture of pasta products such as macaroni and spaghetti. Durum wheat is imported from Canada and the United States.

Despite a more than 40 per cent rise in the production of wheat in 1994 (from 76.9 thousand tones to 107.8 thousand tones), imports rose over 12.3 per cent to a record 353.1 thousand tones.

Demand for wheat flour is distributed as follows: home=baking 64 per cent; bread making 32 per cent; biscuits three per cent; and pasta products and baby food one per cent. Between 1991 and 1993, the level of capacity utilization of bakery enterprises was an average of 63 per cent. In 1994, bakery enterprises have increased production. The main product of wheat milling is sifted wheat flour. By-products include bran and germ used in animal feed.

In general it is apparent that there is a need for rapid expansion of grain milling production throughout Africa - specially in the Southern countries. Grain milling industries are domestic demand oriented and ought to be domestically sourced. This is not often the case specially with regard to the wheat processing units which depend on imported grain. Due to the heavy foreign exchange cost associated with wheat and rice procurement an effort should be made to increase domestic wheat production where feasible (specially in North Africa). More important in the need to increase the processing of coarse crops - maige, millet, sorghum and cassava. This has been demand constrained as urban consumers have shown increased preference for wheat and rice. There is a need for innovative product research and for a marketing effort for increasing the local acceptability of coarse grain based products in urban area. Increased coarse grain processing strengthens backward production limpages with agriculture and will generate significant investment, income and employment linkages as well.

b) MEAT PROCESSING

The meat processing industry is particularly important in Southern Africa, where it is dominated by the processing of beef, perk and poultry. Beef processing is well developed in Botswana which succeeds in fulfilling its European orders - the Botswana Meat Commission (BMC) is one

of the most efficient public sector organisation in Africa. In its 30 years existence it has made a profit and been able to distribute dividends for 25 years - despite severe draughts in the 1970s and 1980s. Processing facilities have been regularly upgraded and stringent quality controls applied to ensure continued preferential access to European markets.

The BMC has expanded the capacity of its facilities in order to take advantage of its growing market. Lobate remained the location of the only export abattoir in the country until 1983, when a small regional facility was built 400 miles to the north, in Maun. Nine years later, a third and larger abattoir than the latter came on line in Francistown at a cost of 54 million Paula - half raised from local commercial banks as a loan, and half from the BMC's own development reserve.

The number of animals processed by the BMC - namely, the cattle 'throughput' - increased from about 150,000 head in 1966 to the peak of 239,293 in 1984, while net sales grew to over 222 million Paula in 1994, albeit punctuated by the effects of drought. The advantage of having such high-garde abattoirs in a livestock-based economy means that all producers are assured of a safe and reliable market, as well as a stable price for their animals, not least since the BMC is mandated to buy whatever becomes available. The implementation of such a strategy means that producers do not suffer as badly as their counterparts in other semi-arid countries.

The Botswana Meat Commission, unlike similar parastatal institution in Africa, has remained sensitive to the needs of producers. The prices paid for their cattle have been consistently adjusted to keep pace with trends in the international market, notably the European Community. The BMC producer price increased from a base of 100 in 1960 to 863 in 1983, and has continued to rise during the 1990s, albeit at a lower pace.

The meat industry is subsidised in Botswana and very enerous taxation deductions and allowances are permitted.

Pork is the principal input of meat processing firms in Zambia. Pig products, including processed items such as sausages, polonies, cured hams and bacon. Statistics on pig production are incomplete, being largely confined to the traditional sector.

Large white and Landrace are the only breeds of significance in the commercial sector, which is characterised by low levels of efficiency. The average number of pigs slaughtered per sow each year is estimated al 11, and the overall feed conversion (defined as the total feed consumed divided by total cold dressed weight) is 7.24. Equally, the feed conversion ratio for slaughtered pigs is put at four to one. The principal reasons for this poor performance are inadequate

management standards, and feed that is low quality and in irregular supply.

Figure 4.1 illustrates the major linkages of the Zambian meas processing branch.

Figure 4.1: Zambia - linkages of the meat processing branch

Source: Report of the UNIDO field mission to Zambia in May-June 1988, The regeneration of Zambian manufacturing industry with emphasis on agro-based industries, PPD/R.19, 1988, P.21

The pork products branch in Zambia suffers from a shortage of slaughtering pigs and, to a laser extant, inadequate spare partsfor essential equipment. These two problems explain the low capacity utilization reported in some firms. In general meat is sold without difficulty, but new storage space and equipment, and packaging facilities will be needed once pig production

increases significantly.

In Namibia the cattle her consists annually of between 1.8 to 3 million animals depending on rainfall. Agriculture accounts for about 10 per cent of GDP and commercial cattle breeding for 80 per cent of agricultural GDP . Commercial cattle are kept free from foot and mouth deceases and are exported to the Eu and South Africa. Namibia has a quota of an annual average 12,000 tones of beef exports to the Eu. There are twenty abiators but only two operate to Eu standards. A large proportion of the meat is supplied by communal ranchers. Two modern meat processing companies cater for the domestic market while the Meat Corporation of Namibia (Meat Co) has the right to export beef to the Eu. Its slaughtering capacity in 1995 was 130,000 units of cattle and 100,000 sheep per annum. It exports 90-95 per cent of its output.

Since independence the meat processing industry has attracted relatively high levels of investment and modernisation has been underway in the major firms. The upgrading is however almost exclusively concentrated in the export oriented firms and the domestic segment is dominated by small scale units supplied by commercial breeders and capable of only minimal levels of processing. The meat industry in Namibia has developed a dualistic production and technological structure.

The dairy industry is most developed in Zimbabwe where the parastatal. Dairiboard produces a range of milk products including yogurt, aried, milk, butter and cheese. The meat industry is plagued with a series of structural problems and Zimbabwe has found it to be increasingly difficult to meet quality requirements and fill its quota to Eu.

In Uganda livestock contribute about 30 per cent of GDP - in the early 1990s the herd was estimated at about 5 million cattle, 3.5 million goats and about 1 million sheep. The only major meat processing plant is in Kampala and plans to develop a second plant have apparently been shelved due to problems of general insecurity and cattle rustling which are likely to seriously disrupt supplies. Commercial ranching is being promoted in Central and Western Uganda. Insecurity has led to decline in the size of the herd. There are however excellent prospects for both mined farming and exclusive livestock trading stations in Uganda.

The Ethiopian meat industry is slowly recovering from a very severe crises created by the political disturbances of the early 1990s. The five major meat processing plants all publicly owned are being restructured. Meat exports are reported to have fallen to less than 10 per cent of the 1980s level. Given the size of the herd there is significant scope for both export expansion and in domesture sales growth.

There is potential for expanded meat processing in Mauritania where meat exports have declined since the mid 1980s and mostly takes the form of "on the hoof" trading by normals (particularly during the seasonal transference and other informed sector operations). The modernisation of abiators can significantly raise output and better integrate the livestock with the domestic sector. The profitability of the meat processing industry depends overall upon stablising meat supplies at a high level - this is difficult in draught years and is also restricted because of low purchase prices of public sector cooperations.

In Egypt self raising ('bittelo') projects launched by the government in 1985 and 1994 have had considerabal success and meat imports have declined. This may also be due to the fact that the meat processing industry - including fresh foods, was operating at only about 40 per cent of capacity in 1994. There has in recent years been a significant increase in the preference for frozen meat and a rapid modernisation of meat processing and preservation facilities is required to meet this demand.

c) ***Fish***

Fishing is an important activity of several African countries. The riverine industry is common throughout the continent. States along the South East Atlantic shores have concluded several deep sea fishing agreements with the Eu since the 1980s. Namibia is one of these states. It declared an Exclusion Economic Zone (EEZ) in 1990. Pilchard, anchory, hate and horse mackerel comprised over 90 per cent of its industrial catch but over fishing has led to serious depletion. Even so Namibia is the largest Africa fish producer and exporter and ranks among the top ten nations in the world in this respect. A UNIDO study (1993) estimated that with adherence to total allowable catch volume could increase from 673 thousand tones in 1991 to over 1.5 million tones in 2000 with commercially valuable stock growing rapidly. It is estimated that less than a third of the total catch is landed in Namibia. There are five palagic fishing companies which operate canning and oil meal factor.

The total processing capacity for the canning operations was estimated at 120,000 tones (9 million cartons) of fish over a six month season or 160,000 tones (12 million cartons) over eight months, the maximum length likely to be allowed by the fisheries authorities. The meal/oil reduction plants could process 2 million tones whole fish over 12 months. The low catches during the 1980s and the low quotas in 1990 and 1991 left most of the processing capacity for both canning and reduction of pelagic fish idle. The plants were estimated to operate at less than 10 per cent of their capacity.

White fish catches are processed by the small plants with a maximum processing capacity of

about 25,000 tones capacity utilisation is about 50 per cent. As a result of lack of preservation facilities Namibia exports over 70 per cent of its total catch and 100 per cent of its white fish, guano and deep sea oral catches.

The allocation of long-term fishing rights for 9 categories of fish was first introduced in 1994. Two thirds of the granted rights went to existing concessionaires and the rest to new applicants. The largest number of applicants was for rights to fish hake where 9 out of 38 successful applicants were new concessionaires. New Namibian companies were granted the majority of rights for tuna and line fishing. A vessel capacity based quota, mainly for white fish, was also introduced as from 1994. The total allowed catch of 771,000 tones in 1994 was more than three times the catch in 1990. Pescanova which owns a fishing feet and the hake processing factory in Luderitz, received the largest quota in hake TAC. The biggest pelagic quota went to the Gendev company which operates a fishing fleet and fish canning plants in Walvis Bay. The expectations are that by the end of the century the total fish catches will reach 1 million tones. The pessimist scenario for maximum sustainable yields is 800,000 tones.

The sales value of the combined fishing and fish processing industry for 1993 was estimated to exceed N$ 1 billion. Production at sea is estimated to contribute almost N$ 700 million. It is projected that through an increase in production, mainly in land fishing, the total figure can be doubled by the year 2000. The Ministry of Fisheries also estimated that in 1993 the fisheries industry employed a total of 11,000 people of whom 7,000 were Namibians. It is expected that the employment will rise to more that 21,000 by the end of the century.

The fisheries sector has proved to offer the brightest of all investment opportunities since independence. The greatest area of opportunity is in catching and processing white fish species, mainly the hake. The prospects for an increase in allowed hake catches and government policy geared to process 60 per cent of white fish catches, has lead of substantial investments in the processing and handling operations. In terms of actual investment and commitment. Pescanova Fishing Industry, represents the largest investor in the white fish industry since independence. Other investments were made by the existing companies in Walvis Bay to revitalize and modernize their production and infrastructure including purchases of new vessels. A large new project of N$ 120 million was announced by the Consortium Group to invest in boats and inshore facilities in 1995. In addition, Namibian and Icelandic joint venture with an estimated investment in fishing and processing of N$ 85 million is planned at Luderitz. The cold storage and handling facilities for the landed hake have been also expanded. A new company making polystyrene boxes and containers for exporting white fish was started in Walvis Bay recently.

Increasing capacity utilisation in the processing plants can significantly raise profitability in the

pelagic fish industry. The present technology is designed for high volume, low value added production. There is a need for automation and quality control. Processing facilities for horse mackerel, tuna, mussel, oyster, crab and labster should expand quality to met export demand.

Prospects for the development of inland fishing are good in Uganda - fifteen per cent of its total surface in covered by taken and rivers. Fish catches are currently estimated at about 300,000 tones. Almost 400,000 people are said to be employed in fishing, processing, marketing and transporting activities.

Donors have been interested in assisting the development of the industry, aid coming in particular from Italy, for development on Lake Kyoga, and IFAD. Experience with more modern mechanized methods of fishing on Lake Kyoga pointed to the dangers of over fishing of that lake, as well as issues of appropriate technology and employment creation which may be relevant.

With the assistance of various donors, the government embarked on a major development of the industry, through improved fishing techniques, local boat building, provision of inputs, and improved fish handling, processing and marketing. A particular development is a small fish smoking and drying plant installed in 1992 at Masse on Lake Victoria, near Jinja, with Italian assistance. Supported by three fresh fish collection and chilling points and three distribution centers, this has a capacity for the processing of 10 tones of fish a day. It is hoped to develop export outlets.

Fishing also has enormous potential in Eriteria which is endowed with abundant marine resources including shrimp and lobster beds, tuna, mackerel, snapper, barracuda, grouper, anchovy, and sardines. The country's 1,000 kilometre costal line bordering the Red Sea combined with continental shelf shores of some 52,000 square kilometers within the country's exclusive economic zone, and its pristine waters provide the capacity for producing up to 66,000 tones of fish and sea food annually. Indeed, the Eriterean Read Sea water alone consists of around 1,000 known species of fish and 220 species of coral.

There are however virtually no processing facilities in the country and production has been severely affected by the long struggle for independence. The catch was estimated at only 1,000 tones per annum is 1996. Agreements are reported to have been signed in 1994-95 with ten foreign companies for fishing in Eriteria's EEZ and this may lead to an increase in sectoral investment for processing purpose.

Fish processing is undeveloped in Kenya. Annual landing have more than doubled since 1990

but in 1994 were estimated at only about 212,000 tones. Only 11 of the 25 registered processing factors renewed their license in 1995 - the rest did not have the necessary fish processing equipment. Fish exports account for about 18 per cent of total export earnings but almost all of the exports are very lightly processed. Main constraints on the processing industry are high transportation costs, lack of storage facilities and poor boat technology.

Fishing is an important industry in West African States specially in Senegal and the Islamic Republic of Mauritania. In Mauritania the processing industry has grown in response to government initiatives relating to increase in landing requirements for caphalapods and demersal species. There has not been a significant increase in capacity utilisation rates because the governments permits the processing of lower value added pelagic species at sea and because of lax monitoring of compliance with regulation. Processing on shore is generally limited to gutting and freezing. There are few facilities for smoking, drying and salting - fish processed by these methods accounted for only 0.1 per cent by value in 1986 - let alone more complex processing procedures such as canning and fellating and none at all for the production of fish food products. If the fishing industry is to increase the value added accruing to the national economy developments along these lines are essential. This will demand a marketing strategy for both the national market, where fish is looked down upon as a food, and for exports.

The growth and development of the fish processing industry must also overcome the constraints of location - the main fishing port, Nouadhibou, is distant from the major population centers in the south of the country-, the high cost and irregularity of power supplies and the problems of hygiene and quality control experienced by other enterprises in the food industry. Doubtless an improvement in both the quality and the preparation of fish products will make fish more attractive to the local market. It will also create the opportunities for higher value added that the government has sought to achieve in the past by increasing the level of participation in the industry by Mauritanians.

The industry is dominated by European interests and the government has signed deep sea fishing agreements in its EEZ with European companies. Poaching and pricing its waters is very high as is non compliance with government regulations. The proliferation of agreements with the European companies does not seem to have helped the processing industry in a very significant way.

d) ***Fruit and Vegetable Processing***

Fruit and vegetable processing is important in North Africa. The industry is well developed in Morroco. Exports of fruits and vegetables in processed form account for one third of total

manufactured exports.

Marrakesh is an important center for apricots and olive processing, accounting for 75 per cent and 70 per cent of the national total respectively. Larache cans or concentrates 60 per cent of Moroccan tomato output, while Cacsablanca is the principal center for vegetable concentrate and fruit juice, with 50 per cent of national capacity. The branch only exploits the raw material base in part, because sales of fruit and vegetables direct to consumers are often more attractive for the farmer. Nonetheless, it manufactures a wide range of food products, and has become an important source of foreign exchange revenue.

Inputs are generally procured through the market, either directly from farmers (often contract growers) or via intermediaries. The latter is the usual source of procurement in the large urban centers such as Fes and Casablanca. However, easily damaged crops (grapes and mushrooms are two examples) and those that must be fresh (like spinach) tend to be procured direct from the farmer. Integrated agro-industrial production accounted for only 10 per cent of total output volume in the 1990s.

The most important inputs for the branch are circus fruit, olives, tomatoes, apricots, string beans, cucumbers and dates. Tomatoes are the only crop for which integrated production is significant: this form of production consumers 50 per cent of total inputs used by tomato processors. With the exception of dates, a desert oasis product, the majority of inputs are grown in the North West. Although the agricultural sector can produce high quality inputs, the branch sometimes has difficulties in acquiring adequate quantities because of the already noted advantage to markers of selling direct to the consumers. The seasonality of inputs and a lack of diversification are other problems for processing firms.

The Moroccan branch has strong linkages, although these could be improved. The domestic manufacturing sector has access to a substantial raw material base and provides certain intermediates, such as sugar and some preservatives. Some packaging materials are produced locally, as shown by Figure 4.2. However, import dependence is greater at this level. with tin cans and glass jars, for example, often imported.

Forward linkages are principally direct to the consumer, both Moroccan and foreign. Some products serve as inputs for other industries, often within the same branch. The latter is the case with tomato paste and condiments, while fruit juice and dried fruits are used by other branches of the food industry. A potential linkage which appears worth exploring is that to the animal feed branch. Wastage is very common is this branch and opportunities to recycle are now hardly exploited. Vegetable waste, for example, can be used in feed for domestic animals.

The fruit and vegetable processing branch in Tanzania has backward linkages to domestic agriculture and to the packaging branch. Commercial fruit farming takes place on a very limited scale, so processing plants are almost entirely dependent on small-scale subsistence farmers for their supplies. During the off-season they rely on imported supplies. Special ingredients, such as preservatives, are all imported.

The country has only a few supplieres of cans glass, bottles, but then can not meet peak demand for their products. Squash and sauce bottles, for example, must be bought at least six months in advance. Moreover, the quality of the cans is poor, and there are not pilfer-proof. The crown caps used for beer and soft drinks bottles are not suitable for squashes and sauces. The processing units have therefore started to use molded plastic bottles, made from imported granules and sealed with imported aluminum roll on caps or locally made plastic flip-top closures. Cartons tend to be expensive, and their quality is inadequate. The poor quality of packaging materials is a major constraint to the development of exports by the branch.

Figure 4.2 Morocco - linkages of the branch

Source: Report of the UNIDO field mission to Morocco in March 1989, Modernisation at Restructuration des Industries Manufacrieres du Maroc, en particular des Industries Agro-alimentaires, PPD/R.27, 1989, p.47.

There are two principal constraints on the expansion of the branch. Firstly there is inadequate storage technology available. This leads to low capacity utilisation rates as it is impossible to operate in off seasons. Secondly canning and packaging costs are relatively high and this reduces competitiveness in European markets. Quality control is also some what lax and this has led to a loss of market share specially in relation to Israeli products in the Eu regard.

In Kenya the potential for fruit and vegetable processing is considerable. Indeed it is sometimes held that processed fruit exports can replace tea and coffee as major foreign exchange earners. Kenya produces roughly about five million tones of fruit and vegetables per year. Harticulture is the fourth largest foreign exchange earner. Over 350,000 tones of fruits and vegetables are processed annually. There are 30 t0 35 processing plants. Del Mente is the largest with an annual processing capacity of about 250,000 tones. Facilities exist for canning, dehydtration, freezing and extraction of juices. Over the period 1990-94 output of jams and fruit juices has remained stagnant while that of squashes and canned fruit and vegetable has fallen.

The major constraint affecting this subsector is the lack of cooling facilities both at production areas and airports. The later is more a problem for the exporters of un-processed fruits and vegetables, however. Another major problem the sector is facing is the pricing structure for fruit and vegetable produce. The prices offered to farmers by processing facilities for their lower than that in the fresh market, thus enterprises which rely on independent growers for produce, do not receive adequate supply. This is the primary cause of the low capacity utilization in the sector. This pricing structure also results in the quality of the produce made available to processors being quite low - low enough that it can not be easily sold in the fresh market.

There is also some scope for expanding fruit and vegetable processing in Tanzania but the processing industry is in a state of deep crises. Most of the thirty odd processing units were closed in the early 1990s. Supplies from small holders was uncertain, refrigeration facilities were non existent and technology employed was inefficient. Cost of packaging was high with the result that export prospects were not bright. A major rehabilitation taken programme for the fruit processing plants could however lead to significant export earning game for Tanzania (UNIDO 1989)

e) ***Sugar***

Sugar has been an important manufactured commodity in many African countries. In the Sudan it accounted for roughly for over 50 per cent of all employment in the food manufacturing branch . Productivity of the large mechanised public sector mills is low so that the share of the sugar to food processing value added reported to be farely 13 per cent. The total rated capacity

of the five large mills is about 700,000 tones per year. Capacity utilisation has increased and the country's sugar imports have stablished in recent years.

Sudan has one of the largest sugar producing plants in Africa. Its per capita consumption is only about 4 kilograms and among the largest in Africa. There is therefore considerable room for expansion. But capacity utilisation has been low. the major constraints on expansion of the sugar industry are.

Production units are rarely in a position to recoup the full cost production. Final product prices are kept low which contributes to smuggling of sugar to other African countries and to a lack of correspondence between input and output prices. Profitability is low in this industry and the lack of exploitation of by-products has exacerbated the financial difficulties.

Inappropriate cane varieties are used in production and inadequate water supply made available to the irrigated farms catering to the factories. Output has also been affected by shortages in serviceable equipment and tools for cultivation and harvesting of cane as well as shortages in complementary agricultural inputs.

There have been shortages of foreign exchange which contributed to shortfalls in fuel, spare parts, technicians, and equipment.

Poor working conditions have lex to the loss of staff and skilled workers. Performance is also impaired by inadequate management, financial, and technical systems.

At least two of the major factories were poorly designed and built and this has constantly impeded operations in these factories.

High interest charges on accumulated debt, high water charges and a high variability of world sugar prices contributed significantly to an asymmetry between costs and revenues.

Egypt is also a large sugar producer. In terms of local consumption it is the largest country with annual consumption estimated at about 1.8 million tones per year. Production however is only about 800,000 tones so that over 45 per cent of sugar consumed is imported. I has the largest sugar enterprise in Africa. Sugar cane output has increased from 8 million tones in 1981 to over 12 million tones in 1993. Processing is mainly limited to refining. The local confectionery industry is dependanton imports. There has been rapid growth of demand for chocolates in recent years. Investment in the industry has risen dramatically since 1985 and there are now over 500 companies - mostly in the private sector manufacturing confectionery. Competition

between public and private companies, specially in the wafer market, is reported to be intense. Many international companies - e.g Cadbury - have been attracted and licensing arrangements are common.

Confectionery exports are growing rapidly and international producers are using Egypt as a base to penetrate the Gulf market. Cadbury Egypt was in 1994 reported to have earned 25 per cent of its revenue from exports.

Sugar is one of Kenya's most important industry. About 100,000 farmers are engaged in cane production and the industry employees over 35,000 full time workers. Total cane crushing capacity is estimated at about 600,000 tones annually. During the early 1980s Kenya was self sufficient in sugar production. But smuggling and a rapid growth of demand created a huge gap in the market. Imports as a percentage of apparent consumption rose from 53 per cent in 1988 to 64 percent in 1994. During this period domestic sugar production declined at an annual average rate of about ten per cent as smuggled sugar drove local producers out of the market. Investment in cane development has declined. Both an increase in crop area and a major rehabilitation programme are required for a revitalization of the Kenyan sugar industry.

Sugar production accounts for roughly 30 per cent of manufacturing value added in Swaziland. Output has doubled during the past decade.

The Simunye Sugar Estate has become one of the giants of agriculture in Swaziland. It is the largest sugar growing estate in Swaziland with 9,200 hectares planted to sugar cane.

The Simunye Estate is the largest single employer of labour, including unskilled labour, in Swaziland. On average, it employs more than 3,800 persons during the peak season, and has a population of about 18,000 people, making it the third largest center is Swaziland after Manzini and Mbabane. It is committed to the training of Swazi nationals and the implementation of the government's localization policy. Its apprentice training center has already graduated more than 50 artisans.

The Simunye Sugar Estate is linked directly to the agricultural sector in that it is engaged in both crop farming and livestock farming. It is also linked to other major industries within the country such as the bakeries, Swaziland Fruit Canners, the confectionery plant, the breweries and Swaziland Meat Industries.

Sugar cane production has stimulated the beverages industry in Swaziland and international companies - including Coco Cola have investments in the country. Sugar exports typically

account for over 25 per cent of total export earning. Sugar is exported mainly to North America the EU and South Africa. The industry's prospects depend entirely upon price movements in the international market.

Production of raw and refined sugar is commonly an enclave industry on large estates, in Mozambique, Zimbabwe and in Malawi (where it is the countries country's third largest export); processing is on site in the former two, but in Zimbabwe the Triangle and Hippo Valley estates, along with the associated small producer cooperatives, produce mainly raw sugar. Refining is carried out mainly by ZSR which no longer owns estates, although its then parent company Tate & Lyle used to operate estates in the north of country. Exports of raw and refined sugar (about three-quarters the former) amounted to over 200,000 tpa in the late 1980s; output of confectionery was worth US$ 20 million. Lonrho has shown interest in the Eastern Caprivi of Nambia for a possible new plantation. Sugar is used to produce ethanol as a partial motor fuel substitute, most notably in Zimbabwe. Sugar dominates agricultural production in Mauritius, and the industry has a number of assets, such as a well established training institute, and marketing research and information. Sugar accounts for 10 per cent of GDP in Mauritania. The production of sugar industry by products remains very limited throughout the African continent

f) ***Oil seeds***

The production of edible oil is one of the oldest industries in Sudan. there are over 300 oil mills with a combined of capacity of about 750,000 tones per annum. Capacity utilisation rates are estimated at about 30 per cent. Edible oil is among the major manufactured export. Some modernization of the industry took place in the late 1980s with the construction of several large mills and ancellory packaging plant. Rates of return are low due to over capitalization. Production suffers due to shortage of spare parts, interruption of spare supply and fluctuation in raw materials. Growth of export demand has been sluggish in recent years. Reduction in ground nut and cotton seed production during the drought years forces the government to import processed oil to keep the mills operative. Plans for backward integration in agriculture - the investment by the mills in groundnut and sesame productions - have moved slowly. Sizeable investments are required for insuring stability in raw material supplies and for increasing capacity utilization rates. Foreign exchange requirement of a proposed comprehensive rehabilitation programme are modest (about $ 15 million in 1992 prices). Rehabilitation would involve shutting down of several plants - mergers could significantly reduce the overall cost of the rehabilitation programme.

Kenya has a suitable climate to grow a wide range of oil such as sunflowers, coconuts, groundnut, simsim, cotton and soybean. However, the area under oil seeds production has been

declining since 1987 due to increased competition from cheap imported oils and low domestic prices. With the fall in production of oil seeds, the production of vegetables oils in Kenya deteriorated over the past few years and currently dependents on imports in nearly total. The country imports over 95 per cent of its edible oil requirement of about 200,000 tones and oil seed derivatives such as oil meal and cake valued at KSh 5-6 million annually. During 1990-94 production of cotton seeds, sunflower, groundnut and soybean declined while coconut production rose by 1.1 per cent.

There are over 30 processing facilities in Kenya engaged in processing a variety of oil-seeds, oil bearing materials and vegetable oils (oil milling, solvent extraction, refinery and hydrogenation). The current installed oil extraction capacity about 265,500 tones per annum. The low international prices of edible oils have rendered most of the domestic processing of oils uneconomical and most plants are operating well under capacity.

An additional 342,000 tones per annum refining capacity is available mainly to process imported crude palm oil. The major refinery based on imported palm oil are East Africa Industry Ltd., Kappa Oil Refinery and Bidco Industries. While oil extraction units were established mostly during the period of expansion of oil crafts in Kenya, the refining capacity was created especially to process palm oil and contrary to the situation in the oil milling/extraction subsector, the refining of imported crude palm oil attracted large investments and the establishment of several modern refineries equipped with the latest technology and skilled manpower. As a result, the capacity utilization of the refineries is higher than that of the oil-seed processors estimated in 1995 at about 20 per cent for the latter and 60 per cent for the former.

The decline in oil craft production in Kenya as a result of competition from cheap imported oils, coupled with low domestic producer prices is the major constraint in the development of the sector. The current import duty structure, however, encourages the import of crude oils over refined products.

The edible oil sector is also constrained by its structure. The oil extraction industry in kenya is highly fragmented and lacks integration. Most operations are stan alone oil mils or solvent plants, and refineries, leading to low oil recoveries, high costs, poor product quality and low capacity utilization.

The growth of an efficient edible oil processing industry in Kenya requires increasing the availability of oil-seeds. This can be accomplished by both increasing production and, in the immediate term, imports. Encouraging imported oil seeds via such a mechanism as a preferential tariff, would enable oil-seed processing enterprises to increase their capacity utilization, which

in turn would help stimulate the revival of the market for domestic oil-seeds and increase the availability of protein meal for animal feed.

Because the use of intermediate technology is possible in this sector, the government's programme to improve the enabling environment and promote the development of small and medium enterprises should indirectly encourage oil-seed processing and could easily be adopted to include specific policies to promote the development of such entities.

Most part of the western lowlands of Eritrea are suitable for growing oil seeds. Particularly, sesame has high demand for export and domestic markets. Aggregate production of oil seeds has rebounded strongly since the early 1990s from just over 5,000 tones to 9,000 tones in 1993, further rising robustly to an estimated 11,700 tones in 1995. Much of the strong growth has stemmed from an enhanced up turn in sesame output. Processing activity is virtually non existence.

According to FAO estimates, Ethiopia's production of oil seeds in 1993 were rapeseed 82,000 tones, sesame seeds 62,000 tones, lenseed 33,000 tones, seed cotton 46,000 tones. Exports of oil seeds have been declining for the past twenty years and very little processing taken place in the country.

In Uganda the major oil seeds are cotton, groundnut simsin and soya. There are eight large scale cotton seed oil mills in the country but cotton seed production has been declining with the result that there exists considerable capacity under utilisation . As against this production of the other oil seeds - and also of sunflowor - have grown at a rate of almost 15 per cent per annum since the mid 1980s. Processing of these take place in small scale operation.

g) ***Tea, Cocoa and Coffee***

Tea, coffee and cocoa, mainly in non processed and semi processed forms have been traditional exports from several African countries. Coffee and tea processing has grown a pace in Egypt. The public sector company Shemto is the main tea processor. Several private tea processing and packaging companies have also been established in the free zone. Coffee processing is undertaken by a private company - Misr Cafe - and by Nestle both producing a wide range of products. Total coffee processing capacity is estimated in 1994 at 420000 tones of which roughly 70 per cent is exported to the Gulf, Europe, Canada and Australia. Nestle's share of the market is estimated at about 50 per cent. Both the tea and coffee processing industry are heavily import depended.

Kenya is one of the world leading producers of coffee and tea. Both crops are major foreign exchange earners. Coffee production is organised under co operatives involving large estates as well as thousands of small holdings. Kenya Tea Development Authority supports the production of thousands of small holders. It has thirty tea processing factors. TNC also maintain a strong presence in the Kenyan market.

Coffee production has declined by about 25 per cent during 1990-94 due largely to the collapse of the international coffee agreement in 1989 and associated falls in world coffee prices. Kenya regularly exports 95 per cent of its coffee crop.

The coffee subsector plays an important role in the development of the country through its foreign exchange earnings and employment generation. The subsector earned the country over KSh4.4 billion in 1990 and over KSh13.0 billion 1994.

The production of tea rose from 197,000 tones 1990 to over 209,000 tones in 1994. The decline in 1992 was due to drought. The general good performance of the subsector has been the result of liberalization of the tea industry, introduction of foreign exchange retention accounts, strong prices offered in the auction markets and maintenance of rural access roads enabling growers to get their produce to market. Tea exports earned Kenya KSh6.3 billion in 1990 and KSh16.9 billion in 1994. The major markets for Kenyan tea are Pakistan and the United Kingdom.

The coffee subsector has been performing poorly mainly because of the decline in world prices which has made it uneconomical to produce. This has been exacerbated by delayed payments to farmers which resulted in many abandoning the crop. The suboptimal application of fertilizers and other chemicals due to the high price of these inputs has also adversely affected the output of both tea and coffee. With an improved system of payments to farmers and the expected privatization of the country's tea factories, production of the crops should improve. Coffee production has declined from 104 thousand tones in 1990 to 80 thousand tones in 1994. Export earnings have tripled over the period.

Both tea and coffee will always be subject to the swings in the world price of these commodities, however, and there is little that can be done to combat the adverse effects of drops in the price except to strive or the lowest cost production possible.

Coffee is Ethiopian's most important export. The commodity has deep roots in the country, with Ethiopians claiming that coffee in fact originated in their country. (The Yemenis make the same claim.) What is indisputable is the value of the crop to the national economy. Between 1980/81 and 1992/93, it generated 63 per cent of total export revenues, and taxes on it are the largest

single source of government revenue.

Although coffee is grown in many parts of the country, the production which supplies the export market is concentrated in four areas in the south and south-west of the country - namely, Sidamo, Kefa and Illubabor, Wollega and Hararge. The variety produced in this last location is considered to among the best in the world - consequently, premium prices can often be obtained. in all areas of the country, it is the peasant farmers who produce most of the coffee. The central grading and marketing centers, are located in Addis Ababa and Dire Dawa.

Most of the Ethiopian production is processed by the sun-drying method and then hulled. Hulling capacity, however is limited by old plant. In 1985/86, for example, only 13,000 tones (less than 10 per cent of that year's crop) was processed as washed coffee (a commodity which sell at a premium). Meanwhile, most domestically consumed cofee is roasted and ground at home, while exported coffee undergoes no further processing.

The export figures for coffee - in terms of both quantity and value - have fluctuated considerably during the past 30 years. The variations in the quantity of coffee exported are explained by a number of factors. Most importantly, coffee berry disease (CBD) has been a severe problem.

During te 1980's CBD affected up to 30 per cent of the country's trees. In response, a programme of replanting with disease-resistant strains was instigated. This has sered to remove a proportion of the diseased trees from production each year. Given, however, that it takes five years after replanting for the new coffee tree to reach maturity, there is necessarily a log-time associated with any such programme. Other physical problems which have served to inhibit production have included drought, rust, aging trees and the inadequate use of fertilizers.

Economic and social factors also impact production levels. When world prices are low, it may be in farmers' interest to switch to other cash crops - for example, qat. Additionally, in times of food shortages, other kinds of pressures may force farmers to substitute subsistence crops for their coffee trees. Either way, the land-area devoted to coffee falls, and the quantity available for export declines accordingly. (Additionally, when the prices paid by government were relatively low during the 1980's a substantial illegal export market emerged, with farmers striving to profit more from their production.)

For many years, Ethiopian exports of coffee were regulated by international agreement. As a signatory of the International Coffee Agreement (ICA), Ethiopia was allocated quotas which accounted for the majority of its exports. Its share of the world coffee trade under quota agreements fell from about 2.5 per cent in the late 1960s to 2.2 per cent in the late 1970s. This

decline was offset to some extent by a growth in exports to countries not covered by quota agreements - particularly the Middle East and Japan. Consequently,the proportion of exports to quota markets to total exports fell from about 90 per cent to just less than 80 per cent. With, however, the suspension of the ICA in July 1989, this agreement no longer presented a constraint.

Additionally, coffee is also an important domestic consumer good: it is drunk by almost all Ethiopians, with people brewing up three times a day in the areas where it is grown. This lover for coffee among Ethiopians has a considerable impact upon export performance, for domestic demand sometimes consumes about half of the total output.

The corresponding value of coffee exports has also fluctuated - within the last 20 years, world coffee prices in 1977/78 were particularly high, while those during 1989-90 and 1991-92 were extremely low (indeed, because of the collapse of the ICA, they were at their lowest level in real terms since the 1920s). Preliminary indications, however, suggest that both export volumes and export values may have rise to historic highs.

Explaining this are a combination of good rains in Ethiopia in 1994 and the frost and drought that hit Brazil at the same time, Consequently, one report suggests that coffee exports could have reached $250 million in 1994, as compared with $100 million the previous year. More tangibly, it was reported that the country's Jimma zone had increased coffee production by 600 tones to 12,000 tones between September 1994 and April 1995. Farmers have been tempted back into coffee producing by many factors: not only the higher world prices, but also by the fact that the government has set a minimum producer price, thus allowing them to earn a higher return (and thereby reducing the incentive for smuggling).

The prospects for Ethiopian coffee are generally good. Yields are continuing to rise as management practices are improved and as applications of fertilizer are increased. The fate of the sector, however, is heavily determined by climatic factors (affecting not only the production of the crop itself, but also the production of other crops, and thereby determining whether they - in particular, cereals - will place demands upon those lands currently under coffee cultivation). World rices are, of course, the other main determinant of the health of Ethiopian coffee industry.

Cocoa production and processing is common in some West African countries. In 1991 Africa accounted for 25.6 per cent of the developing world grindings of cocoa beans - its share of global coffee bean grindings was only 8.3 per cent down from 10.2 per cent in 1986. Virtually all production was exported.

The most important cocoa processing country in Africa was Cote d'Ivore with grindings amounting to 120,000 tones in 1992 (more than half of total African grindings and over 5 per cent of total world grinding of cocoa beans in 1992). Other major cocoa processors in Africa included Cameroon with a total 25,000 tones in 1992 and Ghana (23,000 tones). Nigeria significantly expanded its cocoa processing capacity through the establishment of projects partly funded by the African Development Bank.

Cocoa is a typical primary commodity in that is grown mostly in developing countries and consumed largely in developed countries. It is consumed primarily in the United States and Western Europe. Very little cocoa is consumed at origin, with the exception of Brazil. Consequently, investment in cocoa processing in the producing countries is dependent on the export market for chocolate products and intense competition with highly efficient companies in cocoa consuming countries has put processors in the cocoa producing countries at a distinct disadvantage. The costs of production at origin are such that in all but a few cases cocoa processing is highly unprofitable. This explains the gradual decline in cocoa grinding in Latin America and the significant underutilization of processing capacity in most cocoa-producing countries. However, despite such factors which seem to point away from investing at origin, countries such as Indonesia, Malaysia and Nigeria are going ahead and setting up new processing operations.

During the past three decades the existence of alternatives to cocoa products has had a growing influence on the market potential of cocoa products, and hence on the size of cocoa-processing operations. Most of these are alternatives of cocoa butter, while alternatives to cocoa powder are a more recent development, and their impact on the market has been small. Nevertheless, alternative vegetable-based fats are becoming both more numerous and more technically complex, and a variety of terms are used to describe them. These include cocoa butter equivalents, which are chemically compatible with cocoa butter and can be mixed with it, cocoa butter replacers, which are not as compatible with cocoa butter, and cocoa butter substitutes, which cannot be used with cocoa butter at all. The development and use of alternatives has been stimulated by both technical and economic factors. the latter are more important in that if an acceptable and cheaper product can be found which does the same of a similar job, then production costs for the final product will be lower. The rise in cocoa bean and butter prices, particularly in the late 1970s and mid 1980s, combined with uncertainty over their future availability, has contributed to the emergence and development of cocoa butter alternatives. The greater the incentive to use alternatives, the higher the price of cocoa products. Existing branded products using cocoa butter and cocoa powder are unlikely to be modified to use cheaper fats because of the costs involved in the change and or the resistance to change a well-established product. However, when developing new products, the situation is more favourable

for alternatives, particularly if cocoa products are higher priced. On the technical side, small quantities of alternatives may improve the functional characteristics of the product, and in some uses cocoa butter does not behave as well as alternative fats.

The biggest obstacle to the use of cocoa butter equivalents in chocolate is the existing legislative restrictions in most major markets. The United States and most of the European Community forbid the use of cocoa butter equivalents in pructs labelled "chocolate". The exceptions are Denmark, Ireland and the United Kingdom, which allow products labelled chocolate to contain up to 5 per cent vegetable fat other than cocoa butter. upon accession to the EEC, those countries were permitted to retain the use of cocoa butter equivalents in their products. With the creation of the single European market, it is likely that this "5 per cent rule" will be extended across the ECC. If the 5 per cent rule is accepted and adopted by all countries and manufacturers in the EEC, then the use of cocoa butter equivalent could triple by the end of the decade, thus containing the growth in demand for cocoa butter, particularly when prices for it are relatively high.

Many European end-users argue that they prefer to buy their cocoa products from large European manufacturers, since they can produce to the highest quality specifications and can also have their products tailored to their particular requirements. Grinders can also deliver their products, particular requirements. Grinders can also deliver their products, particularly cocoa butter and liquor, in bulk liquid form in heated tankers on a "just-in-time" basis, thus saving end-uses costs of storage and overhead. Cocoa processors at origin cannot offer this advantage because of the distance between factories and end-users. Many manufacturers also claim that most of the processors at origin generate products which are not up to their quality specifications, and would only purchase products at origin if they were offered at a substantial discount, often at a price at which processors at origin cannot afford to produce.

As a large reprocessor of cocoa products, the Netherlands imports about one half of its products from countries of origin. The large fluctuations in imports, mainly form suppliers at origin, depend on capacity utilisation in the Netherlands and product prices. France is also a relatively large importer of cocoa products from origin, particularly because of Cocoa Barry factories in Cote d'Ivoire and Cameroon which supply its factory in France. The United Kingdom is the only other European country known to import substantial quantities of cocoa products, particularly cocoa butter from origin. It obtains butter primarily from Ghana and Nigeria, whose cocoa has the flavour characteristics upon which the United Kingdom built its chocolate tastes and recipes.

Currently, the cocoa industry is characterized by a high degree of concentration. Nine companies accounted for nearly 50 per cent of global capacity and an estimated 62 per cent of world

grindings in 1991-92. All nine companies are based in either Europe or the United States, although some of them have a significant share of their capacity in cocoa-producing countries.

Total cocoa processing capacity in Africa was estimated at 303,000 tones and the capacity utilization rate was roughly 50 per cent in 1992-93. Cote d'Ivoire was the world's largest exporter of cocoa liquor the third largest exporter of cocoa powder and cake. Prospects of export growth however are not bright.

There is a quality difference between cocoa products manufactured in factories in cocoa-consuming countries, particularly North America and Western Europe, and those manufactured in cocoa-producing countries. This explains the discounts received by products from origin. It also explains why, despite and excess capacity world-wide of 25 per cent, large transnational corporations invested in expanding their capacity in European the early 1990s. There was a shortage of the highest-quality products and service provided by those companies. Meanwhile, many factories at origin have been struggling for several years because of the discontinuance of government subsides (Brazil, Nigeria). Brazil and Ecuador responded by cutting back production. Ghana received World Bank assistance to restructure and rehabilitate its cocoa-processing plant with a view to privatization. Overstaffing has been significantly reduced in order to lower production costs. However, factories continue to operate well below capacity, and it is deoubful whether all of them will operate profitability in the future.

That some countries of origin are forging ahead with investment in cocoa processing has little to do with the prospect of financial success. Nigerian industry in particular will have a difficult time being competitive, considering the relatively small size of the factories being installed and the discount they will face for their products. Although labour costs are low, labur productivity is lower than that in competing regions. Both energy and capital costs are also higher than elsewhere. Nevertheless, the willingness of the Government to lend money for these investments has encouraged a number of local entrepreneurs to go ahead.

The rapid growth in the consumption of cocoa products during the 1980s was due largely to low cocoa prices and the development of new products and new markets. This level of growth is unlikely to be sustained through the 1990s as markets in North America and Western Europe reach saturation, and growth rates evolve more in line with population increases. The biggest boost to growth is likely to come from the Asia and Pacific regions, although it will be from a small base.

The increase in consumption in Western Europe is likely to benefit European processors rather than processors in cocoa-producing countries. The main reason is the difference in product

quality, and the degree of service that European processors can offer end-users because of their proximity to the clients.

With the continued rationalization and concentration in European cocoa processing, efficiency gains may tighten the margins for basic cocoa products. Smaller processors are likely to continue moving away from grinding cocoa beans, and are more likely to move into producing semi-finished and finished products such as coverture and chocolate chips, where the value added is higher. Germany and the Netherlands should assume growing importance in the supply of cocoa products, since the largest grinding operations are located in those countries. Consequently,intra-European trade in coca products is expected to rise as Germany and the Netherlands ship to countries where smaller processors are converting to the manufacture of semi-finished and finished products.

West Africa is the least well-placed region in terms of processing, because consumption is in significant and because beans from the region attract premium prices from importers, while products tend to fetch premiums that fall short of those that can be earned from bean sales. In this respect, Cote d'Ivoire and Nigeria are most advantageously placed, since their beans sell at a lower price than beans from Cameroon and Ghana. Further-more, factories in Cote d'Ivoire are relatively large by regional standards, thus lowering their unit costs of production. Their factories also benefit from links with overseas companies. Nigerian processors could see an export levy or a ban introduced on the export of cocoa beans, which could enhance the returns from grinding.

The animal feed manufacturing branch uses a wide range of inputs, including cereals and cereal bran, oil-seed cake, fish- and bone-meals, offal, salt and other minerals. Most of the inputs could be procured locally, but the condition of the agricultural sector and of upstream industries is such that the branch must live with a high degree of import dependence in many African countries.

The stockfeed manufacturing branch in Liberia has been acutely dependent on imports for its major raw materials (maize, soya-meal, fish-meal and concentrates). Before the civil war, 20 per cent of Liberian demand for stock feed was met by domestic millers, who imported 80 per cent of their inputs. However, the last Liberian mill was closed down in 1984, and the country has since relied almost totally on imports.

Cassava chips, pellets or flour could substitute for imported cereals and other local filler materials for up to 25 per cent of the total feed for layers and 10 per cent for broilers. Rice bran is also a potential input. Much of the rice is milled in villages, and the bran fed to farm animals.

However, the bran that is the residue of commercial rice milling should be collected for further processing. Other potential inputs that are domestically available are pulses, slaughterhouse by-products and fish-meal.

In Tanzania the branch relies mainly on local supplies for maize, oil-seed cake, wheat bran, fish- and bone-meal, limestone and salt, supplemented by imports of vitamins, amino acids and trace minerals.

Fish-meal has been in short supply since the plant at Mbeya halted operations on a regular basis in 1986. The branch now depends on irregular supplies of small dried fish from the lakes purchased from fishermen and from middlemen at widely fluctuating prices. Access to oil-seed cake is also limited because several oil-seed processors have broken down. At the same time, supplies of oil-seeds are scarce, mainly as a result of transport constraints.

Imports of essential vitamins, amino acids and trace minerals were severely limited until the beginning of Canadian supplies under an aid programme. Branch performance is generally weakened by the low productivity of he agricultural sector and of upstream processing operations, and a shortage of transport facilities.

The animal feed branch in Zambia depends on imports of the some essential ingredients, mainly minerals and vitamins. Domestic processing of by-products from slaughterhouses, such as offal, blood and bones, and, to some extent, condemned meat and carcasses, could provide the branch with considerable volumes of inputs. This possibility has apparently not received much attention, and existing rendering plants are not operating efficiently. Cereal inputs are normally produced domestically, but the quality of maize, for example, is generally poor as the prices paid to farmers are set irrespective of quality. Lucerne-meal and fish-meal are not currently used by the branch, but exiled serve as raw materials.

Production of stockfeed in Zambia has fallen from 192,000 tones in 1980 to about 150,000 tones in 1991. Aggregate nominal capacity is put at 244,000 tones.

The expansion of the branch in Tanzania is contrast by the shortage of key inputs notably animal protein supplements this lead to poor output quality. The absence of regular preventive maintenance and the shortage of foreign exchange to purchase spare parts have led to increasingly regular plant breakdowns and complete stoppages. Inadequate roads and the lack of 7-10 tone lorries are also substantial constraints.

In Zambia there are the same foreign exchange constraints on imports of inputs. With offal,

there is the additional problem that the structure of relatively small slaughterhouses militates against producers making economies of scale. The branch has the same problems of spare parts shortages and irregular plant maintenance that have been noted in the case of Tanzania.

Laboratory facilities do not exist in most Zambian plants. Given the uneven quality of feed ingredients, this is a major obstacle to quality control. in the absence of adequate monitoring, to finished product is not uniform, and an excessively high fibre content is found in poultry and pig feeds. Protein deficiencies also create lower quality stockfeeds, which results in adverse effects on the quality of the animals that consume them. The Zambian Standard Institute (ZSI) has established national standards for the different types of stock feed, but these are not enforced by regulations, apparently because there is no body to administer a control system. There are no established national standards for inputs, with the exception of maize. Prospects for the branch would be enhanced if national standards for inputs were established, and stockfeed prices related to quality. These changes assume the creation of an appropriately qualified, independent laboratory to serve the national stockfeed branch. This need is clear in view of the weaknesses of the few existing laboratories: test results are not always quickly assessed and passed to appropriate parties, while there is a low level of co_ordination between quality control centers and individual plants. These quality related constraints in the branch hold back livestock development and weaken efforts to develop export markets once domestic demand is met.

In Mauritania the development of modern livestock sector has created a market for manufactured animal feeds and a linkage from the industrial sector into agriculture. In 1982 an animal feed factory was established by Generated' Industries, Commerce et de Representation (GICR). The enterprise responded to a growing market for feed supplements and substitutes in the livestock and poultry farming industries, formerly met by imports which totalled 15,000 tones in 1983. The company was renamed the Society Mauritanian pour le Development Rural et 1'Elevage (SOMADERE) in 1986, and has a production capacity of 120 tones per day. Raw materials for the livestock feeds come from Senegal but the company also makes use of the fish meal produced locally. The company has also benefited from technical assistance from Pfizer (USA), Protector (USA) and UCAAD (France). A second animal feed factory, SMPF, has been established at Nouakchott and other entrepreneurs have shown interest in similar ventures. Although the domestic market is expanding and , in the case of SOMADERE at least, there is potential for export sales in neighboring countries and perhaps even the United States there is a danger that the sector will suffer from overcapacity. marketing networks within the livestock sector are poor and a major constraint on the growth of sales. The government is , however, eager to promote the use of feed supplements as part of its livestock development policy.

i) ***Wood product, paper and packaging***

This branch is important in countries with rich forest resources. Almost half of Liberia's territory is covered with forest. Timber harvesting within National Forest Areas and other productive forest land is regulated on the basis of a Forest Management Plan and other government policies. These regulations restrict cutting to cases when the trees felled are replaced by replanting and/or natural regeneration. In reality mining, road construction, urbanization and shifting cultivation patterns have continued to erode the forestry resources. Depletion of reserves have been more severe elsewhere in West Africa, such as Cote dIvoire where n estimated two-thirds of the forest has been cut down since 1966, but it is nonetheless obvious that measures must be taken in Liberia to reverse the trend.

An increased volume of wood processing would help to preserve forests for the simple reason that less trees need to be felled to attain in the same level of earnings from unprocessed timber. This would encourage better forest conservation practices per se. A similar policy could also be applied to those other African countries that still retain significant forest cover, such as Gabon, Congo and Zaire. A regulation on exports of wood that came into effect in Liberia in march 1988 imposed an obligation on logging companies to process 10 per cent of extracted logs locally. This could boost operational sawmilling capacity by an estimated 25-50 per cent. The example of Zaire has indicated the difficulties in enforcing such a regulation, since authorized logging companies generally operate in remote areas where they cannot be easily supervised.

Current sawmilling operations in Liberia are inefficient. Slabs and off-cuts are used as fuelwood, and large quantities of wood residues and waste are left to rot. Productivity is low and installed machinery is normally underutilized, mainly because roads and logging trucks are poorly maintained. In these circumstances sawmills cannot be properly supplied. This in turn constrains the performance of the secondary wood processing industry, which uses the primary products for further manufacturing and assembly into standardized products (such as scaffolding, partial frames, beams and formwork), non-standard products (building components such as doors, windows and moldings), furniture, packing (crates, boxes and pallets), and other products (such as hatches and boats).

The branch in Liberia faces substantial constraints in all areas. Supplies of wood inputs at competitive prices are inadequate because of the inefficient extraction and transport of logs. Productivity in the sawmills is very low, and secondary processed wood is both non-standardized and of low quality. Operators have great difficulty in reaching break-even point because of high production costs and the low prices in the domestic market.

Lesser-known and relatively inexpensive species of wood are poorly promoted on the local market. The branch suffers from a lack of experienced and trained management, and skilled personnel. Operators have not often recognized the need for short- and long-term planning, and have a poor grasp of pricing considerations and record-keeping procedures. The units tend to be undercapitalized and have restricted access to foreign exchange, so that plants are poorly maintained due to a shortage of spare parts. Institutional credit facilities are scarce, especially for Liberian-owned operations, and loan applications are processed slowly.

These constraints are noted in other studies of wood processing in West Africa, but their gravity differs in the various countries. They are often more serious for secondary than for primary processing, two examples being transport (because the products require more care, and packaging), and trained manpower (because of technical and marketing needs).

Cameroon ranks fourth among African countries in terms of forestry resources, Although about 120 companies - almost two thirds of them foreign - are in the industry. Production usually approximates 2 to 2.5 mutton metric tones annually, processing is confined to saw milling.

Secondary processing in the sub-sector almost exclusively takes place in artisanal units. Unlike other West African countries, Cameroon does not produce wood fiberboard. But there are some furniture manufacturers; the country also has a match factory.

Furniture manufacturers have benefitted in recent years from spin-offs from the construction boom in the public sector and, in particular, from projects such as the railway station in Douala, schools and hospitals. Demand within the private sector has been more stagnant and is often satisfied by artisanal production. The sharp cutback in public sector spending and the suspension of many prestige construction projects have had sharp repercussions on furniture demand.

The match factory UNALOR, set up in 1966 in Douala, more than doubled output between 1980/81 and 1985/86. UNALOR uses wood from its own 250 hectare plantation and places around 40 per cent of its output in the regional market, mainly in Gabon, Congo, Central African Republic and Chad. It has particularly benefitted from the closure of Congo's only match factory and as there is no local cigarette lighter manufacturer, there is no other competitor.

Kenya possesses both a mechanical wood industry and pulp and paper industry. Output was about 1,000 cubic meters in 1995 and was projected to rise to 1,200 cubic meters by 2000.

Wood harvesting in Kenya is based on a licensing system with licenses only given to those enterprises that are engaged in wood processing, such as saw milling, plywood, furniture and

joiners industries. The raw materials of the sawmills consists of locally produce softwoods estimated at around 2,835 thousand cubic meters of wood. A balance of about 10 per cent is imported from the United Republic of Tanzania, Uganda and Zaire. In the plywood mills, pine accounts for approximately 80 per cent of inputs, followed by cypress. About 800,000 cubic meters of timber are used in furniture and fixture industry, while wood carving uses 600 tones per year of hard indigenous wood.

There are about 494 sawmills in Kenya with a total installed capacity of 400,000 cubic meters of timber per year. The mills produce only around 200,000 cubic meters a year, however. Of the 494 sawmills, fifteen large mills account for 50 per cent of the subsector's output. The sawmills use small-sized low quality logs and a lot of waste is generated with only 37 per cent of the log recovered as a product. All the timber produced is consumed locally. Plywood production is relatively new, beginning in the early 1980's. There are now three plywood mills with a total installed capacity of 40,000 cubic meters a year. The products produced are inferior grades of plywood having thickness ranging from 3 millimeters to 25 millimeters. Each of the mills is integrated with a sawmill and one has a particle board mill and he other a fiberboard mill, which maximizes raw material utilization.

The furniture and fixtures subsector consists of about 1,200 formal firms and thousands of small-scale entrepreneurs in the informal sector, (jua kali operators). They produce structural timber products, furniture and miscellaneous wooden articles.

The major constraint in the mechanical wood industry is the use of old and obsolete machinery. Poor infrastructure in forest areas also hinders the regular supply of logs to the sawmills. The sector therefore requires modernization and enhancement of skills to improve productivity and product quality and decrease the wastage during processing. Affordable technologies or using saw dusts and wood wastes in making such items as breakouts, wooden toys and other small wooden pieces could be developed through existing research institutions and increase the efficiency and output of the subsector. Production of both saw timber and block board has declined during 1990-9,

Kenya has six paper mils, all of which use waste paper as their major raw material. Pan African Paper Mils (PAPM) also manufactures from wood pulp. Locally available raw material does not meet the demand of the mills and consequently they must rely on imports.

Almost all industrial wood come from plantations. Under the Kenya Forestry Master Plan, more wood products will be produced to reduce import costs. Also as indicated above, wood harvesting is based on a licensing system. Pan African Paper Mills has a 31 year license from 1973 to 2003

for wood harvesting. There is also agreement whereby PAPM re;lants trees in areas where it has felled trees.

In total, Kenya's six paper mills have a capacity of 145,000 tones per year. Local demand is currently estimated at 220,000 tones per year.

The largest mill is Pan African Paper Mills, which is 51 per cent state-owned. The Birla Group of India and International Finance Corporation hold the other 49 per cent. The other mills, are wholly-owned by Kenyans. Total installed capacity by 146,000 tones per annum involving an investment of Ksl 7.7 billion (over 96 per cent in Pan African Paper Mill).

Most of the paper produced in the country is consumed in the domestic market. In the last two years, however, Pan African Paper Mills has begun to export small quantities of its products to neighboring countries. The trend in the production of the paper during the last five years has been down as can be seen in Table IV.3 below. The major reason for this decline is the difficulty the existing establishments are having competing with cheap imports.

TABLE IV.3

Production of paper products, 1990-1994 : Kenya

At present there is an inadequate production of pulp in the country due to the relatively small area under forest. For this reason Pan African Paper Mills is currently setting up a fourth plant to utilize bagasse (a byproduct of sugar processing) as a raw material for paper production. Due the recent liberalization of the economy, paper enterprises were unable to obtain enough waste paper in domestic market and hence they operated at less than 50 per cent of their installed capacity. This constraint has now been removed and it is expected that with importation of high-quality waste paper the existing enterprises will be able to produce high-quality paper for both domestic and export markets.

As there is only one other paper manufacturing plant in the rest of the East African region (in the United Republic of Tanzania), there is a strong demand for imported paper. If Kenyan plants can meet the quality standards and compete on the price front, there is a good export market waiting for them.

Environmental hazards and the handling of hazardous waste have been a great concern of all paper manufactures worldwide. While in Kenya the situation concerning environmental laws and regulations is often unclear, all existing plants have installed effluent treatment ponds for the treatment of waste materials and all recycle water.

There has deforestation in Ethiopia and currently only about four per cent of the land is under forest cover.

Deforestation obviously has implications for the wood and wood products industry, and the industry has experience a corresponding decline since the early 1980's. Nominal installed saw milling capacity at that time was estimated to be 220,000 cubic meters per year. Most of the saw mils were old, even then, working with obsolete machinery and finding it difficult to secure spare parts. Consequently, many mills subsequently closed. Output of finished timber declined steadily during the 1980's: the FAO reports that the production of sawnwood fell from 45,000 cubic meters in 1982 to 12,000 cubic meters in 1993. Reductions were also experienced in the production of fiberboard, sawlogs and veneer, and wood-based panels. This has been accompanied by an increase in demand or fuelwood and charcoal. The FAO also reports that the production of these goods increased from 33 million cubic meters in 1982 to 45 million cubic meters in 1993 - not surprising given the increase in the size of the population (FAO 1994).

In 1992/93, the government reported that there were eight publicly-owned establishments in the wood and wood products industry in operation. All were located in Region 14, and together they employed 4,297 people, operated at 78 per cent capacity and accounted for 2.2 per cent of industrial production. Of these, half produced furniture of the others, the enterprise at Ecafco was the most important, producing less-refined products.

This industry comprises the industrial sub-branches of sawmills, planing and other wood works, and manufacture of furniture and fixtures, The main products manufactured in the industry are plywood, clipboard, household and office furniture, and fixtures. The reduction capacities employed to manufacture these products are about 7000 cubic meters of timber 4500 of soft wood and 14,000 of clipboard.

Most of the enterprises in the subsector are small privately-owned wood workshops engaged in manufacturing household and office furniture. Timber, plywood and clipboard manufacturing enterprises are relatively of larger scale and are mostly owned by the State. All of the major enterprises are located in Adds Ababa. Most of the saw-mills are located in he southern and eastern pacts for the country.

The major raw materials required are clipboard,formica, log, plywood and veneer. Except veneer, which is imported in large quantities, almost all of the major raw materials are locally available. However, the local supply is dwindling because of deforestation.

There has not been much change in the total value of production during the past five years, although the volume of production of timber and plywood has sharply decreased by about 50 per cent to 75 per cent. There is no export production in the subsector. Moreover, there are no

major new or expansion projects being undertaken at the moment.

The major constraint in the subsector is shortage of raw materials. Because of the diminishing forest resource of the country, it has become very difficult to supply the enterprises with the required quantities of timber and log. There is also a marketing problem in case of certain wood products as a result of competition from imports.

Activity in Ethiopia's pulp and paper industry centers around two publicly-owned enterprises. The largest of these is the Ethiopian Pulp and Paper Share Company, which is located in Wonji. Established in 1955, its capacity is nominally 10,000 tones a year. In 1992/93, it produced just under 7,500 tones, the majority of which (almost 63 per cent) was writing and printing paper. Notwithstanding the name of this factory, Ethiopia produces no pulp. Consequently, domestic demand can only be met when sufficient foreign exchange can be found to pay for imports (the price of which fluctuates dramatically). The country also imports quantities of paper and paperboard. The FAO estimated that in 1993, 5,000 tones were imported - they have been as high as 13,000 tones (1985). These imports are, of course, also restricted by the amount of foreign exchange available.

The major products of the pulp and paper industry are printing and writing paper, duplicating and typing paper, exercise books,tissue and sanitary paper, and corrugated boxes. The enterprises in the printing and publishing industrial branch provide printing services.

The major constraints in the subsector are the unavailability of most of the raw materials on the local market and the escalation of prices of imported items. Local production of paper is below 50 per cent of the total consumption, and, therefore a large quantity is imported. As this requires a substantial amount of foreign currency, acquiring sufficient quantity of paper i often a problem.

Uganda has very substantial forest resources. Officially registered forests cover an estimated 77 per cent of the dry land area of the country. These made up of 540,000 ha. of productive tropical high forest 632,000 of savannah woodlands and 24,000 ha. of plantations, of which 10,900 are pari-urban.

Overwhelmingly, the main use of wood in Uganda is as fuel, rather than as an input into industry, though charcoal-making can be counted as part of the latter. In 190 fuelwood and charcoal accounted for 92 per cent of total monetary wood production, the remaining 8 per cent being for sawn logs and poles. Of the latter, amounting to 16.1 million tones, only 571,000 tones

went into sawn wood and building poles in 1990.

This indicates the possible opportunity-cost in terms of wood supply for rural industry purposes o the voracious demand for wood as energy in the absence of alternative sources. Despite the extent of the resources referred to, timber reserves in many parts of Uganda are being subject to severe pressures from the demands of the rural and urban populations via timber dealer,charcoal burners and fuelwood collectors. In densely populated rural areas such as Kigezi and Bugisu there are serious potential problems of erosion in highland areas resulting from this depletion. Not surprisingly, responsibility for forest resources was moved in 1986 from the Ministry of Agriculture to the Department of Environment within the Ministry of Environment protection.

Most wood-working and furniture-making activities in Uganda are small-scale activities concentrated in the townships and smaller rural centers. Informal Sector Survey indicated that relatively high incomes could obtain to entrepreneurs in wood working.

Two commercial sawmills exist in Uganda, including one fully integrated factory in Jinja, the Kiira Saw Mills. This is able to produce plain sawn planks and also plywood, blackboard, flush doors and furniture. Processed timber products incorporate considerable value added, and it is desirable that the export of squared logs and rough sawn planks should be phased out as soon as possible. Following the appointment of a new General manager at the mill the rate of capacity utilization has improved from below 10 per cent to around 40 per cent. Production in 1988 reached 7.5 million cubic meters of plywood of sawn hardwood, 1.2 million cubic meters of plywood and multilayers, 4,000 flush doors, and 200 sheets of block board. A second phase of rehabilitation is envisaged. There has been a subsequent decline.

A small domestic paper products industry exists in Uganda, composed of four firms making different kinds of paper products, but this is heavily dependent on imported inputs which are expensive and use foreign exchange. Print Pak (Uganda) Ltd makes cartons, boxes, bags and general printed items using imported clipboard, kraft and plain paper. It supplies some important industries in Uganda such as cigarettes, beer, footwear,detergents and educational stationery industries. Capacity utilization has been around 20-40 per cent. Papco Industries uses imported pulp and chemicals, and produces a range of products from writing to wrapping paper. Associated Paper Industries Ltd produces large multi-ply sacks of 10-50 kilo capacity used in the cement, sugar and food processing industries but has been operating at between 10 per cent of capacity. Mulbox Ltd produces corrugated board and associated printed cartons for a range of industries, including fruit and vegetable exporting, but its capacity utilization has been as low as

3-4 per cent. Ownership issues remain in relation to some of the enterprises.

In Swaziland there exists one wood pulp mill, a paper mill, a corrugated craft container plant and about a dozen printing and publishing units. Swaziland paper Mills is the largest enterprise. Wood pulp is produced by processing renewable timber from man made forests. Unbleached wood pulp is produced from locally grain pine trees. Pulp paper containers and kraft paper is also produced as is packaging material. A significant propertion of the output is exported to neighboring countries. Quality of output is poor and there is a serious shortage of marketing outlets. Financial management of the major companies is weak and capacity utilisation rates are low.

Wood products include saw-milling, timer processing and furniture manufacturing, and utilizes Swaziland's extensive forestry resources. The country has one of the worlds's largest man-made forests covering a total of 103,566 hectares as well as two medium-sized natural forests. The wood and wood products industry is very important in terms of employment creation and revenue generation, and is one of the largest employers of unskilled labour.

The industry currently comprises two sawmills, three wood processing plants and four medium scale furniture workshops. In addition, there are also a number of smaller workshop producing simple household, office and school furniture. While timber processing and saw-milling enterprises are located near the sources of raw materials, the larger furniture manufacturers are located at the Matsapha Industrial Estate and at Mbabane. Smaller furniture producers are also located at the SEDCO estates in various parts of the country.

Lack of marketing outlet and poor quality of production are the main constraints on the wood products break in Swaziland.

The wood processing branch accounts for ten per cent of manufacturing employment in Namibia Saw milling and furniture production are the main activities. Production techniques are labour intensive with little use of elecric machines. Capacity utilization was estimated at 60 per cent in 1994.

Forest resource capacity is estimated to sustain 22,000 cubic meters of logging per annum. But actual logging is about 5,500 cubic meters per year. Teak harvesting is only about 5 per cent of sustainable levels. A very small proportion is locally processed and most of the wood harvest is exported to South Africa. There are three saw mills which also produce furniture. A large number of smaller terms are scattered through hert the country. These produce office and

kitchen furniture and wood carvings and curiors. Although may firms are export oriented luck of packaging materials limits exporting possibilities. Packaging material is produced by only on e company in Walves Bay. There is scope for investment in this industry as hard wood is relatively abundant and imports and extremely high priced.

According to a 1984 pulp and paper study, the raw material resources of the SADC region are more than sufficient to supply its requirement in wood pulp for the foreseeable future. The total potential supply of pulp from existing plantations and cane mills is over 2 million tpa, of which halp derives from softwood, 22 per cent from hardwood and 28 per cent from sugar bagasse, plus small quantities of straw, recycled paper and rags. In comparison, projected SADC consumption in 1995 320,000 tpa, which is 16 per cent of the present maximum supply.

Regional production of pulp in 1983 was 214,000 tones, the bulk of it from the Usutu mill in Swaziland and most of the remainder from the Hunyani and Mutare mills in Zimbabwe. Since then the integrated Southern Pulp and Paper Mills at Mufindi in Tanzania has come on stream and is currently turning out about 30,000 tpa. The regional output is thus about 245,000 tpa.

Projected regional demand for paper is a function of existing and additional paper production. The quantity of paper produced in SADC memeber states, estimated at 81,500 tones in 1983 and about 120,000 tones in 1986, has been well below the level of consumption, estimated at 170,000 tones in 1983. Imports in that year were 101,000 tones, of which probably less than 10 per cent came from other SADCC countries. Five countries imported all their paper and only Zimbabwe imported less than 70 per cent. Since then, Mufindi has come on stream at about 50 per cent of its rated capacity of 60,000 tpa and Tanzania is now self-sufficient, although paper quality remains a problem.

There was some 80,000 tpa of spare paper-making capacity out o a regional total of 200,000 tpa in 1986, inactive mostly for want of repair and rehabilitation but also, in the Zimbabwean case, for lack of foreign exchange to pay for imported pulp. By 1995, already planned rehabilitation and expansion could reduce import dependence to 20 per cent in Angola, 30 per cent in Zimbabwe and 50 per cent in Mozambique. If all plants were run at full capacity, the SADC region could be self-sufficient. A new 60,000 tpa chemical pulp mill was being developed in Zimbabwe in the early 1990s; its lead company, Hunyani Holdings, which had to be localised before the project could be supported by SADCC, has been in serious financial difficulties in 1992-93 and the Industrial Development Corporation (IDC) is now the lead institution in what is regarded as a PTA project; US$ 87.4 million project will make Zimbabwe self-sufficient in pulp for paper-making with a surplus for export.

An important industry which to a large extent overlaps with the branch is packaging materials. The industry is well-developed in Tanzania and Zimbabwe. In Tanzania, the Mufindi paper plant dominates the industry and supplies many smaller firms. There are three other processors with a total capacity of about 20,000 tones per year, and 14 registered paper packaging enterprises; the quality of output is generally low. In Zimbabwe, the industry is highly sophisticated, and includes some of the largest firms in the country, including Art Corporation, Cellophane Packaging, Flexible Packaging, and Saltrama Plastex (a division of Art), together with divisions of companies such as Hunyani Holdings, Treger Industries and TA Holdings. There are at least three manufacturers of packaging machinery. Namibia, Botswana, Lesotho and Swaziland rely heavily on South Africa for their packaging materials.

The packaging industry uses inputs from paper, agriculture glass and chemical branches.

Bag manufacturing in Angola is mainly based on synthetic materials. Bags for cereals and coffee used to be made of jute, but in 1975 the only production line was closed. The raw materials for natural fibre ags use also to be produced locally, but the disruptions of the civil war brought total dependence on imported synthetic substitutes, mainly from the Federal Republic of Germany.

In Tanzania paper bags and cardboard bxes are produced by the paper and pulp branch. The principal input, pulp, is manufactured within the branch. The main supplier is Southern Paper Mills (SPM) at Mufindi, and has installed capacity of 90,000 tones per year of newprint, Kraft, machine-finished paper and pulp.

Most other converters rely on SPM to a great or lesser extent for paper (kraft and machine-finished) and/or pulp. The paper and pulp mill division of Kibo Match Corporation at Moshi is independent of SPM, but has difficulty in securing reliable and reasonably priced waste paper supplies from Dar-es-Salaam. It manufactures board for eonversion to plain cartons.

Kio Paper Industries in Dar-es-Salaam relies on SPM unbleached pulp for manufacture of its corrugated carton board, as well as kraft paper for conversion to cement and grain sacks. It procures the thicker whit-lined boards from Kibo Match Corporation.

Twiga Paper, also located in Dar-es-Salaam, is almost entirely dependent on SPM for supplies of Kraft liner and text liner for corrugated board manufacture, and Kraft paper for conversion into grocery and other bags. it also uses some yellow-machined paper from SPM for tea-bags. The quality of the paper is inadequate for exports, and the company uses imported machine-glazed paper in its place.

The bag manufacturing industry in Zambia is almost exclusively dependent on imported raw materials, making it very vulnerable in view of the foreign exchange constraints. UNIDO survey found in mid - 1988 that the foreign exchange cost of these imports was estimated at ZK 45 million per year (although subsequent currency devaluations have boosted these costs).

Ploypropylene and polyethylene granules are imported from Europe. There has been a steady increase in the price of polypropylene. The price of polyethylene increased in that Jute prices were US$ 483/tones for BWC quality and US $452/tones for BWD quality.

Bag manufacturing in Zambia has many forward linkages but its backward linkages are weak Figure 1V.3 depicts the structure of the linkages.

Figure 4.3

Source: Report of the UNIDO field mission to Zambia in May-June 1988, The regeneration of zambian manufacturing industry with emphasis on agro-based industries, PPD/R.19, 1988, P.29.

The bag manufacturing branch in Zambia suffers from a number of problems familiar to Angola and Tanzania, although the transport and input constraints are less marked than those in Angola. Raw material supplies are a problem, not least because 98 per cent of the branch's input needs are imported. Prices of synthetics and Jute for the branch increased strongly leaving it short of its import requirements at a time when general economic difficulties reduced foreign exchange availability.

The branch also relies on imports of spare parts for almost all equipment. This will remain the case, except for some simple parts that could be locally manufactured. This dependence has created further problems. When spares have been unavailable, some pieces of equipment have gradually been dismantled. In consequence, capacity has fallen and import needs risen.

The branch in Tanzania has two major constraints, the high cost and unreliability of road and rail transport, and the high prices charged by SPM for its products. This high tariff stems from heavy production costs, which are further increased by the need to subsidize exchange. All operators face stiff competition from better quality and lower priced imports.

A further constraint common to Tanzania and Zambia in this branch is the acute shortage of foreign exchange to procure essential spare parts. The branch is bedeviled by shortages: two others are heavy road and rail transport for ferrying raw materials and finished goods, and storage space to accommodate the fluctuating deliveries of inputs and dispatch of finished goods.

IV.1.2 PROBLEMS AND PROSPECTS

The section will seek to identify key problems in the food manufacturing sector and the strategy that should be adopted in specific product areas to deal with these problems and realise Africa's industrial potential.

Perhaps the single most important problem is that of declining **food security** in much of SSA. We must begin by addressing the question; what strategy for the development of the food manufacturing branches is most apposite for the achievement of food security in Africa.

The role of the food industries is that of a nexus between agriculture and industry. The provision of adequate supplies of industrial inputs is necessary both for the production of food and for its efficient distribution and marketing. As modernisation proceeds there is an irrestible neccesity for the introduction of a capitalist mode of production into food producing and distribution systems. The challenge in the developing countries has been that the introduction

of commercialised production has created a dualistic agrarian structure with a large mass of pesant household containing to depend on subsistence farming. On the other hand export of food products is often dominated by TNCs responsible both for processing and marketing or by the large public sector organisation that are now being dis mantled or privatised to Africa. Most processed exports are in the traditional "cash crop" - sugar, coffee, cocoa and vegetable oils - although canned fruit is also assuming in created importance. Export success is becoming increasingly difficult in these areas due to the development of substitutes in the development countries and the key to mantaining export success is the adoption of large scale technology. This require high foreign exchange expenditure on food technology imports or costly joint venture arrangements with TNCs. Moreover an emphasis on cash crops has important food security implications for pesants are diverted from the production of staples and grain imports (or food aid) have to be increased .

Processing for domestic consumption of food products has taken the form of an increase in branded foods - jams fruit juice, beer, concentrated milk for an urban market. Processing operations are medium sized and have tended to have higher losses due to reduction in urban incomes during the 1980s and 1990s. Branded cereal products ar heavily import dependent and have few linkages with domestic agriculture. Staple food production remain semi processed or not processed at all.

The African food processing industries have lower than average productivity (as argued in section III) and the productivity gap between Africa and developed country systems has grown wider over time, hence imports of rice, wheat, soya and animal feed - as well as food aid - has shown a seculer upward trend. Demand for food in Africa has become import intensive and increase in per capita consumption has not led to a greater liralisation of grain processing. The continuing institutional stasis in the African countries and the weak position of the small holder reflects both the import dependence of the food production and distribution system and the worsening patterns of income distribution in Africa. African elites - in sharp contrast for example to the urban population of the Republic of Korea - are abandoning traditional patterns of food consumption. This has a negative impact both on the growth of the domestic market oriented food processing branch and on food security in general. Increasing volumes of food imports require new habour infrastructure, storage facilities milling capacities and technologies and the development of these facilities has to be financed from the aid supplied by the country which is the source of the food imports - Africa's dependence and vulnerability to external shocks is US further enhanced. Processing technology development related to imports - incorporated in many milling and poultry projects - weakens agro industrial linkages and thus enhances food insecurity.

There is an urgent need to increase investment in grain production in Africa. SSA currently has the lowest per capita cereal consumption levels in the world.

Table 4.4

Market Demand for cereals in 2025 on the hypothetical per caput levels of consumption (all uses, with rice milled)

	Developed		Developing				
			Sub-Sah. Africa	South Asia	Others	Total	World
1989/1991							
Per caput consump. (kg)	621	137	182	280	236	327	
Population (million)		1251		474	1117	2443	4043	5285
Total Consumption		777		65	203	203	953	1730
(mill.tons) 2025							
Per caput consump. (kg)		621		190	240	360	296	351
Population (million)*	1422	1207	1939	3726	6872	8294		
Total consumption		883	230	465	1341	2036	2919	
(mill. tons)							

Source: Alexundratos N and de Haren H. World consumption of cereals: will it double in 2025". Food Policy volume 20 (1995) p.355-366.

Alexandratos and de Haren (1995) conservatively estimate an increase of about 39 per cent in per capita cereal consumption in SSA over a 35 year period (Africa's cereal consumption per capita would still be only 54 per cent of the world and 64 per cent of the developing country average). Cereals consumption in SSA would rise by over 250 per cent according to these projections. SSA's present net grain imports are about 25 million tones. Unless production expands significantly imports will have to rise to 90 million tones in 2025. This is clearly unsustainable given SSA's foreign exchange earning capacity and the crippling debt burden.

Rising levels of cheap food imports and food aid have clearly been injurious to the local grain producers. Several studio (Tscherley etal 1986) have shown that imported grain (specially yellow maize) has been used in a substitute for locally produced cereals and the milling industry has developed in a manner which makes it difficult to increase processing of local grain. Continued availability of food imports at subsidised prices (subsidised that is by the exporters of these products) depresses incentive for producers and traders of local grain and investment in the production and marketing system falls. Food valueability and insecurity is thus enhanced. A

country such as Mozambique which could easily be a net regional food exporter remains "one of the most food aid dependent countries in the world" (Tscherly 1996 p.190). Preference for local grain is gradually eroded and the price differential required to switch from local to imported grain is reduced. Indeed in some African countries there is now a well established preference for imported grain and this preference has been shown to be price inelastic in the case of Mali (Dibley etal 1995). Substitution of foreign for local grain is usually most pronounced for lower income groups in urban area : Major traders prefer to specialise in the marketing of imported cereal and to stay out of local grain market. The management of food aid creates large rents for these traders who are usually the official consignees receiving and distributing the food aid shipments.

The growth of local grain processing is not inhabited by price factors. It has been shown that contrary to popular beliefs - course grain dishes are often cheaper than rice based dishes in African countries. Moreover course grain dishes need not take longer to process and prepare if the de hulling process is mechanized. Improvements in the efficiency of the processing system is required if the present relative cost advantages of the course grain dishes are to be preserved (Dibley 1995). Dibley's results although derived from centers in Mali "are true for a wide range of rice and coarse grain prices and opportunity costs of women's time suggesting that the findings apply more generally to the urban sahel (1995 p.43). The cost disadvantage of imported grain is likely to continue to rise as the external value of African currencies depreciate.

Thus cost differentials do not explain the rise in the consumption of imported grain in urban Africa. A rapid increase in the production of coarse grain in many African countries is technically feasible. The single most important food staple in SSA is maize its production has expanded rapidly in recent years and now accounts for over 40 per cent of total cereal production. Maize will play an important role in any strategy designed to arrest the decline in Africa's per capita consumption of food. Demand for maize in SSA is expected to grow at an annual rate of 3.2 per cent over the next two decades (Byerlee and Saad 1993). Many SSA countries have introduced new maize varieties and hybrids are increasingly available over many areas. Appropriate crop and resource management technology specially for maintaining soil fertility are however lacking. The commercial application of successful maize research is very slow. So that they are instances of countries with successful research having declining per capita maize production (Byerlec 1996)

Over 300 improved maize varieties and hybrids have been introduced since 1960 - the pace has accelerated significantly during the 1980s. Delivery of improved seed

Table 4.5

Maize area planted to improved varieties and hybrids, Sub-Saharan Africa, 1990

to small holders is adequate in countries such as Zimbabwe but very low in Ethiopia and Tanzania. Hybrid maize has slowly spread to dryer areas in many Eastern and Southern SSA countries and in the West African savanah areas about 33 to 50 per cent of the maize area is now planted with improved hybrids and other modern varieties (MVs). Improved varieties have often been introduced in areas where maize is mainly grown for home consumption.

Maize research has given insufficient attention to problems related to grain processing and storage Dent hybrids have low stability and processing potential and formers prefer 'flexity' non hybrids varieties which can be easily stored and processed. Productivity growth has been restricted by the fact that application of chemical fertilizers to maize is very low. A major increase in the use of phosphorous and other materials is oriented for increasing maize production. Fertilizer costs are prohibitive in many parts of SSA due to inadequate transport and infrastructure and buying disadvantages associated with small purchases. Rates of return on application of fertilizer to both local and hybrid maize is low. Increasing fertilizer use efficiency - i.e. the rate of conversion of materials into grain - remains critical in raising production in this sector.

Technologies for enhancing soil fertility have been less effective than those for the improvement of seeds. A key concern of industrial policy must be to provide inputs for soil enrichment and for increasing the production of locally grown crops. As has been seen earlier although much remains to be done to improve production systems and structures the principle constraint on the growth of cereal consumption remains that of demand. The challenge is to create maize, millet, sorghum and cassava based processed products, which can effectively substitute for wheat and rice based products in urban markets. This calls for an analysis of the traditional milling industry and identification of possibilities for increasing its productivity and the range of products it is capable of producing. It also calls for an expansion of marketing system and development of marketing strategies to increase the acceptance of coarse grain based produce specially in urban markets. In our view increasing the processing of coarse grain products in a manner which reduce the growth in demand for imported food stuffs is the single most important element of a strategy which seeks to ensure food security in Africa. This is so for two reasons first imported food displaces local production in a sector which provides livelihood for the majority of Africa's population and a relative decline in this sector is likely to create massive unemployment and income distribution problems. Secondly given the persistent shortage of foreign exchange reliance on food imports is not a sustainable policy in a macroeconomic sense - Africa will find it extremely difficult to afford a tripling of food imports over the next thirty years. Rapid increase in the processing of coarse grain can be an effective means for reducing the need for grain imports. It can also stimulate rural urban linkages as the natural location for coarse grain processing units are small towns and villages.

It is important to stress that supporting an economic sector (such as coarse grain production) necessarily entails shifting resources to it from another. Two industrial sub-sectors have substantial excess capacity in Africa, cocoa processing and sugar. A strong case can be made (section 4.1.g) that attempting to expand cocoa processing is not likely to lead to significant gains for either Cote d'Ivoire or Ghana. Concentration is increasing in the cocoa processing industry and investment is moving from developing to developed countries. The larger producers have moved to more centralized processes and thus reduced gains of sellers of cocoa butter and cocoa powder. The ratio of the prices of cocoa butter to cocoa beans which rose sharply in the mid 1980s has proved unsustainable. Cocoa liquor (of which Cote d'Ivoire is the world's leading producer) prices have also stablished at a low level in the 1990s. Africa has traditionally been the highest cost processor in the large scale plants.

Once other factors are added to the costs of production, cocoa processors at origin, particularly in West Africa, are shown to be at an even greater disadvantage. If assumptions about the recovery rates of cocoa butter and cake at the factories are relaxed, then the results point to

even less profitable factories at origin.

As intervening factor is the quality of the beans used in processing. All producers at origin face the trade-off between, on the one hand, exporting beans and receiving the premiums or discounts prevailing on the world market, and, on the other, processing the beans into products. The trade-off is least favorable for those producers, notably in West Africa, whose beans command the highest prices on world markets, even though processors also use a disproportionate share of substandard beans. It is most favorable for South East Asia, since its beans attract the largest discounts from importers. The counterpart of high bean prices tends to be high product prices. West African beans attract premium prices and African butter and powder are usually quoted at a premium compared with products from other countries. However, they sell at a discount compared with products generated in consumer countries because of differences in product quality and service.

For these reasons moving out of cocoa processing and gradually shifting land from cocoa to food grains seems a rational policy for West African countries. The pace at which this can be achieved depends among other things on the development of alternative sources of export revenue. This should not be impossible in countries like Cote d'Iviore and Ghana which have relatively diversified industrial instruction.

The case of sugar can (processing is much more) complex. Africa produces 5.5 million tones of sugar annually which is about 5 per cent of world output. International sugar prices are expected to stabilize as tariff levels and government protection is gradually reduced and the share of internationally traded sugar in total production is likely to increase. The share of international traded sugar in spot markets (i.e. not subject to fixed price long term contracts) to total production is however currently only about 16 to 18 per cent in most years. The gains Africa enjoyed by preferential access to Eu markets are also likely to be eroded. Many large African countries Nigeria, Algeria and Morocco are net importers of both cane and white sugar - the latter two concentries import raw sugar for their refineries. African countries with the exception of Mauritius, Swaziland and Zimbabwe have very low per capita consumption levels and therefore, there is considerable scope for expansion as income rises.

Technical progress in field and processing operations is becoming increasingly important for the long run competitiveness and viability of leading beet - and cane-sugar producers. This has been especially important in recent years, as industries in several countries in the South (such as Argentina and Mexico) have reduced the role of the State and opened their markets up to foreign competition. The need to compete with foreign rivals, amid the rising costs of inputs

such as labour and energy, has encouraged producers to seek ways to increase productivity and reduce costs.

Trade liberalisation is expected to lead to a shift of sugar investment towards low labour cost sites in Africa and Latin America but given existing technologies low labour costs are not likely to be a major determinant of international competitiveness. Export prospects for African based sugar enterprises do not look particularly bright in the years ahead.

It is also argued that if as a result of its Uruguay commitments the EU moves towards more liberal sugar policy this will depress domestic and preferential sugar prices in the near future, thus damaging ACP sugar related foreign exchange earnings (Mc Donald 1996). Under the Sugar Protocol attached to the Lame Agreement Congo, Cote d'Ivoire, Kenya, Madagascar, Malavi, Mauritania, Swaziland, Tanzania, Uganda and Zimbabwe have been awarded quotas at prices equivalent to EU domestic prices to perpetuity. Changes in the prices of domestic EU sugar impact directly upon ACP producers. Only in the case of Mauritius and Swaziland are the benefits of these quotas substantial in terms of total export earning (Mauritius) share of the total "transfers" generated by the sugar policy were estimated at 37 per cent between 1974-92, Mc Docanld 1996 p.143). An adjustment of EU domestic sugar prices in accordance with its Uruguay commitments would be disastrous for Mauritius - its revenue from sugar exports under the protocol are estimated to decline by about 40 per cent in the medium case. This is equivalent to 13. 5 per cent of its export earnings. Swaziland would be less seriously affected and the impact on the six other African countries would be trivial (Mc Donald 1986 p. 142-143). In any case agricultural liberalisation is on a very "slow track" and modification to existing price structures are likely to be minimal - under the minimum price adjustment scenario (which in my view is more realistic) Mauritius revenue loss is estimated at only about 5 per cent (1.1 per cent of export earnings). This the change in EU sugar prices cannot be expected to have a significant negative impact on the export prospects of the African countries.

On the other hand there is considerable scope for efficient import substituting investment. This would require a restructuring of the industry structure and a reduction in its capital intensity. This requires the promotion of an efficient small-scale technology capable of being disseminated in rural regions and of contributing to employment and income in those regions. The Indian experience provides a good example of the possibilities offered by small-scale sugar technology. During the 1970s, Indian engineers designed efficient plants with an average production scale of 1,000 tones/year. Small-scale plants of this type cost about one twentieth as much as the modern large-scale plants being established in Africa. They can create 300 positions with the investment required for one job in the large plants and their investment costs per tone are about

one fifth those of the large units. Even if sugar extraction rates are slightly lower, this type of technology seem to offer better possibilities of reducing the gap between insufficient demand and huge potential needs. However, despite the fact that it also opened interesting channels for technology transfer among developing countries, this technology has not yet received the attention it warrants.

The development of the cane sugar industry is particularly attractive because of its very wide range of by products.

The products include cane tops, which can be used an as input into the annual feed industry. The most important by product is bagasse.

Figure IV.5

Principal Sugar-Cane Derivatives

The bagasse is the fibrous residue that is obtained in the milling station of the sugar factory during the extraction of juice. In comparison with other vegetable residues, bagasse as a fibrous material, has a series of properties with the greatest possibilities for industrial use, since large amount are available. From the industrial point of view, the bagasse can be divided into two fractions: the fibre (70% of the whole bagasse) and the pith (30%). The fibre constitutes the industrially required factions for the production of pulp, paper and particle boards. The most extended uses of bagasse are as a raw material for the manufacturing of pulp, paper, particle boards, furfural and of course, as fuel in the boiler furnace of the sugar mills, 1 t bagasse (dry basis) being equivalent to 0,34 to fuel oil. Bagasse can also be used for animal feed.

The use of baggasse as an energy source has been widely recommended both at the domestic and the industrial level. A country such as Mauritius should be able to produce a significant proportion of its electricity requirements from bagasse. Bagasse can also be used for producing pulp and paper fibre board and particle board.

Chemicals can also be extracted from the cane. Furfural is the most important by product in this group. It is used as a raw material for the production of furfuryl alcohol, tetruhydroforan and its derivatives. Other by products include molasses, yeast, lysine, citric acid, mono sodium glutamate and diestrum

TABLE 4.6

PRODUCTS OBTAINED FROM MOLASSES

Direct utilization:	-	Exportation
		- Fertilizer
		- Animal feed
		- Rum
		- Ethyl alcohol
		- Rectified spirits
Distillery industry:	-	Anhydrous alcohol
		- Alcohol derivatives
		- Vinegar and acetic acid
Other fermentation industries:	-	Buthanot-accetone
	-	Citric acid
		- Lactic acid
		- Glycerol
		- Yeast (baker's) (fodder)
Miscellaneous	-	Aconitic acid
		- Monosodium
		- Dextran
		- L-Lysine

The harvest waste comprises those by-products of the industry that have been used least, although very large quantities occur.

In many countries, the harvest waste is burnt on the fields owing to the difficulties of manual cutting. It is also used as animal feed, although usually on a spontaneous basis. Some experiments on its use as fuel are rivals reported.

There are two basic components of harvest waste: the green components such as the top and fragments of sugar cane, and the dry, fibrous components, such as trash, dry leaves, etc. The green components are characterized by their content of juices containing sugars and the dry components by their low density and highly varied shape.

In general, harvest wastes have a high content of fibers and few proteins. By the use of fermentation processes, it is possible to improve their protein content and nutritive value. The low density of the wastes affects their transportation, so that in some countries methods are being studied of separating the various types and compacting them in order to improve their handling characteristics and reduce handling costs.

The utilisation of these by products has not been methodically developed and a case can be made for developing a regional initiative for this purpose. Such co-operation can play an important role in enhancing the profitability of the industry and on technological updating of the production process, quality improvements and the enforcement of environmental standards at factory level. The key problem of the African sugar industry are:

a) very high production costs, partly a consequence of high costs of technology procurement.
b) poor installation and maintenance
c) lack of product diversification
d) absence of appropriate training and research
e) low levels of inter Africa trade

African sugar producers can learn from the position experience of the group of Latin American and Caribbean Sugar Exporting Countries (GEPLACEA) which has done much to enhance policy co-ordinate in Latin America. GAPLACEA has offered to support African initiatives in this field (UNIDO 1990).

The sugar cane industry thus needs restructuring and rehabilitation not expansion in capacity. Policies concernal with these issues and with the acquisition of more appropriate, less capital intensive, technology can pay dividends. This is one area where regional co-operation between sugar exporting and sugar importing nation can play an important role.

Another branch with export potential but serious rehabilitation and restructuring problems is the fruit and vegetable processing industry. This industry has expanded rapidly in many developing countries whose imports of processed products has fallen while that of the developed countries has increased. World trade in vegetable and fruit juices has also grown very significantly for over two decades. Trade in tropical fruit juices (pineapples, mango, passion fruit) is on its way to becoming a billion dollar business. Trade in dehydrated vegetables has also risen. Prospects of further expansion are good as there exist wide divergences in per capita fruit juice consumption in different OCCD countries.

A number of markets still, therefore, have considerably growth potential. Secondly, demand should also continue to receive a boost from the growing health consciousness of consumers, new developments in product lines and packaging, and more aggressive marketing being undertaken by the juice industry. Thirdly, fruit juice raw material is used more and more in other food products, e.g. dairy products, in particular in yoghurt, bakery products and baby food.

The fruit juices business is dominated by the TNCs. Their involvement in processing in developing countries has been largely in terms either of producing for final consumption in the local market by higher-income urban consumers, or of producing intermediate products for export to affiliated companies which carry on processing to the final stage and marketing in industrialized countries. These has been only limited success in developing countries by domestically-owned firms entering into competition with TNC's through the introduction of indigenous brand names or impending into foreign markets.

There are serious constraints on the development of the fruit and vegetable processing industry. Domestic consumers have a strong preference for fresh product. Another limitation is the prohibitively expensive canning and packaging inputs. Seasonality, perisbablity and variability of fruits and vegetables also pose serious problem and the storage and transportation system is not adequately equipped to deal effectively with these problems.

Because raw material is seasonal, available at the end of the crop cycle, raw material supply is usually available only during one or two brief periods during the year, while the demand for the finished product is relatively constant throughout the year. Unlike the non-agro industrial manufacturer, fruit and vegetable processing must contend with a supply-and-demand imbalance and problems of inventory management, production scheduling, and co-ordination among the production, processing, and marketing segments of the farm-to-consumer chain.

Raw materials are perishable and often quite fragile. For this reason, they require greater speed and care in handing and storage, which can also affect the nutritional quality by reducing the damage or deterioration of the raw material.

Quantity is uncertain because of weather changes or damage to crops from disease. Quality varies because standardization of raw materials remains exclusive, even though there have been advances in plant genetics (this is in sharp contrast to the extensive specifications for standard materials used in other manufacturing industries). These variations exert additional pressure on the plant's production scheduling and quality-control operations.

Furthermore, the raw material is usually major cost component. Tus, procurement operations fundamentally shape the economics of the enterprises.

Marketing in international markets are problemastic as these are dominated by TNC- thus although, 90 per cent of world exports of orange juice originate from Brazil, the bulk is sold under the brand names of well-established and well-known transnational corporations domiciled

outside brazil. in the developing countries themselves, transnational corporations also frequently hold a dominant position, whether in respect of the semi-precessed or fully processed goods.

Frequently, the proportions of different raw material inputs used to produce a final product are influence by the desire of the firm to differentiate its product from that of its competitors. producers with processing facilities located in or close to principal consumer markets are clearly better able to react quickly to changes in market conditions than producers in developing countries, who have only a limited influence on the world market for final goods an limited knowledge of changes therein.

The transnationals exhibit a strong preference for unprocessed or semi processed purchases of fruit and vegetable from African countered.

In our views the single must constraining factor in this sector is the unavailability of realistically priced canning and packaging material.

Containers are a serious handicap and add to the final cost of the product. The average cost of a container ranges between 40-50 per cent of the price of the final finished product. The price of the product is prohibitive beyond the average income and purchasing power of the average citizen. When it comes to export also it poses the same problem, then it cannot compete with similar products on sale by other countries. A local material has to be found to reduce average sale unit price in order to make it competitive. The African countries in general require urgent support and assistance in packaging and handling.

Another major constraint is the state of the processing plants.

Almost all major processing plants, currently operational, are public-owned in partnership with private sector or being positive.

Equipment used generally is simple, out-of-date and a low- capacity, exacerbated by lack of spare parts and maintenance problems. There are also some equipment and machineries on modern lines, capital intensive with consequences of heavy cost burden and non-competitive. Consequences of such situation has lead to capacity under utilization.

The processing plants generally depend on the supply of trial basic raw materials which may not be available on a continuous basis, throughout the year. But there are several vital input materials that has to be imported such as chemicals, fuels, oils and other intermediary goods,

always adding to the cost.

In general, the fruits and vegetable processing industries would require rehabilitation, reorganization, technologies, modern management, in order to make them efficient and competitive. Industrial measures including proper quality control can facilitate progress towards a modern fruit and vegetable processing industry.

The equipment and machinery utilized generally is obsolete and out-of-date. The cost is high especially in terms of spare parts, maintenance service, etc. The equipment, machinery and spare parts are imported from developed countries, and more often than not, the imported technologies are not suitable and appropriate for the existing socio-economic conditions.

In the absence of skilled and experienced management and work force, one is faced with poor manufacturing practices, materials handling and plant lay-out leading to inefficiency and economics loss. Most of the equipment and machinery used are second hand, brought under special contractual arrangements. In such a situation, the suppliers of second hand machinery are usually unable to provide adequate back-up service or spare parts. Finally, the capacity of the equipment and machinery does not respond to the immediate needs of the market and is often either too big or too small.

The potential for exports and for a major expansion in domestic consumption has to be carefully assesed.

The African continent produces a variety of fruits and vegetables, due to its diverse climatic and soil conditions and abundance of human resource. The various African Climatic zones, that is, tropical, sub-tropical, arid, semi-arid and temperate highland are suitable for almost all fruits produced in the world.

The total production of fruits and vegetables reached about 69,563,000 tones in 1986. The per capita production and consumption is much lower than the actual potential. Through policies, strategies and programmes, coupled with public education and sale promotion, the production and consumption could be increased substantially.

Africa's share of world production is higher than 15 per cent in tomatoes, artichokes, pumpkins, pineapples, bananas, chilies and pepper. In date and citrus fruit this share usually exceeds 35 per cent in a normal year yield per hectre has been rising in the case of many fruits and vegetables. However the current condition of the processing industry - specially in North and West African - is serious. It is in no position to effectively exploit its material resource advantages. A major rehabilitation effort seems to be necessary. This should include a programme for reducing packaging and canning cost. Availability of relatively low cost packaging material is vital for the revitalization of the industry.

The development of the oil seeds industry also has considerable potential. Major constraints on its expansion are:

a) Insufficient supply of raw materials due to drought, floods, pest and disease; lack of adequate incentives for farmers to grow vegetable oil-seeds;
b) Limited market for further processed oil-seeds and oil products and their co- and by-products;
c) Lack of co-ordination among the various bodies responsible for production, processing and marketing;
d) Some of the technologies used in the developing counties are alien to the practical realities and socio-economic conditions;
e) Limited number or lack of co-operatives and associations for the vegetable oils and fats industry and failure to establish a network of collection centres;
f) Poorly developed infrastructure;
g) Permanent shortages of spare parts in processing plants;

h) Acute shortage of skilled manpower.

The role of co-operation in promoting effective marketing has proved crucial. The setting up of group processing facilities has improved product quality, supplies and prices.

Contractual agreements between farmers and manufacturers or retailers also deserve to be promoted as alternative to co-operatives and market boards. They may be preferred in developing countries where oil seed are mainly grain by small holders.

Plant productivity is limited due to lack of trained manpower, high energy and marketing costs and lack of appropriately priced, packaging material. Nevertheless significant progress has been made in major crop based oil processing plants. In Zimbabwe for except a private farm Essen Oil Company is a clear success story. The company producers essential oil from several crops grown in Zimbabwe. According to a recent report by an international expert (UNIDO 1996) it has good prospects.

Following the installation of a fractional distillation unit and the transfer of technology for its operation, Essen Oil/have the capability to fractionate a range of essential oils. The capacity of the unit is not sufficient for the economic commercial processing of lower value oils but will provide the information on which to base decisions on upgrading to a commercial capacity. However the unit should be suitable for the isolation of high value individual components in small volumes.

Observation and discussion of the equipment and procedures for the primary distillation of essential oils at Essen Oils indicate that there are no major shortcomings in the processing of oils. There are plans to establish a small pilot for experimental purposes which will be necessary for the screening of material for diversification.

Marketing of its products remains a major concern of Essen Oil. Severe difficulties are encountered with communication with buyers overseas because of the inadequacy of the telephone system. Without reliable and rapid international communications it is difficult to respond to buyers enquiries and to obtain up to date information on market trends and prices. International surface shipment of oils is difficult as it has to go via South Africa or Mozambique with the associated delays and difficulties. The alternative use of airfreight is only viable for high value oils due to the higher costs. Future marketing strategy should therefore be aimed at supplying high unit value products internationally by air and lower value oils within Zimbabwe for import substitution and regionally in Southern Africa. With the fractionation facility it should

be possible to meet local buyers specification. Diversification should be aimed at high unit value or value added products unless there is a clearly identified sustainable local demand for a product.

Essen Oils is a well managed commercial operation in which any developments must be shown to have an economic justification. The association with Redevelopments Ltd should improve considerably the marketing of its products.

The company has sought to manlact product quality. The methods used for quality control of essential oils at Essen Oils Ltd are commendable. In a country where the essential oil industry is still a cottage industry and advanced technology support is limited, the Essen Oil laboratory is making a determined effort to come to grips with adequate quality control. The instruments available have been purchased second hand when suitable opportunities have arisen. Essen Oils have show much initiative in acquiring this equipment and learning through reading the literature and by experimental trial and error the art of obtaining analytical results. They are aware of standards, physical constant and bench chemistry methods used in determining essential oil quality.

Furthermore there is considerable potential for expanding small scale oil milling operations at the village level. If relatively inexpensive milling techniques can be introduced there is significant scope for expansion of oil seed processing in several African countries. Several small oil processing machines have been introduced in East Africa since the mid 1980s. These include the KIT/UNATA system developed in Zambia, the Ram press introduced in Tanzania, an Indian made Tiny Oil Mill system several versions of small european expellers and CEOCOO expellers from Japan (Hyman 1993). These have proved popular but their widespread adoption depends on how they are introduced.

Small-scale processing of an agricultural product for local consumption can be a viable alternative to the sale of raw products to parastatals or large corporations. Small-scale producers will adopt new technologies where the benefits are large enough, the costs affordable, and the risks manageable; however, the characteristics of early and later adopters may differ. Government policies relating to imports of edible oils, purchase prices for oilseeds, and the ability of farmers to process oil themselves can have a large bearing on the incentives.

Flexibility in the type of technology promoted is important, but many of the problems that may lead to rejection of a technology can be anticipated or avoided if a through assessment of the social and economic factors affecting technology choice is done in advance of implementation.

The dissemination of new technologies to the rural poor i LDCs usually requires more than just the provision of information, especially in the initial stages. Manufacturers need accurate engineering drawings and a list of acceptable, alternative parts.

The Ram press projects in Tanzania were able to achieve a significant impact because they concentrated on commercialization of single technology and adopted an integrated approach of providing assistance. This assistance included access to equipment, extension services, credit, and training of manufacturers and users. Another important characteristic of the Tanzanian experience was the continuity, commitment, and perseverance of the project staff.

One of the main factors leading to the success of the Tanzanian efforts was a strong emphasis on getting the technology into the hands of farmers who can actually use it. Once field tests have shown that the cost and reliability of a technology are satisfactory, one of the best ways to identify areas for further improvement is to begin disseminating it to users. At that point, it may be best to keep the design constant for a certain period of time and then gradually change a few aspects so that the effects of the changes can be easily monitored. over time, further improvements may be made by both manufactures and users. In general, it is important to have a simple design that is inexpensive and easy to produce and to foster competition among producers. In countries where local levels of skills in manufacturing and repairs are lower, however, some tradeoffs may have to be made in favour of greater durability over lower cost.

By working with existing small-scale metal workshops, a sustainable manufacturing system for a technology can be created that minimizes the risks to the manufacturers. The new press may be only one item in their diversified product lines and it need not require any equipment or tools that these workshops are unlikely to already own. The fixed cost of adding this product to their manufacturing process is basically the cost of the recommended jigs and fixtures, and 1-2 weeks of training for their workers. it is estimated that manufacturers in Tanzania are earning a profit margin of at least 25% over the costs of production in the ram fibre fabrics.

Another branch which should actively be promoted is fish processing - This industry has grown rapidly in recent years and world production is currently estimated at over 100 million tones. In Africa there has been little overall expansion and virtually none at all in the processing of industrial catches. Industrial fishing is concentrated in countries on the South East Atlanta shelf and inland riverine fishing is well developed in Chad, Egypt, Uganda, and Tanzania. Morocco and Mauritania are major suppliers of chephelopods demand of which is expected to grow with good prospects for the Atlantic suppliers as Japan and Republic of Korean catches in the North Pacific have been reduced African countries are also major suppliers of pelagic species, the

future of which remains uncertain and over fishing threatens all species, with the possible exception of anchovies, herring and sardines (Angola, Mauritania). This threatens to limit the potential of the markets; at the same time world demand seems to be weakening, except perhaps in some developing counties and, in the medium term, in Eastern Europe. Such changes should constitute no great threat to the pelagic fishing industry, in so far as the fish can be alternatively processed into oil and fish-meal.

Many OECD countries are now confronted with declining populations of both fish and shellfish, largely because of careless over fishing. This has resulted in excess capacity for their fleets. In developing countreis, capacity utilisation rates can be weak. Many African countries, for example, do not use all the potentialities of their artisanal fisheries. New processing industries (canneries, freezing facilities etc.) could also be used more intensively. In the case of Mauritania, utilization rates of its freezing units did not exceed 25 per cent in 1990, and the distribution network of frozen fish remained largely under utilized.

In many OECD countries, recent industry restructuring has lowered production capacities between 1985 and 1990, the number of vessels declined by 5 per cent in Canada, 14 per cent in Denmark and 30 per cent in Norway. Much of the reduction has been aided by subsidy policies on the part of Governments.

The share of development countries in world fisheries has increased regularly. Since 1985 it has exceeded that OECD countries. But a great part of the expansion has been linked to inland fisheries. In 1990, developing countries accounted for 86.1 per cent of world inland catches, compared with 80.6 per cent in 1981. In developing countries, this represents 22.1 per cent of all landings, compared with only 4.8 per cent in OECD. Much of this is due to the success of aquaculture in those countries. In 1990, they accounted for 66.9 per cent in value of the world aquacultural supply, compared with 61,9 per cent in 1984. Sources of this expansion include marine aquaculture, the farming of shrimp in Ecuadoe, India, Indonesia and Thialand, the farming of salmon in Chile etc. Marine catches have also experienced a considerable growth in developing countries. Indeed, between 1981 and 1990, catches increased by 50.2 per cent in developing countries, compared with only 4.2 per cent in OECD countries.

In Africa in 1990, landings per capita reached 8 kilograms, compared with 13.9 kilograms in developing countries; 19.7 kilograms in the EEC; 27.1 kilograms in North America; 32.9 kilograms in developed countries and 37.9 kilograms in Japan. However, serious regional distortions still exist. Indeed in 1990, eight countries (Chile, China, India, Indonesia, Peru, Philippines, Republic of Korea and Thailand) accounted for 72 per cent of the total catch and

90 per cent of the increase in the catch of all developing countries. At the same time, Africa has an extremely small industry.

There is immense potential for increasing both riverine and industrial fishing and fish processing in Africa. Aside from pelagics, which are subject to fluctuations in catch, only krills and cephalopods seem able to support greater exploitation. Indeed, cephalopod resources have been estimated at 200 million tones. Their use could increase in human consumption, or they could be processed into fish-meal to substitute for pelagic, which are more useful for direct human consumption. Expansion of industrial fishing has been hampered by the Euro-Africa fishing agreements that have been signed since the enforcement of the Law of the Sea and the establishment of African exclusive economic zones (EEZ) in the 1980s. There is very little experience of industrial fishing in the African countries and their only realistic option after 1983 was to license commercial fleets from the deep water fishing nations (DWFN) to fish in their territories. Typically these agreements included provision for technology acquisition and upgrading of the local fishing industries.

A number of specific external and domestic constraints have compelled African countries to enter into these agreements. First, there are tariff and other market entry barriers that prevent African entrepreneurs from penetrating European markets. Second, there is an array of non tariff barriers that includes lack of knowledge of market and distribution outlets for fishery products, lack of access to appropriate industrial fishing technology, lack of familiarity with product promotion, and lack of investment capital. Within Africa itself, low income and low demand for fishery products are major constraints to large-scale development of the sector for the local market. Finally, economic dependency, especially of Frncophone African countries, has led to a high proportion of the fish trade being accomplished through monetary transfers between the CFA franc zone and metropolitan France.

Increased dependency on fishing rents and foreign fishing technology in highly centralized state systems has also resulted in the policization of access to fishery resources. Licenses and financial compensation, for example, are often used to advance patrimonial state structures within some African coastal states. Today, Africa has achieved neither self-sufficiency is seafood production, nor the generation of large revenues from access rents and licenses for its fisheries. Ironically, Africans today import most of their fish from Europe and Asia, whose fishing companies exploit and manage most of Africa's pelagic fisheries resources.

Within the framework of the Lone Concentration it has been agreed that each African member of the ACP group would negotiate with the EU as a group which would then apportion the

fishing quotas to individual fishing companies. The so called second generation agreements include provisions for:

* commitment to rational exploitation of the fishery resource;
* contribution to rural and industrial development through local landing of fish harvest;
* obligation of EU fishing companies to recruit nationals of the African coastal state as crew members on the fishing vessels;
* provision of vocational training for nationals of the coastal state to study different aspects of fisheries in an EU or ACP state;
* funding/financing of scientific and technical programs to improve information on fishery resources;
* payment of financial compensation by the EU as a bloc to a coastal state for granting access to EU fishing companies as well as license fees to be charged for individual EU vessels; and
* Penalties for infringement of fishing regulations

These provisions also contain certain technical measures for monitoring and controlling fishing activities such as zoning provisions, transshipment regulations, obligatory reporting of specifications (e.g., catch statements, etc.),compulsory inspection provisions, the presence of Scientific observers on fishing vessels, mesh-size regulations for nets, and by-catch regulations. Interestingly, most of the pacts entrust the enforcement of the agreements to the EU or to the EU fishing companies eventually awarded the licenses.

The total rent paid by the EU compared to the value of the catches is low., Moreover the ratio of rent to total catches would be even lower. if account is taken of the proportion of the catch that is not landed in the African country, not declared by the vessel owner or simply poached.

Worse still, some EU fisherman have traditionally over fished with impunity in some of the region's fisheries, with the result that most of the fisheries are on the brink of collapsing. The EU's response to reduced quotas since the 1990s has been a marked reduction by the EU of the total compensation package it is willing to pay to African countries. For instance, under the new agreement between the EU and Mauritania covering the period from 1 August 1993 to 31 July 1996, the EU reduced its financial compensation from the US$32.5 million in the preceding agreement to $29 million because the maximum sustainable yield (MSY) of Mauritania's fisheries was revised downward. The same is true of the current EU-Madagascar agreement, which shows a reduction in its financial compensation to $2.4 million from $3.2 million owing to a reduction in the MSY of the country's tuna catch from 12,000 tons to 9,000 tons. The same fate befell Comoros in early 1995, when the European Parliament reportedly approved the renewal of the

fishing agreement between the EU and the island nation, but reduced the EU's financial compensation to Comoros from ECU 900,000 (about $1.02 million) to ECU 675,000 (about $880,000) over three years. Again, this action was due to a reduction (from 42 to 37) in the number of fishing vessels authorized to operate in the Comoros EEZ. Only Morocco and Senegal, in the whole of Africa, were able to obtain an upward revision of their rent despite a downward revision of the total allowable catch (TAC) in their respective fisheries. Even if one accepts the suggestion that fishing rents have had a positive impacted on the national budgets of some of Africa's coastal states, that fact would not invalidate the asserting that the rents are low relative to the value of the total fish catch. Instead, one can make a strong case for the claim of continuing under compensation of African countries for the fisheries access they have granted to Europeans (Inedure 1995).

Very often the rents collected do not filter down to the people, especially those whose livelihood depends on fishing and who have been dislocated in the aftermath of these agreements. Only a few countries plow back some of the receipts from this sector into the industry to benefit artisanal fishers. In most others, the rent ends up in the central government treasury, from where it is allocated to more pressing demands such as civil service pay and food imports that are often used to placate the state's urban-based supporters or opponents. The inadequacy and patrimonial appropriation of these financial compensations were denounced by the European Commission, the executive arm of the EU, which noted that:

The existing financial compensation arrangements are little more than institutionalised corruption: financial compensation per se is seen as the "bribe" to the Ministry of Finance; scientific and technical cooperation funds are seen as the "bribe" to the Ministry of Fisheries; the bursaries programme is seen as a "bribe" to all senior Ministers and Officials who can use it to send faboured friends and relations on all expenses paid training junkets to Europe. (quoted in thikiru 1995 p.90)

Fish poaching has increased at an alarming role and effective steps have not been taken to counter it. Landings have not grown significantly and even in countries such as Senegal, Mauritania and Namibia, where the fishing industry is well developed the processing factories cater to a small segment of the market and employ a relatively capital intensive technology.

Some of the fish landed are intended for the plants that supply the local market, and since very few of these agreements establish the quality of the fish to be landed some of the European fishing companies simply dump their by-catch on the African countries. Most do not even land these inferior fish unless forced to do so by their host states. Senegal stands out clearly as a

beneficiary of on-shore employment and increased government revenue form local landings, because it has an established local marketing infrastructure and processing capacity geared to the export market. This has, in turn, given a great boost to local businesses. In most other signatory countries, very little of the anticipated rural industrialization has materialized, and several fishing villages and fishing ports are still impoverished. Consequently, even Mauritania has had problems in setting up adequate on-shore facilities, particularly in view of its close proximity to Las Palmas, with which it had to compete. In Guinea-Bissau there has been virtually no landings from foreign vessels, because the Guineans cannot afford to keep the cold stores operating and have insufficiently trained staff. (thikered 1995)

Some fishing companies and the EU have begun to respond to this problem by encouraging rapid modernization of on-shore equipment and boatbuiling, for instance, in Mauritania and Senegal, to adapt this production to the needs of small-scale fishermen. Today, projects for the manufacture of single - or multihull boats of aluminum or fiberglass are being suggested for replacement and extension of the existing fleet, which is assumed to be under equipped. Improvements are also being suggested for modernization of fishing equipment, harbor installations, and the like.

Strictor regulation of over fishing, limitation of poaching, expansion in landings and improvement of backward and forward landings with the local economy are required if processing of fish is to become a sustainable activity over the long run capable both of foreign exchange earnings and of providing nutritional supplements to the grain based diets of less well of consumers. Lack of refrigeration and of cold storage chains is an important constraint as are packaging inadequacies and lack of quality control. Some modern technologies can also be effectively absorbed by the artisanal sector. In this regard the upgrading of traditional fishing is of importance and it is not always easy to overcome local resistance to the replacement of wood by more efficient construction material. The development of artisanial fishing is also constrained from a general dearth of institutional credit. Lack of transportation facilities and of training are other important constraints.

There is a shortage of middle-level technicians such as mechanics, electricians, refrigeration experts and others to carry out day-to-day operations and maintenance in the fishery industries in many developing countries. It is necessary to train such technicians, taking into account the conditions of the country, and periodically to offer additional training in new techniques.

The fish processing industry can provide inputs for the animal feeding branch the development of which is important for Africa. The livestock population in Africa totalled over 207 million

tropical livestock units in 1995 and has been growing at the rate of 1.25 per cent per annum during 1981-1995. The livestock sector's share in gross agricultural production is estimated at 25 per cent for Botswana to 5 per cent for Cote d'Ivoire and Zaire. Meat self sufficiency is currently rated at between 85 to 90 per cent (Abassa 1995). As urbanisation and deferestation proceeds the production of animal feed becomes increasingly important.

The animal feed industry provides a market for many other industries. As noted above fish processing yields many processable wastes with high process components. Organic factory wastes from fruit and vegetable processing industries also have high nutritional value for cattle.

The vegetable oil industry (oilseed processing industry) produces vegetable oil and oil cakes by mechanical pressing and extracted meal by solvent extraction. In order to make a vegetable oil factory economically feasible, both products, namely oil cakes/extracted meal and the vegetable edible oil, have to be sold. Normally in developing countries an considerable market demand exists for edible oil. However, in the absence of a local animal feed industry no market exists for oil cakes/extracted meal despite the fact that these are valuable protein animal feed components. To enter the international export market means competing with soya meal which is most difficult if not impossible to be met by vegetable oil factories in developing countries. On many occasions, despite high local market demand for vegetable oil and available oilseed raw materials, the establishment of a vegetable oil factory was not feasible because there was no local market for the oil cakes. no animal feed industry existed to by and utilize the valuable oil cakes as a protein animal feed ingredient.

A further very important supplier of animal feed raw material is the grain milling industry producing flour and bran. in many developing countries the bran is directly fed to animals; it would, however, be better utilized as a carbohydrate component in mixed feed. An existing animal feed industry would provide a secure bran market for the flour milling sector and both the animal feed producer and the grain miller would profit from regular supplies and less fluctuating prices.

Considerable quantities of spent grains become available from the beer brewing industry. These spent grains are a valuable animal feed ingredient but remain largely unutilized. They have to be dried which is an expensive process. Spent grain-drying may, however, become economically feasible, together with a secure local market for dried brewers' grain as an animal feed ingredient. Again the animal feed industry may prove to be an important local market for an agro-industrial by-product with a strong development (dehydration technology and economy) aspect.

Another important sector of the agro-based industries with considerable dependence on the animal feed industry is cassava processing. Cassava is abundantly available in most African countries but remains largely unutilized in industry. For many reasons, the utilization of cassava for the production of human food is limited although it offers a potential as a carbohydrate raw material for the animal feed industry. let us recall in this context the very large quantities of cassava chips or pellets produced in Thailand solely for exports to European Community (EC) countries for use in their animal feed production sector. At the request of the EC, the exports had to be reduced and eventually ceased because of an excess of feed grains produced by the EC itself. This example shows that the animal feed production sector is in a position to stimulate agro-industrial (cassava) processing operations to a very large extent and is also able to abandon them with all the economic and social consequences involved.

In industrialized countries the animal feed industries are typically large scale and capital and technology intensive. Feed products are designed on the basis of scientific food formulation. Automation, computerization and just in time production and distribution systems are becoming common. In developing countries the market for animal feed is demand constrained. Production has to be relatively small scale and close to the market. Small capacity animal feed production plants in developing countries are not required to produce compound animal feed based on scientific feed formulations. Raw materials may in the first instance be oil cakes and cassava. The availability of agro-industrial by products will depend on the location of the animal feed factory. The utilization of agricultural residues and/or fruit and vegetable processing residues will in many cases be useful. The production of feed for ruminants may be easier because considerable quantities of roughage raw material can be used.

The scale of production largely depends on the availability of the relevant equipment. The equipment has to be suitable for this purpose and should permit the design of small-capacity factories with all the transport elements as well as technical links and connections permitting uninterrupted production.

From this viewpoint, "small scale" may start with a capacity of 1 (one) tone per hour or 2400 tones per annum (one 8 hour shift for 300 days per year) and increase to 10 (ten) tones of feed concentrate per hour or 24,000 tones per annum (one 8 hour shift for 300 days). The operation of three 8 hour shifts per day (round the clock operation) would triple the capacity to 7,200, - per annum or 72,000 tones respectively.

The production capacity of 1 ton per hour (2,400 tones per annum) may be sufficient for one medium commercial pig or chicken farm while the capacity of 10 tones per hour would already

mean commercial marketing and a large scale operation would be on its way.

An important concern must be the provision of storage facilities. Bags and silos must be available which can prevents pests and molds. Some attempts at quality control are also clearly necessary.

An important industry in this connection is wood . African countries clearly enjoy international comparative advantage in the wood product branch (especially furniture) but forest resources are very rapidly being depleted. There are only a small number of countries where wood products branch seems to have a future. The development of the wood products branch should be encouraged as a means to ensure that logging does not surpass sustainable levels. Environmental programmes rarely address this issue.

IV.I.II *CONCLUSION*

The following measures are recommended:

(a) Highest priority ought to be accorded to expansion of the processing of coarse grain specially maize (but also millet and sorghum to increase its acceptability in urban markets as a substitute for imported crops.

(b) Dis investment and retrenchment in the cocoa industry should be pursued and land under cocoa should be gradually shifted to food crops.

(c) An expansion of the cane sugar milling capacity is not desirable but rehabilitation and rationalization of existing units - particularly by the phased introduction of more appropriate technology and regional co-operation - can be useful. There is also a strong need to make more effective use of by products (specially bagasse and molasses)

(d) Another branch in great need of rehabilitation and rationalization is fruit and vegetable processing. This may have significant export and domestic demand potential but existing plants are in very bad shape. Key products that may be targeted are dates, citrus, pineapples, dehydrated vegetables and juices.

(e) The oil seeds industry has potential and can make a significant contribution towards increasing nutritional levels. Medium scale enterprises using efficient technology should be promoted and simple cheap manual and power oil seed milling technology should be introduced at the village level.

(f) Fish processing - specially pelagic species - should be encourages. African countries share from open sea catches should be increased and landings should rise. Senegal and

Namibia can serve as models for the development of the industrial fishing sub-sector. The EU should ensure elimentation of over fishing and poaching. Environmental and sustainability consideration should be addressed.

(g) The promotion of the riverine fishing industry is necessary for increasing nutritional content of diets. The basic concern here must be the improvement of boating technology.

(h) The animal feed industry has linkages with several agro industries. It can be promoted by the effective utilization of a range of by product and crops (specially cassava). Medium scale operations in this sub-sector should be encouraged.

(i) A key constraint on the development of all food processing industries is the unavailability of adequate packaging and canning maternal. A full scale programme for the rehabilitation and development of a locally sourced packaging industry should be urgently undertaken.

IV.II TEXTILE AND WEAVING APPAREL

IV.II.I Characteristics

Textile and wearing apparel are important industrial branches in many African countries. Three countries - Mauritius, Morocco and Tunisia - are exceptional in that they serve as homes for Europe and Hong Kong based firms whose output is entirely export oreinted and these countries are among the EU's most important import sources in a wide range of clothing product groups. Prospects for there counties are partly dependent on their ability to increase competitiveness sufficiently during 1997-2005 when preferences will be eliminated. Maintaining market share will not be easy for costs in Tunisia and Morocco have been rising more rapidly than is the East Asian countries.

In most other African countries the textile and clothing branches are domestic demand oriented. In Zambabwe for example the contribution of the textile and apparel sector in total manufactured exports risen from 8.3 per cent in 1981 to 16.9 per cent in 1991 since when it has stagnated (World Bank 1995). In 1991 cotton ginning export was still more important than either textile or clothing as an export revenue source accounting for 11.5 per cent of total manufactured exports. At the time of independence the share of the cotton ginning sector in manufacturing exports had been as high as 18.7 per cent, so that some restructuring had been achieved. The growth performance has been erratic with a high coefficient of variation specially in the case of the wearing apparel sector the annual average rate of growth of which is not statistically significantly different from the average annual rate of growth of manufacturing output. Given

an annual population growth rate of 3.3 per cent during the period it is clear that the domestic per capita consumption of textile and clothing has declined. Domestic orientation of the textile and clothing sub-sectors is thus justifiable.

Table 4.7

Growth of Output of Textile and Wearing Apparel Zimbabwe 1983 - 1993

	Textile and Cotton Ginning	Wearing Apparel	Manufacturing Output
1983	-8.4	-7.9	-2.7
1984	14.1	-8.9	-4.8
1985	41.0	12.1	11.4
1986	8.8	-4.4	2.9
1987	3.0	12.1	2.3
1988	3.3	0.6	4.9
1989	2.7	14.6	5.6
1990	4.0	5.3	5.6
1991	4.4	2.7	3.5
1992	-22.0	-16.4	-9.2
1993	9.1	2.7	-8.2
Average	2.49	1.13	1.03

Note (a) includes footwear
Source World Bank (1995) Teble E8.1.

The textile and cotton ginning sector has grown at roughly twice the rate of growth of manufacturing output and if the the abnormal years (1985 and 1992) are dis regarded its coefficient of vocation is also relatively low. Its performance had been outstanding during 1980-85 when it was the leading growth performer within manufacturing but it has been seriously affected by the containing economic downturn and there are reports of dis investment by British TNCs from this sector (Bennell 1995). The foreign exchange shortage has affected the sector as its import to gross output ratio is highest among Zimbabwean industries - estimated at 22.2 per cent in the early 1990s. As against this the import to gross output ratio of the weaving apparel sub sector is only 2.5 per cent (World Bank 1995). Gross margins are relatively low - estimated as 16 per cent against 51 per cent in drinks and tobacco - 22 per cent in chemicals and 21 per cent in the manufacturing sector as a whole (World Bank 1995). But employment within the sector has continued to grow at a rate faster than in the manufacturing sector as a whole. Capacity utilisation was estimated at 74 per cent for the textile sector and 90 per cent for the wearing apparel sector by the World Bank. Wearing apparel was judged to be the least competitive sector in Zimbabwean manufacturing. The competitiveness of the textile sector was

also low with a 19 per cent domestic to export price differential. Capital intensity is high and modernization has proceeded at a very uneven pace. Human capital intensity is modest with 0.12 per cent of total employees in the textile sector being engineers and 2.3 per cent being technicians. Effective rates of protection range between plus 35 to plus 72 per cent for textile and wearing apparel product groups. It is thus evident that improving competitiveness in both domestic and export markets is not an easy task as far as Zimbabwean textiles are concerned.

The textile industry in Southern Africa is dependent for 25 per cent of its cotton on imports from outside the region - only Zimbabwe and Tanzania are major cotton producers. Polyester fibre is also imported. Only Tanzania and Zimbabwe are major textile exporters - mainly yarn and fabrics. Botswana has emerged as a major wearing apparel exporter but much of its exports consist of clothing which receive only final stage manufacturing in Botswana. Lesotho and Swaziland are also exhititong similar trends but on a much reduced scale. During crises of the 1980s a small scale cottage type wearing apparel industry has also appeared in Southern Africa

Wool spinning and wool scouring plants exist in Botswana and Lesotho. Karackul wool is processed in Namibia for the production of carpets. Mauritius is of course one of the world leading exporters of woolens. Denim is also exported to EU and South Africa.

Malaror produces cotton fabrics, knitted fabrics, garments, towels, blankets and netting. Cotton fabrics - which compares over 60 per cent of the sectoral output uses domestic raw material but the other products have high import content. The small scale sector is very important as a provider of employment - specially in wearing apparel branches. (tailoring). Forward linkages between fabric producers and tailoring enterprises are well developed. Excess capacity is said to exist in knitwear, towel, blanket, and net making branches (UNIDO 1994)

Throughout Africa there is a trend towards falling income elasticities for cotton textiles in feature of rising elasticities of man-made fibre and blended fabrics, which have advantages in terms of working and durability. Despite the very low per capital consumption to fibre in Malawi, the proportion of man-made fibre in the total was estimated in 1987 at 20 per cent. This fact has already led the main manufactures to establish polyester production. While this development' it may permit local manufacturing industry to retain its control over the domestic textile market as it expands, absorbing whatever increased production of cotton becomes available.

The output of knitwear has grown sporadically. The main difficulty is that the industry is not supported by broad oral demand but caters for the rather narrow market provided by the higher

income groups. The problem would appear, however, to be one of effective demand due to lack of purchasing power, rather than need: despite seasonally low temperatures, particularly in the highlands, the total estimated per capita consumption of cotton and man-made fibers is low even for Africa at about 1.3 kg per annum, and knitwear is scarce compared to other African countries, which have seasonal temperature, such as Kenya.

The growth of the textile and wearing apparel industry in Mauritius has been extremely rapid due to the successful operation of export processing zone. New investment in the EPZ sector is tax exempt if investor agree to export all their output. Imports of raw materials and machinery are duty-free, and low-interest loans are available. Industrial buildings are rented cheaply, and electricity and water is supplied at cost.

Currently there are over 300 firms in the EPZ employing 75,000 people in the textile and clothing sector - this represents 60 per cent of the total number of firms and almost 90 per cent of the total number of persons employed in the EPZs. Total export from EPZs have risen over sixteen tones during 1981-94. But since the late 1980s there has closure of both large and small enterprises in the EPZ. Employment in the EPZ at end 1994 was almost ten per cent lower than its peak level, six year earlier.

The bulk of the job losses and decline in EPZ firms were in the textile and clothing industry, which accounted for of jobs and 82 % of EPZ exports in 1994. EPZ exports of clothing and textiles have almost doubled between 1989 and 1994. Mauritius has at times been the World's third largest supplier of woolens. Developments over the past five years have led to an even greater concentration of EPZ firms in the textiles industry. Taped industrialization based on a single industry, although beneficial to the economy in the short run, cold prove to be dangerous in the longer term. A vertically integrated textile industry is now in operation, importing raw cotton and exporting cloth.

Table 4.8

EPZ Merchandise Trade

(MRs m unless otherwise indicated

While textile and clothing exports comprised 32.1 per cent in 1994, the share in imports is much higher at 60.1 per cent. Textile net exports were equivalent to MRs 6.4 billion - which is 47 per cent of total sector exports. While the import dependent character of the textile and clothing sector is evident it is also evident that this sector is significantly less import dependent than other firms in the EPZ. The net exports of the textile and clothing sectors are almost equal to total net EPZ exports in value terms in 1994.

Much of the growth in direct foreign investment in Mauritius has been in the EPZ sector and largely concentrated in the textiles and clothing industry. between 1986 and 1989 total investment in the WPZ sector was MRs797m, while investment in the textile and clothing industry amounted to MRs704m. The largest source of investment in the textile and clothing industry is Hong Kong, equivalent 22% of total foreign investment in the EPZ sector. The other major investments came from France, the UK, Germany, Taiwan and China The textiles sector is dominated by two large foreign firms. Total accumulated foreign direct investment in the textiles and clothing industry during 1987-91 stood at MRs873m according to a report, "Foreign investment in the Mauritian Textiles and clothing Industry", (1992). Over 54% of the accumulated investment was in the clothing industry, while the textiles industry accounted for some 46% of the total. The desegregated figures indicate five largest foreign groups, all subsidiaries of a Hong Kong-based firms, for 34% of total accumulated investment in the clothing industry.

Total investment in textiles and clothing peaked in 1989 to MRs25m subsequently el sharply to MRs59m in 1991. Hong Kong, France and the UK are the largest investors in the industry, together accounting for 68% of foreign firms, 80% of total employment by foreign firms and 81% of exports by foreign firms. But Hong Kong firms occupy a dominant positive the industry, representing 31% of foreign firms, 55% of employment.

TABLE IV.9

Foreign Direct Investment in the Textiles and Clothing Industry

Source: Foreign investment in the Mauritian Textiles and Clothing Industry, Textile Outlook International, No 44, No Textiles Intelligence Ltd.

EPZ exports have since recovered steadily, although net exports fell slightly in 1994. Recent changes in the GATT and the Multi-fiber Arrangement (MFA), combined with both a lack of modernization and increase competition from other low-cost countries, have had an adverse impact on the performance of the EPZ sector.

Further development of the manufacturing sector, especially the EPZ, has to be monitored closely in terms of its net contribution to GDP, if a proper analysis of the role of the EPZ in the economy is to be made. The percentage share of real value-added by the EPZ to GPD increased from 2.6% in 1976 to 13.9% in 1988, and established at 12.5% during the last five years. Net EPZ exports as a proportion of total EPZ export declined from 35.2% in 1983 to 17% in 1989 and there picked up to just under 39% by 1994. Further increases in the percentage share of value-added by the EPZ to GDP can be achieved if the import content of its exports is reduced and backward and forward linkages between the EPZ and other sectors of the economy are increased.

In Namibia the textile branch is mostly small scale containing a large number of units but accounting for less than ten per cent of manufacturing employment. Capacity utilisation in 1993 was estimated at 70 per cent. Technology employed is not modernised.

Because of the small market and unshielded competition from South Africa, development of textile and clothing industry has not taken place in Namibia on the same scale as in other developing countries. There was a limited production of cotton before independence but the quantity did not justify commercial development of the spinning and weaving industry. The Namibia Development Corporation set up a small ginnery, spinning and weaving facility close to the Angolan border in the North. Although this experiment has proved successful as a small-scale local industry, it is unlikely to grow into anything bigger given the present level of cotton production. Namibia cold capitalize on the high quality of its cotton and export it either as a high value primary commodity or in a processed form.

Traditional weaving is based upon Karakul wool. Products such as carpets, wall hangings and small handicrafts are produced for the local tourist markets. The present evel of wool production is estimated 1,700 tones, mainly as a byproduct of the KaraKul pelt industry. than 3 per cent is being utilized in the local production of hand woven carpets. The rest is exported to South Africa and marketed through the South African Wool Board at auctions held in Port Elizabeth. There are some 14 commercial weaving enterprises and one weaving school. In addition, a number of small weaving workshops have been started. It is estimated that 50 per cent of all craft manufactured from KaraKul wool is exported.

Textile products such as curtains, table-cloths and bed linen are made from imported materials by small-scale enterprises concentrated in Windhoek and Swakopmund. With the increasing level of tourism, small workshops specializing in traditional dying and screen printing of textiles have been established since independence. The clothing industry consists of eight small-scale

enterprises and two medium-scale firms producing a limited range of clothes, mainly for the tourist market, and uniforms under contract. After independence, large contracts for the government and school uniforms have been awarded to local manufacturers in a drive to support local industry. Local production of garments finds it difficult to compete with vertically integrated textile and garment industry in South Africa. Retail shops in Namibia are supplied on contract from South African producers and show little interest in marketing local products.

Luxury fur coats made from Karakul pelts have been produced by a private concern Nakara since 1980. The company marketed its products internationally under the brand name of Swakara garments. The major export markets were Germany, Italy, Japan, Canada, the USA, and Spain. After independence a joint venture was established between Nakara and Grustein in Finland. As a result of this venture Nakara now exports also suede and leather products made to the Grunsten design as well as ostrich leather handbags. The leather comes from its own tannery which, apart from specializing processing Karakul lab skin, Tans ostrich skins and all types of souvenir game skins on contract. The tannery exports mainly to Germany, Japan and South Africa.

At present Swaziland can only partially meet the raw material requirements of its textile industry from its own resources. The supply of locally grown cotton in particular is insufficient to meet the demands of the textile industry, and the relatively inferior quality of the locally produced show fibre varieties requires them to be mixed with imported long fibre cotton, Swaziland does have the potential to grow enough cotton for its domestic use, however, and both short and long fibre varieties can be grown in the country. The low veld, which is the driest part of the country, is particularly suitable for cotton farming. It is currently planted to maize, for which it is less suited.

The main raw materials used by Swaziland's knitting mills and carpet and rug weaving enterprises are wool and mohair, which are imported from Lesotho. Swaziland's own potential for the farming of sheep is limited.

Scope exits to bed linen, school and police uniform protective clothing and blankets. The textile and clothing industry is still very small even in relation to local needs.

The most important textile enterprises are the National Textile Corporation (NATEX), which produces textile yarn and fabrics,and Injobo, which produces ready made garments. In addition, the textile industry includes a cotton ginning plant, a metal and nylon zipper plant, knitting mills, clothing factories, yarn and fabric factories,and wool and mohair carpet and rug factories. Most

of the textile enterprises are located at the Matsapha industrial park, although smaller knitwear and clothing enterprises are dispersed throughout the country, especially in the SEDCO estates. Most of the larger and more important textile enterprises in terms of employment, output, MVA, and revenue earnings were established during the "mini boom" of the mid-1980s, which in turn was induced by a substantial increase in foreign private investment. Some of the textile companies established at that time are footloose enterprises, which were attracted by the financial incentives offered by Swaziland, and in particular the five year tax holiday.

Most of the textile enterprises are established by Asian or South African capital. NATEX and another domestic yarn producer SPINTEX were established with South African and local capital, while Injobo and zipper factory were established with Chinese and Japanese capital, respectively. The small clothing, Knitwear and carpeting factories are mostly established by small-scale entrepreneurs with local capital.

The textile and wearing apparel branch has expanded considerably in recent years despite year to year fluctuations in the growth rates of both gross output and value-added. This expansion is likely to be curbed in the coming years, however, by a variety of marketing problems faced by the textile industry in both the regional and world markets.

The main problem of the textile and clothing industry is a tightening of both regional and world markets for textile products, which is causing a number of textile and clothing enterprises to incur heavy losses. This problem is accentuated by the fact that a number of Swaziland's textile enterprises are capital-intensive, since they were established in the late 1980s when there was a boom in the textile industry. The situation has been further aggravated in the SACU market by the Structural Adjustment Programme (SAP) of the South African Government, which has resulted in the market being flooded by cheap yarn from Asian countries. Despite the good quality of Swazi textiles, their market share has declined even in South Africa.

Further problems are posed by the lack for an aggressive marketing strategy by local textile companies, as a result of which the textile industry has made little headway outside the SACU area. in addition, the design and choice of fabrics is also inappropriate for the local market, with even the traditional dress (emahiya) having to gibe imported from outside the SACU area.

The expansion of the woolen carpets and rug industry is severely constrained by the unavailability of raw materials from local sources. Mohair is imported from Lesotho and the producers of rugs are allocated quotas, which often fall short of their requirements. This inhibits production because producers cannot obtain mohair above the assigned quotas even if demand for their rugs

and carpets increases.

Another key constraint is the absence of skilled manpower specially in the area of designing and producing finished cloth.

In order to develop and/or improve design and manufacturing skills so that textile factories can introduce the manufacture of finished garments and existing garment factories such as Injobo can diversify their production, there is need to have appropriately trained personnel with skills in fashion design.

The textile industry also suffers from infra structural shortcomings and energy shortages. Repeated cuts in electricity at the plant level, which frequently last for weveral hours, a common occurrence Technical assistance is required in the field of electrical equipment repairs and maintenance, and in the training of power engineers needed to strengthen the capabilities of the Swaziland Electricity Board.

In Ethiopia fabrics comprise 60 per cent of the output of the textile and clothing industry and yarn for another 15 per cent - the share of garments in total output has been rising but is still only 13 per cent. Main products are cotton fabrics, nylon fabrics, acrylic yarn, cotton yarn,woollen and waste cotton blankets, carpets, gunny and polypropylene bags, hosieries and sewing thread.

Most of these products are manufactured by state owned enterprises. The major enterprises in the subsector are Akaki Textiles Factory, Dire Dawa Textiles Factory, Bahir Dar Textiles Factory, Debre Berhan Wool Factory, Combolcha Textiles Factory, Ethio-Japanese Synthetic Textiles Factory, Awasa Textiles Factory and Arba Minch Textiles Factory. All of the above enterprises except Ethio-Japanese Synthetic Textiles Factory are owned by the State. Ethio-japanese Synthetic Textiles Factory is a share company jointly owned by the Government of Ethiopia and two Japanese companies, Toray and Mitsubishi. Privately owned enterprises consist mainly of Knitting mils producing knitted products and hosieries. Some of the state owned enterprises are being privatized, though it is not easy to find buyers.

The industry is quite import dependence 1992/93 figures show that 21 per cent of the lint cotton used as a raw material is imported. The import to apparent consumption rates approached 100 per cent in the case of polyester fibre, jute fibre, wool wastes acryalic yarn, nylon yarn and bachting oil. The ratio was however only 47 per cent in the case of dyes tulf showing the relatively high development of the chemical industry.

The major constraints of the subsector are increasing prices of raw materials, competition from imports, over manning, and lack of experience in operating in competitive markets. The price of most raw materials has increased manyfold. From instance, the price of cotton has increased from br3.50/Kg in 1992 to Br11.50/Kg in 1995 mainly due to the devaluation of the birr.

Both legally imported and contraband garments are entering the country in large volumes. Foreign garments are low priced and superior in quality. As a result, they pose stiff competition to the local garment producers and tailors.

Almost all of the state-owned enterprises are over manned, mainly because of the policy of the previous regime which had favoured employment irrespective of the profitability of an enterprise. Reducing the number of employees has now become necessary for the competitiveness of the enterprises, although its social consequences may be unfavourable. The state-owned enterprises used to sell their products to state-owned distribution companies at fixed prices. The have no experience of operating competitive market environment where prices are changing based on market conditions.

In Kenya the potential area suitable for cotton cultivation is approximately 350,000 hectares in the Nyanza, Western, Coast and Rift Valley Provinces. Out of this potential only 49,188 and 76,000 hectares were used in 1993 and 1994 respectively. The increase in 1994 is as a result of liberalization of cotton market in 1992. However, cotton production in Kenya has been declining over the years due to low seed quality, delayed delivery or non-availability of inputs, and delayed and poor payments to the farmers. Sine 1984, the country has had to import to meet domestic demand.

Kenya's wool production is around 885 tones per annum. The main wool producing areas are Nyandarua, Narok, Nakuru, Elgeyo Marakwet and West Pokot. The later accounts for approximately 60 per cent of the wool produced. There is potential of expanding wool production to meet the high demand of wool and woollen garments.

On average sisal production is about 30,000 tones per annum. Sisal 8 is used in Kenya for the manufacture of gunny bags, making ropes and twine, and matting. The main sisal producing areas are Kilifi, Kwale and Taita-Taveta.

The textile industry is the second biggest manufacturing activity in Kenya after food processing. The Textile subsector has been in existence since the second half of 1950s when several textiles mills where established by Asians. There are now 52 textile mills producing a total of 83 million

square meters of fabric, excluding blankets and knitted goods. The knitting mills alone have a capacity equivalent to 28.8 million square meters.

Capacity utilization in the textile subsector is low. It utilized, the installed capacity, which is in the region of 115 million square meters of fabric, would satisfy 66 per cent of local demand which is estimated at 180 million square meters per year. Output of the textile and clothing sector has fallen rapidly during the 1990s, due to increased competition. The index of textile production has declined from 202 in 1990 (1976 = 100) to 183 in 1994. The clothing output index has fallen dramatically from 379 in 1990 (1976 = 100) to 184 in 1994 - a 50 per cent decline in 4 years. The decline was concentrated in woolen fabrics, viccos fabrics, toweling material and men's clothing.

Publicly owned units are being privatized - these include integrated spinning/weaving/finishing operation as well as independent spinning and weaving units. Government manufacturers number about 350.

Kenya's textile exports consists of yarn fabrics and ready-made garments. Exports of yarn and fabrics are done directly by the textile firms. The recently introduced Manufacturing Under Bond (MUB) and Export Processing Zone (EPZ) factories, which are mainly garment factories have boosted exports for the sector. The products from MUB and EPZ factories are exported mainly to United States, United Kingdom and in smaller portions to the COMESA countries.

The gross under utilization in the subsector results in frequent operating losses. The main causes have been identified as inadequate supply of raw materials, outdated technologies, mismanagement and competition from imports.

Table 4.10

Production of Textile and Garments, 1990-1994 : Kenya

Source: Republic of Kenya, Central Bureau of Statistics

Until 1990, production of cotton was under the jurisdiction of the Cotton Marketing Board. The Board provided farmers with credit in the form of inputs to grow cotton and at the same time had the monopoly in buying cotton from farmers. The Board was very poor in paying farmers for delivered crops and that led to poor cotton production. With the removal of the Board's monopoly in 1990, the private sector has moved into the cotton production and marketing system and introduced efficiency which should stimulate production. The government also is expected to introduce measures of rehabilitating and expanding cotton growing schemes.

Kenya's textile industry has a mixture of old obsolete machinery and modern state of art equipment. As a result of this some firms produce high quality products that compete in the export markets, while the others produce poor quality products. It is therefore necessary for ginning facilities to be modernized and change obsolete technology that hamper development of new products in a fast moving and changing market environment.

Kenya is also seriously affected by the continuous imposition of a highly restrictive quota on imports of shorts and pillow cases by the United States of America. The Kenya capacity is 1 million shirts and its American export quota for 1996-97 is only 300,000. Diversification of export outlets is thus extremely urgent.

In countries such as Mauritania the textile industry remains concentrated in small scale operative (mainly tailoring)

A survey of informal sector activities in Nouakchott undertaken in 1986, revealed 1,156 tailoring enterprises, 5 weaving workshops, 102 enterprises producing leather goods, 52 enterprises dyeing cloth and 21 rug weaving workshops. Together these enterprises accounted for 55.6 per cent of all in formal sector manufacturing activities. These activities are also important in rural areas and the towns of the interior. Such artisanal operations are orientated towards the domestic market, more specially the needs and tastes of the less affluent, and , except in the case of

carpets, have little export potential. Most artisans use local raw materials, although tailoring depends heavily on imported cloth, and the quality of the product in such activities as tanning, shoe making and tailoring is often poor.

Within the carpet weaving industry attempts have been made to integrate the traditional artisanal mode of production into the modern economy. But success has been some what limited although the parastatal established for the purpose and subsequently privatized has provided valuable marketing, training and technology upgrading services.

The textile industry is grain is mainly controlled by large private sector companies often involving substantial foreign investment participation. Nigerian laws have limited this to 60 per cent of the total equity of textile sector firms but it is likely that the current privatization initiative will lead to an increase in the permitted level of foreign investment participation within the textile sector form 60 to 90 per cent. Major foreign investors within the textile sector are from Hong Kong, India, the United Kingdom, Liechtenstein, the Netherlands, the United States, Japan and Colombia.

The influence of the Nigeria Textile Manufacturers Association which groups together the major firms (about 40 in number) and other modern sector producers on policy making is considerable. The weavers seem to be less well organised and less influential than the spinners - this is often the case in developing countries because of differences in size of operation. Major products include yarn, printed cloths, shirting and drills - African prints account for roughly 40 per cent of total cotton fabrics output. Share of synthetics in total woolen fabrics has been rising over time. Capacity under utilization is higher in the synthetics sector than the cotton using units. Costs have risen in both due to increasing import intensity and supply is insufficient to meet local needs. Bans on import of foreign fabrics have been ineffective and have usually led to increased smuggling.

Per capita textile consumption is estimated at about 1.5 kilograms - one of the lowest levels in Africa. It is evident that there is considerable scope for expansion of domestic demand-oriented textile production in Nigeria. This however depends crucially on the assumption that per capita income will grow and the foreign exchange constraint gradually eased. If per capita income continues to fall, the projected demand for textiles can be as low as 400 million sq m in 1997 in this case there will be an excess supply by that year. Even on the basis of the most pessimistic scenario however there is likely to be an excess of demand of about 6 million sq m for yarn-based products by 1997.

Capacity within the textile sector has been reduced by about 30 per cent since 1980s due to closures and obsolescence of equipment which has not been replaced. Obsolescence of equipment has become a major problem. In particular the design capacity of many rating mills is not geared to meet the increasing demand from finer cotton-yarn, polyester (PES) and cotton polyester blends. The fact that demand for such fabrics has increased even during recession indicates the growing inequality of income distribution in Nigeria.

Technological gaps are also illustrated by the fact that twelve mills representing 61 per cent of the total capacity spin only cotton. Modernization of spinning capacity is lagging behind technological improvements in the weaving mills. There is serious shortage of spinning capacity for easy care blends. Labour productivity in spinning operations is not significantly higher than in other African countries and lags behind productivity levels in developing countries such as India. This is mainly due to the low levels of capacity utilization and the inadequate provision for on-the-job training of workers.

Low productivity levels limit export possibilities. Nevertheless some Hong Kong entrepreneurs have established export-oriented plants in Nigeria with a view to escaping the quota restrictions imposed by the Multi Fibre Agreement (MFA) on their country. European firms have expressed an interest in establishing textile operations in Nigeria integrated within a larger international network of textile and apparel production ventures. If these investments are proved to be successful, Nigerian firms may be encouraged to develop an active export strategy perhaps in collaboration with other ECOWAS members who have an interest in the development of their own national textile industries.

The impact of the recession and the falling oil prices has been particularly severe for Nigerian textile and clothing industry and a major rehabilitation and restructuring effort in association with foreign investors and technology suppliers is urgently required.

In Sudan weaving and spinning capacities are around 300 million yards per year and 30,000 tones per year, respectively, on 10,000 looms and half a million piddles. Installed capacity for bleaching, printing and dyeing is about 125 million years per year. Actual production is far below capacity. Spinning capacity utilisation is no more than 30 per cent, whereas that of weaving is around 35 per cent. Capacity utilisation rates are higher in the private sector than in public sector enterprises - in spinning the public sector capacity rate is 25 per cent ; whereas that of the private sector is over 410 per cent, in weaving the public sector has a rate of 20 per cent, whereas that of the private sector is 38 per cent.

On the basis of a per capita demand for textiles of 15 yards per year, total demand is estimated about 300 million yards per year. Installed capacity could easily cover domestic demand but in fact the existing enterprises cover only 40 per cent of the market. The remainder is serviced by imports. One of the major reasons for this gap lies in the fact that domestic yarn is of poor quality.

The large capacity in the branch is partly the result of earlier plans to export part of the production. Exports however have not grown in line with expectations due to poor quality, political dis inability and the impact of the sanctions against Sudan.

Profitability in Sudanese textile and clothing enterprises has been low. This has discouraged the growth of investment. Major constraints include serious over-manning, inappropriate plant sizes, power supply shortage and obselence of equipment.

Improved garment and textile designs, quality control and increased productivity, through the introduction of modern machinery and upgrading the worker skills could make the manufacture of ready made garments for the domestic market profitable. It might also be possible to export cotton textiles to the African and Arab regions.

Sudan's role as major risen cotton producer and exporter provides a prima facie case for the long term development of the textiles branch as a central component of the manufacturing sector. A prerequisite of long-term development is the preparation of a sectoral development and rehabilitation plan based on a plant level review of the existing production capacity, the macro-economic environment and forecast of domestic and external demand.

The production of textiles in Egypt is based largely on the country's main agricultural crop is cotton of which a wide range of varieties are produced, including premium extra-long and long-staple varieties as well as its medium-and short-staple varieties. Measures have been taken recently to increase the output of synthetic fibers using the country's resource endowment for the manufacture of petrochemicals. On average, the textile industry absorbs about 80 per cent of local cotton production, the remainder being exported. Traditionally the textile requirements of local mills were met entirely by domestic supply. Imports of short staple cotton have increased in recent years and in 1994 were reported to equal 17 per cent of the raw material used by the spinning industry. Overall area under cotton has contracted during the last 40 years while yeild per hectare has grown at an annual average rate of about six per cent during 1988-93. This is not enough to offset a stagnation of production. Egypt's world share of extra long staple cotton has fallen from 59 per cent in 1980-81 to 27 per cent in 1990-91.

It was estimated in 1990 that there were about 925 firms in the textile sector providing employment to 300,000 people 31 state owned mills dominate the industry and account for 100 per cent of spinning and 70 per cent of weaving. Total textile production has tripled in value terms during 1984-1991 reflecting a doubling of domestic purchases and a quandripling of exports. Egypt's main markets are the EU and USA. It has usually been unable to fully utilize it's quotas and has lost ground to other exporters in both cotton yarn and woolen fabric product categories.

Table 4.11

Production of Textiles, 1986/1987 - 1991/1992

Source: Central Agency for Public Mobilization and Statistics (CAPMAS)

There has been a decline in demand for Egypt's fine count yarns and Egyptian mills have had to shift to medium and low count spinning. The textile industry lacks international competitiveness. Egypt's quarterly index of unsold yarn stocks has risen well over the world index in recent years reflecting a loss of international competitiveness.

Major constraints on the expansion of the textile industries include the over capacities in the spinning sector which

Table 4.12

Egypt's Quota and Actual Exports of Cotton Yarn and Fabrics to the USA and EC, 1989 - 1993

Source: Cotton Textile Consolidation Fund.

makes rationalization and recapitalization difficult, obselence of equipment, low product quality and high wastage. Joint ventures can prove effective in revitalising the Egyptian textile sector.

The garment industry employs about half a million people - wage levels are roughly 40 per cent lower than India and 85 per cent lower than Taiwan province. Garment franchising has grown rapidly but is confined to the upper income groups and tourists.

Already, international names such as Pierre Cardin, Wrangler, Van Heusen, Benetton and Stefanel are producing ready-to-wear clothing in Egypt for domestic consumption. The Benetton range is manufactured under license and sold in Egypt by the local Chorgabi with another Egyptian partner, Intaky for Fashion. Launhched in 1988, its casual knitwear has become highly popular a month young, affluent Egyptians. As a result, production increased ninefold in the first two years of operation. By 1990 the partnership had launched a second brand, Naf-Naf, under license from the French manufacturer. Total output in 1990 amounted to 400,000 items, all of which were sold on the Egyptian market. Currently local franchises account for about 30 per cent of the market for ready-made garments.

Exports of ready-made garments in value terms rose sharply from $13.9 million in 1988 to $70.5 million in 1992, Egypt enjoys a significant comparative advantage in the export of garments due to the availability of cheap labour. The country's preferential access to lucrative markets is yet another advantage. However, garment manufacturing in general lacks the capability to meet the quality requirements of industrialized markets, especially in woven garments. This was evidenced by the fact that in 1992 actual exports of shirts and blouses to the United States amounted to 646,000 pieces against the United States quota of 773,000 pieces. Under utilization of quotas in lucrative markets is a reflection on the lack of non-price competitiveness of Egyptian garments.

It is contended that the most competitive product areas for the expansion of garment exports are knitted cotton garments and franchises. These highly labour-intensive activities can make good use of the country's high-quality long-staple cotton. Moreover, firms can also specialize in 100 per cent cotton garments. According to rough estimates, export earning from garment franchsingh rose significantly from $10 million in 1991 to $31 million in 1993. With a significant increase in the number of local firms affiliated with franchises, high-quality garment manufacturing will thrive due to good management and strict quality control.

The textile and clothing sector in Morocco accounts for roughly a third of manufacturing employment and for a roughly similar propertied of total export earning. Its total import content is high relative to many other consumer goods produced in the country.

Textiles have traditionally been at the forefront of export-led industrial growth and textile exports rose significantly over most of the 1980, as did the level 0 output. In recent years, however, growth has slowed and output is estimated to have contracted by some 6 per cent in the export sector, and as much as 15 per cent in home markets in 1994.

In 1992 the Moroccan clothing industry comprised 1,500 enterprises providing employment for 180,000 people, constituting 25 per cent of manufacturing employment. The sector exports 84 per cent of its production, with more than 90 per cent of exports directed at the countries within the European Union (EU). Production fell by 6 per cent in 1994 with the largest drop in demand coming from the domestic sector. Exports to France (70 per cent of the total) remained subdued, and regional sales were hit by Algeria's cancellation of orders as relations deteriorated following the August border closure.

The Morocco clothing sector is a typical enclave segment in a developing economy dependant upon investment by European firms and growth of European markets. This is also true of the clothing sector in Tunisia which together with textiles accounts for almost 7 per cent of GDP and dominates manufacturing production. Textiles have been the fastest growing sector during the 1990s with an annual average rate of growth of 8 per cent.

With a workforce of some 220,000, this subsector accounts for about half of all employees in manufacturing. Textiles exports exceeded TD2bn in 1994, which was equal to around 43 per cent of total exports (bearing in mind, however, that most of the raw materials used by the industry - cotton, wool, cloth and so on - are imported at a cost which, in 1994, amounted to over TD1.5bn).

Foreign and domestic investment has been attracted the textiles since 1989-90 however the textiles sector has difficulties, arising from a lack of integration, a large number of small firms and the dumping of cheap foreign textiles. The big question for the next decade will be whether Tunisian textiles can flourish as import tariffs on European industrial goods are lifted.

The Moroccan experience is of particular importance to African countries seeking to restructure their textile and clothing industries. The textile and wearing apparel sector employs more than 33 per cent of the industrial labour force. The export to total production ratio is 20 per cent for the textile sector but 85 per cent for clothing (de Coster 1994).

In the early 1980s Morocco became a successful net exporter-mainly of ready-made garments, knitted articles, yarns, cotton fabrics and upholstery fabrics. The export/import ratio rose sharply, from 116 per cent in 1981 to 143 per cent in 1986. Further revisions to regulations affecting investments and exports in 1983 had a very positive effect. Average annual investment during 1981-86 was Dh559 mn. while employment in the sector reached 110,000 in 1986.

The years 1987-91 brought a real explosion of investment in the Moroccan textile and clothing sector. The main reason was the growing role of Morocco in the subcontracting and outward processing trade activities of European companies. Foriegn investments represented, on average, 30 per cent of total investments during this period. Despite progressive relaxation of import restrictions on textile products since 1987, the export/import ratio continued to increase, reaching 166 per cent in 1991.

The severe droughts of 1922 and 1993 hit incomes in agriculture, and so reduced local consumption of textile products. At the same time the difficult economic situation in Europe and the partial switch of European investors and contractors to Easter Europe badly affected the growth rate of Moroccan textile exports. In 1993 investments in the Moroccan textile and clothing industry fell back to Dh 1.428 bn - 59 per cent than in 1990, 51 per cent less than in 1991 and 33 per cent less than in 1992.

Table 4.13

Structure and Performance of the Textile and Clothing Industries in Morocco, 1991

The textile and clothing sector now contain about 1600 firms with a total employment of around 166,000 persons.

Morocco is becoming steadily more important as a jeans producer, manufacturing for Lee Cooper, Levi's, Jordache, Rifle, Lois, Lewe and other foreign groups. In the Casablanca region there are a lot of companies producing jeans: Jordache (16,000 garments/day), Universal Promotions (9,000 garment/day), Mondi-Sport (5,000 garment/day), Look-Tex, Ingelof, Bogart, Robitex, Aryan's, Textra, Adnane Confection and others.

The big jeans producer Atlantic Confection is situated in the Moroccan capital, Rabat. Also located in Rabat is Confantex, the company which last year was granted the Lee Cooper license for Morocco. The Italian group Carrera produces jeans in Tangier, next to the Kuwaiti-owned denim factory Nascotex.

Since 1991 export of garments, carpets, cotton yarn man made fibre yarn, leather clothing and blanket have declined significantly. The policy response has been to attempt to diversify, improve quality and service and restructure OPT (outward processing trade) arrangements specially with Spanish and Patugere manufacturers - these involve delivery of fabric by the European Company processing in Morocco and re export to Europe. Of Morocco's total quota under the prefential trade arrangements with the Eu, roughly turn third is for OPT.

Fabrics and accessories needed for the OPT business enter Morocco freely. But outside OPT , the protectionist barriers are high. A license is needed and, even after the Uruguay Round negotiations, Morocco still maintains customs duties at a level of 40 per cent and an import tax of 15 per cent (PFI - prelevement Fiscal a l'Importation). In addition, value added tax (normal rate 19 per cent) is paid on the total fabric cost after the above mentioned duties and tax have been added. Certain Moroccan products enjoy additional protection through a system of "reference prices". Under this system, customs duties can be introduced to bring the prices of imported competing goods up to the same level as domestic prices.

Morocco has been attempting to improve transportation links to Europe. Morocco is a larger importer of cotton and a large part of the fabrics it needs. The country itself produces a small quantity (10,000 - 15,000 tones a year) of high-quality cotton (Pima variety), but most of this is exported. Only two Moroccan spinning companies - ICOZ and Setafil, both situated in Casablanca - use local cotton. The main cotton-growing area is in the region of Houz de Marro, south of Marrakesh and there is only one producer of synthetic fibers.

Foreign groups with investments in the clothing sector in Morocco include Courtaulds, Coats Viyella, Triumph, Devanalay, Bidermann, Sara Lee, Jordache, Carrera, Van Gils, Deltex, and Abanderado. Many famous branded products are produced in Morocco. French brands are the most common, including Christian Dior, Yves Saint Laurent, Daniel Hechter, Pierre Cardin, Xavier Durand, and Yves Rocher, but other international names, including Levi's and Lee Cooper, are also represented.

Most foreign investment in the industry has been channelled into the ready-to-wear and knitting sectors.

France, Spain and Italy are the main foreign investors in the Moroccan textile and clothing sector. However, interest is also coming from Belgium and the Netherlands.

Investment in the Moroccan textile and clothing sector enjoyed several years of continuous growth. However, it has fallen substantially since 1991 (Table 4.14). Moroccan businessmen blame the weak international economic situation together with high credit rates in Morocco. AMITH (Moroccan des Industries des Textiles et de l'Habillement), the manufacturers' association, believes that one of the main reasons is increased competition for available funds from Eastern Europe.

Table 4.14

Investment in the Textiles and Clothing Industry in Morocco, 1987-93

Source: Ministry of Commerce and Industry yearly enquiry

Capacity utilisation has fallen during the 1990s and is currently estimated at roughly 50 per cent in the clothing industry. There are no major domestic units producing textile machinery and Morocco's heavy debt service commitments make it difficult to import machinery for modernization purposes. Modernization is becoming necessary as labour costs are rising, although they are lower than in Turkey and Portugal. Other costs (land, electricity, petrol, credit) however are higher tending to reduce competitiveness of Morocco exports.

Textiles and clothing are an important industry for many African countries although as the proceeding section shows structures differ widely. A key question is should the sectoral strategy aim to be export oriented or should the primary focus be on the domestic market.

We may begin addressing this question by asserting the expected size of the world textile and clothing market over the next decade (the period of the phase out of the MFA). Growth of fibre consumption has been high since the med 1980s. Excluding the transitional economies it has grown at as annual rate of over 3 per cent during 1985 - 1995 (Coker 1995) - during 1980-85 the rate of growth had been only about 2 per cent per annum. The rate of growth has been particularly high in the OECD countries - rising from 1.1 per cent in the former to over 3 per cent in the latter periods.

World consumption of fibre has been forecast to rise form 37.9 million ton in 1993 to 51.5 million tones in 2004. OECD country demand is expected to increase from 18.2 million tones to 24 million tones over the same period whereas developing country demand is expected to rise from 16 to 23 million tones (the forecasts for developing countries demand are probably too high). Textile Intelligence estimates that production of fabric will have to rise by about 12 million tones during 1993 - in 2004 to meet the supply demand gap (Cokes 1995 p.16) - 90 per cent of this additional production is expected to take place in developing countries but consumption per capita is expected to increase much more rapidly in the industrialised countries (rising from 21.5 kg in 1993 to over 26 kg per capita 2004) than in the developing countries where even in 2004 per capita consumption is unlikely to exceed 5.0 kg. For Africa the per capita consumption is unlikely to exceed 3 kg by 2004.

Two thirds of textile production capacity is in developing countries and relocation in the form of establishment of subsidiaries is continuing. Developing countries own investment in the textile sector is also growing particularly for modernization and upgrading.

The structural change is even more marked in the case of clothing. The share of clothing in OECD country textile and clothing imports was 53.6 per cent in 1985. It increased to 64.5 per cent in 1992 and by 2004 is projected to equal 67 per cent. The share of yarn has declined from 23 to 13 per cent during 1987 - 1992 and is expected to fall to 10 per cent by 2004. A similar trend is forecast for fabrics. Clothing imports from the developing countries into the EEC have grown at a rate of 15 - 17 per cent per annum during the 1990 despite the quota restriction. Continued growth of clothing demand in the OECD countries may be constrained by the slow

recovery in Europe and Japan, the persistently high rate of unemployment and demographic changes which are reducing the share of the working population. On the other demand in the East Asian economies may increase and as they structure out of traditional manufacturing branches their textile and clothing imports may rise.

Indication for the 1996-97 season are that demand growth has slowed and both cotton and wool prices are sluggish. Synthetic fibre capacity has grown by over 15 per cent in the last three years and the share of man made fibers in total fibre consumption is rising rapidly (Anson and Simpson 1996). The share of OECD countries in total synthetic fibre production is well on its way to falling below the 40 per cent level. Polyester is by far the most rapidly growing fibre - its share in total synthetic production has increased from 40 per cent in 1972 to 64 per cent in 1994.

Africa's meagre contribution to the expansion of textile and clothing production is reflected in its textile machinery purchases - for example during 1985 - 94 Africa bought just about 9,000 shuttless looms, representing 1.3 per cent of world sales. Moreover 4759 of these were bought by just three countries - Egypt, Morocco and South Africa. While Egyptian production is mainly for the domestic market the Magreb countries made significant export gains during the 1985-94 period. Growth in Europe seems however to have slowed down in 1995 and the most dynamic products are blouses, suits, shirts and accessories. Competition from China, Bangladesh and East European countries has intensified. Moreover both Malaysia and Pakistan will be seriously affected by changes in US rules of origin which became effective in July 1996 and will intensify efforts to penetrate the European markets.

A major issue is the impact of the Uruguay Round (UR) trade liberalisation measures on textile and clothing exports from Africa. It is apparent that for both Europe and the USA clothing will be the last sector to be integrated into the GATT system - untill 2005 most clothing items will remain subject to quantitative restriction for man preferential non lome and OPT countries. Because of the historical evolution of the MFA system which was highly discriminatory at country and product level, the initial short-term impact of trade liberalisation will work through individual markets and at product levels. African countries will need to re-orient their policies and engage themselves in product and market diversification in anticipation of these emerging trends. (Page and Davenport (1994) UNCTAD (1994))

Several important features of this ten-year period should be noted. First, given the initial differential growth rates for exporting countries and products, if the initial permitted growth rate was 1 per cent, the subsequent growth rates will be 1.16 per cent, 1.45 per cent and 1.84 per

cent. On the other hand, with an initial growth rate of 6 per cent, the subsequent growth rates will be 7 per cent, 8.7 per cent and 11 per cent. Secondly, as only one product from each sub-sector is mandatory, the clothing sector products of significance can be left on the MFA list until the last stage, when the remaining products, some 49 per cent, will be phased out. Thirdly, the interim arrangements allow for the imposition of Article XIX safeguard measures in cases where trade is liberalized and integrated into GATT rules. Countries are also permitted to initiate anti-dumping action against unfairly traded goods. Fourthly, despite the agreement on phasing out, tariff for goods in the post - UR period will be 4 per cent as compared with 6 per cent pre-UR, but for textiles and clothing the post-UR rate will be 12 per cent as compared with 16 per cent pre-UR. Despite a 4 per cent reduction, the textile sector will have the highest tariff level in the goods sector.

Overall, despite liberalisation, textiles and clothing will remain one of the most protected sectors. These views are echoed also be Page and Davenport (1994), UNCTAD (1994) and Schott (1994).

Currently the US has bilateral agreements will 41 countries accounting for 70 per cent of its clothing imports. It has published the full list of products to be phased out over three stages untill 2005.

For the US, the main aim in the interim period appears to be to retain the MFA framework in clothing, with a view to arresting major import surges. Hence, the emphasis is not so much on a few selected product categories but on overall levels of import penetration. Even for the WTO members, the bilateral agreements do not specify the future growth rates which can be used to 'add on' WTO growth rates in order to provide a ten-year profile of permitted growth rates for each supplier country. Furthermore, the bargaining process is left wide open for the future. For example, for India, although the number of restrained categories is small in comparison with many other countries, a 'market access' offer on the part of India was part of the overall negotiation process. To sum up, the US stance on the interim phase is in accord with the concerns over recent trends in import penetration levels, which accelerated despite continued restrictions under the MFA framework.

In contrast to the US, the EU has not registered the full product list for all three stages but has notified only the first-stage products. The remainder for the quota agreements are notified to the WTO. There are at present 28 third-country agreements, including China and Taiwan (Official Journal of the european Communities, L94 April 1995). The specified quota limits for WTO countries include enlarged quotas as a consequence of the enlargement of the EU with

the accession of Finland, Sweden and Austria, with quantity limits for 1995-7. The confirmation of quota levels and growth rates permits calculation of quota growth for all subsequent years adding relevant additional WTO growth rates in 1998 and 2002.

For the EU the most sensitive products are shirts and Tshirts (category 4) jumpers and sweaters (category 5) blouses (category 7) and mens woolen shirts (category 8).

The current US agreements appear to be more restrictive than those of the EU. However, the EU stance on MFA quotas needs to be related to its overall 'textile policy', consisting of special provisions accorded to the European Free trade Area, the Mediterranean countries, the Eastern European countries, the ACP group and the autonomous countries, as well as to past import trends and the evolution of the dominant and emergent suppliers' market shares.

EU trade instrument under textile policy are as follow.

		Tariffs	Quotas	Surveillance	Certificate of origin
I	Preferential				
	Tunisia	0%(ECGAR)	None	Yes (Cat. 2,6)	EUR1
	Morocco	0%(ECGAR)	None	Yes(Cat.6,7,8,26)	EUR1
II	ACP	0%(Lome)	None	None	EUR1
III	Bangladesh	0%(LDDC)	None	None	EUR1
IV	EFTA	0%	None	None	GSP Form A
V	Other OECD	0-25%	None	None	EUR1
VI	Turkey	0%	None	None	Yes
VII	Countries under autonomous regime				None
VIII	Countries of East and Central Europe (CEE)				

a) 0% duty subject to preferential rules of origin being met, 0-25% duty otherwise.
b) Liechtenstein, Switzerland, Norway, Iceland.
c) USA, Japan, Canada, Australia, Mexico, New Zealand
d) Customs Union with EU as from 1 January 1996.
e) North Korea, Bosnia, Herzegovina, Croatia, Macedonia, United Arab Emirated.
f) As of 24/11/95, a mid-term review of CEE is under way which is likely to lift some quotas and increase Outward Processing Traffic (OPT) quotas.

Source: Majumdar 1996

It appears that about 30 per cent of the EU imports in 1993 (in value) are directly covered by the progressive liberalisation agreed by WTO members. Including China, which sooner or later will become a WTO member, it would be 43 per cent. Concentrating only on imports in restricted categories with a quota utilisation above 80 per cent, the study considers that the UR liberalisation is only relevant for 13 per cent, including China 16.5 per cent, of the EU textile and clothing imports. (Commission, 1995:4)

On trade-related factors the report further concluded that the customs union status accorded to Turkey, the full trade liberalisation with the East European countries and the closer trade links

with the former Soviet republics would have by far the biggest potential impact.

Two further points on the EU policy on integration are elaborated in the same communication. Highlighting the need to boost textile and clothing exports, it is emphasised that a more rapid integration of products under QRs could be used as a lever for the accelerated opening of third markets. And stressing the current situation in the EU industry, the Commission also emphasised that certain effects of the liberalisation and integration process could be accelerated or delayed, depending on the selection of products. It concludes that;

> these are the main reasons for which the Community has util now only taken a decision on the products to be integrated in the first phase of the integration process (1.1.95) and not decided on the second and third stages of integration of the textile sector into the WTO system. (Commission, 1995: 12)

There are two distinct integration processes at work for the US and EU. The US, concerned with the overall level of import penetration, has concentrated on tightening the QRs on the dominant and emerging development country suppliers. The EU has adopted a different dimension, given its 'textile policy', its large internal trade and recent developments with Turkey and Eastern Europe. It focuses more specifically on products and market access rather than targeting in general on specific emerging countries. These policy differences have implications for the future prospects of the development countries.

During the 1990s in both the US and the EU clothing markets there has been a significant more away from traditional suppliers (the big three of East Asia) to new low cost suppliers. In the United States the share of these new suppliers increased most in men's cotton knit shirts, men's cotton shirts, women's cotton knit shirts, women's cotton shirts, cotton shirts, men's cotton trousers, women's cotton trousers during 1982-92 (Majmudar 1996). The prices of cotton knit shirts and cotton trousers also rose significantly. Despite a fall in export volumes the traditional suppliers often succeeded in maintaining their value share in a small range of products by up grading of quality. In ten product export categories in the United States, China appeared in seven, India in five, Bangladesh in three and Sri Lanka in two as among the top suppliers. There were no African country in any of these product group.

The top ten suppliers to the EU market over the 1988-94 period showed important changes. For example, in 1988, Hong Kong, Turkey, Yugoslavia, South Korea and China were the top five. By 1994, China, Turkey, Hong Kong, Tunisia and Morocco were the top suppliers. India and ex-Yugoslavia were in the top 10 in both years. Indonesia, Poland and Bangladesh replaced Austria,

South Korea and taiwan in 1994.

The average unit price trends in EU clothing were in sharp contrast to the US pattern. For example, the average unit price of clothing declined from 16.72 ecu in 1982 to 16.40 ecu in 1994 (a decline of 2% over the period 1982-94). The maximum price declined by 16.6% (from 33.4 ecu in 1982 to 27.9 ecu in 1994) The maximum price declined most, by 18.3% (from 10.5 ecu in 1982 to 8.6 ecu in 1994). This pattern is further evidenced at the product level. For the EU, the price-raising effects of restricted products were condoned to the maximum price band, raising the average unit price over time, although for some products the rise tended to be small with even a decline a few cases. For example, maximum and average unit prices rose for T shirts, pullovers, trousers, shirts and women's overcoats. the price increase were small for women's dresses. In comparison with the US, the market share declines. changes of the dominant suppliers are uneven, and in most cases the were small. The market shares of the top five suppliers at product level confirm the general picture of the significant presence of preferential countries, alone with Hong Kong and China. O the emergent suppliers, Bangladesh is the least-cost supplier of T shirts and shirts, along with other developing country suppliers.

The share of the dominant suppliers declined most in the following categories Pull over trouses shirts and T shirts.

Table IV.15

The Structure of EC external trade in clothing, 1992

		Extra-EC imports	Apparent consumption		Imports as % of apparent consumption
Clothing '000 tons		1,237.0	3,189.6		38.3
Knitwear		574.6	1,518.5		37.8
Woven clothing	662.4	1,671.1		39.6	
By product (mill. pieces)					
shirts	846.1	1,401.9		60.3	
Blouses	232.2	419.0		55.4	
Men's coasts and rain coats		24.1	33.1		72.8
Men's suits		22.3	34.5		64.6
Women's suits	24.9	26.9		92.6	
Skirts	82.5	235.5		35.0	
Dresses		101.4	188.1		53.9
Pullovers		321.8	933.3		34.3

Source majumdar (1996 p 2c)

Mauritius appeared among the first four suppliers to EU during 1992, in two product categories T-shirts and pull over). Tunisia appeared in two as well trounces and women's spire. Morocco appeared in five categories (trousers, pullovers shirts, women's suits and women's over coats. Bangladesh appeared in two (T-shirts and shirts). Turkey in appeared in all nine categories.

Extra EU clothing imports are expected to increase to between 57 to 71 ECU billion during 1992-2204 (EC Commission 1995) and to constitute between 55 and 61 per cent of apparent consumption.

Attempts at modelling the impact of liberalisation on clothing exports of developing countries have been common in the literature since at least the mid 1980s.

For example, Trela and Whalley (1995) estimate developing country gains at $8 bn if both quotas and tariffs are removed in the textiles and clothing sector; if quotas alone are removed then the expected gain is reduced to $3 bn. In both cases the countries which stand to gain the most are China, Turkey, Brazil, India and Pakistan. Yang (1994) estimates an increase in developing country exports of the order of $6.8 bn, of which the newly industrializing economies, China and the other MFA exporters account for 69 per cent, 16 per cent and 15 per cent respectively. There are striking differences between the two studies. As Yang points out, while the dominant suppliers are projected to benefit most in his study, they have virtually nothing to gain from the removal of quotas in the Tela-Whalley study. As products are not differentiated in the latter study, the tariff equivalents are low and Hong Kong, for example stands to lose from greater competition from other low-cost suppliers. Yang estimates tariff equivalents at 49 per cent, 43 per cent and 23 per cent respectively for the NIEs, China and other MFA exporters. Despite these differences, both studies conclude that most countries should gain from the abolition of MFA quotas.

Table IV.16

GATT Estimates of Trade Liberlisation Effects in Clothing, 2005
(% change in volume)

	Version 1a		Version 2b	Version 3c	Actual value	of exports in 1992 ($bn)
Clothing	69.4	87.1	191.6	105.6		
All merchandise	8.6	9.6	23.5	2,843.0		
Developing and transition	13.7	15.3	36.7	906.4		
China	6.1	8.4		26.5	85.0	
US		7.5	8.2		21.7	448.2
EU		7.3	7.8		19.4	568.7

a) assumes constant returns to scale and perfect cometition.
b) assumes increasing returns to scale and perfect competition.
c) assumes increasing returns to scale and monopolistic competition.

Source: GATT (1994a)

GATT (1994a) and Page and Davenport (1994) are the most recent estimates for the effects of liberalisation and deserve careful scrutiny. The former presents the trade effects in the different versions to include market structure and economies of scale variables. Table IV.29 shows the percentage increase in volume growth for different sectors and groups of countries, putting the growth in clothing for 2005 at 69%, 87% and 192% under Versions 1,2 and 3, i.e. as one moves form constant returns to scale and perfect competition to firm-specific increasing returns to scale and monopolistic competition. The growth for developing and transition economies rages from 14% under Version 1 to 37% in version III.

The possibilities of unequal distribution of the effects of quota removal amonth developing countries are explored by Page and Devenport (1994) by focusing on the OECD market. The following indicators were selected to examine the relative importance of an exporting country to OECD markets: (i) sector's share in country's exports to OECD countries; (ii) sector's share in country's total exports' (iii) country's share in total OECD imports. Two possibilities for projected growth of import demand were considered. On the assumption of a substatial increase in imports to the US from controlled countries but little elsewhere, an annual rise of 2 percentage points results. If, however, the increse in import demand is general, this could amount to an extra 5 points per year. On Page and Davenport's analyses, the countries likely to gain most are China, India, Pakistan, South Korea and Eastern Europe.

Mauritius is identified as the largest single loser with almost a 30 per cent decline in export earnings relative to 1997. A small negative decline of export earnings of 0.6 per cent is precast for SSA and North Africa is seen as not being affected at al. The increased concentration that

is likely to occur as a consiquence of the phased reduction in quotas may mean that some minor producers will leave before integration of clothing into GATT. The key to survival is not just low wages - although foreign investors ate this as the single most important consideration the evidence seems to be that the major African clothing exporters (Moroccs, Tunisia, Mauritius) cannot compete will Bangladesh India, Pakistan, Vietnam and perhaps even China as for as wage cost are considered. China and India are often indentified as the major gainers from the MFA phase out Specialisation and the development of market seems very important in maintaining export growth.

Adopting a broader coverage of production costs and productivity, a recent Kurt Salmon estimated the DM cost per standard minute of standard clothing items. This broader coverage brings many East European countries closer to the Asian countries in terms of competitiveness. Its figures placed the following Asian countries in the lowest cost band: Indonesia (DMO.209); India (DMO.204); Philippines (DMO.192); Malaysia (DMO.187); Vietnam (DMO.181); Poland (DMO.195) and other East European countries fard as well as the low-cost countries, followed by Turkey (DMO.291), Tunisia (DMO.225) and Morocco (DMO.219). The highest production costs were found to exist in Norway (DMO.759), followed by Germany (DMO.645) and the US (DMO.548).

The kurt Salmon study (1995), which is updated every two or three years, took as its base an already existing model factory employing 140 direct employees and carrying out contract processing for Germany, and with a production capacity of 500 suits or 2,000 trousers or 3,000 shirts. The following factors were incorporated in the data: basic (and extra) wage costs; productivity; working day and working hours; absenteeism, management and service personnel; material costs and transport costs to and from Germany.

Majmudar (1996) emphasises the role of purchasing groups and their linkages with large exporting firms in determining the pattern of import demand in several European countries. These factors would favour the contnuation of geographic links in the post-liberalisation period. On the other hand, the disappearance of quota rents and the subsequent decline in the average supply prices of standard products are factors favouring large supplier countries, creating strong possibilities of substitution away from small to medium-sized suppliers. The overall competitiveness of the supplying countries will also be influenced by the governments' policies towards the sector in the interim period.

Products and geographic distribution finance and infrastructure availability are key elements in government policy initiatives to sustain clothing sector growth.

The impact of the phase out is likely to be concentrated on product categories where quota utilization are in excess of 80 per cent. These constitute only about 15 to 17 per cent of extra European import of textiles and clothing. Of much more significance for Africa are the 1996 customs union with Turkey and the continuing liberalization of trade with Eastern Europe CMT (Cut, manufacture and trim) investment may shift from Africa (specially Mauritius) to Turkey and East Europe.

Tariffs in the textiles and cloting sector in the EU will average 12 per cent. The overall tariff average rate is only 4 per cent even after the Uruguay Round. Protection to domestic industry will thus continue and the EU is likely to continue to excercise "surveillence" over imports from Egypt, Morocco and Tunisia. Tunisia also has a bilateral restructuring agreement with the EU. The tightening of surveillance will make investment in Morocco and Tunisia unattractive to non European textile and clothing producers.

The evidence seems to show that price competitiveness of Tunisia and Moroccan clothing exports to the EU declined marginally during 1988-94 - the real price of Tunisian clothing exports rose and that of Moroccoan exports decline by less than the average level of price reduction (Majmuder 1996). Price competitiveness is eroded by OPT - requiring import of high cost EU fabrics. Morocco and Tunisia succeeded in maintaining gains in pull overs and trousers although they lost market shares to Asain countries in T shirts, shirts and blouses during this period. Making progress in the standardised product areas is important for the African countries because here the East European countries and Turkey do not have a cost advantage - on the other hand they can gain substantially in other "designed" product areas these CMT/OPT arrangement.

It is not likely that reaprocity will be a major consideration in the EU treatment of the African countries. Although the receprocity clause in the GATT/WTO is formally sctionable penalties are limited and indeed obtaining penalty action by the WTO will not be easy (Ram 1994). In any case the foreign exchange constrant - given the high volume of external debt - on major African textile and clothing exporters is such that emphasis on reaprocity will be a hard policy choice for their trading partners.

The EU is the world's largest market for textile and clothing imports. In 1994 its share of world textile and clothing imports stood at 37 per cent and 28 per cent respectively. The US on the other hand took only 7 per cent of world textile imports. Its share of clothing imports was 28 per cent (Khanna 1996). Clothing accounted for 63 per cent of US imports while yarn ammounted to only 7 per cent. Over the last decade cotton imports have been gaining over man made fibre in the US and in 1994 cotton imports accounted for 45 per cent of textile and fibre

import. The main US suppliers are Canada, Mexico, some Central American countries, China and the Asian 'big three' (Hong Kong, Republic of Korea and Taiwan province) whose share has been declining. China is now the biggest supplier with a value share of almost 13 per cent in 1994. In individual product areas Sri Lanka and Bagladesh have made considerable head away. Sri Lanka is among the top ten suppliers of cotton coats, cotton dresses, women and girls cotton non knit shirts, Cotton shirts, man made firbe shirts and other cotton apparel. Bangladesh is among the top ten in the following product categories, other cotton apprell, men's and boys cotton trousers; cotton non knit shirts, men's cotton non knit shirts and cotton coats. No African country is a major supplier of either textile or clothing to the US.

Products whose imports have grown rapidly in the US since 1989 include cotton dresses, cotton knit shirts (in which the level of supplier concentration is low) men's woolen shirts, man made fibre shirts, and women's cotton trousers.

Since 1996 EU clothing and textile imports have been growing more rapidly than the USA. A large proportion (about 60 per cent) of EU imports remain subject to MFA quotas rstrictions. Non MFA imports (to which category belong the exports of most African countries) still account for about 40 per cent of the total volume of extra EC imports of textile although their value share is only about 1.1 per cent. In clothing the share of non MFA extra EU imports is only 1 per cent in volume and 4 per cent in value term.

There are no SSA countries among the major supliers of extra EU textile imports but new suppliers from the developing world have made a break through. This in 1994 textile imports from Iran ammounted to Ecu 470 million (roughly four per cent of total extra EU textile imports). Prices of both textile and clothing imports have been falling and clothing imports are seen as threat EU the industry.

Tunisia and Morocco were among the main ten major clothing suppliers to the EU during 1983 - 94. Moroccan clothing exports to the EU grew by 19.6 per cent and Tunisian exports by 13.6 per cent - both significantly higher than the average growth of extra EU clothing imports in value terms (only 6.5 per cent). Both Bangladesh and Indonesia are now among the top ten and in volume terms Bangladesh exports were larger than Tunisia's and almost equivalent to Morocco in 1994. Bangladesh was the lowest price supplier to the EU. Tunisia was among the highest (more expensive than both Turkey and Romania) and Morocco was ranked as a medium price supplier (along with Indonesia, China and India).

Morocco was among the top ten suppliers in the following product categories during 1989 - 1994:

shirts, pullovers, trousers, blouses, shirts, over coats, women's dresses, women's shirts and women's suits. Tunisia was included among the top ten in women's suits, shirts, dresses, over coats, shirts, blouses, shirts and blouses Mauritius ranked in only two categories T shirts and pullowers.
Bangladesh ranked in two: shirts and T shirts, Sri Lanka and Indonesia also ranked in two products. Turkey, Romania and Poland also maintained a strong presence.

Products which have grown vigorously include T shirts (a highly price semitive product in which Mauritius is rapidly losing ground) trousers (in which both Morocco and Tunisia have a clear level) blouses (where quota holders have a strong grip) shirts (with Bangladesh dominant) and women's suits (with a strong Chinese presence increasingly strengthened by joint ventures with European companies).

There is a clear contrast in market opportunities. In the USA growth is slow but prices are stable. In the EU volumes are rising rapidly but there is pressure on prices in all categories, US trade in clothing is being regionaly sourced with preference for NAFTA and Central America (NAFTA may expand to include Chile, perhaps Colombia). EU companies are moving downstream production abroad to take advantage of lower costs. This shift in production has been stimulated by retailer pressure for lower prices. Retailers are estimated to control 51 per cent of EU clothing imports in to the EU in 1994. (Scheffer 1994 p.102). A large portion of EU garment imports are also channelled through European manufacturers and designers.

The internationalisation of Eu firms have taken the form of CMT/OPT arrangements subcontracting as well as the establishment of fully owned subsidiaries OPT trade is being restricted. Only firms with their own manufacturing unit in the Eu are awarded OPT quotas. OPT arrangements are geographically widespread - but three quarters of OPT imports originates from East Europe and Turkey in a typical year. The share of Morocco and Tunisia is only about 15 per cent. Mauritius share is minuscule and no other African country figures at all.

About 15 per cent of Moroccan and Tunisian clothing exports to the EU are coverted by OPT arrangement as against 75 per cent for Poland and Hungary (but only four per cent for Turkey). OPT imports are particularly important in the following product categories: men's suits, men's over coats, shirts, industrial clothing, women's over coats, underwear, corsets and blouses. (in these product categories OPT share in EU imports range from 38 to 15 per cent).

OPT and other forms of subcontracting has its disadvantages but these can be reduced if the foreign firms can be educed to use local fabric rather than import. This has cost and

transportation advantages but requires upgrading of locally produced fabric. Relocation by EU textile firms to Africa can increase the production and use of local fabric Moreover the sourcing of grey fabric from low cost countries is increasingly common among EU firms.

Subcontracting and extra Eu production by European clothing manufactures now accounts for over 40 per cent of total turn over as against only 28 per cent in 1983. In Germany and France about one third of turn over is derived from local production. In the Netherlands this share is less than 20 per cent. Foreign sourcing is most common among large diversified companies operating in brand markets and among producers of children's clothes. Both mass production and smaller runs are being sourced from abroad. Local sourcing in North Africa - i.e. the use of local fabric - is restricted by Eu policy which gives significant tariff advantage for the use of Eu fabrics by OPT firms.

Moving abroad is prompted by retailer pressure - who usually move before the manufacturer - and by labour cost advantages (Scheffor 1994). The move is usually a long term commitment. Scheffer's survey shows that there are no advantages in terms of prices production flexibility or taxation which creates an incentive for a "return to Europe" (1994 p.114, 115). Textile firms benefit from OPT which increase their international competitiveness by reducing costs. Textile firms supplying fabrics to North African sites are more likely to contemplate relocation. Direct delivery is common in denim, cotton shirts and children's clothing. During the 1983-92 period some European textile firms have set up home in Morocco, Tunisia and Mozambique. The size of these producer units are small. They have been set up by large firms and mainly produce grey cloth, basic qualities and a limited range of fabrics. Retailers' demand plays a leading role in the decision of textile firms to set up a foreign unit which is geared to supply the local market. But the move overseas of textile production is restricted by the prevalence of OPT, the clothing manufacturers prefers taking supplies of fabric in Europe and the geographical spread of the purchasers of the output of textile firms is limited - few textile suppliers sell to a production base which is so big in one individual country that they can afford to set up a subsidiary then.

The buying of in gray cloth is the most widespread form of international sourcing. In the printing industry the majority of gray fabrics are sourced from outside the EU. It is also growing in the peice dyed goods sector Key growth areas are the plain dyed cotton sector and polyester.

With clothing distribution becoming increasingly concentrated in the Eu and the manufacturing sector fragmented, moving abroad to ever cheaper sources will remain an attractive long term policy. Today the choice is not Eu or East Europe, it is Poland or Morocco, tomorrow it should be Morocco or Nigeria.

Both production and investment restructuring is also evident in the textile and clothing sectors of East Asia. Their the combined share of the big three - Hong Kong, Republic of Korea and Taiwan province - in US textiles and clothing imports has declined from 50.3 per cent in 1982 to 28.7 per cent in 1992 in value terms: China's share increased from 8.6 to 13.4 per cent during this period. It is also now the biggest supplier to the EU market with its share exceeding 9 per cent in value terms in 1995. Asian exporters now supply over 70 per cent of US textiles and clothing imports. Traditionally China, the 'big three' India, Turkey and Israel were large suppliers. Now many other Asian countries have emerged as major players in the US markets . They include Sri Lanka, Thailand, Malaysia, Singapore, Indonesia, Philippines, Macau, Bangladesh, Pakistan and even Nepal. The UAE, Oman, Qatar and Bahrain are expanding their US exports. Why are the Africans alone unable to follow ? Besides the big three, China and Thailand several Asian countries (Bangladesh, Sri Lanka, Vietnam) have successfully penetrated the EU market.

Moreover there is evidence of a second migration of the clothing and textile industry in Asia. Hong Kong firms are shifting to China specially to Guangdong. The usual pattern is to relocate labour intensive processes and retain skill intensive activities through joint venturing and the establishment of subsidiries. According to a 1991 survey of the Federation of Hong Kong Industries which covers 411 companies the following factors were responsible for relocation to over seas site: labour shortages in Hong Kong, high wages and costs in Hong Kong, High labour turnover in Hong Kong, abundant labour and land supply and market potential in host country, favourable investment environment and good connections in host country and its proximity to Hong Kong. (quoted in Khana 1993 p.21)

Besides China large Hong Kong producers had set up establishments in the following countries during 1981-1992 Singapore, Macau, Sri Lanka, Malaysia, Philippines, Maldives, Bangladesh, India (Asia). Saipan (US tenitory in West Pacific). Costa Rica, Panama, (Latin America). Morocco, Mauritius, (Africa).

In 1990, 193 South Korean firms had established overseas production facilities. Firms moving abroad produced suits and trousers, knitwear, jackets and dresses, blouses and shirts, fibre and fabrics and printing and dying units. 83 of the units were producers of jackets, dresses blouses and shirts, 35 of knitwear and 23 of suits and trousers. 50 per cent of the investment had gone to South East Asia and 35 per cent to Latin America - the African share was in significant. Indonesia and Guatemala were the favoured locations. Reasons for the move have been desire to escape quota restrictions, high Korean wages and costs and low cost production basis with an abundance of skilled workers.

Structural changes in the Taiwanese textile and clothing industry is reflected in the rapid growth of man made fibre and decline in both natural fibre and apparel. Taiwanese clothing and textile firms have relocated mainly to China but also to Philippines, Vietnam, Thailand, Malaysia, Bangladesh, Laos, Dubai, Iran and Mauritius. The move abroad has been response to rising wages and shortage of skilled workers in Taiwan.

Both European and Asian firms have incentives to relocate to low cost sites with sizeable domestic demand and proximity to the Eu which is the world's largest textile and clothing market - Africa has the added advantage of having prefrential access to the market. But its industry is in bad shape. The changes that are taking place in production technology particularly in the clothing sector may to some extent be to Africa's advantage. There is a distinct move away from the guest for a fully "unmanned factory". The emphases now is on design, new fabrics production and delivery flexibility quality and service. Computer systems are being oriented to pattern grading market making and materials transport. There has been a dramatic decrease in the price of entry level systems and new technologies are becoming affordable and more accessible to small and medium sized firms. While the new technology has changed the organisation of the overall supply chain in the clothing industry - enhancing economies of scale - it has not fundamentally affected the most labour intensive production processes on the sewing room flies floor.

One crucial development is the increase in the power and concentration of major retailer groups specially in the USA and Asian countries but also in Europe. Lead times are being shortened and technology is making possible to move away from standardisation of products to "bespoke" fabric and garment coloration by applying existing, dying, printing and finishing technology. Advances in information technology and the cheapening of air transport make customisation and rapid supply of garments increasingly feasable. Advances in CAD, CAM and CIM (computer integrated manufacturing) all are applicable globally if utilised within the context of co-operation between firms based in developed and developing countries. Use of cutting room CAD has become almost universal leading to a significant reduction in costs. The impact of CAD on creative design in also widespread and CAD is also evolving as a merchandising tool.

Co-operation between developed and developing country firms is being dictated by the relative need to globally source production and trade. Given the device competition in clothing manufacturing and the high level of retailer concentration it is the retailer who calls the shots. Strategic alliances are being developed on a global scale to develop quick response supply chains. Stability of supply relationships are being promoted to lower costs. On a world wide basis future patterns of development in the clothing industry are becoming dependent upon external sourcing

of new fibre, fabrics and finishing methods. Analysts product that soon it will become more efficient to locate production near source of supply rather than near the final consumer to minimise labour costs and to tie more closely the location of fabric finishing and garment manufacturing (Byrne 1995).

IV.II.II *CONCLUSION*

We set out to answer the question; should the textile and wearing apparel branches in African countries be export or domestic demand oriented? Our conclusion are as follows.

a) Export prospects are very limited for the vast majority of African countries. On the other hand per capita consumption of textile and clothing in Africa is by far the lowest in the world. There is thus a strong prima fack case for domestic demand orientation with large populations and raw material availability (agricultural for natural fibre, chemicals and petrochemical for synthetics). All the major African countries come into one or both of these categories. The development of an efficient domestic demand oriented textile and clothing branch thus is justified in these countries.

b) In many of these countries textile and wearing apparel represent one of the largest manufacturing branches. But it is usually not efficient and has low levels of capacity utilisation. Policy must be concerned with rationalisation acquisition and merger, rehabilitation, balancing and modernisation. Privatisation may be a means for achieving these objectives. In Africa as in South Asia integrating the spinning and weaving sector has proved problematic. Rather than setting up large scale integrated units an attempt must be made to develop vertical and horizontal sub contracting links between the spinning mills and the weaving operations to maximum income and employment generation impact.

c) Production for the local market must be mainly in the form of low and medium count yarn, grey fabric and coarse cloth. Given the low levels of income in Africa production must be price not quality driver. The impact of European / American "throw away" (second hand clothes) on the wearing and spinning sector is similar to the impact of food and on the production of coarse grain. Policy must aim at reducing the price of locally produced clothes below those of "throw aways".

d) Expansion of synthetic fibre should not be accorded priority (except perhaps in a small group of countries, Algeria, Egypt, Nigeria, which produce a significant quantity of no cellulosic fibre.

In synthetic fibre manufacturing there is a need to employ large production capacities and continuous processes in order to achieve cost reductions. In the case of the synthetic fibre industry, as the production volume increases, the cost per unit decreases, with the benefit of the cost reduction being more pronounced at lower volume levels than at higher ones. Other factors also can contribute to the cost reduction. For instance, process integration from petrochemicals all the way to fibre spinning would have a favourable impact on costs. An additional factor is capacity utilization: a small plant operated at a higher utilization rate will have a cost advantage over a larger plant operated at a lower rate. Traditionally a synthetic fibre plant operating at 70-75 per cent capacity utilization would be considered operating at a break-even point.

Capacity utilisation in Africa however has been low. Some African countries have large capacities in nylon. Performance in these countries have been weak (UNIDO 1992-93 p.322-323). Reducing prices of synthetic fibre to affordable levels does not seem likely.

e) A particularly weak aspect of the African textile and clothing sector is its almost total dependence on machinery imports. Textile machinery, equipment and design are widely available on a merchant basis rather than being contingent on the proprietary technology of an enterprise. But unlike the East Asian case even relatively advanced African countries such as Kenya, Nigeria and Zimbabwe fail to unpackage textile manufacturing technology. Imports of textile machinery - particularly of the more advanced rotors - have fallen as the foreign exchange constraint has become binding. Any attempt at modernising and balancing the textile and clothing branches must include measures both to increase technology imports and to enhance the capacity for local manufacture of textile machinery. Several Asian countries at relatively low levels of development are significant manufacturers of textile machinery.

f) While the bulk of the textile and wearing apparel manufacturing activity should be domestic demand oriented, there is scope and need for creating export competitiveness in a selected number of products. The export strategies must be constructed in a manner that they synchronies with the sourcing strategies of major European and Asian retailer chains. It is the retailer groups who are now the principal market makers and investment flow facilitators in the textile and clothing business. An alliance with key

retail houses can pay rich dividends in the form of both export earnings and foreign capital inflow for many African countries.

g) The export strategy must be product specific. Low cost African countries must seek to develop a capacity to market standardised products of the type exported by Bangladesh, Sri Lanka and Thailand. The magreb must learn to compete in highly styled and designed products that are produced by Turkey and East Europe. Some indication has been given of the type of product likely to be most lucrative (cotton dresses, women's knit shirts, men's cotton non knit shirts, women's cotton non knit shirts, shirts, trousers, T shirts, blouses, women's overcoats women's suits, men's overcoats, industrial clothing, cotton sports wear, children wear, fabric printing and knitted fabrics). But this is a tentative list and detailed research is required to identify potential of each product in major markets. Strategies of retailers and manufacturers and possibilities of liaising with and influencing these strategies. Such research is urgently necessary to develop a viable and coherent textile and clothing export policycc.

h) A very important need is to increase the volume of locally produced fibre in manufacturing of OPT/CMT type operations. As argued above this make good economic sense for host countries, foreign manufacturers and retailers. OPT related legislation inhibits this development and lobbying must be under taken, in association will EU retailer and clothing manufacturers to modify this legislation. There is also a need to improve the quality of locally produced fabric. Investment by foreign firms should be encouraged for this purpose.

i) There is also a significant opportunity for expanding the share of locally produced grey goods in export oriented production.

j) While the EU market remains of primary important note must be taken of the opportunities in Asia (both East and South). Asian firms are also moving out of low count yarn and low value added fabric and clothing production creating space for lower cost producers. Moreover Asian - specially South Asia firms - can be attracted to East Africa (given the presence of a large Indian community) to export oriented and modern projects. This may also be true of some Latin American countries which have sought to develop trade and investment ties with Africa such as Brazil.

k) Finally the American market remains almost totally unpenetrated. Many low cost Asian countries have had significant success in the USA as have some Latin American

countries (but that may be attributed to preferential treatment). The presence of a large African community with strong cultural ties to the home continent provides a rare opportunity to African textile products. If properly targeted this community can help build the market niche necessary for African penetration for the US clothing and textile markets. This community can also serve as a rich source of technical know how and expertise for the modernisation of the industry.

IV.III LEATHER AND FOOTWEAR

IV.III.I CHARACTERISTICS

Leather and footwear are important manufacturing activities in several African countries. Most countries do not succeed in making adequate use of resources in this sector. Their about 70 per cent of the hides exported from Sudan are unprocessed. This represents a substantial loss in value-added since semi-processed hides command a premium of 250 per cent over raw hides. If leather products enterprises, such as shoe and bag manufacturers, develop downstream the potential gains in terms of value added are even greater.

The estimated local supply of hides and skins in 2 million and 9 million respectively but processing capacity is far below this and actual production is lower still. The rated capacity in the three large, mechanised, publicly owned tanneries is 570,000 hides and 1.8 million skins but these enterprises are currently working at only a fraction of their capacity. There are also three major private tanneries. One of these, the Afrotan tannery, which works at near full capacity, due to its proficient management and modern machinery, processes 88,000 heavy pieces and 888,000 light pieces annually. The other two tanneries - work at capacity utilisation rates of between 10 and 25 per cent. In addition to these modern tanneries there are numerous small-scale, artisnal tanneries in rural areas. They usually process defective hides and skins rejected by the larger factories.

These low capacity utilisation rates result from shortages of foreign exchange which constricts supplies of chemicals, spare parts and packaging materials, interruptions in the power supply and the inadequate infrastructure. Supplies of hides are, moreover, of low quality due to deficient herding and slaughtering practices. The tanneries also find it difficult to purchase supplies of raw materials because they offer lower prices than exporters. There have also been serious shortcomings in the marketing system, especially in finding suitable export markets. Experienced

salesmen are difficult to find. This prevents the tanneries from taking advantage of the premium on processing. Part of the problem in finding buyers abroad is the poor quality of the product. Training is needed to improve curing and hide preparation practices.

The footwear industry in Sudan also suffers from high levels of capacity under utilisation. Capacity was estimated at 50 million pairs of leather, 60 million pairs of plastic and 40 million pairs of sports shoes in the early 1990s. Quality is generally rated at medium to low and export possibilities have not been exploited. Infrastructural bottlenecks - particularly power breakdown - has been a major constraint on the development of the footwear branch in Sudan.

In Somalia the contribution of leather to the manufacturing sector has been rising during the 1970s and in 1986 it stood at 8.5 per cent. At that time, Somalia had 7 mechanized tanneries, of which four ware in the public sector as part of the State-controlled Leather Agency. Three belonged to the private sector. in addition, there were 25 small cottage industries in Brava area. The number of small units scattered throughout the country was estimated at about 700 in 1986.

The potential for leather output is great, both for home consumption and for export. However, the factories do not get the required amount of hides and skins. The export possibilities are not fully availed of due to the following reasons:

a) over 70 per cent of available hides and skins were sold directly to state agencies at very low prices thus inhibiting development of an efficient market .

b) Low level of capacity utilization of tanneries;

c) shortage of skills at all levels in the tanneries and shoe manufacture;

d) defective flaying and curing of hides and skins;

e) lack of foreign exchange for spare parts and for import of chemicals for tannery operation (except salt, lime and some local vegetable tanning materials);

The major measure for improvement of leather sector operations, suggested by many researchers and donors, is to keep the sector open to the private entrepreneurs; allowing them to collect leather , process it and market it locally and abroad.

In view of the high importance f the leather sub-sector, there is urgent need for a detailed study

of the entire sector and enterprise. Such a study should review the legislation governing domestic and export trade, and make recommendations to modify such legislation with a view to liberalizing trade and providing incentives for increased value added in the sector. It should suggest measures for rehabilitation of industry and for locating joint venture management/partners.

Once political stability is restored the leather and footwear branch should be one of the most important targeted for restructuring and rehabilitation. There is also considerable potential for the development of the sector in Djibouti.

At present, hides are exported from Djibouti unprocessed and plans to build a tannery have foundered on administrative obstacles. With exports of skins totalling about 600 tones in 1991 the project merits reappraisal, both for the added value it will create and for potential resources it would provide for a leather industry. Nomads produce traditional sandals and leather water-bags, some of which are sold as tourist curios, but otherwise there is no leather industry. The market for shoes, for instance, is largely met by imports, most of which are synthetic and textile products from China and Hong Kong, totalling about 1,000 tones in 1991.

Mauritania lacks modernised netuorks because , despite the huge potential of livestock, there are problems with the collection of skins and their quality. In the early-1980s the Societe National des Industries des Peaux et ded Cuirs proposed the construction of a wet-blue tannery with a capacity of 65,000 cattle skins, 80,000 goat sins and 160,000 skins of cross-breeds, with an investment of 6 million, but nothing came of the project. The tanning and curing of skins remains mainly an artisanal operation. Consequently, larger-scale leather-working enterprises have problems securing regular supplies of cured skins. The products of artisanal curing process are, of low and un reliable quality and so inhibit the development of a leather industry producing high value, export orientated products Poor quality also prevents the development of export sales to countries with established leather working industries - Spain and Italy.

The shoe and sandle manufacturing enterprises also operate at an artisanal level. The Societe manritanienne d'Industrie et de Commerece (SOMIC), founded in 1985 remains a low-technology and highly labour-intensive operation. This is equally true of Etalissement Drae et Freres. Both companies face competition from artisanal scale enterprises producing similar products for the domestic market. Since 1986 a company manufacturing plastic shoes, Establishment Moahmed Mahoud, has been established. This enterprise is also orientated towards the lower income domestic market. Until the quality and supply of cured leather is improved the industries potential cannot be fully exploited and in particular export growth will

remain impossible.

It is estimated that Kenya has approximately 11.7 million cattle, 9.6 million goats and 8.3 million sheep (1992 figures,). The availability of raw hides and skins, however, directly depends upon the number of animals slaughtered and hence the 'off-take' rate per annum is important. On the basis of off-take rates, the local availability of hides and skins to tanneries is in the region of 1.5 million pieces and 4.5 million pieces respectively. Other raw materials such as PVC polyurethane, rubber and other shoe accessories are imported.

There are 14 tanneries in Kenya with an installed capacity which far outstrips local supply. Together they can process 3.3 million hides and 8.3 million skins per year. In 1992, tanneries in operation processed 920,000 cattle hides and 6.5 million skins.

With the liberalization of the economy, exports of hides and skins have increased and this has resulted in a server shortage of raw hides and skins to the local tanning industries. They are now operating at an average rate of only 50 per cent of installed capacity.

The majority of the tanneries' capacities are geared towards the processing of hides and skins up to the wet-blue stage for export which accounts for more than 60 per cent of the total leather produced in the country. Twenty-five per cent is processed up to the crust stage, and 15 per cent to finished stage mainly for local consumption by the footwear industry. In 1994, leather exports earned Kenya KSh 68.2 million in foreign exchange, up from KSh 35.4 million in 1991.

The largest consumer of leather in Kenya is the footwear subsector. This subsector has enterprises ranging from small-scale semi-mechanized, to medium- and large-scale fully mechanized firms. There are a total of 30 formal factories manufacturing both leather and synthetic footwear. Apart from the formal enterprises, there are hundreds of informal shoe manufacturing units scattered all over the country. The biggest shoe manufacturing firm is Bata Shoe Company with a capacity of about nine million pairs per year.

Table IV.17

Production of Leather and Footwear, 1990-1994 : Kenya

Source: Republic of Kenya, Central Bureau of Statistics

Eritrea is also endowed with a large number of livestock. Although as the result of the war and drought, the livestock population was severely reduced between the mid-1970s and the early-1990s, the advent of peace and relative stability has enabled livestock production to rebound strongly.

Crucially, since independence, the livestock numbers have started to increase, as has supply of hides and skins to the leather and footwear industries. The tannery and pickling industries mainly depend on domestic hides and skins as their raw materials.

There are seven (two public and five private) factories which are engaged in tannery and pickling processes. At full capacity, the tanneries import about 588 tones of hides and skins from Ethiopia and the Sudan, to complement domestic supply. Besides, the tanneries and foot wear factories require about 4,323 tones of imported chemicals per year.

Production of hides and sheep skins in 1993 were still at their pre independence level but goat skins had requested a small increase , rising from 220 thousand units in 1990 to 234 thousand units in 1993. In 1993, 165 thousand sheep skins and 54,000 hides were also produced.

The total investment in the leather and footwear industrial subsector is bier 69 million, of which bier 53 million is in the public and bier 16 million resides in the private sector.

Inadequacy of veterinary services and traditional skinning and skin handling increase the quantity of defective raw hides and skins supplied to the industry. in terms of prospects, livestock raising is predominant in Eritrea and the value of livestock to the farmers is relatively higher compared to that of food crop production; the phenomenon encourages livestock breeding Thus leather and foot wear, as well as, meat processing industries have an existing platform which can be developed to ensure adequate supply of raw material to meet production for both domestic use and for export.

With Ethiopia being home to Africa's largest livestock population, the country has been encouraged to develop a significant industry in hides and skins. It ranks as the second largest export commodity, accounting for 21 per cent of export earnings in 1991-92 and 17 per cent in 1992-93. Preliminary figure s suggest that its contribution has continued to be important since then: one source reports that the value of exported goat hides for gloves has recently been about $2 million a year (1994).

In 1992/93, there were 10 publicly-owned establishments in the leather and shoe industry in operation - together they employed 6,283 people, were working at 100 per cent capacity (that is the greatest output for the previous 20 years) and contributed 11.3 per cent to the total value of industrial production. The largest tanneries were the Ethiopian Tannery, the Medjo Tannery, the Awash Tannery and the Addis Tannery. Leather shoes were produced at the Tikur Abbay Shoe Factory and the Anbessa Shoe Factory, while canvas shoes were made at the Ethiopian Rubber and Canvas Shoe Factory (which also produced a smaller number of wellington boots). Universal Leather Articles produces a small ammount (in terms of value) of higher-quality leather goods - for example, briefcases, hand-bags and wallets.

The leather and footwear subsector is a fairly well developed industrial subsector. The main products of the subsector are semi-processed skins, crust hides, wet blue hides, leather shoes, boots, canvas and rubber shoes, plastic footwear, leather upper and leather lining, and leather sole.

Table IV.30

Production Capacities of Main Leather and Footwear Products, 1992/93 : Ethiopia

Product	Unit of measure	Annual production capacity
1. Semi-processed skins	Thousnad pieces	11,000
2. Crust hides and wet blue hides	Thousand sq. mt.	12,000
3. Leather shoes and boots	Pairs	2,823,400
4. Canvas and rubber shoes	Pairs	4,902,000
5. Plastic footwear	Pairs	300,340
6. Leather upper and lining	Pairs	21,440
7. Leather sole	Tonnes	370

Source: C.S.A., Results of the Survey of Manufacturing and Electricity Industries 1992/93, Addis Ababa, August 1994.

Most of these products, including footwear, are produced both by private enterprises and state-owned enterprises. The major enterprises in the industry are Awash Tannery, Ethiopian Tannery, Addis Ababa Tannery, combolcha Tannery, Modjo Tannery, Ethiopian Pickling & Tanning, Anbassa Shoe Factory, Ethiopian Canvas and Rubber Shoe Factory, Tikur-Abbay Shoe Factory and Universal Leather Articles Factory. All the major enterprises are owned by the state.

There is a large number of privately owned enterprises in the subsector. Most of them are small-scale footwear factories and leather garment production plants.

Another country with significant potential for rather production is Namibia.

In the 1970s Namibia was one of the main karakul pelt suppliers on the world market, producing 3 million pelts annually. The slump in the world prices in the 1980s due to a high demand for mink lead many karakul sheep farmers to switch to meat production. After Namibia acceded to the Lome Convection, leather products and karakul pelts were granted free access to EU markets. In addition, marketing of karakul pelts receives assistance under the STABEX system. This may create the necessary stimulus for revitalizing the karakul industry to benefit the wool and weaving production as well as high value added products in the leather goods and apparel industries.

Namibaian Tannery (PTY) Ltd. in Windhoek has a capacity to process 200,000 hides into wet blue stage per year, but the present production is only half of that. Almost the entire production is for export markets,75 per cent to Italy and 25 per cent to South Africa. The company is a sole exporter of wet-blue skins produced by the recently established Okapuka tannery of Meatco.

Swakopmund Tannery (PTY) Ltd. tans kudu skins for the production of leather shoes, harnesses, jackets and tans game skin for souvenirs. It has a capacity to produce 800 vegetable tanned kudu hides and 200 chrome kudu hides per month, as well as 32,500 pairs of "Veldskoenen" shoes. It employs about 35 workers and the turnover in 1991 approached N$ 2 million. The products are sold to the public on premises or supplied to wholesalers and shops localy and in South Africa.

Namibia's accession to the Lome Convention benefited the Meat Corporation of Namibia (Meatco) not only in the export of beef but also provide stimulus for skin processing. A new tannery came on stream in Windhoek in 1993. The production adds 50 per cent more to the value of skins previously exported only as dried and salted products. most of Meatco's N$ 10 million investment was financed by a loan from the European Investment Bank at 3 per cent interest rate. The tannery is the most modern in Africa and among the most advanced in the world. The factory has a functional sloping design to maximize the efficiency of production flow and was designed by the company's own staff. The production is centrally controlled by computers purchased from Switzerland. The machinery imported from Italy also takes care of the environment concerns.The skins are supplied in a "green flesh" state by Match's two abattoirs in Windhoek and Okahandja and processed into "wet-blue" state. The present capacity can handle 700 cattle skins a day. Future plans are to boost production to 1,000 hides a day and to add processing of sheep skins. The long term plans also include provision for final leather finishing. There entire output is bought by Namibia Tannery and sold in Italy. At the opening of the Okapuka Tannery in April 1993, hopes were expressed for the tannery to create additional

jobs in the downstream leather goods industry.

Table no. IV.37
Production and Sale of Karakul Products
1987-1992 : Namibia

IV,III,II ***Problems and prospects.***

Developing countries have since the 1970s made major-advances in the development of the footwear industry (cloth leather and plastic) and have also significantly increased their penetration of international markets.

Progress in other segments of the leather industry is more limited.

The making of footwear is a relatively straight-forward operation and, attracts considerable interest from low-labour-cost countries form 1978 to 1990 there wa continuing and significant shift of shoe making on a global scale from developed to developing countries. For example, in 1978 developed market economies accounted for around 24 per cent, of world shoe making and developing countries 53 per cent. by 1990, the shares had changed to 18 e cent and 69 per cent , respectively. Within this broad picture, the main benefactor has been Asia, a region which has seen its share of world shoe making increase from around 40 per cent to 60 per cent, while Eastern Europe and the former USSR, Western Europe and North America have seen their combined share reduced from 47 per cent to 31 per cent.

The major increases over the period have occurred in two groups of countries or areas. Brazil, China, Republic of Korea and Taiwan Province have all registered increases of over 100 million pairs, while Italy, Portugal, Thailand and Yugoslavia have all experienced increases of over 50 million pairs each . There have also been several intraregional moments, such as production in Europe shifting from north to south, and , in East Asia, from the Republic of Korea and Taiwan

Province to China, Indonesia, Thailand and Viet Nam, with Malaysia and the Philippines also making their presence felt. At the other end of the scale, the United States has been its shoe making decrease by over 200 million pairs,and France, German and United Kingdom have also registered significant decreases. Footwear production in Belgium, Denmark, Ireland and Sweden has virtually ceased. China was the leading producer in 190, with 2700 million pairs, followed by the former USSR with 820 million pairs.

In recent years, the shift in shoe manufacturing within Asia has shown a clear trend with production of simpler styles of shoes moving offshore from countries or areas such as Hong Kong, Republic of Korea and Taiwan Province, to China, Indonesia, Thailand and even Viet Nam, as manufacturing gravitates to low-labour-cost producers. India could be included in this group, but has yet to exploit its potential.

On the consuming and importing side of the shoe market, table IV.38 shows Europe, the former USSR and North and Central America as the major consuming regions, while asia and the western Asia are minor consuming regions. In terms of per capital consumption of shoes, the highest levels can be found in Western Europe and North America. For example, table IV.39 shows per capita consumption to be 6.4 pairs in Switzerland, 5.9 in France, and 5.5 in the United States.

Table IV.39

World Consumption of Shoes, 1990

Region	Million of pairs
North and Central America	1728
Western Europe	1595
Eastern Europe and USSR	1327
South America	623
Asia and Western Asia	304
Africa	304

Source: SATRA Footwear Technology Centre, World Footwear Markets, 1992 (United Kingdom, 1992)

Table no. IV.40

Per Capita Consumption of Shoes, 1990

Country	Pairs per head
Switzerland	6.4
France	5.9
United States	5.5
United Kingdom	5.1
Germany, Federal Republic of	4.3
Canada	4.1
USSR	3.4
Italy	2.4
Africa	0.7

Source: SATRA Footwear Technology Centre, World Footwear Markets, 1992 (United Kingdom, 1992).

Reliable estimates of production in Africa was not available but consumption in 1990 was estimated at about 300 million giving a per capita consumption ratio of significantly less than one. Scattered data from individual countries in the UNIDO data base show that while shoe production is growing at a rate in excess of population the target of one pair per person is not likely to be achieved by the year 2000. Meanwhile shoe consumption is almost reaching the saturation level in most industrialised countries.

Many developed country producers (e.g. in Germany and the Scandanavian countries) have larger investments outside their countries than at home.

Productivity levels are higher in developed countries, but the cheap and abundant supply of labour in developing countries more than compensates for that. It is impossible for the European and North American countries to compete on prices with East Asia, companies that manufacture synthetic footwear or lower-cost leather footwear. Eventually, cheap footwear production will go to the countries offering a package that is based on the lowest labour costs, but also able to meet certain other basic criteria, such as reliability and ability to meet delivery dates, political stability and a basic infrastructure.

There is very limited movement of foreign capital to the African footwear industry - except to Egypt and South Africa. Shoe exports and production in many African countries has been growing and if income growth revives there is likely to be a large increase in demand over the medium run, given the rapid pace of urbanisation.

Given Africa's large raw material resource base for the leather and footwear industries there is also considerable scope for export growth. Here sports wear may be a very important category. About 75 per cent of world production in sports footwear takes place in East and South East Asia. It has become extremely difficult to produce sports footwear in Europe. As the styles have started to require increasingly complex upper stitching, the labour costs involved have made it prohibitive to manufacture there. One of the problems facing Adidas, for example, was that they retained too much of their production in Europe. Consequently, their costs were too high. Now they have joined the general trend in closing plants in France and Germany and switching to East Asia.

The growth areas for sports footwear in recent years have been the Republic of Korea and Taiwan Province, followed by Thailand, Indonesia and China. The Republic of Korea developed as the volume producer of sports footwear, with the companies tending to be very large-scale, while in taiwan Province companies were much smaller. Wage problems have led to a rapid

downturn in the fortunes of companies in the Republic of Korea. Major sports companies have consequently shifted some of their sourcing to other, cheaper East Asian countries, although it must be said that they are still keeping the bulk of their sourcing in the Republic of Korea, because it has a better infrastructure and better supply industry and is more reliable. Firms in the Republic of Korea are mindful of the need to change their marketing strategy, and are shifting their low-end production to places like Thailand and often forming joint ventures. They are also developing their own brands, such as Pro-Specs, and this trend can be expected to accelerate.

In many respects, sports footwear is in the vanguard of footwear technology, and manufacturer must be aware of new materials and components and decide where to source their footwear. As the market demand has been for increasingly complex designs, both in terms of uppers and soling, so this has affected the materials used (for example, there has been a switch away from polyurethane soling and a move towards more intricate stitching and meshing of materials), as well as accelerating the movement to low-labour-cost countries.

Several sports companies have recently found themselves in financial difficulties, and there has been a feeling that markets (particularly the North American market) has become saturated with basic trainers, offering only limited opportunity for future growth.

Global footwear output is projected to reach 12 billion pairs by 2000 (UNIDO 1992-93 p. 418). Low cost producers have an intrinsic advantage and the acquisition of the new 'just in time' and 'quick response' technology is not prohibitively expensive as many of the 'second generation' Asian economies have shown. But the markets will not be in Europe and America where per capita shoe consumption approach six pairs a year, population growth is slowing and population is aging. The market for the future is in the countries with per capita consumption rates of less than three pairs and with a factor cost structure which makes it efficient for them to either move out of shoe production or to produce higher quality shoe. Such a market exists for African producers in West Asia, Latin America, to a lesser extent in South East Asia and pre-eminently in Africa itself. The real challenge is to target lower and lower middle income groups within these markets and to mass produce standardised cheap but durable footwear for home consumption as well as export. French companies in North Africa have shown an awareness of these opportunities by concentrating on the production lower priced shoes. Success in attracting foreign investment depends on developing a managerial and production system geared to on time delivers, productivity growth and quality control. Low labour costs and tax incentives are necessary but not sufficient to induce location by major international manufacturers.

An expansion in leather and shoe production should at least in some African countries be accompanied by the establishment of a capacity for the production of leather and shoe manufacturing machinery. The Magrib and some Western African countries should take advantage of the close proximity of Spain one the world's leading producers of leather and shoe making machinery, for local production of the simpler type of tannery machinery such as drums and paddles and to emulate European designs in some African countries (Tunisia, Morocco, Cameroon, perhaps Mauritius, Senegal) either for domestic use or export to other African countries. Joint ventures between European and Indian leather machinery manufacturers have not been unsuccessful. Initiatives in African might also prove fruitful (Howari 1995). In transforming shoe making from an artisanal to an industrial activity machinery has played an important role. Use of machinery is a means for ensuring consistency in colour, substances and characteristics of leather. This brings tanners and manufacturers closer together and is a useful way for raising efficiency throughout the industry. This becomes increasingly necessary to here trade export markets where tight product specifications and related performance standards are becoming increasingly common.

Africa's share in global bovine leather production has increased from 0.1 per cent over 1961-65 to 2.1 per cent in 1991-92 - total production of bovine leather in Africa that year amounted to about 195 million sq. ft. Africa's share of leather produced from sheep and goat skins rose from 2.1 per cent over 1961-65 to 9 per cent in 1991-92 - about 34.6 million square feet. The continents share of global leather footwear stood at 0.2 per cent over 1961-65. This increased to 1.6 per cent in 1991-92 (Sykes 1995 p. 19-20).

This relatively good performance (relative to other product areas) is partly a consequence of the global shift away from heavy leather. Investment in the leather industry has been driven by market - rather than raw material - access. That is why shoe manufacturing activity outpaces - and stimulates - leather production. Light bovine leather production is particularly closely associated with the shoe making industry. Africa has been doing well in the light bovine leather industry - in the last thirty years its output increased by 55 per cent, but its share of global production is still less than three per cent (Sykes 1995 p. 20) and no Africa country could be classified among the major producers (about 100 million square ft. per year production levels). In small skin (goats and sheep) leather production Africa has a more marked advantage. In 1991-92 Kenya and Nigeria ranked among the top ten producers and exporters of small skin leather. Unit prices in both countries were lower than that in any other developing country. Ethiopia ranked among the top ten exporters but its unit price was higher than that of all other major developing country exporters except Pakistan. Prospects for increasing small skin processing are good in several African countries. The domestic manufacture of leather clothing

is an important means to stimulate the small skins processing industry. The leather clothing industry is a very labour intensive process and low labour cost can attract both domestic and foreign investment to the branch provided infrastructural support is available and the environment is appropriate. Small skin processing and leather clothing are likely to be export oriented activities - the average export to production ratio of the leading African exporters (Kenya, Nigeria and Ethiopia) was 90 per cent in 1991-92. Exporting is lucrative because unlike bovine light leather the prices of small skin leather have risen at an annual rate of over 2 per cent during the past decade (Sykes 1995 p. 22).

The potential for the expansion of the industry is considerable but structural constraints exists in major leather producing countries. There are briefly enumerated below.

A) **Malawi**

1. There is only one tannery at Liwonda. Capacity utilisation is low and it can only process 400 hides and 200 skins per day. It suffers from a shortage of capital and managerial inefficiencies. It usually produces an annual financial loss.

2. The leather and footwear industry is largely dependent on imports. It obtains only about 50,000 ft of finished leather from Liwonda per month.

3. There is only one major footwear manufacture - BATA - which totally dominates the domestic markets.

4. There is only one major leather garments firm established in 1992 capable of producing a limited range of product.

B) **Somalia**

1. Collections are very low. There is wide spread smuggling of animals. It is estimated that the domestic markets lose about 50,000 cattle hides, 370,000 goat and 250,000 sheep skin per year skins due to smuggling.

2. Skins and hides are poor quality. Animal nutrition and hide quality have deteriorated due to draught.

3. The 100,000 head a year slaughter house built in 1990 at Kismayo has fallen into dis use.

4. Prices paid by the Somalian Leather Agency to small dealers who make collections are low.

5. Most of the seven major tanneries in operative in 1990 are now reported to be practically closed. Even before the civil war utilization of capacity never exceeded 25 per cent.

C) **Tanzania**

1. Off take rates are only 8 per cent for cattle, 15 per cent for sheep and 25 per cent for goats. Collections are estimated at 75 per cent for cattle and between 7 to 5 per cent for sheep and goats.

2. The hides trade is dominated by one company which has a market share of 75 per cent. There is widespread pilferage and smuggling.

3. Continuing devaluations have made chemicals and spare part imports very expensive leading to a drastic fall in tanneries production.

4. The three major tanneries have high ratioes of under utilisation of capacity. Due to foreign exchange shortage plant and machinery is rapidly becoming obseleet. The tanneries are being rehabilitated by Tanzanian private investors.

5. The privatisation of the state owned tanneries has lead to the monopolistic control of this segment of the industry by just two firms - Aga Khan Tanneries and ATD. The survival of the smaller private sector tanneries is now seriously endangered.

6. Trade liberalisation has had a negative impact. Local leather is being rejected by manufacture who prefer imported goods.

7. Waste disposal is substandard. Waste and disposal equipment is not commissioned because enforcement of effluent treatment legislation is minimal.

8. Under utilization in private shoe manufacturing units is high. The two publicly owned shoe factories are non operational.

9. Although leather goods manufacturing is doing well - almost all companies are

profitable and exports are rising - poor quality of leather supplied is becoming an important problem.

D) **Zambia**

1. There has been no animal census since 1978 and the herd has been seriously affected by the drought conditions of the 1980s.

2. Off takes are 15 per cent for commercial firms (which have one third of the herds and flocks) and 7 per cent for the commercial firms. Collections are about 70 per cent.

3. Available dipping facilities are rarely used by commercial farmers.

4. Operational conditions and storage facilities are poor at the main Zambia Cold Storage Commission (ZCSC) a parastatal. The ZCSC has a monopoly in hide supply. Relations between ZCSC and tanners are strained. The farmer say prices are too high and quality control is minimal - sales have some times been made on a peice rather than a weight basis.

5. Tanneries find it difficult to move from wet blue to finished leather due to technical problem arising from increased obsalence of equipment. Moreover export wet blue hides was hampering the upgrading of the tanneries as the best hides went to Europe and East Asia. The poor quality of hides and skins was partly due to low prices.

6. Devaluation has led to a major increase in input costs.

7. Monopolisation of the footwear branch has increased and two major plants closed down in the early 1990s leaving only Bata and Copperbelt Footwear in the feild.

8. Leather goods manufacturing is very small.

E) **Zimbabwe**

1. Liberalisation and devaluation has led to a step rise in input prices and made spares and new equipment acquisition very expensive. The prolonged recession has also lead to a fall in domestic demand.

2. Quality of hides is poor. Drought is Southern Africa had seriously affected the livestock and shortage of hides has led to a closing of plants. Increased export of wet blue has led to a major contraction of top grade hides in the domestic market.

3. The export of wet blue has inevitably led to a fall in the export of footwear. Exports and production of leather garments have also fallen.

4. Preparation and preservation of skins and hides are inadequate.

5. Efficiency was low and production costs could not be matched with neighboring countries. In crocodile and ostrich skin tanning costs could not be matched even with the United States.

F) **Ethiopia**

1. Conditions deteriorated significantly during the political unrest of the 1980s. Dipping ceased in many areas and it became difficult to deliver salts and insecticides. This ground has not yet been made up. Organised slaughter houses still account for only 5 per cent of the nationl kill. Collections have however increased.

2. Tanneries suffer from shortages and poor quality of raw material. The five year development plan (1992-96) targets of a 175 per cent increase in leather exports have not been achieved. The installed capacity of Ethiopian tanneries is estimated to be in excess of 14.8 million skins and 1.3 million hides annually. This includes abut 80 per cent of hides and 60 per cent of skins to crust and finished leather. Thus, there is sufficient production capacity to meet national targets, but it is dependent on raw material collections and grades.

3. The dissolution of the National Leather and Shoe Corporation (NLSC) which was an exceptionally efficient para statal has led to a slump in up stream activities and the private sector has not shown an ability to take up the slack. Privatisation cannot proceed under existing circumstances.

4. The major part of exports is in the form of semi processed. The shore of crust is not increasing at a satisfactory rate. International standard can be met in all classes of manufacture. The demand for Ethiopian wet blue and crust in export markets proves this. Awash Tannery has concerted a three million birr loss over a year or two into a

10 million birr profit, and the bulk of earnings came from exported wet blue and crust.

5. There are only three large shoe manufacturing and one leather goods plant. The quality of product is poor. Major constraints are over staffing, inconsistent quality of raw material and a rapid escalation in the costs of imported imputes due to accelerated devaluation. Exports markets in East Europe have been lost and prospects for penetration into the OECD countries are not good.

6. Upgrading of effluent treatment systems seems to have been in definitely post poned.

G) **Kenya**

1. Off take rates are low ranging from 10 to 25 per cent. Facilities at rural slaughter houses are minimal.

2. Capacity utilisation of tanneries is low and there is wide spread smuggling.

3. There are 11 functioning tanneries six of which cn only go up to wet blue and crust levels. Effluent treatment systems are poor.

4. Taxation on domestic shoe manufacture is high and duty on imported shoes has been lowered. There is shortage of technical and supervisory skill and domestic shoe production is declining.

H) **Nigeria**

1. Production at tanneries is mainly to wet blue stage but the three biggest tanneries have been modernised.

2. Skins are not adequately dried and preserved, and by the time they are received at the tanneries and go into production, a certain amount of damage has set in, adding to poor flay standards and natural faults exacerbated by the lack of good husbandry.

3. Production is generally poor quality and has been stagnant both in shoe making and in leather goods.

4. Effluent treatment at tanneries is generally unsatisfactory.

I) **Sudan**

1. Livestock population at 22.4 million cattle, 14 million goat and 19 million sheep are the second largest in Africa, exceeded only be those of Ethiopia. But availability is just 1.5 million hides, 2.5 million goat and 4 million sheepskins annually. Animal distributions are widespread and ownership in the hands of nomadic people who inhabit remote areas.

2. The national herd and flocks are at the limits set by traditional methods and available grazing. Stock improvement is not practiced. All livestock are indigenous and, because of natural selection, are suited to the environment. There is no commercial ranking.

3. Modern slaughter facilities exist only in Khartoum and Omdurman. Cattle are moved in 'on the hoof' from outlying areas. Many do not survive the trek and losses are high. Because of distances involved and financial limitations, plans to improved facilities along stock routes have not materialised. Urban abattoirs account for only 30 per cent of the kill.

4. In country districts standards are poor, only one abattoir to every 17,000 km, and home slaughter is the norm. Hides and skins exports go to Italy, Greece and contiguous Arab countries. But earnings are not optimum because of quality defects and the fact that export is as raw not wet-blue.

5. The main problem in improving quality and output of hides and skins, are remoteness of producing areas and the resistance to change of nomadic owners. Poor road systems contributed when animals were moved on the hoof to abattoirs. On the other hand, facilities were poor in rural area, but, even if correctly processed, hides were subject to frictional and heat damage during transport over rough roads.

6. There was no incentive, to produce quality leathers for the domestic market. Footwear manufacturers bought on price only; they did not differentiate between good and bad.

   Per capita income in the Sudan was among the lowest in the world and so consumer demand was entirely price oriented.

7) Shoe making is still mainly a craft activity . The number of formal factories has been declined capacity utilisation is poor input prices have risen as a consequence of

devaluation. Quality of product in both the formal and informal sector is poor.

IV.III.III. ***Condition.***

a) The leather industry has significant unrealised potential in several African countries. Africa has byfar the lowest per capita shoe consumption level in the world and as (and if) per capita income risen, the domestic market will grow rapidly. Africa can also gain from plentiful raw material and cheap labour to derlop an export industry oriented mainly torwards other developing countries and perhaps Southern Europe.

b) National and international assistance should mainly be focussed on developing export potential and not on domestic market expansion because,.

1. Increasing domestic demand should be a relatively automatic consequence of macroeconomic growth and there is no reason why efficient domestic companies should not be able to compete with imports provided the accelerated devaluation which Africa has been expressing is arrested.

2. Increasing per capita shoe consumption is not neccisitated by health considerations.

3. On the other hand policy support is crucial in enhancing export earning capacity quickly and given Africa's need to earn foreign exchange the leather sector potential comparative advantage in world markets should rapidly be developed.

4. This comparative advantage cannot be denloped by a "hands off" policy which reties on liberalisation and the gradual working of the market.

c) Policy support should take the following forms.

1) Technical Assistance till UNIDO has in recent years run a highly successful technical assistance programme in Ethiopia, Kenya, Malawi, Somalia, Sudan, Tanzania, Zambia and Zimbabwe. The programme has succeeded in improvements in collection, reduction inwastes, upgrading of tannery technology, better effluent treatment and improvements in product quality.

Results in kenya, Ethiopia and Tanzania have been described as outstanding by international exports (Leather 1994).

The coverage of the programme is being extended and it should proceed to West African countries such as Nigeria and Senegal.

2) Technical assistance should be accompanied by financial restructuring. Publicly owned units are under funded but privatisation has been slow and recapitalisation remains necessary. UNIDO should provides assistance in the form of national financial restructuring plans. These plans should identify the unit that should be saved the mergers that are feasible and financial sources that can be tapped for this recapitalisation of potentially viable plan.

3) Re-capitalisation can in most cases fruitfully involve foreign investors. An attempt must be made to interest Spannish companies in particular to establish subsidiries and joint ventures in North and East Africa, such co-operation can be very useful leading to a gradual transfer of leather and shoe making technology and reduction in the import intensity of investment in this sector in African countries.

4) South African companies can also be important investment partners. South Africa has some of the more successful tanners in the region (e.g. Mossop which celebrated its 150 th. anniversary in 1996) and labour costs wastes are rising rapidly. It makes good economic services to consider relocating to lower cost production sites for the manufacture of some products.

5) The key products that ought to be targeted are leather clothing, crocodile and ostrich leather, products, camel leather products (specially lamps), sports footwear, relatively low cost shoes targeted at lower income groups in Europe and Asia.

6) Support for a full scale leather restructuring programme.

would require the implementation of six steps:

a) An evaluation of the sector's rated and actual performance on the basis of installed capacities;

b) Identification of the main technical constraints on achieving increased performance of installed capacity;

c) Specification of investments in additional equipment, technical services and other imported inputs;

d) Assessment of the total foreign exchange and domestic currency investment required;

e) Assessment of the economic benefits which may be achieved through revitalizing and balancing existing plants;

f) Negotiation of financial resources for revitalizing the industrial capacities in question.

Use of ODA funds to finance a comprehensive leather sector restructuring and revitalisation programme of the type presented above is justified. Given the need to expand Africa's foreign earning beasuring capacity it can be argued that public debt restructuring programmes should incorporate such sectoral programs as a means to enhancing the long term capacity to repay debt.

g) Some African countries have time and again banned the exports of raw hides and wet blues to stimulate the local processing industry. The general preference for higher value addition is natural and justifiable. However a crucial constraint is water availability. Leather processing is highly water intensive. Recycling water through efficient effluent treatment is one possibility but this might lead to a significant escalation of costs. Given the relatively small number of tanneries and leather manufacturers it seams more effective to have a firm specific policy - specially because the informal enterprises usually escape these bans through smuggling. An incentive / punishment aptness should be evolved around annual targets for product upgrading by major tanneries and leather goods and footwear manufacturers. Subsiding input wastes associated with devaluation (over which the leather industry of course has no control) should be an essential element of this incentive system.

h) Finally regional co-operation in the field of training, processing, design, management and marketing can be very beneficial. The efficient manufacture of tanning chemicals is feasible in only a few African countries Regional co-operation in the supply of tanning chemicals is thus required. Inter Africa trade in leather and leather products could more easily be integrated with production for national markets and its growth could be

significantly stimulated by regional co-operation.

IV.IV *Agricultural Machinery*

Systemic information at country or plant level in this branch is extremely rare. Large scale agricultural machinery producers are few and usually involved in other lines of engineering so that it is difficult to separate the agricultural machinery out put from the total production of the units. The major portion of the agricultural machinery need of the commercial and large scale sector are served by imports and as the foreign exchange constraint has tightened agricultural machinery imports have fallen. As far as smallholder and commercial cultivators are concerned their needs for equipment and tools cannot be classified as "machinery" and these needs are supplied by artisanal units situated both in urban and rural settings.

The information that exists at UNIDO does not permit a generalisation about structure of production enterprise characteristics or other details. Thus of the 30 African countries which provide time series data that is regularly reported in the International Yearbook of Industrial Statistics only Nigeria , Senegal and Uganda provide data on production and value added for the agricultural machinery branch (ISIC 3822) for any year after 1985. Moreover this data appears extremely weak. This for Nigeria the share of the agricultural machinery sector in gross manufacturing employment is reported to be 0.23 per cent, its MVA share is 4.25 per cent in that year. In Uganda in 1991 the agricultural machinery manufacturing branch is reported to have contributed 0.14 per cent to gross manufacturing output and 1.4 per cent to MVA in 1991 (UNIDO 1996). These figures illustrate the in significance of the formal units of the sector in total manufacturing activity. The informal artisinal enterprises which produce the bulk of agricultural equipment and tool are clearly not covered in the official statistics. None of the 19 Industrial Development Reviews on African countries published since 1988 contain branch profiles of the agricultural machinery sector.

Given the paucity of country and plant level data only relatively general recommendations can be made. The most important aspect that ought to be emphasized is that the availability of adequate levels and quality of agricultural machinery should be seen as a requirement of food security. Two types of equipment are essential: those which are necessary for the construction and maintenance of the irrigation system and those that are used for agricultural production (construction equipment for the building of storage and transport capacities is discussed in the next section). While availability does not necessitate local production it must neccistate the

generation of capacity to finance the acquisition of the machinery that is required. Thus the prima face case for an expansion in domestic production is based on the fact that continuing devaluation of the local currency has made imports prohibitively expensive leading to a serious obselence of existing plants and transportation system.

The primary purpose of local production should be to serve existing effective demand of small holders and enable them to raise factor productivity. The initial step is to assess this effective demand for typically markets are missing particularly in commnal areas and demand remains unsatisfied because suppliers are unaware of its existence. Moreover demand for agricultural equipment is volatile and responding to it by committing long term funds is risky. The creation of effective and efficient markets in agricultural equipment thus requires measures for stablising effective demand and thus contributing to its expansion. In East Asia the establishment of farmers co-operative for purchasing and distribution has been an important means for converting potential into effective demand for agricultural equipment among small holders. Agricultural financing systems where effective have enhanced the provision of long term credit to both consumers and producers of agricultural equipment and so have insurance facilities to safeguard producers against fluctuations in sales occasioned by external causes,

Taking account of the technological disparities in the agricultural machinery industry in African countries, it is recognized that national agricultural institutions are often in a better position than regional institutions to advise local authorities on the formulation of mechanization policies and to assess the needs of local farmers. These national institutions can also perform a useful role in the testing of both locally produced and imported agricultural equipment, as well as in the adaptation of imported technologies, the development of indigenous technologies, the dissemination of information, quality control and the promotion of safety standards.

The development of national data banks to monitor inventory, condition, application, manufacture and testing of agricultural machinery in the country as a whole and particularly in regions whose production is suitable for maintaining local security should also be a task for national institution. Given the small pool of technical know how locally available it might also be appropriate for national centers to play a more active role in procurement of agricultural equipment and technology from foreign suppliers who should be encouraged to relate sales to technical support including training, participation in setting up service and spare parts centers and repair and maintenance facilities. Indeed there is a need to establish national focal points for agricultural engineering and allied metal working branches which could stimulate and create local markets for the production of spare parts simple agricultural and drainage equipment and most important a wider and more regular provision of maintenance services. Such local

institutions can also play an important role in enhancing local design capacities and as far as major ventures are concerned in facilitating the establishment of joint venture projects. It may be argued that one of the most effective uses of ODA funds can be the support of agricultural mechanisation of regions which are of critical importance in maintaining food security in African countries. The availability of ODA funds can stimulate the flow of private finance and the establishment of major projects for improving the irrigation and drainage systems and enhancing agricultural productivity to meet food security requirements in particularly vulnerable African countries. ODA funds can play a major role in enhancing co-operation between medium sized producers of agricultural equipment systems in the industrialised countries and African firms which can manufacture components of agricultural machinery and drainage equipment and develop a capacity to provide effective repair and maintenance services in the African country side. The establishment of a network of contacts between African firms and medium sized producers of agricultural equipment in the industrialised countries can be a legiamate and fruitful use of ODA funds.

It is important that agricultural technology should be developed taking account of African eco systems, land tenure patterns and the physical characteristics of production. Adapting agricultural mechanisation to local requirements requires that the provision of machinery be accompanied by the creation of a local capacity to unpackage it and adapt it to suit local conditions. Technology transferred should preferably be useable, simple and cheap. Wherever possible local sourcing should be increased so as to protect the agricultural production system from fluctuations in foreign exchange cost associated with accelerated depreciation in the value of national currencies. Similarly the development of financing systems is a necessary requirement for increasing the sustainability of agricultural production and mechanisation. The obtaining of finance on appropriate terms for agriculture related firms has become extremely difficult after the collapse of the development finance institutions (DFI) in Africa. Default or the part of borrowers leads to a drying up of working capital funds and to a deterioration of machinery as maintenance and replacement to offset depreciation becomes unfinanciable. The switch in so many African regions from mechanised to animal traction reflects these rising unfinanciable repair and maintenance costs. It also reflects inappropriateness of design. Products imported have remained incomprehensible to local users for in many countries the agriculture machinery industry has stood still for several decades. Production has remained confined to very simple hand tools by village craftsmen and artisans and the capacity for "learning to learn" has not grown except in a handful of countries - Egypt, Kenya, Zimbabwe. Tractonisation and harvesting techniques have not been transferred to the most vulnerable food insecure African countries and the payments crises has seriously retarded the development of agricultural mechanisation in Zimbabwe and Nigeria. Even Egypt and Kenya have failed to keep

pace with agricultural mechanisation improvements in countries such as China and the Republic of Korea.

If local capacity does not grow imported equipment becomes in operable after only a short period owing to the absence of spare parts and maintenance facilities. The abandonment of tractors and other agricultural mechanical equipment had assumed crisis proportion during the 1980s in some African countries. The short term solution is that all purchasing agreements include provision for supply of spare parts for a four year period. This can be converted into a long term solution if during this period the supplier enhances the spare parts producing and maintenance capacity of the purchaser (through for example the establishment of a joint venture). Again this can be an effective use of ODA funds.

Agricultural mechanisation policies should be based on forecasting the demand for different types of machinery and equipment and measures at the local level regarding: land use; transport; improvement of water management systems; extension services; improved animal-drawn equipment to replace tractorization; promotion of industrial joint ventures; manpower training; improvement of maintenance and the supply of spare parts; provision of finance and credit facilities to farmers and design of and research on equipment.

An important concern should be to integrate the acturity of informal and formal sector establishments. Informal sector enterprise should be upgraded for example by provision of facilities for the joint purchase and use of equipment and casting and forging facilities. The development of prototype designs and provision of services for testing agricultural equipment can stimulate the upgrading of village blacksmith type operations and their gradual integration into the formal sector. Mobile demonstrations and exhibition workshops can play an important part in upgrading technology. This can be particularly useful in introducing watershed management, pumping and tillage techniques and various types of irrigation, including the construction of canals, reservoirs and wells. The urgent need to provide training in irrigation techniques along banks of rivers and creaks in Africa is emphasized.

It is suggested that consideration be given to promoting the production of the following type of equipment in Africa.

1. Low lift pumps for irrigation.
2. Simple diesel engines.
3. tillage equipment
4. Fertilizer spraying equipment.

5. Harvesting and threshing equipment.
6. Sowing equipment
7. Trailors
8. Tractor accessories
9. Animal traction equipment
10. Walking trackers

If the intention is to upgrade local production, investment per unit must be at a level which is capable of making a significant impact on agricultural productivity in a given unit. For example we may envisage projects with a capacity to manufacture 5000 to 7000 units of agricultural implements such as harvesters, ploughs, reapers and other tillage and cultivation related equipment on an annual basis. The typical total cost (both fixed and working capital requirements for the first year) in South Asia is currently between US $ 160,000 to $ 300,000 (1996 prices). Costs would be at least 20 per cent higher in most African countries since India and Pakistan can domestically source 90 per cent of the machinery and equipment needs of such a project at internationally competitive prices. It is thus clear that increasing agricultural mechanisation to enhance food security involves a large financial effort. If enhancing food security is an important objective of aid policy serious consideration must be given to allocating a significant preparation of ODA funds for the establishment of agricultural mechanisation projects and projects for improving the effectiveness, expansion, and maintenance of irrigation systems in vulnerable areas.

IV.V BUILDING MATERIALS

A growth in locally produced building materials can stimulate the construction of agricultural storage facilities and irrigation and drainage systems. It is required as permanent villages are built and small towns linking rural to main metropolitan areas expand.

Building materials are produced i several African countries. In Southern Africa most of the cement is produced by the dry process. All Southern African countries except Botswana, Lesotho and Swaziland have cement plants - the Swaziland plant closed in 1980. Limes toneclay, gypsum, fuel and sacks are sourced locally. Capacity utilisation is low in Angola, Mozambique, Tanzania and Zambia. Capacity was estimated at about 4,000 tpd in the Southern African region (Angola, Tanzania, Malawi, Botswana, Swaziland, Namibia, Lesotho, Mauritius, Zambia, Zimbabwe, Mozambique) in 1994. Consumption was estimated at about 3000 tone per day in 1992-93. In the early 1990s, Portland Cement and Twinall announced plans for major capacity

expansion in Zimbabwe including the largest cement project in SSA - a plant producing 100 tones of clinker a day.

Apart from Zimbabwe, the existing plans for cement emphasize rehabilitation capacities rather than new investment. Thus, SADCC's last detailed Industry and Trade Plan (1987) included the rehabilitation of cement projects in Mozambique an the cement plant in Malawi, and suggested studying the rehabilitation of cement plants in Malawi, Tanzania and a Zambia. It also called or a study of alternative uses of anent products. botswana, which imports 67 per cent of its cement requirements from South Africa and 33 per cent from Zimbabwe (whose production capacity may soon be overtaken by domestic demand), might weigh the cost of establishing a local cement plant against imports. Such a plant would utilise local fly ash and gypsum. Clinker, however, would have to e imported from Zimbabwe, Zambia or South Africa.

Most cement product are bulky and therefore costly to transport. product like blocks, pipes, tiles, etc., are also demand in a wide range of local specifications. Intra-regional trade rather is therefore unlikely to grow much at present. Here production technology allows, some of this activities can be decentralized and undertaken on a small scale. Production of cement products is at the national level is probably to be preferred. The possibilities of intra trade in cement however should be explored. For instance northern Zambia and northern Malawi could get cement however should be explored. For instance northern Zambia and northern Malawi could get cement from the Mbeya plant in Tanzania, whilst southern Tanzania could get it from northern Mozambique and north-western parts of Mozambique could obtain their supplies from Zimbabwe or Malawi.

There also seems to be room for more intra-regional trade in inputs which are currently imported from elsewhere by some SADC countries. For example, Mozambique could obtain gypsum supplies within SADC. Zimbabwe could supply spares and grinding media to other SADC countries,provided supply capacity is available. Refractures are imported by virtually all cement plants in the region. The possibility of local manufacture is being explored in Zimbabwe, and it is suggested that this is a potential SADC project given the general regional need. A PTA project for the rehabilitation and rationalization of cement mills was ongoing in 1992. The cement plants in Mozambique are now being privatized, with a total annual capacity of 990,000 tones.

Swaziland produces glass and concrete based at least partially on the processing of domestic natural resources, with manufacturers of clay bricks and tiles utilizing local clay as their main raw material and manufacturers of cement blocks using local supplies of sand. The cement mixing

industry also uses sand in addition to clinker.

Cement used to be produced at a grinding plant, matola Cement, from clinker imported from Mozambique. Matola Cement was set up at Matsapha in 1969, with a capacity of 60,000 metric tones per year. A variety of problems with supply of clinker from mozambique caused a shutdown of the Matola plant in 1984, following which Inter-Africa Supplies Ltd, the marketing company of matola Swaziland, began to import ready made cement from South Africa, either in bulk to be bagged in Swaziland or already bagged, in order to satisfy domestic demand. Although clinker is also available in South Africa, it would not be economically feasible for the Swaziland cement plant to import it because of the high cost of South African clinker.

A brick factory, Langa national Brickworks was established in 1983. It produces bricks and clay tiles from local clay. langa National Brickworks produces both for the domestic and the South African market, with 85 per cent of the output being exported to South Africa. There are many small producers of cement bricks and blocks throughout the country, but they produce slowly for the domestic market.

One of the major problems encountered by this branch is the dominance of many small-scale indigenous producers of cement blocks. They are likely to benefit from the formation of associations in order to achieve economies of scale and acquire trucks for delivery purposes.

Most construction companies prefer buying building materials, including bricks, from companies which are able to deliver the material to the construction site. Indeed, a major problem for the small-scale producers of cement blocks outside the Manzini-mbabane corridor is the unreliability of cement supplies and the high cost of transporting cement from the main distribution center at matsapha to the various parts of the country. A further difficulty facing the industry is the unavailability of clinker from mozambique Investment is required for the rehabilitation of the cement plant at matsapha, which still has much of the required basic infrastructure. In addition, investment is also needed to establish a glass manufacturing plant to reduce Swaziland's dependence on South Africa, which currently still supplies almost all of Swaziland's needs for glass.

The largest brick factory in Angola is (UNICERAMICA), established a quarter of a century ago.

The product range consists of three sizes of hollow blocks, 300 x 200 x 90, 300 x 200 x 150 and 300 x 200 x 200 mm. A small quantity of roof tiles was also made in the past. This activity has virtually ceased.

The strong growth of the urban population has created a great need for building blocks, and the factory should have few problems selling its output when operating at full capacity. UNICERAMICA relies on local clay deposits. There are therefore few problems (apart from relatively minor quality problems) on the raw material side. Production is kept low because much of the equipment is in poor condition. The production of tiles has virtually ceased because the tile press is in disrepair. The tunnel driers for blocks have apparently never been operational, and the factory relies completely on air drying. As a consequence of this alone the factory could never attain rated output. Much of the electrical equipment and cabling is in bad state.

Deficient production methods, which are in part caused by the poor state of the equipment, in part by lack of sufficient experienced personnel, contribute to the low quality of products. The shortage of building materials however makes it possible to sell the output without any attempt to improve product quality.

The main reasons for poor performance can be summarized as:

- lack of spare parts for the capital equipment during a long period of time;

- lack of experienced and qualified personnel for production, maintenance and quality control purposes.

Power cuts and irregular oil deliveries for the kilns are relatively minor problems.

UNICERAMICA's problems could be solved to a large extent if funds were mae available to purchase spare parts and some new equipment. Simultaneously, a maintenance programmme should be started. Finally, training should be provided to personnel in the proper production, maintenance and quality control procedures. if these measures are carried out, it should be possible to achieve an output rate that is close to capacity within a year.

Namibia has ample mineral resources. The share of non- metallic minerals in MVA is low - it employed only 5 per cent of the manufacturing labour force in 1993. There were only three companies employing more than 100 persons. The rest are small scale enterprise. Products include clay and cement bricks, concrete wall sections and structural beams kerb stones and window sills; modern technology is employed by sprengel.

Production of cement began only in 1991. the Cement Industries in Otjiwarongo invested over N$ 6 million in a plant equipped with an electronically controlled rotary kiln process. It uses gypsum from a coastal town near Swakopmund and limestone from the Otjiwarongo area. It

employs 120 persons and produces about 80,000 tones a year. Production is 30-50 percent below capacity, which when fully utilized, will be sufficient to meet domestic demand and leave a small margin for export.

Production of a new building material is to be started by International Technique Industry (ITI) in Otjiwarongo. The company plans to invest US$ 3.6 million to produce a 5 centimeter thick wood-wool cement board which will be 20 per cent cheeper than conventional building materials. The mineral bonded building boards are fire, water and fungi resistant and are well suited to conditions with extreme temperatures. They are economical and easy to handle and will represent a new concept for constructing houses in Namibia. The production plant will have a capacity to manufacture enough material for two houses a day. The equipment was imported from the netherlands. Otjiwarongo location, 250 north of Windhoek was chosen for the easy access to local supplies of hard wood (Acacia tortelis) and cement as well as close proximity to markets. The company's plans include expansion into regional and other markets in Africa.

There is no production of plate glass or bottles. The present demand of a total of 500-550 tones per annum is too small to justify investment unless export could be guaranteed. Investment inquiries made by a Czech glasswork factory concluded that shortage of necessary skills and tradition in this sector out weighted the advantages of locally available raw material. In spite of suitable commercial deposits of clay in the Kavango region, production of ceramics is also absent. Only small0scale handicrafts are produced, mainly for the tourist market.

The building material industry can also benefit from adding value to exports of sidelight. This valuable and rare stone known as "Africa-Blue" is in great demand internationally. Namibia is one of the few countries with commercial deposits of sidelight. It is presently mined and exported as unprocessed blocks to Germany. Cutting, polishing and making tiles are under consideration by the Namibia Blue Sidelight company.

The scope for developing non-metallic mineral-based industries is primarily in the building materials manufacturing. There are already several proposals for establishing cement factories following the opening of the Otjiwarongo plant in 1991. In addition, investigations have been made about a potential investment in the production of bricks, ceramics ad industrial insulators and concrete roof tiles and blocks. The investment also received a proposal for establishing a glass factory for beer and soft drinks bottles and inquiries about an additional glass factory.

Kenya possesses many resources used the production of building materials. Not all, however, are exploited. For example, the raw materials for the manufacture of cement that may be obtained

locally are: Limestone, kunkur, iron ore and tuff. Gypsum, although present in Kenya, is not exploited and instead is imported from Spain.

In the production of ceramics, the country is endowed with ample cheap and exploited resources. These include; clay, soapstone, feldspar, dolomite and silica sand. Glaze is not available locally, however, and is currently imported from Italy. Glass production also requires silica sand, feldspar and dolomite, as well as soda ash and salt cake which are also available locally.

Although Kenya s endowed with vast deposits of building stone, quarrying is not well developed and the country has outdated soil moving machinery and stone cutting equipment.

Two Kenyan enterprises produce cement: East African Portland Cement Company (EAPCC) and Bamburi Portland Cement Company Limited (BPCC). EAPCC is located in Athi Rier some 25 kilometers from nairobi. it was incorporated in 1957 and began the manufacture of cement in 1958 using the wet process with an installed capacity of 120,000 tones per year. The plant was later modified and expanded, raising capacity to 350,000 tones per annum.

Bamburi Portland Cement Company Ltd which is located in Mombasa, was commissioned in 1954. Since then, additional production lines have been installed and it now has a capacity of 1.2 million tones per year. Thus, the current total capacity for cement in Kenya is 1.55 million tones per year. While EAPCC concentrates on supplying the local market, BPCC deals with both local and export markets. Exports are both in the form of clinker and bulk cement to mauritius, Reunion, and the Seychelles, and bagged cement to the Comoro Islands, Uganda, Somalia and Sudan.

TABLE IV.40

Cement Production and Utilization, 1990-1994 : Kenya

(Thousand tonnes)

Source: Republic of Kenya, Central Bureau of Statistics

In the 1990-1994 period, the production of cement has been near the capacity level ranging from 1.3 to 1.4 million tones. In 1993, however, consumption began to falter, dropping from 1.1 million tones to 1992, to 858 thousand tones in 1994. Exports to uganda and the United Republic of Tanzania rose significantly (almost quadrupling) as did exports to all other countries, almost completely compensating for the drop in domestic demand.

Despite the slump in consumption in 1993 and 1994, official estimates are for domestic demand to increase at a rate of seven per cent per year in the coming years. Given the present capacity of two existing plants, this means that by the year 2000, Kenya will need to import significant quantities of cement unless new or greatly expanded production facilities are established.

Cement production in Kenya is also relatively costly due to the use of old and medium technologies. BPCC has high foreign exchange needs for the purchase of spare parts, while EAPCC is affected by its use of the wet process' technology which requires more fuel oil which makes the process costly. The problem of cement fupply and demand is compounded by the fact that the BPCC plant is now run down and is suffering from the breakdown of the basic plant and equipment which have outlived their productive lives.

The second problem facing the cement subsector is transportation. Cement is a bulky commodity, both as inputs and as the finished product. Although the majority of raw materials are available locally, they must ge transported from the quarries to the production facility. For example, limestone has to be transported over 100 kilometers from quarries to EAPCC. bamburi has to transport its finished products to distances over 1,000 kilometers from the factory. Given the existing transport infrastructure in the country and surrounding region, these are great distances, and the costs are included in the pricing structure.

In order to reduce production costs, a programme of rehabilitation and modernization is being undertaken at EAPCC. The project is founded by the Government of japan and involves changing the technology used from the wet process to the dry process. It also entails an increase

of the installed capacity from 350,000 tones per year, to 550,000 tones per year with the possibility of further increasing it to 700,000 tones per year.

The Government of Kenya is also encouraging the establishment of two additional cement plants in the country. An initial study of the possibility of locating a plant on the south coast has been undertaken and there is also discussion over the establishment of a facility in the Shimoni area. The later has a proposed capacity of 600,000 tones per year. The industrial and commercial Development Corporation (ICDC) are the promoters of this project and the feasibility study was conducted jointly with both the Japanese and Kenyan Governments. The Japan Consulting Institute (JCI), Tomen Corporation and Osaka Cement of Japan also are participating in this project.

Additionally, a study has been undertaken to explore the feasibility of establishing a cement factory in Western kenya with an installed capacity of 300,000 tones pe annum. The project is being promoted by Kerio Valley Development Authority, but no commitments had been signed towards the implementation of the project as of October 1995.

The Government of Kenya also is promoting the establishment of mini-plants in areas of the country where raw material quantities would not support a large-scale facility. Priority has been given to the establishment of suchmini-plants and investment is being encouraged.

Further constraints to the subsector are the fact that gypsum, which is available locally is not being exploited, but rather is imported form Spain. Studies are currently under way by KenSwiss Company Ltd to look into possibility of producing high quality gypsum. There is also need for local fabrication of spare parts for cement plants. Such measures if implemented fully, would improve cement production in Kenya.

There are deposits of limestone marble, phosphate rock glass sand and clays in Uganda.

The main cement factory in uganda was formerly that at Tororo. Currently the two plants at Tororo and Hima, both government-owned through the Uganda Cement Corporation, have a combined capacity of 479,000 tones per annum. Production has been at a low ebb throughout the 1980s, however, and the 1989 volume of 17,000 tones amounted to only about 3 per cent of capacity. Recent studies have been carried out of the requirements for rehabilitation. These indicated prospects were more favorable at Hima, for which financing has been secured for developments on a joint venture basis with private participation.

Lime is use in different sectors of the economy, in agriculture, construction and in the sugar, leather, paper and paint industries. Most of the current requirements of some 70,000 tones are imported. Some lime is produced at UDC's tororo Cement Works, with some other production from very small plants around Kasese in Western Uganda, using simple, crude technologies to produce entities of approximately one tone a day. A study of an improved lime burning kiln capable of producing a higher quality product has been carried out by UNIDO, which may lead on to further investigation.

Clay deposits in Uganda form the basis mostly of dispersed small-scale industries producing bricks, tiles and ceramic products. Data collected in 1989, covering 6 districts revealed 157 such enterprises, employing 2,052 people altogether, many employing fewer than 10 persons. Larger plants are the Kajansi Clay Works, producing bricks and tiles, Kisubi Bros., producing bricks, and the African Ceramics Co., producing dinnerware.

Although abundant deposits of glass sands, limestone and felstar exist, from which glass production might be established, all uganda's substantial flat and container glass requirement is imported. A study has been carried out, with UNIDO assistance, of a potential container glass and flatware project, with a projected output of 9,300 tones a year, based on initial fixed investment of over US$ 24 million.

Cement is by far the most important construction material manufactured in Ethiopia, accounting for 87 per cent of value in the 'non-metallic' manufacturing sector. Of this, the vast majority is produced at the Mugher Cement Factory. This facility, which came into production in 1983 with financial assistance from East Germany, produced 343,918 tones in 1192/93. An additional 33,167 tones was produced at the Addis Ababa Cement Factory - this facility, which was established in 1964, has a nominal capacity of 70,000 tones per year.

Bricks, meanwhile, are produced at the Burayu Bricks factory and the Ethio Bricks Factory (each producing about 9 million annually), while marble is produced at the Ethio Marble Industry. In the 'non-metallic' industrial sector as a whole, there were nine publicly-owned establishments - three in Oromiyaa and six in Region 14 - which together employed 4,415 people in 1992/93, operated at 100 per cent capacity and contributed 7.4 per cent to the total value of industrial production.

The above are only the publicly-owned operations in the sector. The construction industry is relatively unique in Ethiopia, given the high rate of private sector participation, even during the Derg regime (1994). Chile, for example, states that the state accounted for only 48.4 per cent of

all activity. Keith Griffin further reports that the 'construction sector has about 160 small-scale manufacturing (1994 p.223).

The non-metallic minerals industry consists of mainly the building materials industrial branch which manufactures cement and cement products, lime, structural clay products, and glass and glass products. Recently, the production of ceramic products such as tableware, sanitary ware and wall tildes has started in a newly established plant. The production capacities employed to manufacture these products are given in Table IV.41

The major raw materials needed are limestone, gypsum, kadin, gravel, cullet, clay, cement, marble, pumice, sand, silica sand and soda ash. All the major raw materials are locally available. ait may be noted here that this is the only industrial subsector where all major raw materials are locally available. The quantity of major raw materials consumed during the 1992/93 fiscal year is shown in Table III.26.

The gross value of production of the subsector was br88 million in 1988/89. After five years, this rose to Br128 in 1992/93. The increase in the gross value of production is mainly attributed to the increase in the prices of the products.

There is no export production in the subsector at present. However, the newly established ceramics plant is expected to start export production as soon as it has established itself in the local market.

There are only few investments and expansion schemes presently under way. A major investment is under implementation to increase the production for cement in Tigray Region in the northern part of the country.

Low capacity utilization is a major problem among many of the enterprises in the subsector. This is main due to two reasons. The first reason is the old age of plant and equipment in the subsector. The second reason is the sharp fluctuation of demand stemming from the cyclical nature of the construction industry. The plant and equipment of enterprises such as Addis Ababa Cement Factory and Senkelle Lime plant are very old and are badly in need of renovation.

A number of studies conducted so far show that there are a lot of mineral deposits in the country that could be used for the development of various no-metallic minerals for domestic and export markets. in particular, it is reported that limestone, the major raw material required for the cement is found in almost every region of Ethiopia is abundant quantities, Eritrea also is rich

in various non-metallic mineral resources, including granite, marble, slate, limestone, potash, sulphur, gypsum, silica sand, feldspar, mica and asbestos. Silica sand, and marble are available in abundant quantities for glass production.

At present, cement products are in high demand, principally for housing construction and in the development of basic infrastructure. The major raw materials for the domestic cement industry are available on the Red Sea coasts in abundance; while paper bags and chemicals are imported.

There is one cement factory in Eritrea located in the Red Sea port of Massawa. The factory at present has an annual production capacity of 500,000 tones of cement. Eritrea is now in the process of national reconstruction practically in every aspect of infrastructure, including roads, bridges, shelter etc and hence the domestic supply of cement is far below the enormous demand.

The cement industry needs large-scale investment which the country cannot afford and requires foreign loan and investment for the acquisition of machinery and technology. since there is abundant raw material available within the country, the costs can be traded off and investment in this sector will undoubtedly be rewarding.

As indicated earlier, silica found domestically - the chief raw material for glass manufacture - has one of the highest qualities by world standards. Auspiciously, there are extensive deposits spanning a range of mountains in the southern parts of the country. More than 84 per cent of the value of the raw materials for the glass industry are from the local mineral resources.

There is one glass factory in Eritrea which produces bottles and glass cups for the domestic market and for export, mainly to Ethiopia. Glass production has risen form about 6,500 tones in 1992 and over 50,000 tones in 1995.

Given the outdated machinery and severe production difficulties, production has now ceased completely. But a pre-feasibility study to bring production back on stream is under way. According to preliminary indications from the study, the revamped project will have a production capacity of some 70 tones per day. The estimated initial investment cost to bring the plant back into production put at about birr 317 million.

The glass industry requires heavy investment. The major advantage in investing in such an industry is that almost the entire raw materials are locally available and therefore, will significantly substitute imports and promote exports, especially, to the neighboring middle East and African countries.

Cameroon has the raw material base for the development of a building materials branch but is largely dependent on imports: it is suggested that this is because of aid tying by donors who finance the construction of large projects and associated buildings.

The leading enterprise in the sector is the country's main cement manufacturer Cimenteries du Cameroon (CIMENCAM). The main foreign shareholder, the Italian Cementir, withdrew from the company in 1982 and most of its holding was acquired by SNI a publicly owned company. NSI now holds 63.1 per cent, with the French groul LAFARGE now the main foreign shareholder. CIMENCAM has factories in Douala (capacity 1 million tones a year) and at Figuil in the north (capacity 100,000 tones a year), and a clinke crusher at Douala. The FIGUIL factory in particular has suffered from the rise in fraudulent imports from Nigeria since the reopening of the border . It also suffered during most of the 1980s from the shrinking market in nearby Chad because of the war. The improvement in the internal situation in Chad should partly offset the impact of the domestic recession on FIGUIL's output.

During the construction boom of the mid-1980s, a British company Blue Circle announced plans to construct a new cement factory at Limbe. The project was, however, subsequently abandoned for reasons variously reported as the fall in demand following the recession and a reneging of a Government commitment not to allow further expansion of CIMENCAM's capacity in the short term. The korean firm DAEWOO has also announced plans to set up a new cement factory in Cameroon.

The strength of the construction industry - which has consistently represented a larger proportion of GDP than the manufacturing sector - has encouraged the development of Mauritania's non-metallic mineral resources. In recent years the industry has evolved beyond the traditional artisanal scale of operations with the emergence of industrial plants producing traditional products. the two modes of production remain in competition, with the artisanal operations having the advantage of flexibility.

Plaster has long been produced at an artisanal scale, in small ovens near construction sites. The Association pour led Development de l 'Architecture et de l'urbanisme en Africa (ADAUA), for instance, has constructed a number of houses of plaster, with domed roofs in a traditional style. Plaster has excellent thermal insulation characteristics which make it a valuable construction material. A plaster factory began production in 1984, using gypsum mined at Sebkha N'Dahamcha - gypsum deposit currently exploited in West Africa. The factory, operated by the Societe Arabe des industries Metallurgiques, attained an output of 14,809 tones in 1987, 8,615 tones of which were exported. Production capacity is 30,000 tones per year. To large extent the

growth in demand depends on the substitution of plaster for cement. However, a number of specialist uses for plaster have emerged. part of the output is used on site in the production of plasterboard and tiles. these products also have export potential. further vertical integration, with the manufacture of a wider range of plaster products, is planned. Another company, a RIM-STAFF, already uses the plaster produced by SAMIA to manufacture decorative plaster moldings.

A project for a cement factory was mooted in the late 1970s but was abandoned because of the narrow domestic market.Instead, private entrepreneurs established a cement packaging factory, cement de Mauritania, in 1978 and this began operations in 1981. The cement is imported in bulk, mostly from Spain, and distributed in sacks. In the early 1980's the company planned to install a clinker crushing machine but this development appears to have been abandoned. The construction of silos has allowed the company to maintain regular supplies of imported cement to the domestic market. The company's contribution to value added and the development of the country's industrial technology appears minimal while the lack of competition is a handicap to improved productivity. Although the company holds a strong, almost monopolistic position, in the local market, it remains heavily dependent on public works contracts. A number of artisanal enterprises - manufacture cement blocks and tiles from imported material in egypt a relatively large number of minerals used for the production of building materials are available but mostly on a limited scale, with the noble exceptions of gypsum, clays and to some extent ornamental stones including marbles and granites. Gypsum reserves, estimated at 20 million tones, are found at Ras Malaab, located around 100 kilometers south of Suez on the eastern side of the gulf of Suez. The thick layers at Ras malaab in Sinai constitute the country's largest source of gypsum. Gypsum deposits are also found in the shallow lakes of Mariout, Manzala, El-Ballah and also at El-hammam near Alexandria. Additional deposits erst at some depth by the Red Sea coast and the Gulf of Suez, as well as near Beni Suef. Proven reserves of Kaolin and white clays, estimated at over 20 million tones, are found at Musaba Salama and El-Dehssa. um bogma and El Khaboba and Wadi Musaba are known for substantial reserves of glass sand.

The domestic resources base for the production of construction materials can be gauged from data pertaining to domestic sullies of raw materials. Following three consecutive years of faltering growth, the production of gypsum rose dramatically in 1991/1992 there was a significant upswing in the production of granite in the late 1980s.Production figures for 1991/1992 indicate a sharp fall in the production of granit, basalt, common sand, limestone, gravel, clay and sandstone, compared with the respective production levels in 1990/1991. Kaolin production recorded a steady increase for four consecutive years, but its production of 203,000 tones in 1991/1992 was less than the peak (204,000 tones) achieved in 1987/1988. In the face of

inadequate domestic supplies of building materials, the country depends heavily on imports. in 1992 Egypt imported LED 39.2 million worth of stones, cement and asbestos.

Despite erratic supplies of domestic raw materials, the production of a number of building materials has risen significantly over the years. One of the striking features of construction material production in recent years has been the dramatic increase in the production of cement, rising from 8.7 million tones in 1986/1987 to 15.4 million tones in 1991/1992 Egypt currently produces over 16 million tones of various kinds of cement. The production of red bricks stood at 105 million in 1991/1992, compared with 10 million in 1986/1987. The production of brick substitutes, such as clay bricks, cement,gypsum and light-weight lyca, was estimated to have exceeded 1 billion units in 1991/1992. Following its peak production of 26,000 tones in 1989/1990, the production of glass sheets faltered for two consecutive years. The public sector enterprise Eu Nare Glass is the largest Egyptian company producing around 85,000 tones of glass annually.

Recent increases in the prices of building materials have largely been the result of rising fuel and energy costs and the removal of subsides. The devaluation of the Egyptian pound has also contributed to the rise in the prices of building materials. 10 number of enterprises seem to have record profits. In the year ending June 1993, Helwan Portland Cement Company and Tora Portland Cement Company earned net profits of $9.7 million and $7.2 million, respectively. In that year they each produced around 2.8 million tones of cement.

The problem of rising energy costs is exacerbated by inefficiency in the use of energy in a number of enterprises engaged in the production of building materials. According to a UNIDO study a substantial proportion of heat generated in the productive process in one of the glass producing enterprises is lost. Much of the waste heat can be reused to increase the thermal efficiency of the furnace and reduce the energy intensity of production.

Projected demand for construction activities seems to augur well for a further expansion of the production of construction materials. According to official sources, almost 300,000 new housing units will be needed nationwide every five years. The newly created cities - Tenth of Ramadan, Fifteen of Many, Sadat City, New Burg El Arab, Sixth of October, Salheyah, New Noubareyah, New Damietta, Obour, Badr, New Beni Suef, and New Menya - ar expected to house around 6 million for the construction of 1.2 million new houses, of which 220,000 units will be constructed in 1993-94.

The growing demand for building materials also stems from a number of infrastructural projects

including public utilities, such as the expansion of potable water systems and sanitary drainage facilities, tourism facilities, port expansion, reconstruction in the Suez Canal area, and infrastructural projects in the agricultural and industrial sectors. Egypt has an ambitious programme for the development of the Sinai peninsula, the north-western coast, the New Valley, Lake Nasser, and the Red Sea and Suez Canal regions. The government also plans to complete infrastructural projects in 14 new cities in the near future. The estimated $85 million contract awarded in March 1994 to a joint-venture company for the construction of a twin commercial and residential complex on the west bank of the Nile at Giza is symbolic of the rapidly expanding construction activities, growing at an annual rate of over 20 per cent. Of the 31 public-sector contracting firms, 11 firms perform manor project works. The private sector's involvement in construction activities is predominant. Out of 36,000 private sector medium and small sized construction contractors, 150 firms are well knows for undertaking multi-million contract projects.

Although the mainly state-owned metallurgical enterprises were not slated for privatisation when the wave of privatisation swept across some manufacturing subsectors, private-sector investment in the production of building materials has been significant in recent years. As of June 1993 the General Authority for Investment (GAFI) had approved 101 private investments in the production of building materials, of which 30 were in brick production, followed by marble and by-products (14), ceramic and sanitary wares (10), refractors (10), prefabricated buildings (9), cement production (7), concrete manufacturing (7), other building materials (5), and gypsum (3). Private investment as of June 1993 amounted to LED 872 million, with foreign investment accounting for 54 per cent. Refractors attracted as much as LED 278 million in terms of foreign investment.

While the non metallic minerals processing industry exists in several African countries it is in a state of decline. This is reflected in falling levels of construction equipment purchases. Between 1991 to 1993 African international purchases of construction equipment declined by over 20 per cent and in 1993 they probably did not represent much more than one per cent of world sales of construction equipment. UNIDO (1996) groups together Africa and West Asia, the later including the rich oil states with traditionally large pure hases. The combined share of world construction equipment purchases of this group for 1993 is repeated as 2.4 per cent. This, despite the fact that international prices of construction equipment were significantly depressed over this period - the prices of second hand machinery had gone down sharply. The depressed market conditions have induced some major manufacturers based in Europe to shift labour intensive operations to developing countries with good existing or potential sale prospects and also as means to compete with relatively lower price producers in China and the Republic of

Korea. There is however no news about any major company contemplating investment in any African country - indeed the decline in sales to Africa is expected to continue (UNIDO 1996 p.84)

Due to the fragmented nature of the industry specially in new products such as mini excavators and also due to cost pressure the investment shift towards the developing countries will continue and there are opportunities for countries such as Morocco, Egypt, Nigeria and Zimbabwe to attract this type of investment.

In general there is a need to selectively target those segments of the construction materials industry the production of which can be dedicated to the construction and rehabilitation of the irrigation system. Construction materials are extremely bulky products and often transportation costs and associated delays cost more than procurement. Given the existence of large non metallic mineral resources in several African countries it might be desirable to source irrigation and urban water supply schemes locally by revitalizing the building material plants which are conviently situated and capable of producing inputs cheaply and efficiently. The revitalisation of these plants should thus be structured into a comprehensive strategy for improved water management in countries suffering from desertification, obselence of irrigation and water works and urban drainage systems, water wastage, etc. ODA funds should be committed to such projects and consequently they should also be available for restructuring and modernisation of building materials companies which can be dedicated to such plans. It is likely that since these projects will be of a long run duration they could provide a basis for attracting investment and technology transfer services from international companies in the construction materials and construction equipment business. As noted above the later branch is in a phase where overseas sourcing is becoming increasingly attractive. Involvement in large ODA irrigation and urban sector water development projects may well provide a basis for a closer relationship between European and African companies and might lead to a long term European commitment to the African building material and construction equipment industries - if major companies can go to Hungary and Turkey, today they can go to Morocco and Zimbabwe tomorrow provided ODA funds are committed to play a cataltic role.

IV.VI *FERTILIZERS*

Table IV.23 shows that Africa is an insignificant producer, consumer, importer and trader of fertilizer. Production of nitrogenous fertilizers has been growing at an annual average rate of 4.9 per cent per annum during 1989-90 to 1993-94 but production of phosphatic fertilizers has

declined by about 0.7 per cent per annum during that period. Consumption of

Table IV. 23

Africa's share of production, Consumption and Trade of Nitrogen, Phosphatic and Polish Fertilizer 1989-90 -- 1993-94

(Per cent of world's total)

	Nitrogenous	Phosphate	Polish
Production			
1989-90	2.52	6.14	----
1993-94	3.09	6.20	----
Imports			
1989-90	3.80	3.68	3.00
1993-94	3.43	3.86	3.13
Exports			
1989-90	3.69	15.51	----
1993-94	5.25	15.26	----
Consumption			
1989-90	2.58	2.87	1.81
1993-94	2.91	3.59	2.40

Source FAO: Quarterly Bulletin of Statistic (Rome)

(Various) Statistically negligible

nitrates has grow at an average rate of just 1.6 per cent. Consumption of phosphatic fertilizer rose at an annual rate of 1.8 per cent. Fertilizer per capita production declined significantly as population growth is estimated at 2.9 per cent during the period. Africa's fertilizer per capita consumption ratio is by far the lowest in the world and her import dependence is increasing.

Nitrogenous fertilizer production is concentrated in Egypt, Algeria, Tunisia, South Africa, Libya, Morocco and Nigeria which together account for over 90 per cent of total African production. Phosphatic fertilizer production is concentrated in Morocco, Tunisia, South Africa and Egypt whose share in total African production usually approximates about 93 per cent in a typical year.

Globally fertilizer production of nitrogenous fertilizer has tended to exceed consumption by about 6 to 9 per cent and phosphatic fertilizer production has exceeded consumption by between

8 to 10 per cent on average during 1989-90 to 1993-94 (FAO 1996). Many analysts speak of a permanent crisis in the world fertilizer industry and predict that the demand supply imbalance it likely to persist. Fertilizer consumption has been growing slowly throughout the world - in Africa during 1989-90 to 1993-94 the consumption of fertilizer grew at a rate which is significantly below the rate of growth of fertilizer production as a whole - although consumption of phosphatic fertilizer outpaced growth of production (which was negative) during the period. However in a typical year more than 50 per cent of phosphatic fertilizer is exported and in quantitative terms phosphatic fertilizers account for only about 30 per cent of total African fertilizer consumption.

The growth of fertilizer usage is vitally important for an increase in agricultural productivity. While gas reserves - at least those that can be economically exploited - may be modest Africa is well endowed with phosphates - it currently produces about one third of the worlds phosphates (most of it exported in unprocessed form). These deposed are widely distributed throughout the contain.

Extremely low levels of agricultural productivity estimated at more than 1,00 times lower than that of Western Europe and North America - has been attributed to low fertilizer application (Preri 1988). Increased fertilisation is required both to improved production per hectare and as a means for compensating for continued soil degradation

In view of these facts FAU estimated in the early 1980s that fertilizer consumption should increase by 7.3 per cent per annum in Africa during the period 1980 - 2000 (FAU 1983). During 1980-95 applications have grown roughly at an annual average rate of about 1.5 per cent so that the need for increase in the growth rate has considerably expanded.

The low level of fertilizer application in explained not by agronomic but by economic factors. Most fundamental is the stagnation of farmers' income but also of significance is the reliance on food imports, of ten financed by aid and the inability to promote agricultural intensification through the provision of appropriate technology packages. Despite the fact that fertilizer prices are often too low to sustain the profitability of the producers they are still too high for the consumer due to the fact that the cost of transpiration from the factory to the farm gate is enormous - often transpiration and distribution charges are one and a half times larger than production cost. Under these condition subsidization to reduce farmers' fertilizer purchase prices is a more effective way of ensuring food security than reliance on food aid. Indeed there is a strong case for redirecting aid from the provision of grain which drives local producers out of the market to the provision of resources for enhancing fertilizer production and consumption

in the recipient country. ODA could be structured to give supplementary facilities to countries and individuals seeking to increase fertilizer consumption, by various modalities: complementary loans granted to dynamic private entrepreneurs (fertilizer production, distribution) on the basis of a programme of satisfying national or subregional requirements, donation of raw materials or semi-finished fertilizer products to processing shops, access to production factors that will bring abut greater efficiency of the fertilizers they purchase (fungicides, selected seeds), etc.

Fertilizer aid has been offered on a sporadic basis on several occasion but it has been unsustainable in the sense that it has not enhanced the farmer's capacity to acquire relatively permanent access to assured fertilizer supplies. For this the development of an infrastructure to reduce transportation and distributional costs seems essential. The question of increasing domestic fertilizer production has to be viewed in this context. It is a means for ensuring farmers access to assured stocks at an affordable price so as to ensure food security.

As far as phosphatic fertilizers are concerned Africa's resource potential is not in doubt. The development of a phosphatic fertilizer industry is potentially viable in a number of African countries.

This applies particularly to countries on the Sahel fringe, but the availability of the raw materials which are no doubt an indispensable prerequisite for any scheme for producing fertilizers, particularly of the phosphate kind, is not sufficient to bring about the drive for conversion into finished products required by a potential regular local market and the availability of sources of financing calculated to meet the need of plants for substantial investments and revolving funds. Since the raw material in question and the finished product are heavy substances and subject to deterioration, the need for wholesale and reliable infrastructures - transport, marketing and storage - also constitute serious constraints in regard tot he decision to invest. These constraints (inadequate infrastructure, poor local markets, high investment costs, lack of sources of financing, etc.) together with a situation on the world market characterized by apparent over-production of fertilizers and sluggish international trade prices explain why all in all, new fertilizers manufacturing schemes have been few and for between in sub-Saharan Africa, However closing-down of certain productive units in the developed countries, and the emergence of new technologies, offer prospects to small units which are less demanding in capital than the existing projects, and they favour the rehabilitation of units already set up in Africa but functioning inefficiently.

An analysis of feasibility studies for new plants or rehabilitation projects (and analysis of the balance sheets and accounts of existing fertilizer plants) show that their earning capacity is

largely dependant on the degree of utilization of production capacity. UC rates below 70 per cent do not guarantee real profitability and are only acceptable in extreme cases for the first year of existence of new units. more important still, the rates between 30 and 60 per cent found in certain African countries are a sure sign of badly run businesses. This is explained by the burden of fixed costs in the functioning of fertilizer plants, which are particularly capital intensive, with maintenance and repair costs first of all, and also depreciation charges, very high.

Moreover establishment of fertilizer plants is extremely expensive - a simple "formulation" unit mixing imported raw material to produce fertilizer compounds - to produce day 100,000 t/y would cost between $8 to $10 million. A small plant producing 170 t/d of ammonia and 900 t/d of urea would cost between $120 to $130 million further the investment needed for the efficient marketing of fertilizers (road and rail networks, warehouses, hangars for wholesaling and shops for retailing, and means of transport) as well as the cost of the staff needed to provide the logistics of ordering, delivering, invoicing, credit and cash handling, are enormous, and cannot be borne by the manufacturer. Thus it seems likely that certain investment items necessary for fertilizer distribution will have to be contributed by the State in many African counties.

At present the inadequacy of the purchasing power of farmers in the light of the prices for fertilizers "delivered at the farm" the level of which is explained largely by a poor transport infrastructure and marketing, forces the State to subsidize the purchase of fertilizers by the farmer at very great cost, thus placing a further burden on already tight budgets. In a way these subsidies can be regarded as investment expenditure, since they result in an increase in the value added by the agricultural sector. But the question arises whether they could not be better used elsewhere, for example to finance small agricultural production plants, or to improve the transport or distribution infrastructures and thus reduce the real cost of fertilizers "delivered at the farm".

The cost of fertilizers produced locally - at time higher than the price of the imported product - is not likely to decline appreciably in the present mined by the economic authorities of producer developing countries, the aim being to enable a plant operating normally at 80 per cent capacity to make a profit of 12 - 17 per cent (the case of India and China, although certain African producer countries are hoping to adopt a similar method of calculating ex-works prices for fertilizers produced locally). It is impossible to fix the selling price with reference to international market prices for they are very variable and with only a tenuous link with real costs of production .

The high investment costs have led to a search for the possibility of economically valuable "mini

plants" pioneered by UNIDO in the 1970s. Units can be net up to produce a binary fertilizer (containing the two main fertilizing principles P2 05 and N). This is certainly more efficient than powdered phosphate or SSP, and the manufacturing cost in terms of nutrient would be lower than that of the nutrient in DAP (even imported DAP).

Units can be small in dimension, since the capacity of the plants varies from 10 to 250 t/d, or an annual production of between 3,000 t and 75,000 t of fertilizer with 19 per cent of nutrient: 5 per cent of N and 14 per cent of P2 05.

Tests carried out for a plant with a daily capacity of 50 t/d (15,000 t/y) in geo-economic conditions valid for many African countries would seem to indicate perfect adaptation to the potentialities of most fairly small countries. The requirements by way of investment would seem to be easily accessible: between $4 and $6 million, (1996 prices).

The manufacturing costs comprise variable costs (69 per cent) and fixed costs (31 per cent) and 70 per cent of them consist of expenditure in local currency, the only foreign currency being essentially that for imports of ammonia, catalysers and bags. The ex-works cost of the nutrient, estimated at between $500 and $650 /t, is to be compared with $750 /t, the cost price of the nutrient contained in a ton of imported DAP delivered to the consumption site and $900 per ton for nutrient (nitrogenous) contained in imported urea delivered at the consumption site.

The type of investment that can be recommended in the fertilizer branch in Africa depends on the size of the domestic market.

UNIDO (1988) suggests several levels at which investment should differ by type.

Level 1: for a market of under 5,000 t/y, the best form of investment consists in improving the reception and distribution structures. Many African countries re in this situation.

Level 2: for a market ranging between 1,000 and 25,000 t/y, it is possible to envisage a fertilizer bagging shop, and possibly a formulation unit. This again is the case of most African countries.

level 3: for local markets covering between 25,000 and 100,000 tons (a level reached by eight sub-Saharan African countries) it is possible to envisage bulk blending and granulation. If the country in question also has substantial deposits of natural phosphates, it can envisage testing out the spreading of powdered natural phosphate (very small additional investment by

the mining installations) or even the manufacture of SSP.

Level 4: at between 100,000 and 300,000 t/y, the manufacture of certain types of fertilizer can be envisaged if the situation is favourable from the point of view of raw materials. This situation at present applies only to the North African countries and to Nigeria and Zimbabwe.

Level 5: above 300,000 t/y, conditions are favourable for envisaging diversified local production provide the environmental conditions (financing, trained personnel, infrastructures, raw materials) confirm the profitability of the various projects. Egypt and South Africa along are in this bracket.

Whatever the nature of the investment envisaged, it will of course be necessary to verify and plan in advance the nature and the quantity of fertilizers needed, in the light of the qualitative and quantitative forecasts of agricultural production. (UNIDO 1987,1988)

In existing circumstances obtaining financing for project in any of these categories will be difficult.

First of all, fertilizer plants should envisage only long-term or at best medium-term loans to finance their investments. Since equipment has a depreciation period of approximately 12 years on average, in theory it is not recommended to borrow for less than 10 years.

One particular problem arises in regard to the initial establishment of revolving funds. These, rightly regard as investment, should be renewed during the operational period and more particularly during the "cruising period". Hence it can be estimated that a shoe or medium-term loan (3 to 5 years) should suffice to cover la large part of the initial requirements for a revolving fund. It will also be noted that in many recent projects, there has been provision for loans from abroad to be used to cover, as a priority, the project investment costs payable in foreign currencies, local development bank loans and capital being used only to take care of the other investments. This distribution of the use of financial resources enables subsequent outlays of foreign currency for servicing foreign debts to be kept down.

In the case of fertilizer plants, the rate of production growth is slow (2 to 4 years), following a fairly long period for the physical setting up of the project (in many instances there is a period of 3 to 4 years after the decision to carry out the project, once the feasibility study and the financial arrangements have been completed). In these circumstances it is essential to obtain

grace periods for the settlement of debt servicing, with if necessary a lager grace period for the repayment of the capital than for the settlement of the interest. Periods of five years and three years respectively would seem reasonable.

To sum up, financing by means of loans is subject to a number of constraints:

- A fairly long loan writing-off period, close to the depreciation period;

- maximum limitation of the proportion of the loans payable in foreign currencies;

- Special treatment of the initial endowment for a revolving fund;

- Easy terms in regard to loan charges;

- Grace periods for the initial financial charges.

It is unlikely that loan financing of this type be easily available for fertilizer projects in Africa in the 1990. Major expanevan of existing capacity through new large plants is not feasible. On the other hand there is an important need for project rehabilitation in this sector to rescue existing units that are currently operating at levels well below, capacity (often as low as 20 per cent). Rehabilitation can be concerned not just 1 with increasing use of existing capacities but with economising on use of inputs (particularly energy) the alternative use of new catalysers or the replacement of naphtha by natural gases. Rehabilitation should involve improvements in the management methods and distributional systems.

Private financing, national or foreign, is on the face of it reluctant to intervene in the rehabilitation of plants not controlled by the financiers themselves, because of the risks involved. Nevertheless, the repurchase of plants losing momentum or going through difficult periods by undertakings competing in the same sector, multinations, or national or transnational holdings in particular, within the framework of privatization policies, may be regarded as a form of financial participation in a rehabilitation operation. This repurchase will in general be followed by a drastic restructuring of the plant, the objective being no doubt concentrated far more on a strictly financial profitability goal then in the case of rehabilitation carried out on the basis of pubic financing or financing by forcing aid institutions.

International public funds committed to rehabilitation of carefully selected fertilizer plants can

stimulate private sector investment in this area - the public funds may be phased out over the medium or long term.

A more effective use of fertilizer aid is also desirable such aid should not be handed over free of charge, but should be sold at the normal price, the effect intended by the donation system being mainly to ease the balance of payments (by reducing imports which have to be paid for in foreign currency) and to enable the distribution circuit to spread to new agricultural zones. When this aid is channelled through local fertilizer production plants which undertake their costly distribution and/or processing, it is desirable that these gifts should be dealt with on an accountancy basis. in the case of Zambia, its fertilizer donation scheme was reflected finally in an increase in the capital of the firm producing the fertilizer. Thus for practical purposes it amounted to financing national investment which led to an increase in agricultural output, following the conversion in the plant of basic feedstock into fertilizers.

It is possible to envisage an extension of this formula to other industrial inputs use by fertilizer plants, e.g. spare parts.

In Latin Ammonia DFI has sometimes taken the form of the discounted repurchase by a foreign investor of credits on a developing country held by an international commercial bank and its use for participation in the local financing of industrial undertakings in that country. This type of financing scheme reflects a willingness on the part of the foreign investor to promote the balanced management of a plant, and can be followed up by the advent, if necessary, of supplementary financing in foreign currencies for purchase abroad of capital goods, spare parts and various types of industrial inputs.

Foreign investment in the fertilizer industry can be facilitated if debt equity swaps are efficiently organised in international markets particularly in the case of the North African States and perhaps also of Nigeria.

In conclusion the following points may be considered of relevance as for as the fertilizer industry is concerned.

a) Increasing fertilizer use per hectare is necessary to ensure food security in Africa. The use of chemical fertilizers must increase for this purpose. Organic nutrients can be effective if they are combined with chemical fertilizers. The increased use of chemical - specially phosphatic fertilizers - is required not just because of the direct impact on agricultural productivity but because they enrich the soil.

One of the major problems of the African agriculture is permanent soil deterioration (erosion and depletion of nutrient content), attributable to many factors, among them reduced arable acreage, overworking of the available land and insufficient soil management. Losses are sizeable and contribute to reducing income available for purchasing fertilizers. For example, each year Zimbabwe loses 15.6 million tones of organic matter, 1.6 million tones of nitrogen and 240,000 tones of phosphorus due to top soil erosion. The use of fertilizer in sufficient quantities to replace these losses would cost some $1,500 million per year. The estimated cost of the erosion is put at $20-$50 per cultivated hectare. Insufficient fertilizer use favours soil depletion, bringing about a reduction in yields and consequently in fertilizer purchases, and finally further soil deterioration.

b) The major constraint on the growth of fertilizer use in Africa is lack of effective demand due principly to low farmers income but also to unavailability of complementary inputs _ machinery, distribution materials, application informatus credit etc. ODA funds should be targeted for releving these "supply side" (from the perspective of the fertilizer user) constraints where feasible.

c) While Africa has the natural resources to sustain an expansion of phosphate fertilizes capacity, it lacks the required logistic and infrastructural support system to sustain this expansion. It is therefore not likely that large scale foreign investment - loan or equity - would be attracted to new projects in this area before these constraints are reduced and before effective demand rises significantly. New projects are therefore not advisable at this stage.

d) In African countries there exist fertilizers plants operating at low rates of capacity utilisation. They represent very sizeable commitments of foreign and domestic resources and their continued under performance is a factor inhibiting Africa's ability to service her foreign debt (sometimes incurred to finance these very plants). A comprehensive rehabilitation plan - involving increases in capacity utilisation, efficient use of raw materials and energy, modernisation of equipment, management restructuring etc - should be put in place for a selected number of such plants and ODA funds should be committed to such rehabilitation plans.

e) Using ODA funds for this purpose can act as a catalytic agent for attracting foreign investment in the form of BOT deals, debt equity swaps, transfer of technology arrangements to the fertilizer plants that are potentially viable but have been rendered inefficient by poor management.

f) The purpose of the commitment of ODA funds to the fertilizer sector is to increase food

security. ODA funds should therefore be committed on the basis of a careful assessment of fertilizer needs of specific regions to counter soil degradation and increase food production. The sporadic provision of fertilizer aid cannot achieve this purpose. The provision and distribution of fertilizer aid must be systematically and institutionally related to increasing a region's capacity to acquire and apply fertilizer to the soil. Fertilizer aid should preferably be channelled through fertilizer producing (specially formulation and mixing) units.

g) An appropriate use of ODA funds should be the organization of fertilizer purchasing credit schemes. Support may be provided for the establishment of credit co-operatives, financial association of intermediaries and regional co-ordination of fertilizer purchasing policies.

h) Finally considerable research has been done on the viability of mini plants. These may be suitable for a large number of African countries and investment per unit is less than 20 per cent of a large project. Establishment of such plants may be encouraged in countries with modest natural resource and capital constraints.

CONCLUSION

The conclusions of this paper are presented in the concludering paper "Agro Related Industrial Development in Africa"; A programme for UNIDO

REFERENCES

UNIDO International Yearbook of Industrial Statistics 1996 Vienna 1996

Samatar A and oldfield .S. "Class and Effective State Institution: the Botswana Meat Commission "Journal of Modern African Studies" Vol-33, (1995) p. 651-669.

UNIDO An Integrated Development Programme for the fisheries Industrial System in Nambia Vol-I-III (1993).

UNIDO The Regeneration of Tanzania Manufacturing Industry with Emphasis on Agro Industries Vienna 1989.

FAO Yearbook of Agricultural Production 1994 Rome 1994.

FAO Yearbook of Forest Products 1990. Rome 1994.

ILO Employment Opportunities in the Wood Sector: Uganda Geneva 1991.

UNIDO Profiles of Key Branches of Agro Industries in Africa Vienna 1990.

Alexandratov, A and de Haeen H. "World Consumption of cereals: will it double in 2025" Food Policy vol (20) 1995 p. 359-366.

Tscherley D, Donoovan C and Weber M. "Food Aid and food markets, lessons from Mozambique" Food Policy Vol 21 (1996) p.189- 209.

Dibbley D, Boughton D and Reardon T Processing and preparation costs for rice and coarse grain in Mali Food Policy Vol 20 (1995) p.41-50

Byerlee D and Saad L - CIMMYT's economic environment to 2,000 and beyond: a revised forecast CIMMYT Mexico 1993.

Byerlee D and Eicher C.K The Emerging Maize Based Revolution in SSA: Technologies, institutions and policies World Bank Washington 1996.

UNIDO Report for the expert group meeting for the African region in promoting regional co-operation for the establishment of an organisational framework for Sugar Cane producer ID/WE 505/S (Spec) 1990.

UNIDO Product Diversification and Quality Improvement for Oils Produced At Essen Company Zimbabwe DP/ID/SER A1747 1996.

Hymer E "Production of Edible Oil for the masses and by the masses "World Development Vol. 21 (1993) p. 429-443.

Ihoduru O "Political Economy of Euro-Africa Fishing Agreements Journal of Developing Areas Vol-30 (1995) p.63-91.

Abbasa K Improving Food Security In Africa the ignored contribution of livestock Monograph .14, ECA-FAO. Addis Ababa 1995

World Bank : Zimbabwe, achieving shared growth, Report No. 13540- 217 (1995) Washington Vol-II

Bennel P. British manufacturing investment in SSA Journal of Development Studies (1994) p. 76-103

UNIDO Industry In Southern Africa 1994 Vienna

Textile International Foreign Investment In the Mauritius Textile and Clothing Industry London 1992.

McDonald S."Reform of the Ero Sugar Policies and the ACP countries" Development Policy Review Vol.14 (1996) p. 131-149.

deCostor J "Profile of Morocco's Textile and Clothing Industry "Textile Outlook International July 1994 p.108-135.

Coper. J. "World Textile and Clothing Consumption. Forecast to 2004. Textile Outlook International Sept 1995 p.10-31.

Anson R and Simpson P. "World Textile: trade and production trends" Textile Outlook International Jan 1996 p.9-52.

Majmudar M. "Trade Liberalisation In Clothing: the MFA Phase Out and the Developing countries Development Policy Review Vol.14 (1996) p. 5-36

Page, S. and Davenport, M. (1994) World Trade Reform, Do Development Countries Gain or Lose?, ODI

Special Report. London: Overseas Development Institute.

Panorama of EC Industry (1994). compiled by OETH. Brussels: European Commission.

Schott, J. (1994) The Uruguay Round, An Assessment. Washington, DC: Institute of International Economics.

Trela, I. and Whalley, J. (1990) 'Unravelling the Threads of the MFA' in Hamilton.

UNCTAD (1986) Trade and Development Report. Geneva: UNCTAD.

UNCTAD (1994) The Outcome of the Uruguay Round: An Initial Assessment. Trade and Development Report. Geneva: UNCTAD.

Yang Y. (1994) 'The Impact of the MFA Phasing Out on World Clothing and Textile Markets', Journal of Development Studies 30, July: 892-915.

Mercer Management Consultation, Impact of the Uruguay Round on the European Textile and Clothing Sector Paris 1995.

Commission of the European Communities (1995) Communication from the Commission to the Council of the European Parliament, the Economic and Social Committee and the Committee of Regions (COM 9547 final, 11 October). The Impact of International Developments on the Community's Textile and Clothing Sector, Brussels.

GATT The Results of the Uruguay Round: Markets Access for goods and services, an assessment of results: Geneva 1994.

Kurt Salman Associates Factory Cost Comparison Study (1995) Dusseldort

Majumdar M. 'Clothing Sourcing for the European Market' Special Report EIU/Textile Intelligence London 1996 (b).

Majmudar M. "The MFA phase out and MFA Clothing Sourcing Forecast to 2005 "Textile Outlook International March, 1996.

Khanna S.R. "The New GATT Agreement: Implication for Textile and Clothing Industries. Textile Outlook

International March 1994 p.60-37

Khanna S.R. " Trends in the US and EU Textile and Clothing Imports Textile Outlook International January 1996 p.79-119.

Scheffor M. "Internationalisation of Production by Eu Textile and Clothing Manufacturers" Textile Outlook International January 1994 p. 101-123.

Khanna S.R. "Structural Change in Asia Textile and Clothing Industries: the second migration of production. " Textile Outlook International Sep. 1993 p. 11-32.

Byrne C "Impact of New Technology in the Clothing Industry Outlook to 2000 Textile Outlook International March 1995 p.111-140.

UNIDO Global Report 1992-93 Vienna 1992.

"Business and the Environment Planting Business Skills in Ethiopia" Financial Times Nov. 1994 p. 18.

Houri.I. "Shoe making will never be the same again "Leather April 1995 p. 40-42.

Sykes R. "Developing Production" Leather, March 1995 p. 10-12. Leather 'Out of Africa' Leather January and April 1994.

Chole E " Reflections on under development : problems and prospects" in Zegeye A and Pausessing S (eds) Ethiopia in Change Accadanic Press London 1994.

UNIDO Survey of Selected World Industries Vienna 1996.

FAO Quarterly Bulletin of Statistics Rome 1996 (1st Quarter)

FAO Fertilizer Yearbook - 1995 Rome 1996.

Pieri. C. The Problems of the Phosphate Fertilizer Industry and the Development of Fertilizers in Africa ID.WG 475.3 UNIDO Vinnea 1978.

FAO Agriculture towards 2000 Rome 1983.

UNIDO Fertilizer Manual 1987.

UNIDO Problems Arising Out of the Financing of Phosphate Fertilizer Plants in Africa ID/WG 415/19 Vienna 1986.

Forstner R and Ballance R Competing In A Global Economy. Unvin and Hyman London 1990.

UNIDO International Comparative Advantage in Manufacturing New York 1986.

UNIDO Changing Patterns of Trade In World Industry New York 1987.

Krugman. P. "New patterns of trade among industrial countries" American Economic Review Vol-73 (1983) p. 343-347.

Leamer Sources of International Comparative Advantage MIT Pras Cambridge Mass 1984.

James. " The Political Economy of Inappropriate Technology Industrialisation in SSA" Development and Change (1996) p.415-430.