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17794

Distr.
LIMITED
PPD.132
12 September 1989
Original: ENGLISH

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

**INDUSTRIAL DEVELOPMENT REVIEW
SERIES**

THE SUDAN

Towards industrial revitalization

Prepared by the
Regional and Country Studies Branch

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**INDUSTRIAL DEVELOPMENT REVIEW
SERIES**

THE SUDAN

Towards industrial revitalization

PREFACE

This Industrial Development Review is one of a series of country studies prepared by the Regional and Country Studies Branch of the United Nations Industrial Development Organization (UNIDO).

The Reviews present brief factual and analytical surveys of industrial development in developing countries. Such industry-specific Reviews are in demand for a variety of purposes: to provide an information service to relevant sections within UNIDO and other international organizations and aid agencies concerned with technical assistance to industry; to be used as a reference source for financial organizations, public and private industrial enterprises and economic research institutes in developed and developing countries; and to serve as a handy, useful information source for policy-makers in developing countries. The Reviews do not represent in-depth industrial surveys. With an exclusive focus on industry they present information and analyses on the broad spectrum of the industrial development process in the countries concerned in a condensed form.

The Reviews draw primarily on information and material available at UNIDO headquarters from national and international sources as well as data contained in the UNIDO data base. The presentation of up-to-date information on sub-sectoral manufacturing trends is usually constrained by incomplete national data on the industrial sector. To supplement efforts under way in UNIDO, to improve the data base and to monitor industrial progress and changes on a regular basis, it is hoped that the relevant national authorities and institutions and other readers will provide comments and further information. Such response will greatly assist in updating the Reviews.

The present Review is divided into two rather distinct parts. Chapter 1 presents a brief overview of the country's economy and its manufacturing sector. Chapter 2 illustrates the structure and performance of the manufacturing sector in the 1980s. Chapter 3 analyzes recent performance and prospects for selected sub-sectors of manufacturing. Chapter 4 reviews strategy and policy measures relevant to industrial development and presents information on the more important governmental and other institutions involved in industrial development. Chapter 5 examines the resource endowment for industrialization.

It should be noted that the Reviews are not official statements of intention or policy by governments nor do the views and comments contained therein necessarily reflect those of the respective governments.

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EXPLANATORY NOTE

Regional classifications, industrial classifications, trade classifications, and symbols used in the statistical tables of this report, unless otherwise indicated, follow those adopted in the United Nations Statistical Yearbook.

Dates divided by a slash (1986/87) indicate a crop year or a financial year. Dates divided by a hyphen (1986-1987) indicate the full period, including the beginning and end years.

References to dollars (\$) are to United States dollars, unless otherwise stated.

Totals may not add precisely due to rounding.

In Tables:

Three dots (...) indicate that data are not available or not separately reported;

A hyphen (-) indicates that the item is not applicable.

Basic indicators and graphical illustrations of manufacturing trends contained in this Review are based on data sourced from the UNIDO data base, international organizations, commercial and national sources.

The following abbreviations are used in this document:

AAID	Arab Authority for Agricultural Investment and Development
AFESD	Arab Fund for Economic and Social Development
CPO	Central Pricing Office
EEC	European Economic Community
GDP	Gross domestic product
GNP	Gross national product
IMF	International Monetary Fund
MVA	Manufacturing value added
SDC	Sudan Development Corporation
SL	Sudanese pound
SRDP	Salvation, Recovery and Development Programme
SSA	Sub-Saharan Africa

BASIC INDICATORS 1

The economy

GDP (1986)	:	SL14,097 million						
Annual growth of GDP (per cent)	:	<u>1970-80</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
		2.2	5.0	1.0	-4.6	-1.0	-1.7	3.0
Population (1986)	:	22.2 million						
Annual population growth rate (1986)	:	2.9 per cent						
Structure of GDP (per cent)	:			<u>1975</u>		<u>1985</u>		
		Agriculture		38.6		28.8		
		Industry		10.6		8.9		
		of which:						
		Manufacturing		9.9		8.0		
		Construction		5.4		3.5		
		Services		42.6		59.9		
Rate of inflation (per cent)	:	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
		25.7	30.6	32.5	46.3	29.1	25.0	90.0
Exchange rate (Sudanese pounds [SL] per US\$1)	:	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
		0.94	1.30	1.30	2.29	2.50	2.81	4.50

BASIC INDICATORS 2

Resources

Crops, leading products ('000 tons, 1987)	:	Sorghum (3,277), cotton (693), groundnuts (378), sesame (264), wheat (157)
Livestock (million, 1987)	:	Cattle (20.5), sheep (19.3), goats (13), camels (2.7)
Mining ('000 tons, 1987)	:	Chromite (10-15), some gold
Mineral resources	:	Evidence of the following minerals: silver, copper, zinc, oil
Energy (MW capacity, 1987):	:	Thermal generation (520), hydro-electric (515)

BASIC INDICATORS 3

Foreign trade and balance of payments

Exports (1987)	:	SL1,497 million
Principal exports (SL million, 1987)	:	Cotton (455.2), gum arabic (267.1), sorghum (248.8), sesame (134.8), sheep and lamb (38.9)
Main destinations (1987) (per cent)	:	Italy (10.8), Netherlands (10.4), Saudi Arabia (9.5), United Kingdom (8.2), Federal Rep. of Germany (7.3)
Imports (1987)	:	SL2,612.9 million
Principal imports (1987) (SL million)	:	Manufactured goods (501.0), machinery & equipment (484.9), petroleum products (483.4), foodstuffs (413.5), transport equipment (369.0), medicines & chemicals (248.1)
Origins of imports (1987) (per cent)	:	Saudi Arabia (21.0), United Kingdom (10.4), USA (10.4), Japan (7.4), Federal Rep. of Germany (7.3), Egypt (6.5)
Balance of payments (1986): (current account deficit)	:	\$12.4 million
Public debt (1987) (disbursed)	:	\$9,096 million
as percentage of GNP	:	97.3
Debt service (1986)	:	\$48 million
as percentage of exports	:	6.8

BASIC INDICATORS 4

The manufacturing sector

MVA (1985/86)	:	SL1,737.2 million
MVA <u>per capita</u> (1985/86)	:	SL72.3
Employment in manufacturing: (1981/82)	:	144,503
as per cent of total labour force	:	3.5
MVA per employee (1981/82):	:	SL4,009
Average annual real growth rate of MVA (per cent)	:	<u>1970-79</u> <u>1980</u> <u>1981</u> <u>1982</u> <u>1983</u> <u>1984</u> <u>1985</u> -5.4 12.9 -9.4 -0.5 2.4 3.1 3.4
Composition of MVA (per cent)	:	<u>1981/82</u> Food, beverages and tobacco 76.8 Textiles and leather 4.6 Wood and carpentry 1.0 Paper and printing 1.6 Chemical products 6.1 Non-metallic minerals 1.8 Basic metals 1.3 Metal products 6.6 Other manufacturing 0.1
Share of manufactured exports in total exports (1987)	:	9.6 per cent
Share of manufactured imports in total imports (1987)	:	69.3 per cent

BASIC INDICATORS 5

Inter-country comparison of selected indicators

	Unit						Yemen
		<u>Sudan</u>	Djibouti	Ethiopia	Somalia	AR	PDR
I. Demographic indicators							
Population (mid-1986)	million	22.6	0.4	43.5	5.5	8.2	2.2
Population growth (1980-1986)	per cent per annum	2.9	5.2	2.4	2.9	2.5	3.1
Primary school enrollment as percentage of age groups (1985)	per cent male/female	58/41	...	44/28	32/18 ^{a/}	112/22	96/35 ^{a/}
Area	thousand sq km	2,506	22	1,222	638	195	333
Density (1986)	persons per sq km	9	16	36	9	42	7
II. Economic indicators							
GDP (1986)	US\$ million	7,470	340	4,960	2,320	4,760	930
GNP <u>per capita</u> (1986)	US\$	320	783	120	280	550	470
GDP growth rate (1980-1986)	per cent per annum	0.3	1.7	0.8	4.9	4.3	1.7
Agriculture (1986)	per cent of GDP	35	4.4	48	58	34 ^{a/}	15.1
Industry (1986)	per cent of GDP	15	18.8	15	9	16 ^{a/}	20.9
Manufacturing (1986)	per cent of GDP	7	8.2	10	6	7 ^{a/}	...
Services (1986)	per cent of GDP	50	76.8	36	34	50 ^{a/}	64.0
Exports of goods (1986)	per cent of GDP	9	4.0	13	7	5	...
Gross domestic investment (1986)	per cent of GDP	12	...	9	15	21 ^{a/}	...
External long-term debt (disbursed and outstanding) (1986)	per cent of GNP	95.9	35.0	35.7	54.4	41.1	189.7
III. Industrial indicators							
MVA (1985)	\$ million	498	26.2	492	138	259	...
MVA growth (1980-1986)	per cent/annual	0.0	0.9	3.9	-3.4	16.5	...
share of manufactured exports in total exports (1986)	per cent	9.6 ^{a/}	...	1
share of manufactured imports in total imports (1986)	per cent	69.3 ^{a/}	...	60	79	71	32

Note: Based on the World Bank data presented in the World Development Report 1988, excluding the data for Djibouti. It should be noted that the UNIDO data base, United Nations statistics, national statistics and World Bank data base do not always tally precisely and, therefore, discrepancies may be found between Basic Indicators 5, and the text Tables.

a/ For years other than those specified

SUMMARY

Sudan now faces an economic crisis. The rapid growth of imports and decline in migrants' remittances have pushed the current account into deficit. The estimated \$350 million deficit for 1987 is the highest since 1981. Similarly the steady growth in the budget deficit, estimated at \$450 million in 1988 and likely to increase further in 1989 following the award of pay rises to public sector employees in December 1988, has increased inflationary pressures. At the end of 1988 the rate of inflation reached 90 per cent. Moreover, foreign debt which was thought to amount to \$11.1 billion in 1987 places a heavy burden on both the budget and the balance of payments. Were it not for the fact that the government has rescheduled its debt on three occasions, export earnings would cover no more than a third of debt servicing obligations. As it is the government has been unable to finance repayments and substantial arrears have built up.

The government's response has been to prepare an Economic Recovery and Development Programme (ERDP) which aims to redress the twin budget and current account deficits by imposing austerity measures. At the same time, the plan hopes to achieve growth rates of 4-5 per cent over the 1988-92 period by the promotion of exports, improvements in productivity in all sectors, the liquidation or streamlining of inefficient parastatals and the promotion of private sector investment.

Manufacturing industry is a key sector in the government's ambitious - according to some observers unrealistic - development programme. The government hopes to instil new life into the sector through a programme of rehabilitation and by macro-economic reforms that will increase competition and encourage fresh investment.

At Independence in 1956 Sudan inherited a truncated industrial structure, with enterprises engaged in the processing of agricultural products but with little investment upstream in manufacturing industries. Since then the government has sought to broaden the industrial base by expanding the range of resource-based industries, investment upstream in such areas as textiles and along the path of import substitution. Growth rates have, however, been slow. Between 1963 and 1981 the average annual real growth rate of MVA was only 0.78 per cent and between 1970 and 1980 the MVA generated by the manufacturing sector fell by 26 per cent in real terms. Although there were signs of a recovery between 1981 and 1985, when real MVA grew by 2.1 per cent annually, the prospects of the manufacturing sector achieving substantial growth rates in the near future are bleak.

Nor has the industrial sector seen significant diversification. New import substitution industries have developed but Sudan remains heavily dependent on imports for most consumer and intermediate goods and virtually all machinery. The food products branch, dominated by sugar refining, accounted for 78 per cent of the total number of enterprises, 77 per cent of MVA and 61 per cent of employment in the manufacturing sector in 1981/82.

Textiles, one of the main areas of resource-based development, accounted for only 4.6 per cent of MVA at that date though it provided 19.7 per cent of manufacturing employment. Its contribution to MVA was exceeded by the metal products and chemical products branches, neither of which can be said to offer a comparative advantage.

The private sector has - but for a brief interlude between 1970 and 1971 - been regarded as the driving force of industrialisation and investment has been encouraged by generous incentives. Although the government took an active role in the development of large-scale, resource-based industries such as sugar refining and textiles during the 1970s the gradual return of enterprises nationalised in 1970 to their former owners significantly reduced the public sector's share of fixed assets in this sector from a peak of 60 per cent in 1970 to 12.1 per cent in 1981/82. At that date the private sector contributed 84.5 per cent of MVA, 85.9 per cent of gross output and employed 57.7 per cent of the work-force engaged in manufacturing.

During the 1970s there was a tendency for both the private and public sector to invest in large-scale capital-intensive, industrial enterprises. However, the rates of capacity utilisation and worker productivity are generally low. This results from both genuine over-capacities and from interruptions in the supply of raw materials, power cuts, shortages of spare parts and difficulties in replacing depreciated machinery. Such operational difficulties have come to characterise Sudanese industry. They place a heavy burden on unit costs, particularly in those enterprises that are overcapitalised.

Consequently, improvements to the operational environment may be regarded as a sine qua non of industrial growth. In particular, improvements are needed to the power supplies so that manufacturing enterprises are assured regular savings in the cost of expensive diesel generators. Transport too, must be improved. This will assist in the delivery of raw materials and the marketing of products: at present enterprises are obliged to locate near the capital because the peripheral regions are effectively isolated by poor road and rail links. Efforts should be made to co-ordinate the development of the agricultural and industrial sectors in order to build up linkages and eliminate the shortages of agricultural and livestock products faced by existing resource-based industries.

Policy reforms are also needed. Excessive levels of protection continuing beyond the "infant industry" stage have eliminated comparative advantage and competition as tools in the selection of appropriate paths for industrialisation. Equally, the disparities between levels of protection on consumer and capital goods have discouraged entrepreneurs from developing an engineering industry. This is a major handicap because it leaves the industrial sector dependent on imported spare parts and equipment and has fostered a proliferation of import substitution projects many of which are marginal or sub-marginal investments. Furthermore protection has allowed many enterprises to take advantage of scarcity rents despite the existence of price

controls. This discourages exports, indeed manufactured exports are negligible. Removal of all protection would, undoubtedly, force the closure of many enterprises and so cannot be regarded as policy alternative but the gradual reduction of protection levels would encourage a more economic use of resources.

Much of Sudanese industry is in need of substantial rehabilitation and successful industrialization demands the expansion of capacity in key sectors such as engineering to compliment developments in the resource-based and import substitution industries and improve linkages within the sector. The government lacks the resources to finance such projects and looks to the private sector to fund industrial development. Unfortunately, with low levels of domestic saving and capital formation industrialization along the path of private sector is likely to be a slow process. Besides, entrepreneurs are cautious about investing in fixed assets following the nationalisations of 1970 and in the face of a deteriorating macro-economic situation. Rates of return on investment in industry are generally low and investment in commerce is more attractive. Where entrepreneurs do invest in manufacturing industry import-substitution projects are more attractive. Consequently, the mobilisation of funds to finance industrial rehabilitation and the new projects needed to diversify the industrial structure is likely to be one of the main stumbling blocks to renewed growth.

1. THE ECONOMY OF SUDAN

1.1 Recent economic trends

During four years of economic austerity following the implementation of a Structural Adjustment Programme in 1981, the government succeeded in cutting imports and restoring the current account to a surplus, and had some success in restraining growth of the budget deficit. These successes were, however, only achieved at the price of a recession in the economy. Between 1982 and 1985, GDP declined by an annual average rate of 2.3 per cent.

In 1985 the government relaxed control of both the budget and imports. While this led to renewed economic growth it also brought about a rapid deterioration in the macro-economic situation. By 1988 the budget deficit had soared to an estimated \$450 million. This fuelled inflation, which is now running at 70 per cent, leading to a marked deterioration in the standard of living. In December 1988 the government revised the salary structure increasing the minimum monthly wage from \$13.3 to \$67 at the official exchange rate. This will add \$444 million to the government's current expenditures and raises the prospect of an even larger budget deficit in 1989. Meanwhile, increases in the volume of imports, coupled with a steady decline in migrants remittances as the number of Sudanese finding employment in the Gulf States dropped, has pushed the current account back into deficit. By 1987 the current account deficit is thought to have grown to \$350 million. Moreover, Sudan's foreign debt reached \$11.1 billion in 1987, significantly larger than GDP. Although successive reschedulings have kept the cost of debt servicing artificially low, the government is still unable to maintain repayments and substantial arrears have built up.

Faced with this macro-economic crisis the government revealed the outline of its Salvation, Recovery and Development Programme (SRDP) in 1988. This, the government hopes, will stabilise the economic situation in the period up to 1992 and lay the foundations of sustainable economic growth. The SRDP's goal is to achieve annual growth rates of GDP of 4-5 per cent while reducing inflation by cutting the budget deficit and the government's use of bank financing, relying less on economic aid in order to curtail the growth of Sudan's foreign debt, and becoming self-sufficient in food and basic resources. New controls on imports are to be introduced while incentives will be given to exporters. The exchange rate will be realigned. Productivity is to be improved in both the agricultural and industrial sectors, with measures taken to liquidate or streamline inefficient public enterprises. Finance for long term investment, the SRDP assumes, will be provided by the private sector.

Since both agricultural and industrial productivity is already constrained by the shortage of inputs these austerity measures are unlikely to have a positive impact on output. Furthermore, the liberalisation of the trade regime will, in the short term at least, compromise the profitability of existing enterprises that have been fostered in an environment of excessive protection. Besides, the austerity programme offers little hope that the government will overcome the fundamental problem of Sudan's inadequate infrastructure. Poor communications, resulting in the disarticulation of the economy, power shortages and insufficient and inadequate training facilities have all contributed to low rates of capacity utilisation and low productivity. In these circumstances, neither industry nor agriculture is poised for renewed growth. Rather, it is in dire need of substantial rehabilitation.

Economic recovery depends as much on the generous response of the donor community as it does on the implementation of macro-economic readjustment measures. The Paris Club meeting in November 1988 offered some hope in this respect. Attended by representatives of ten industrialized market economies, the EEC, IMF, United Nations and six Islamic and African development funds, the meeting resulted in a pledge of \$300 million in emergency aid. Much of these funds will, however, go towards helping the government cope with the disastrous floods that struck the Nile valley in August 1988. Further assistance has been promised but it remains to be seen whether the international community is able to mobilise sufficient funds to finance a rehabilitation and development programme that can deal with the fundamental problems facing the economy. Moreover, political instability and civil war have created an environment which makes recovery even more difficult.

1.2 Economic structure

Sudan faces many pressing macro-economic problems: substantial budget and current account deficits, a huge debt servicing obligation, woefully inadequate financial resources, a flourishing parallel market, excessive monetary expansions and soaring inflation.

Even if the government can stabilise the macro-economic situation, there remain considerable obstacles to economic progress. Agriculture, the mainstay of Sudan's economy and source of most of its export revenues, is prone to drought, flood, insect infestation and crop disease while the world price of agricultural products remains volatile. Lack of domestic financial resources, the small size of the domestic market, poor infrastructure and an acute shortage of skilled technical and managerial staff render the path of industrialisation difficult and hazardous. The sheer size of the country, the largest in Africa, is a barrier to progress, as the infrastructure is only rudimentary. The only commercial port is over 1,000 km from the capital and the capital is a 1,000 km from any other major city. The country still has no more than 2,000 kilometres of asphalted roads.

Gross domestic product grew at only 1.3 per cent in real terms between 1960 and 1970. During this period the government looked to the private sector as the principal source of investment in the commodity sectors and public sector investment was restricted, particularly in the later 1960s, by the low level of aid flows. It was only after the government had assumed an active role in the development of the productive sectors and the volume of aid transfers increased after the 1973/74 oil price rises that the rate of growth accelerated. High commodity prices gave a further boost to the economy. Between 1970 and 1980 the annual rate of growth increased to 2.4 per cent per year in real terms and in 1974, 1977 and 1978 growth rates exceeded 5 per cent.

Unfortunately this acceptable - but certainly not spectacular - rate of economic growth proved unsustainable. Substantial government investments in the productive sectors were financed by extensive foreign and domestic borrowing, particularly after 1978 when aid from Arab donors fell by nearly 90 per cent leaving many of the projects initiated under the 1978-83 development plan to be finished by the government. Imports, both of consumer goods to meet burgeoning demand of Sudan's increasingly affluent middle class and intermediate and capital goods for development projects, grew rapidly and by

1981 the trade deficit had soared to a peak of \$840 million. This trend was aggravated by rising world prices, particularly for essential imports such as oil, even though the fixed exchange rate offered some protection. As a result of these two factors, the rate of inflation, which had averaged 4 per cent in the period of fiscal restraint up to 1975, increased to an average of 20 per cent between 1975 and 1984.

In order to combat the deteriorating macro-economic position the government initiated an austerity regime in March 1981, cutting back on government expenditures and tightening import controls. These deflationary measures curtailed the development programme and restricted industry and agriculture's access to essential inputs. In addition the agriculture sector, which generates most of Sudan's exports, was afflicted by a prolonged drought in the mid-1980s which led to a decline in agricultural production while a sharp drop in world cotton prices in 1985 further undermined the economy. Consequently, real GDP fell by more than 6 per cent between 1981 and 1985. The situation improved in 1986 and 1987, when the economy achieved growth rates of 3 and 2.5 per cent respectively, but GDP is thought to have declined by 6 per cent in real terms in 1988 due to the effects of the severe August floods.

The deterioration of the Sudanese economy during the 1980s is even more apparent in terms of per capita GDP which dropped from \$563 in 1970, at constant 1980 prices, to \$541 in 1981 and \$452 in 1985. This is less than half the average for developing countries and only two thirds of the average for Africa. Combined with other socio-economic indicators this classified Sudan as a least developed country.

At Independence the economy was dominated by the agricultural sector. The colonial authorities inhibited industrialisation, particularly in the textile branch where there was considerable potential for industrialisation based on local resources. The service sector, including the Administration, was not well-developed either. By 1970 the economy achieved a limited degree of diversification: the agricultural sector accounted for 37.4 per cent of GDP, manufacturing industry 12.6 per cent and services 42.5 per cent (Table 1.1). In 1982, agriculture's contribution to GDP was little changed at 35 per cent, though by 1985, during the drought, it had fallen to 28.8 per cent. Agriculture's central role in the economy may be better judged by the fact that it generates 94 per cent of export revenues and employs over 70 per cent of the labour force. It should be stressed that Sudanese statistics are often contradictory. The figures in this document must often be considered as approximations rather than exact data.

There has been a marked decline in manufacturing industry's contribution to GDP which fell from 12.6 per cent to 8 per cent during the same period. Meanwhile the contribution of services to GDP has increased from 42.6 per cent to nearly 60 per cent, making it the most important sector. Particularly noteworthy is the growth of "other services" sector, which includes Administration and government services, from 16.5 per cent of GDP in 1970 to 28.1 per cent in 1985.

Table 1.1: Structure of GDP by sector, 1970-1985, selected years
(percentage distribution at constant 1980 prices)

Sector	1970	1980	1981	1982	1983	1984	1985
Agriculture	37.4	32.1	38.0	35.0	31.8	30.4	28.8
Industry	13.9	9.1	7.7	7.4	8.0	8.4	8.9
- Manufacturing	12.6	8.0	6.9	6.8	7.3	7.6	8.0
Construction	3.7	5.4	3.6	2.9	3.3	3.5	3.5
Trade and hotels	17.9	14.4	18.2	21.7	22.8	22.6	23.0
Transport & communications	8.2	11.4	9.8	9.3	8.8	8.6	8.8
Other services	16.5	22.1	20.5	24.9	27.0	28.3	28.1
Statistical discrepancy	2.5	5.5	2.2	-1.3	-1.5	-1.8	-1.1

Source: UNIDO data base.

One of the principal problems facing Sudan is the mobilisation of financial resources for development. The private sector has been timid since the sweeping nationalisations of 1970, despite the subsequent return of businesses to their owners. Gross savings as a fraction of GDP have declined from an average of 10 per cent in the 1970s to negative values in the 1980s. The level of gross fixed capital formation per capita in 1985 was only \$61, at constant 1980 prices, whereas it had been \$64 in 1970 and \$80 in 1975. The figure for 1985 is less than half the figure for Africa as a whole and less than a third of the average for developing countries.

The banking system is an inadequate intermediary. Before the foundation of Islamic banks in the 1980s many Sudanese preferred not to deposit their savings in the banking system because of their Islamic injunction against the receipt of interest. Moreover, the banking system is concentrated in the capital and is beyond the reach of much of Sudan's rural population.

Nor has the banking system been able to attract the savings of Sudanese workers abroad. These savings and the migrants' remittances to are potentially the most important source of funds for investment, the total value is estimated at SL2 billion. The government has promulgated a number of measures in order to attract migrants remittances into the financial system and encourage migrants to invest in the domestic industry. Unfortunately these measures have been unable to divert a large proportion of these funds from unofficial channels. Much of the income derived from migrants' remittances is spent on current consumption, much of it financing imports of consumer goods, and the level of investment is low. Where investment does take place this is often in the informal economy. Unfortunately, it is not possible to measure the contribution of these investments to the economy.

Furthermore, the government is now unable to mobilise sufficient funds from domestic sources to support an ambitious development strategy. During the 1960s economic policy was basically conservative. Fiscal discipline was maintained through a tight control on expenditures. External public debt amounted to no more than US \$1.2 billion and was, therefore, manageable. In the mid-1970s, however, the situation changed markedly as the government embarked on a strategy of direct involvement in the productive sectors of the economy in order to achieve more rapid growth. This was largely financed by massive expansions of the monetary base and huge foreign borrowing. Unfortunately, the investment boom of the mid-1970s failed to achieve an increase in productive capacity commensurate with the large investment expenditures.

Transfers to local governments, a breakdown in the fiscal discipline of the civil service and a disastrous performance by the parastatals led to an increase in government current expenditures. Unfortunately, the government has not been able to finance increased current expenditures through traditional sources. Historically Sudan has depended heavily on indirect taxes, especially import duties, as its main source of revenue. Since the late 1970s, however, the share of indirect taxes in total revenues has declined as imports were cut to deal with mounting balance of payments deficits. The collapse of exports has also contributed to the decline in indirect revenues as export duties fell. To compensate the government expanded the range of direct taxes to include a development tax as well as income and corporate taxes. By 1981 direct taxes accounted for 36 per cent of total revenue, compared to only 2.7 per cent in 1964. But with the introduction of Islamic taxation in September 1984 the government suffered a decrease in incomes.

Even with the restoration of the former taxation system in 1985 the growth expenditures continued to outstrip revenues (see Table A-1). By putting a ceiling on servicing of the external debt at 25 per cent of export earnings and restraining both current and capital expenditures the government reduced the overall expenditures to SL 5542 million in 1986. A deficit of SL 2859.2 million remained which was to be financed mainly out of commodity aid grants. With the renewed commitment to service the external debt, the budget deficit is expected to continue to rise with servicing obligations accounting for a substantial part of the increase. Public sector savings, which declined continuously during the 1970s, have been negative throughout the 1980s.

Bilateral and multilateral aid has, consequently, been an important source of capital to finance Sudan's development effort. During the ten year Economic and Social Development Plan (1961/62-1970/71) the government envisaged an investment programme totalling SL565 million of which SL219.7 million, 38.9 per cent, was to be financed from external sources and SL150 million, 26.5 per cent, was to be financed as aid. During this period Centrally Planned Economies were an important source of aid. Much of this was received in kind. The Soviet Union, for instance, provided Sudan with two grain silos, vegetable oil pressing mills and food and dairy produce. Following the rise in oil prices in 1973/74 Arab donors assumed the dominant role as donors. In 1975 the Arab Fund for Economic and Social Development prepared a 10-year plan to double Sudan's GDP. The plan called for an investment program of \$6 billion, primarily in the agricultural sector, agro-industries and textiles. While the \$6 billion program did not

materialise, partly because of organizational and administrative difficulties that impeded the operations of the executing agency, Saudi Arabian and Kuwaiti aid to Sudan has been substantial. When Sudan's outstanding debt position was finally tallied in December 1982, debt to Arab donors was the largest component exceeding \$2 billion. Over the period 1982 to 1986, OPEC countries provided 27.8 per cent of the official development assistance from bilateral sources. Other prominent donors include the United States, the United Kingdom and multilateral donors, which have provided approximately a third of development assistance in the period 1982-86 (see Table A-6). Prominent among the multilateral donors are the IDA and Arab OPEC agencies.

In the past assistance has been forthcoming, but the level of assistance has varied from year to year and has consistently been lower than the level promised and the level needed. A concerted development effort is needed to lift one of Africa's poorest countries out of a downward spiral of under-development.

Dependence on foreign borrowing to fund Sudan's development programme and to cover the operating losses of public entities has saddled the country with a foreign debt that is now greater than GDP (see Table A-7). According to World Bank estimates the outstanding publicly guaranteed debt amounted to \$9 billion in 1987. Today this figure is likely to be over \$10 billion because of the accumulation of arrears following the government's decision to limit debt servicing to 25 per cent of export proceeds. These arrears include \$1 billion owed to the IMF which amounts to over half the total arrears owed to the IMF by creditors world-wide. The government has forestalled a debt crisis by rescheduling its debts on three occasions. This has kept debt servicing obligations artificially low. If this had not been the case Sudan's receipts from exports would cover only one third of its servicing obligations.

The balance of payments situation is equally precarious. The uncontrolled growth of imports in the late 1970s, combined with sharp rise in oil prices, led to a steady widening of the balance of trade deficit. This peaked at \$840.9 million in 1981. The high level of migrants' remittances in that year cushioned the impact but the overall current account deficit still amounted to \$636.5 million. In response the government introduced quantitative controls on imports which reduced the import bill from \$1,633.6 million in 1981 to \$750.3 million in 1982. The success of this policy of import restraint more than made up for the declining revenue from exports, largely a result of falling commodity prices and the impact of the drought on agricultural production, and the balance of trade deficit dropped to \$80 million in 1984 (see Table A-2). Even though the value of migrants' remittances fell off sharply, from a peak of \$430 million in 1982 to \$89 million in 1986 and \$134 million in 1987, the improved balance of trade position brought the current account into surplus in 1984 and 1985. However, the situation deteriorated in 1987 when the deficit reached an estimated \$350 million, the highest level since 1981.

The government's success in bringing the external balance under control during the period 1981 to 1986 may be attributed to the quantitative controls imposed on imports. Devaluation of the Sudanese Pound, which lost 75 per cent of its value against the US Dollar between 1970 and 1981 and a further 90 per cent of its value between 1981 and 1988, by itself would not have resulted in a sufficient decrease in imports because of the price elasticity of demand for imported goods.

Virtually all Sudan's export earnings are generated by commodity exports - cotton, gum arabic, groundnuts, sesame, sorghum - from the agricultural sector, which, characteristically, vary in volume and price from year to year (see Table A-3). Since the establishment of the Gezira project in 1925, in response to the needs of the cotton mills in Britain, cotton has dominated Sudan's exports. Between 1960 and 1971, lint cotton alone accounted for 46 to 65 per cent of total exports and cotton exports provided 39 per cent of export earnings in the period 1980 to 1987. However, in 1985 cotton prices fell to about half their prevailing values in the early 1980s and the slow recovery experienced in the world cotton market in 1986 and 1987 did not have a positive effect on export earnings because production volumes declined as a result of the drought and plant disease. Similarly, bumper crops of groundnuts and vegetable oils in the USA in the mid 1980s cut deeply into Sudan's exports of these traditional products. By 1986 exports of groundnuts were valued at only SL2.3 million compared with SL57.4 million in 1981. Exports of sorghum, which peaked at SL107.5 million in 1982 fell to nil during the drought of 1985. On the other hand, exports of sesame have increase from SL28.5 million in 1980 to SL134.8 million in 1987 as a result of the increasing sales to Saudi Arabia. Apart from these agricultural staples, exportables from the Sudan are few in number and, under current circumstances, are often uncompetitive abroad.

While exports are primarily agricultural products, imports are largely manufactured goods. Imports of vehicles, other transportation equipment, machinery, appliances and pharmaceuticals dominate other imports (see Table A-4) since few of these goods are manufactured locally. Together they account for about 70 per cent of total imports. This in itself is an indicator of the deficient production structure of the economy. Oil is the main commodity import accounting for 19.3 per cent of imports during the 1980-87 period and absorbing 43.8 per cent of export proceeds. Sugar was the main food import, accounting for 14.9 per cent of total imports in 1980, but as domestic production expanded during the 1980s imports dwindled to SL20,000 in 1986 rising again to SL52.6 million in 1987. Nevertheless, foodstuff imports doubled between 1984 and 1985 as a result of the drought.

Since Independence the direction of trade has undergone a marked change. In the colonial period Britain used to be Sudan's main trading partner accounting for about 40 per cent of Sudanese trade but by 1987 Britain's share had decreased to only 8.2 per cent of imports and 10.4 per cent of exports. As trade with Britain declined, centrally planned economies took a leading role, though trade with these countries tailed off after 1971. Now, Saudi Arabia is Sudan's main trading partner accounting for 21 per cent of imports - mainly oil - in 1987 and 9.5 of exports - sorghum, sesame, sheep and goats. Other major trading partners are industrialised nations such as the EEC, USA and Japan (see Table A-5).

1.3 Overview of the manufacturing sector

Although the colonial administration encouraged the establishment of cotton ginneries and oil seed mills, the flood of cheap manufactured imports and administrative controls inhibited the diversification of Sudan's industrial base. Efforts towards the development of a textiles industry, for instance, commenced only after Independence in 1956.

Following Independence, the government adopted a liberal economic regime and sought to encourage private sector - both local and foreign - investment in manufacturing industry by offering a wide range of tax incentives. Apart from a brief interlude between 1970 and 1971 when the government nationalised many of the larger private enterprises - bringing 60 per cent of the fixed assets in the manufacturing sector under public control - the private sector has been regarded as the engine of industrialisation. During the 1970s the government launched an ambitious investment programme, aimed primarily at expanding capacity in the textiles and sugar refining industries. However, this public sector investment programme was carried out in conjunction with further efforts to restore private sector confidence in the policy environment, namely the return of nationalised enterprises to their former owners and the promulgation of a new investment law offering additional incentives. Consequently, by the time of the 1981/82 Industrial Survey (the last complete survey of the manufacturing sector), the private sector generated 84.5 per cent of MVA, 85.9 per cent of gross output, and employed 57.7 per cent of the work-force in the manufacturing sector.

Industrialisation has taken place on a dual front: import substitution and the development of industries based on local resources, such as textiles, edible oils and sugar refining. Public and mixed sector investment was concentrated in the food products in 1981/82 - principally sugar refining - and textiles branches which use local raw materials. Private sector investment, on the other hand, is more evenly spread between the branches reflecting its development through a wide range of import substitution projects. Nevertheless, investment is still concentrated in food products, textiles and chemical products, which, in 1981/82, accounted for 39.8 per cent, 26.4 per cent and 22.1 per cent of fixed assets in large-scale private sector enterprises.

The growth of the industrial sector has been painstakingly slow with growth rates of MVA averaging only 0.78 per cent between 1963 and 1981. After a period of growth during the 1960s MVA declined by 26 per cent in real terms over the 1970-80 period, despite massive public sector investments in sugar refineries and textile mills. There has been a slight upward trend since 1982, with growth rates averaging 2.1 per cent per year over the 1980-85 period, but the manufacturing sector's contribution to GDP still remains significantly below the level of 1970.

In terms of output and employment the food, beverages and tobacco branch is by far the most important, accounting for 72 per cent of gross output, 76.8 per cent of gross MVA and 60.7 per cent of employment in 1981/82. Besides sugar refining, this branch includes bakeries, edible oil mills and soft drinks factories. Textiles was the second most important branch in terms of employment, employing 19.7 per cent of the work-force, but its contribution to MVA was only 4.6 per cent, ranking fourth after the metalworking and chemical products branches.

Although there are strong linkages between the food products branch and Sudanese agriculture, particularly in the case of the sugar refining industry, most of the manufacturing sector is heavily dependent on imported intermediate goods and packing materials and entirely dependent on imported capital goods. The ratio of MVA to gross output is low at 36.3 per cent for the manufacturing sector as a whole, and surprisingly low at 24.6 per cent for textiles and 38.7 per cent in the food products branch, indicating the large extent to which

these industries use imported intermediate products. It is significant that the level of processing is almost double in the small-scale compared with large scale enterprises. Small-scale enterprises, tend to use a larger proportion of local raw materials and less imported machinery.

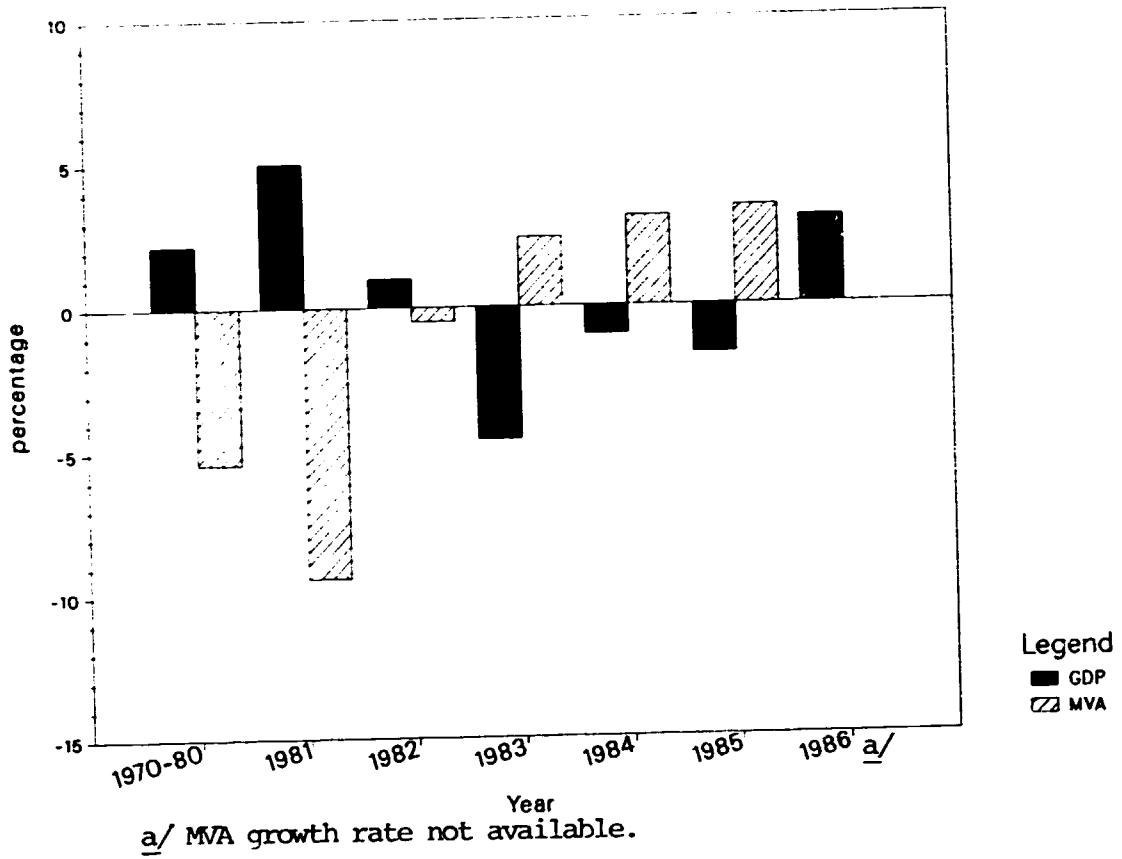
During the 1970s there was a tendency for both the public and private sectors to increase the capital-intensity of industry through investment in large-scale industrial plants. These plants are very vulnerable to interruptions in power supplies, shortages of skilled technicians, and delays in the delivery of raw materials and spare parts. Disruptions of this kind, together with the limited size of the local market, have resulted in low capacity utilisation rates and high unit costs of capital. Moreover, labour productivity is low. Even though the capital-intensity of production is twice as high in large-scale enterprises than in small-scale enterprises, labour productivity is significantly higher in the latter.

Inevitably, low levels of labour productivity and low capacity utilisation rates, coupled with high levels of capitalisation, impair profitability. The survey of the manufacturing sector undertaken in 1981/82 recorded a failure rate of 17.5 per cent among large-scale enterprises. Closures are, however, often a result of exogenous factors outside the control of enterprises. The most frequently cited cause of closure was difficulties in the supply of raw materials. The second most frequently cited cause of closure were fuel and power problems. Other enterprises reported problems with the depreciation of machinery, lack of spare parts and the shortage of manpower. In addition, enterprises reported marketing difficulties and problems with competition from imports - often smuggled imports. These problems were also mentioned in analyses of selected industries in the mid-1980s. If anything, the situation has deteriorated even further.

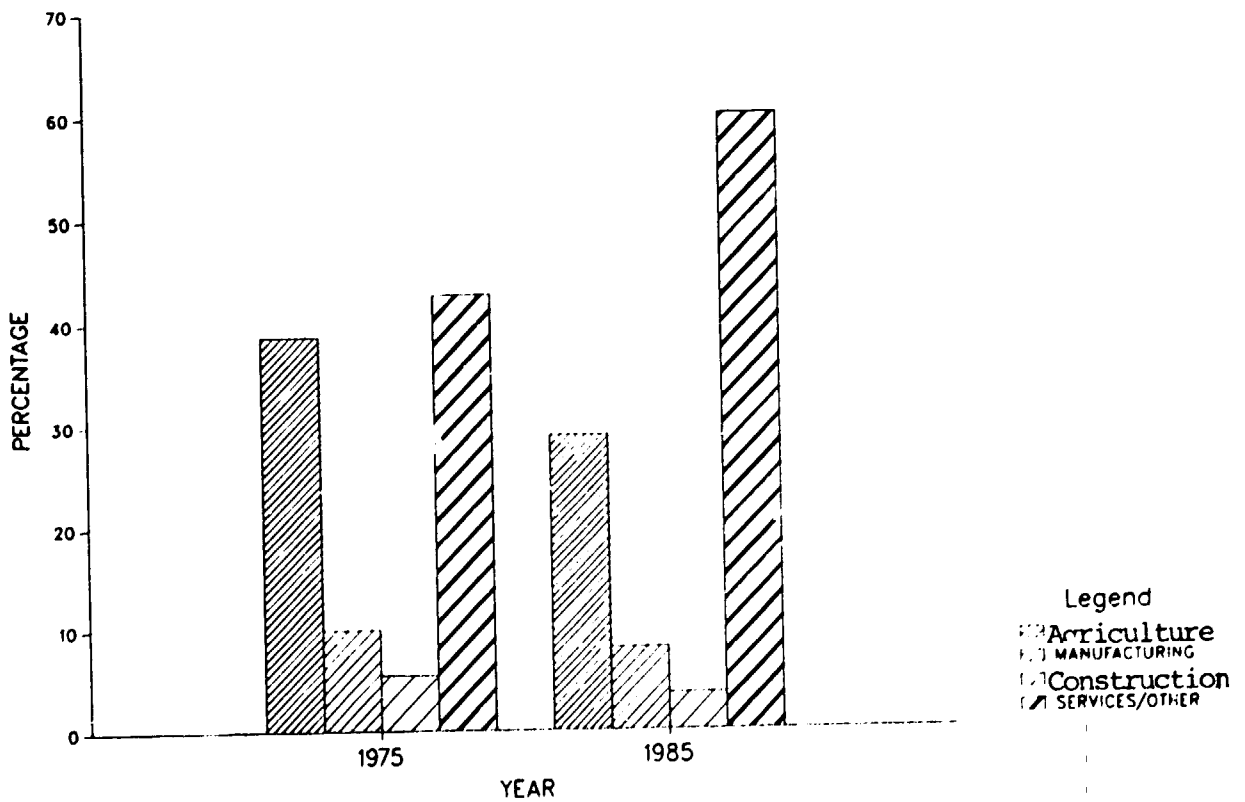
The development of the industrial sector will to a large extent depend on improvements in the industrial environment. In particular, linkages between agriculture and the manufacturing sector would need to be strengthened in order to ensure regular supplies of raw materials. This demands careful planning of future developments and will require improved communications - the present road and railway system is woefully inadequate. Power supplies also need to be improved so that enterprises receive regular supplies and can reduce dependence on expensive diesel generators. Enterprises also require skilled technicians and managers. Vocational training institutions cannot keep pace with demands of industry, though the current acute shortage is likely to be relieved by the return of emigrant workers.

Furthermore, changes in the macro-economic policy environment would greatly enhance the prospects of industrialisation. Private sector investment is discouraged by the depressed state of the economy and the memory of the nationalisations of 1970 have made many entrepreneurs timid about investing in fixed assets. On the other hand, generous, unselective incentives have encouraged many marginal investments while the high level of protection has permitted these to survive at the expense of the consumer. Protection has also discouraged manufactured exports which, but for edible oils and molasses, are negligible. A comprehensive macro-economic policy review that will address most of the important issues is currently being considered by the government. This should strengthen the capacity utilization in and the competitiveness of the industrial sector and pave the way for new investment.

REAL GROWTH RATE OF GDP AND MVA, 1970-1986 (at constant 1980 prices)



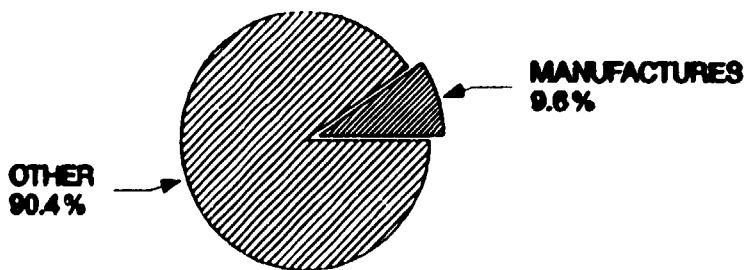
DISTRIBUTION OF GDP BY SECTOR OF ORIGIN, 1975 AND 1985



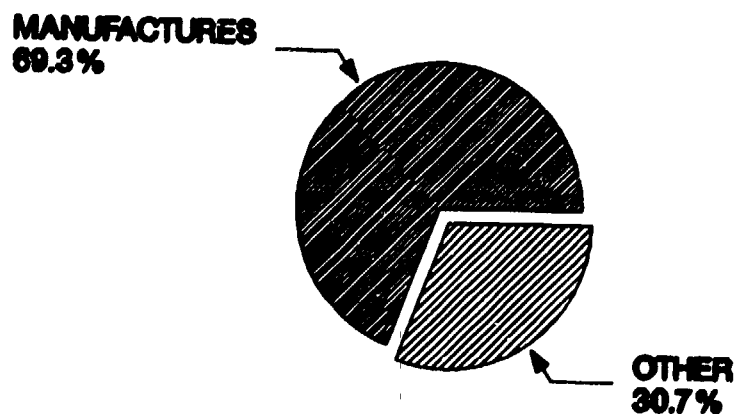
COMPOSITION OF MVA AND EMPLOYMENT BY SECTORS, 1981/82



SHARE OF MANUFACTURED EXPORTS IN TOTAL EXPORTS, 1987

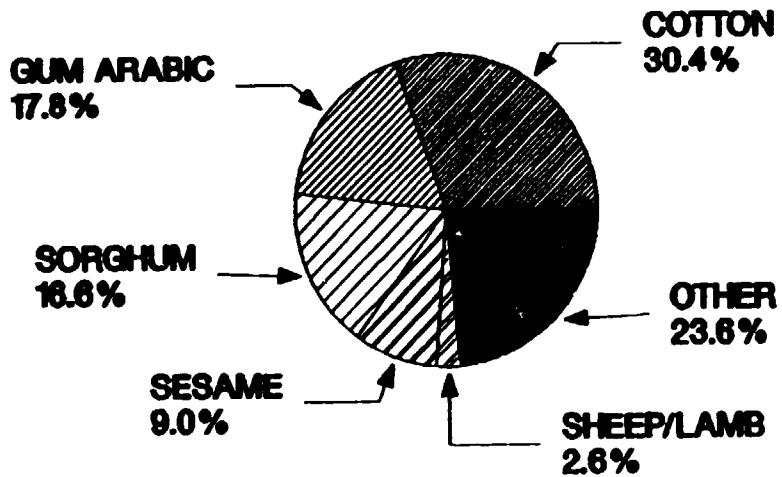


SHARE OF MANUFACTURED IMPORTS IN TOTAL IMPORTS, 1987

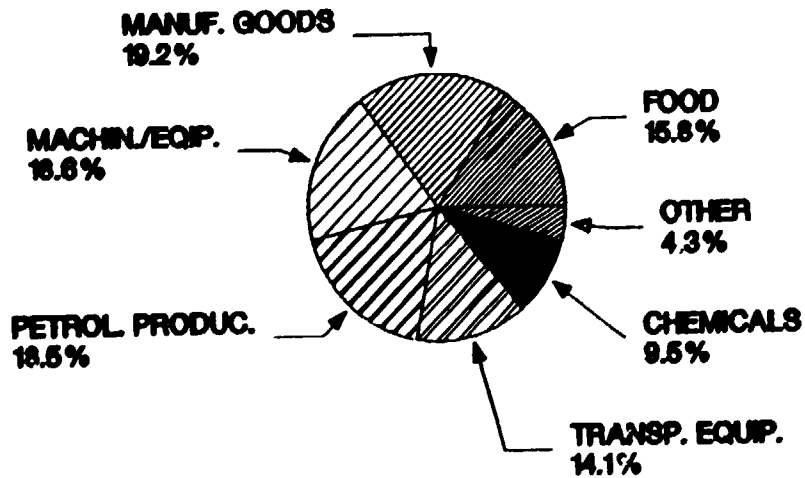


EXPORTS AND IMPORTS, 1987

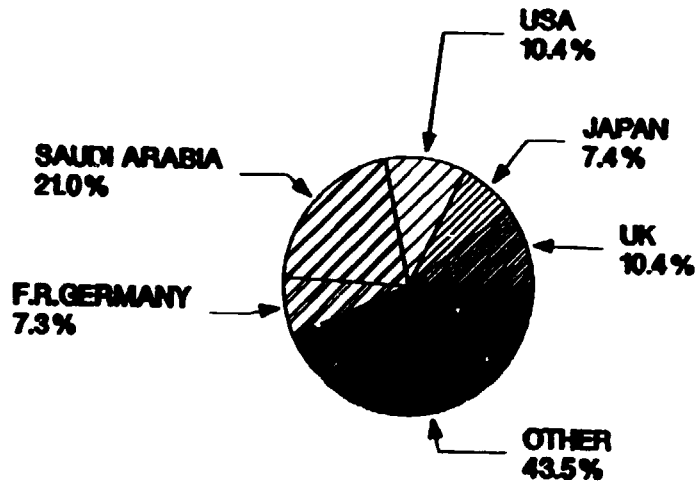
COMPOSITION OF EXPORTS



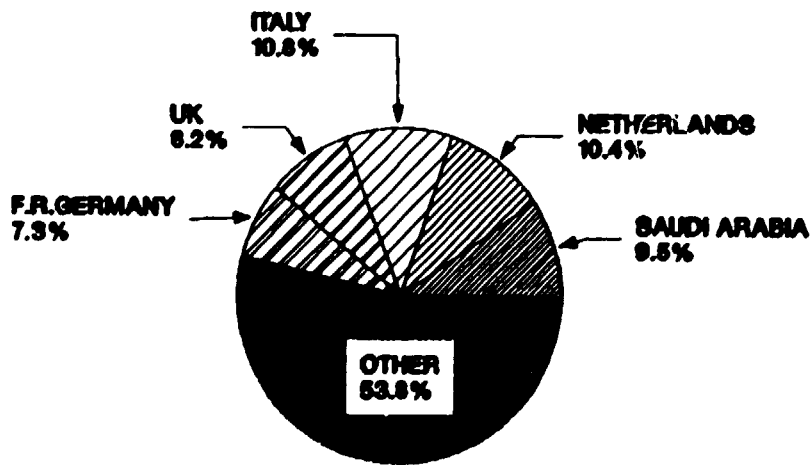
COMPOSITION OF IMPORTS



ORIGIN OF IMPORTS



DIRECTION OF EXPORTS



2. STRUCTURE AND PERFORMANCE OF THE MANUFACTURING SECTOR IN THE EARLY 1980s

2.1 Growth and structural change

Before Independence in 1956, the manufacturing sector was dominated by cottage industries and larger enterprises processing cotton for mills in the United Kingdom. The Gezira project and the construction of the Sennar Dam in 1925 were implemented by the colonial authorities in order to create an export enclave directly linked to Britain. Four cotton ginning factories were installed in the Gezira area by the colonial government in 1925. A natural extension of this activity was the production of edible oil from cotton seed. The colonial authorities, however, prevented the development of a textile industry that might compete with mills in the United Kingdom through a liberal import regime. Moreover, the flood of imported manufactures undermined local cottage industry and prevented the development of a broad base to the manufacturing sector.

During World War II the increased demands of the war effort and the interruption of international trade made it necessary to allow the establishment of manufacturing enterprises oriented towards the domestic market for final consumption goods. There were few linkages within the manufacturing sector and, since many of the intermediate and raw materials were imported, few to other sectors of the economy. Following the war the resumption of imports from the United Kingdom forced many of these enterprises to close though a nucleus survived as the base for industrial development in the post-Independence era.

The government of Independent Sudan adopted a liberal economic regime and sought to encourage private sector investment by offering generous incentives embodied in the Approved Investments Act of 1956. This policy had limited success. Although some new enterprises were established, mostly in the field of import substitution and based around Khartoum, the restricted domestic market and the restraints of inadequate infrastructure, an acute shortage of capital resources and skilled managers and personnel meant that the manufacturing sector was far from the point where it might "take off". The government played a minor role in the direct promotion of industrial activity. Nine public factories were constructed primarily in the agro-industrial sphere, but, throughout the 1960s, the emphasis remained on the private sector.

In 1969 there was an abrupt - but short-lived - change in economic policy. Local and foreign private enterprises were nationalised and, almost overnight, the public sector's share of total assets in the sector jumped to 60 per cent. After July 1971 the government reversed its policy. In 1972 another act providing generous incentives to private sector investors was promulgated and by 1980 most of the nationalised firms had been returned to their original owners. Nevertheless, the experience of nationalisation shook the business community and it has proved difficult to restore confidence in the policy environment.

From 1973 to the early 1980s, the government, while continuing to promote private sector investment, assumed a more active role in the development of the manufacturing sector by establishing several enterprises manufacturing sugar and textiles. There was a bias towards large, capital-intensive

projects that were ill co-ordinated with the raw material base and with the country's limited technical and physical infrastructure. These enterprises absorbed more resources than expected and the inadequate physical infrastructure choked progress. Since the early 1980s the government's dwindling resources have forced a scaling down of ambitious public sector development projects. Once again private sector initiatives have become the principal impetus for growth and development. At the same time, the government is preparing a rehabilitation programme that will, it is hoped, improve the efficiency and profitability of the existing industrial infrastructure.

The poor performance of the manufacturing sector in the post-Independence period is readily apparent when analysed in terms of the growth of MVA. The analysis below is mainly based on a 1981/82 survey. This is the last year for which data covering all manufacturing branches are available. As many manufacturing activities have been characterized by stagnation during the present decade, this survey still gives a useful picture of the sector.

According to UNIDO estimates, MVA grew at the rate 0.78 per cent annually in real terms between 1963 and 1981. During the 1960s the manufacturing sector experienced a period of growth but from 1970 to 1980 MVA declined by 26 per cent in real terms despite the infusion of funds from the public sector. Since the early 1980s the manufacturing sector's performance has improved slightly, with growth rates of 2.1 per cent annually recorded over the 1981 to 1985 period according to UNIDO estimates. Nevertheless, the manufacturing sector's contribution to GDP, at 8 per cent in 1985, remains far below the level in 1971, when it contributed 13.2 per cent of GDP. Moreover, MVA per capita in constant dollar prices has fallen from \$71 in 1970 to \$36 in 1985. This is far below the average for Sub-Saharan Africa (SSA) at \$60, but slightly above the SSA median of US\$25 (1986).

In terms of employment generation too, the manufacturing sector has met with only limited success. Admittedly, employment in manufacturing increased from only 7,200 persons in 1956 to 144,503 persons in 1981/82 but this still represented no more than 5 per cent of the total work-force.^{1/}

In 1981/82, the manufacturing sector was dominated by light consumer goods (Table 2.1). Food, beverages and tobacco branch accounted for almost 77 per cent of gross MVA, 78 per cent of the total number of manufacturing enterprises and about 61 per cent of total manufacturing employment. This predominance is particularly apparent in the case of small-scale enterprises (employing less than 25 persons) where 86.8 per cent of MVA was generated by this branch.

The metal products branch was the second most important, generating 6.6 per cent of MVA but only 5.9 per cent of gross output and the chemical products branch ranked third in importance, generating 6.1 per cent of MVA. Both these branches produce a range of consumer goods for the domestic market. In the metal products branch approximately half the value added is generated by small-scale enterprises. Many of these are workshops engaged in the manufacture of spare parts and repair of vehicles and manufactured appliances.

^{1/} The same figure was reported for 1985/86.

While the textile, wearing apparel and leather products branch accounted for no more than 2 per cent of the total number of establishments and 4.6 per cent of MVA, it contributed 19.7 per cent of total manufacturing employment and 6.9 per cent of gross output. The discrepancy between its shares in the number of establishments and in manufacturing employment is related to the fact that most of the establishments in this branch employ over 25 workers. Thus, while only 1.2 per cent of the small-scale manufacturing establishments were engaged in the production of textile and related products over 17.6 per cent of the larger manufacturing establishments were in this branch.

The remaining manufacturing activity was dispersed between a wide range of activities including the manufacture of wood products and furniture, paper and printing, building materials and non-metallic materials and basic metals. These enterprises generally produced consumer goods intended for the domestic market.

Table 2.1: Branch distribution of manufacturing industry, 1981/82

Branch	Establishments		Gross output			MVA	Employment	
	No.	Per cent	SL million	Per cent	SL million	Per cent	No.	Per cent
Food, beverages and tobacco	5,275	78.0	1,105,973	72.0	428,030	76.8	87,739	60.7
Textiles and leather	138	2.0	105,879	6.9	25,809	4.6	28,409	19.7
Wood & carpentry	182	2.7	10,217	0.7	5,411	1.0	2,091	1.5
Paper & printing	97	1.4	32,057	2.1	8,917	1.6	4,225	2.9
Chemicals	118	1.7	139,012	9.0	34,231	6.1	5,336	3.7
Non-metallic products	81	1.2	28,128	1.8	10,199	1.8	4,741	3.3
Basic metal	12	0.2	17,372	1.1	7,223	1.3	777	0.5
Metal products	854	12.6	90,601	5.9	36,940	6.6	10,803	7.5
Other	2	0.0	6,846	0.4	337	0.1	382	0.3
Total	6,759	100.0	1,536,085	100.0	557,097	100.0	144,503	100.0

Source: Government of Sudan, Industrial Survey, 1981/82.

Even though much of Sudan's manufacturing industry is based on local resources the degree of processing undertaken is relatively low, with MVA accounting for 36 per cent of gross output for the manufacturing sector as a whole according to the results of the 1981/82 industrial survey. The greatest degree of processing was found in the wood products branch, where the principal activity is manufacture of furniture, usually from imported wood. Surprisingly the degree of processing was extremely low in the textiles and food products branches, 24.4 per cent and 38.7 per cent respectively. Other branches depended heavily on imported intermediate goods and consequently the degree of processing was extremely low.

2.2 Ownership in the manufacturing sector

Public sector participation in the manufacturing sector began in the early 1960s and for a brief period following the nationalisation of private sector enterprises in 1970 the public sector dominated the industrial sector, holding some 60 per cent of fixed assets. Even though substantial government investments in a few large public enterprises followed during the 1970s, the return of the nationalised enterprises to their former owners led to a reduction in the number of public sector enterprises engaged in manufacturing. By the time of the 1981/82 Industrial Survey there were only 50 public sector manufacturing enterprises. These enterprises generated 5.1 per cent of total gross MVA and 6 per cent of gross output, but 10.4 per cent of the MVA generated by large-scale enterprises (Table 2.2). They employed 26.4 per cent of the work-force in large-scale enterprises, but only 19.2 per cent of the total work-force employed in manufacturing. Public sector participation in manufacturing was mainly in the food processing branch, principally sugar refining, and textiles, tanneries and printing. The government also held a monopoly in the manufacture of cement.

In addition to the public enterprises the government has formed mixed enterprises under joint public and private ownership. However, this form of company has been little used despite its potential for mobilising funds for large investment projects. By 1981/82 there were only 7 mixed sector enterprises, the most important of which were three huge sugar refining enterprises employing 31,500 persons. The work-force of these three large integrated sugar refineries are thought to have included agricultural workers as well as those engaged in manufacturing operations. These enterprises were very capital intensive, with fixed assets totalling SL289 million, and their contribution to MVA, gross output and employment was greater than that of the 50 public sector enterprises.

At the time of the 1981/82 survey, the manufacturing sector was dominated by private sector enterprises. There were 290 large-scale private sector enterprises which contributed 68.7 per cent of the MVA generated by the large-scale enterprises in all ownership sectors. If small-scale enterprises are included the private sector generated 84.5 per cent of MVA and 85.9 per cent of gross output and employed 57.7 per cent of the work-force engaged in manufacturing.

Table 2.2: Manufacturing activity by ownership
(large-scale enterprises), 1981/82

Ownership	Establishments		MVA		Capital		Employees	
	No.	Per cent	SL'000	Per cent	SL'000	Per cent	No.	Per cent
Public	50	14.4	28,593	10.2	129,671	14.3	27,724	26.4
Mixed	7	2.0	56,678	20.1	298,360	33.0	33,424	31.7
Private	290	83.6	196,177	69.7	477,527	52.7	44,020	41.9

Source: Government of Sudan, Industrial Survey, 1981/82.

Most of the private sector investment in manufacturing industry was by local entrepreneurs and the majority of enterprises - particularly among the small-scale enterprises - were family firms; partnerships and more dispersed forms of ownership are now becoming more common. Despite the government's attempts to attract foreign investment with generous provisions for the repatriation of capital and profits there has been little foreign investment in manufacturing industry. Of the 153 foreign companies registered in Sudan between 1972 and 1983 only 15 were engaged in manufacturing activities and several of these were not operational.

2.3 Distribution of manufacturing enterprises by size

Of the 6,759 manufacturing enterprises recorded by the 1981/82 Industrial Survey 6,412 enterprises, 94.9 per cent, employed fewer than twenty five persons and were classified as small-scale. Only 347 enterprises employed more than 25 workers, and of these, 137 establishments employed over 100 persons (Table 2.3). The category of medium-sized establishments did not make a large contribution. Small-scale enterprises accounted for 27.2 per cent of total employment, 34.2 per cent of total gross output and 49.4 per cent of value added in manufacturing while the very large enterprises - those employing over 100 persons - contributed 65.8, 56.1 and 44.7 per cent respectively.

Table 2.3: Manufacturing activity in the Sudan by size, 1981/82

Size	<u>Establishments</u>		<u>Employees</u>		<u>Gross output</u>		<u>Gross MVA</u>	
	No.	Per cent	No.	Per cent	SL mn	Per cent	SL mn	Per cent
Less than 25	6,412	94.9	39,335	27.2	525.1	34.2	275.6	49.4
25-50	131	1.9	4,679	3.2	66.1	4.3	12.3	2.2
51-100	79	1.2	5,432	3.8	82.7	5.4	20.7	3.7
100 and above	137	2.0	95,057	65.8	862.2	56.1	248.7	44.7
Total	6,759	100.0	144,503	100.0	1,536.1	100.0	557.3	100.0

Source: Government of Sudan, Industrial Survey, 1981/82.

In the food, beverages and tobacco branch, small-scale enterprises held less than 17 per cent of the fixed assets and provided 30 per cent of the employment and 56 per cent of gross MVA generated by the branch. Enterprises employing over 100 persons accounted for 65 per cent of manufacturing employment in this branch, 54 per cent of gross output, 42 per cent of gross MVA, and held 76 per cent of total fixed assets. In the textile branch, on the other hand, small-scale enterprises were of little importance, accounting for less than 3.5 per cent of manufacturing employment and about 20.1 per cent of gross MVA. Most of these small-scale enterprises were tailoring workshops manufacturing traditional wearing apparel to order. Large integrated textile mills generated 92 per cent of the employment in the textiles branch, 71 per cent of MVA and hold 93 per cent of the fixed assets.

Small-scale enterprises predominated in the wood and wood products branch where they provide 70 per cent of employment and 85.7 per cent of MVA. Most of these enterprises were workshops producing furniture or joinery used in the construction industry. Similarly, small-scale enterprises played an important role in the metalworking and metal products branch where they contributed 59.5 per cent of the employment and 49.5 per cent of the MVA. By far the largest number of enterprises engaged in this branch were garages and vehicle repair workshops. Although some of these may have produced simple spare parts they should, correctly have been classified among the service activities.

There is a marked contrast between the degree of processing undertaken by small-scale and large-scale enterprises. The small-scale enterprises do not have easy access to imported intermediate goods, use labour-intensive techniques and tend to use local raw materials which have undergone little preliminary processing. As a result the MVA/output share was almost double that of the large-scale enterprises in 1981/82 (52.5 per cent versus 27.8 per cent). The performance of the large-scale private sector enterprises was particularly poor in this respect. The large-scale mixed sector and some of the public sector enterprises, engaged in the processing of cotton and sugar, had a relatively high MVA/output share.

2.4 Efficiency and productivity

During the 1970s there was a tendency for both the public and private sector to invest in large-scale capital-intensive enterprises where imported machinery was widely used. Consequently the capital-intensity (fixed capital per employee) of production is relatively high by international standards. According to the results of the 1981/82 Industrial Survey, capital-intensity was lowest in the paper and printing branch at SL3,464 and highest in the chemical products branch, at SL21,386 (Table 2.4). It was surprisingly low in the basic metals and metal products branches, a situation that may reflect both the simple technology employed by most of these enterprises and the limited range of their products. In most branches the capital-intensity was close to the average of SL7,442.

Capital-intensity, however, was almost twice as high in the large-scale enterprises as it was in enterprises employing fewer than 25 persons, and much higher in private firms than in the public sector. There is a marked tendency for small-scale enterprises to conserve scarce capital resources while expanding output by hiring extra labour without a commensurate increase in capital. This suggests that development of small-scale industry is a far more cost effective means of generating employment in manufacturing industry than the implementation of large industrial projects as has traditionally been government policy.

Despite the more capital-intensive production in large-scale enterprises labour productivity as measured in gross output and gross MVA per employee was lower than in the small-scale enterprises, and the ratio between output and investment was also far better in the small enterprises (Table 2.4). There are also marked variations in productivity between the branches of manufacturing, with the basic metals branch leading.

Table 2.4: Labour productivity, average wage and capital-intensity, 1981/82
(SL)

Branch	Gross output per employee	Gross MVA per employee	Investment per employee
Food, beverages, tobacco	12,605	4,878	7,540
Textiles and leather	3,727	908	6,639
Wood products	4,886	2,588	7,147
Paper and printing	7,587	2,212	3,464
Chemicals	26,052	6,415	21,386
Non-metallic	5,933	2,151	6,510
Basic metals	22,358	9,296	3,538
Metal products	8,387	3,419	4,244
Others	17,921	882	5,668
Total	10,630	3,855	7,442
Small enterprises	13,441	7,056	4,350
Large enterprises	9,613	2,676	8,611
- Public sector	3,347	1,031	4,677
- Mixed sector	3,708	1,696	8,927
- Private sector	18,044	4,457	10,848

Source: Government of Sudan, Industrial Survey, 1981/82.

It is also significant that levels of productivity of large-scale public enterprises in terms of gross output and MVA per employee were far lower than those achieved in the private sector; the relationship between the size of investment per worker and output per worker was also more favourable in the private sector. To a large extent the higher productivity of private sector enterprises may be explained by the higher capital-intensity of production, which may result from greater investment in private sector enterprises or - more likely - an overstaffing problem in the public sector.

Trends in labour productivity were not encouraging. From 1959/60 to 1970/71 productivity rose by more than 40 per cent in real terms but in the following decade it declined by 9.3 per cent, from SL4,422 to SL4,009 (constant 1981/82 figures). Only the chemical products, wood products and food, beverages and tobacco branches recorded increases in productivity during this period. In the case of the textile branch, on the other hand, productivity fell by 75 per cent. Falling productivity was accompanied by a fall in real wages which dropped from an average of SL2,042 in 1970/71 to SL1,067 in 1981/82 at constant prices.

2.5 Performance and profitability

The poor performance of manufacturing enterprises was reflected in the high rate of enterprise failure. According to the Industrial Survey of 1981/82, 74 large-scale enterprises ceased operations that year, 17.5 per cent - more than one in six - of the total number of large-scale enterprises enumerated by the survey (Table 2.5).

Table 2.5: Failure of large-scale enterprises by branch, 1981/82

Sector	Number of enterprises	Number of failures	Failure rate
Food, beverages and tobacco	184	33	17.9
Textiles and leather	79	18	22.7
Wood and wood products	11	2	18.1
Paper and printing	23	3	13.0
Chemical products	58	9	15.5
Non-metallic minerals	18	5	27.7
Basic metals	8	-	-
Metal products	38	4	10.5
Total	419	74	17.5

Source: Government of Sudan, Industrial Survey, 1981/82.

At the branch level, the highest failure rate was in non-metallic minerals - mostly construction materials - at 27.7 per cent. The lowest failure rate was 10.5 per cent in the fabricated metal and machinery sector. Approximately 70 per cent of failures are in the food and textiles branches, whereas only 61 per cent of large-scale manufacturing enterprises were in these branches.

The reasons given for closures reveal the difficult operating environment faced by the manufacturing sector, which was constrained by shortages of raw materials, spare parts and skilled labour, the interruption of energy supplies and inadequate infrastructure.

Difficulties in raw material supplies was the most frequently cited cause of closure. This resulted from both the shortage of foreign exchange for the purchase of materials, particularly in the chemical products and food processing branch where a large proportion of the inputs and packaging materials are imported, and the disarticulation of agricultural production, transport and the requirements of the food products and textiles branches. Lack of spare parts, related to the shortage of foreign exchange and the inadequacy of the local engineering industry, was also cited as a cause of closure by some enterprises in the metalworking branch. A related problem was the depreciation of machinery which enterprises were unable to replace due to an internal shortage of funds or a lack of foreign exchange. This affected the textiles, wood products and printing branches.

Interruptions in the power supply and shortages of fuel were a particular problem in the textile and leather products industries where these problems caused frequent stoppages of factory machinery. Marketing and competition from imports - often smuggled imports - is also cited as a contributory cause of closure by 17.3 per cent of respondents. All of the enterprises producing edible oils that were closed in 1981/82 had this problem as did the textile mills that ceased operations. Other causes of closure include processing bottlenecks due to the lack of intermediate products, shortages of skilled labour due to emigration, owners disputes and financial problems. Few enterprises ceased operations in order to change activity; the closure of enterprises, in other words, resulted in a definitive loss to the manufacturing sector.

Comprehensive statistics for profitability are not available since companies do not publish their accounts. However, those statistics that are available suggest that the rates of return on investment are generally low. According to the 1981/82 Industrial Survey, enterprises engaged in the manufacture of vegetable oil had only 6 per cent return on fixed capital. This is due largely to an overcapitalised structure. Other sectors recorded similarly low rates of return: 3.3 per cent in the case of the bakery products enterprises (in Khartoum Region), for instance, and 9.1 per cent for wood products enterprises. On the other hand, enterprises engaged in printing generate returns of about 57 per cent and returns are high among enterprises in the cosmetics industry. Low rates of return discourage new investment, particularly where entrepreneurs are assured of higher returns on investment in other sectors, such as commerce.

2.6 Inter-sectoral and inter-branch linkages

The food, metalworking, textiles and leather industries have displayed relatively strong domestic linkages in the past. In the food processing branch these linkages were to the agricultural sector, whereas most of the backward linkages of the textiles branch were to the service sector. The textile industry, however, was more dependent on imported yarns than those produced locally. High levels of dependence on imported raw materials, intermediate and capital goods continued to characterise other branches of manufacturing and even in the food processing industry there was widespread use of imported packaging materials and concentrates.

The rapid expansion of the food processing industries, sugar refining in particular, and textiles in the early and mid-1970s was not matched by the expansion of raw material supplies and improvements in basic infrastructure that would facilitate the development of linkages between economic sectors. Moreover, the preference for large, capital-intensive projects precluded the strengthening of ties to the domestic economy at the implementation stage since most of the machinery and even construction materials had to be imported. This left industry dependent on foreign spare parts and technical skills. Occasionally, projects failed to take the local raw material base into account. Some of the textile mills built at this period, for instance, required short staple cotton while Sudan is a major producer of long staple cotton.

There is certainly room for the development of stronger linkages between the manufacturing sector and agriculture. The textile and food processing industries currently utilise scarcely 7 per cent of the output of the agricultural sector. But, in order to increase the level of linkage and the domestic resource component of Sudanese manufactures the government must co-ordinate the sectoral development strategies for industry and agriculture. It is significant that those industries that do depend on agricultural products complain of shortages of raw materials. In the case of the tanning industry, for instance, domestic suppliers of hides prefer to export their hides unprocessed rather than sell to the domestic market where demand is highly variable and the payment is made in Sudanese Pounds. The Kenana and El Ghirba sugar refineries also faced uncertain supplies of raw materials until they substituted wage labour for tenancy agreements: tenant farmers had begun to use land intended for sugar to produce food crops and grazing.

In the absence of an engineering industry - other than the small workshops producing spare parts and carrying out repairs of uncertain quality - even the simplest spare parts, new toolings, dyes and casts have to be imported. All the chemicals for paints, plastic products, detergents and pharmaceuticals are also imported.

The current tariff regime has discouraged the development of enterprises manufacturing intermediate and capital goods by offering low tariffs on such goods as a means of reducing the costs of domestic industry while offering high levels of protection on consumer goods. Moreover, Sudan lacks the engineering and technical skills to operate such industries. Consequently, the development of appropriate training systems should be given high priority and the tariff structure should be modified.

2.7 Regional distribution of manufacturing industry

There is a tendency, today as in the past, for manufacturing activity to concentrate in the Khartoum and Central Regions. This is a legacy of the colonial administration which fostered development around its supply routes and resource enclaves.

The primacy of Khartoum over the remainder of the country is reflected by the fact that this region had over 34 per cent of total manufacturing employment in 1981/82 and generated 28.6 per cent of MVA, whereas around 9 per cent of the total population lived in the capital (Table 2.6). While all the branches of manufacturing activity are represented in the capital, manufacturing was dominated by the food, textiles and metal products branches. Likewise the Central region, where 19.5 per cent of the population live, provides 44.7 per cent of manufacturing employment and 42.1 per cent of MVA. Together these two regions account for around three quarters of all manufacturing activity in terms of employment, MVA and the amount of capital invested. This pattern has not changed substantially since the early 1980s.

Both Khartoum and the Central Region have the advantage of lying close to the country's population centre, the region where the most affluent consumers live, with access to communications and skilled personnel. It is significant that those regions with the lowest level of industrial activity - Equatoria, Darfur and the Eastern Region - lie on the periphery of the country, isolated by poor communications and handicapped by erratic power supplies, a shortage

of suitable sites and an acute shortage of skilled manpower. In addition, the regional economy of the south has been disrupted by political disorder and drought. An improvement of the basic infrastructure - in particular communications with the national and international markets - must be seen as a precondition of a greater dispersal of manufacturing activity. Other measures could include the provision of selective incentives for enterprises established in the peripheral regions and the establishment of regional industrial estates. Of course, it should be kept in mind that only a limited range of industries is likely to be economically justified in the more peripheral areas.

Table 2.6: Regional distribution of industrial activity, 1981/82

Region	Establishments		MVA		Capital		Employees	
	No.	Per cent	SL'000	Per cent	SL'000	Per cent	No.	Per cent
Khartoum	1,922	28.4	159,482	28.6	307,775	28.6	49,576	34.3
Central	1,782	26.4	234,344	42.1	541,712	50.4	64,572	44.7
Eastern	777	11.5	117,697	21.1	174,288	16.2	12,807	8.9
Northern	933	13.8	20,511	3.7	10,665	1.0	4,879	3.4
Darfur	411	6.1	7,013	1.3	10,323	1.0	3,367	2.3
Kordofan	915	13.5	16,886	3.0	25,977	2.4	8,261	5.7
Equatoria	19	0.3	1,163	0.2	4,746	0.4	1,041	0.7
Total	6,759	100.0	557,096	100.0	1,075,486	100.0	144,503	100.0

Source: Government of Sudan, Industrial Survey, 1981/82.

3. RECENT PERFORMANCE AND PROSPECTS OF SELECTED MANUFACTURING BRANCHES

3.1 Food, beverages and tobacco

In 1983/84 food processing, beverages and tobacco manufacture accounted for 57 per cent of MVA as compared with 46 per cent in 1979/80. The branch includes a wide range of manufacturing and processing activities: sugar refining, which is by far the most important, vegetable and animal oils, vegetable and fruit canning, sweets and confectionery and flour milling. Most of the enterprises in this branch are small-scale - according to the 1981/82 Industrial Survey 5,124 of the 5,275 enterprises employed less than 25 persons - and engaged in the manufacture of bakery products and grain milling. At that date, however, the branch was dominated by 151 large-scale enterprises which accounted for 70 per cent of employment, 61 per cent of gross output and 44 per cent of value added. Only 15 of the large-scale enterprises are publicly owned.

The low ratio of value added to gross output, 27.9 per cent in the case of large-scale enterprises and 55.8 per cent for small-scale enterprises, indicates that many of the larger enterprises undertake a limited amount of processing. They are also, with the exception of the sugar refineries, more dependent on imported raw materials such as wheat, tomato paste and chemicals and packaging materials. Many of the large-scale enterprises also suffer from over-capacities, with capacity utilisation rates ranging from 30 per cent in the case of canning, 20 per cent for biscuit factories, 5 per cent for sweets and 50 per cent for beverages.

In the bakery products sub-branch, including macaroni and noodle production, firms using simple labour-intensive technology are generally small in size and face stiff competition from imports. Operating establishments in the Khartoum Region register returns on capital of only 3.3 per cent and labour productivity is scarcely higher than the average wage level.

According to the 1981/82 Industrial Survey sugar production accounted for 50 per cent of all employment in the food, beverages and tobacco branch, but only 13.8 per cent of the branch's gross MVA. Productivity is very low, even though the branch is dominated by five large, highly mechanised enterprises. Of these four are public enterprises with a rated capacity of 340,000 tons per year and the other is a joint venture between the government and the private sector with a rated capacity of 330,000 tons per year. The latter is the largest factory in Africa and the third largest sugar facility in the world. Despite this considerable production capacity Sudan is still a net importer of sugar. With an estimated demand of 565,000 tons per year in 1986/87, domestic production is not yet sufficient to meet local requirements (Table 3.1). Even at maximum capacity utilisation domestic production is not expected to meet more than 90 per cent of domestic demand.

Capacity utilisation in sugar production has increased from 37 per cent in 1982/83 to 73.7 per cent in 1986/87 but there is still room for further improvement. The major constraints on an improved performance have been summarised by the Ministry of Industry as:

- Production units are rarely in a position to recoup the full cost of production. Final product prices are kept arbitrarily 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 were used in production and inadequate water supply was 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 led to the loss of staff and skilled workers due to poor working conditions and shortages of regular manpower due to bad recruiting policies. Performance is also impaired by inadequate management, financial, and technical systems.
- At least two of the factories were poorly designed and built and this has constantly impeded operations in these factories.
- High interest charges on accumulated debts, high water charges and a high variability of world sugar prices contributed significantly to an asymmetry between costs and revenues.

The marketing of sugar has been one of the main problems facing the refineries. Up to 1981 marketing of sugar was handled by a government corporation: the Sugar Marketing Corporation. Subsequently regional governments were authorised to secure their own requirements directly from the factories. The system functioned well as long as the regional governments were able to secure credit to effect their purchases. When they were unable to pay, the system collapsed. In February 1986, the government revived the Sugar Marketing Corporation, but the pricing system has undergone a significant difference - a margin was allowed between consumer and producer prices. Consumer prices are subsidised, but producer prices were pitted at the medium import price. This will secure some profits for the producers.

Table 3.1: Sugar production, 1982/83-1986/87
(metric tons)

Plant	1982/83	1983/84	1984/85	1985/86	1986/87
Guned	20,181	22,699	14,905	25,115	29,418
New Halfa	38,018	47,886	59,932	53,710	46,304
Sennar	40,601	57,700	68,900	37,569	43,810
Hajar Assalaya	31,625	41,407	47,202	42,279	42,735
Kenana	229,541	248,834	306,000	292,838	309,622
Total	359,967	418,526	496,939	451,511	471,889

Source: Ministry of Industry Reports.

3.2 Edible oil and soap

The manufacture of edible oil and soap is one of the oldest manufacturing activities in Sudan, dating back to before independence. Its growth was encouraged by the proliferation of cotton cultivation after 1925. Today there are more than 300 oil mills and soap factories in Sudan with a capacity of 700,000 tonnes of edible oil, 500,000 tons of laundry soap and about 85,000 tons of toilet soap. Local demand for these products is estimated at 130,000 tons, 75,000 tons and 8,000 tons respectively. Consequently, even though edible oil is one of the most important manufactured exports, capacity utilisation rates are low, ranging from 25 per cent in edible oil milling to 15 per cent in soap making. Although some of the older oil milling capacity remains in service the branch has recently been modernised through the construction of several large mills with self-sufficient power generating capacities and ancillary packaging plants.

Those firms in operation have a low rate of return on fixed capital, only 6 per cent. This is largely due to an over capitalised structure, which has made them vulnerable to shortages of spare parts and raw materials and interruption of the power supply. Furthermore, the domestic market is saturated and the opportunities for exports have been constrained by low world market prices.

Fluctuations in raw material supplies have been one of the main constraints facing all the enterprises engaged in this sector. In 1985 the output of groundnuts and sesame declined to 618,000 tons from 1.2 million tons ten years earlier. Similarly, there was a decline in the output of cotton seeds. This may be explained, in part, by the drought in the early 1980s which reduced yields but output was also affected by the macro-economic slowdown at the same period. The government was forced to import unprocessed oil in the early 1980s to keep the mills in operation. This could only be regarded as a temporary solution because of the high cost of transportation.

In the long term mills will have to achieve a higher degree of linkage with farmers. Vertical integration by mills into agriculture was neglected in the 1970s while supplies were sufficient but now the instability of raw material supplies is forcing the producers to involve themselves into the direct production of sesame and groundnuts. The government is also planning to establish a joint public and private trading company to purchase cotton seeds from the farmers directly and to provide a mechanism for stabilising product prices from one season to the other.

These measures should resolve the supply difficulties facing large enterprises and provide a stable base for further growth. This would not require substantial new investment since there is considerable spare capacity. Edible oil production was put recently at 120,000 tons, on a total fixed assets of SL 1,375 million, only 17 per cent of the installed capacity. Bringing spare capacity into use would also generate employment opportunities since only 15,000 persons are currently employed in edible oil mills as compared with a potential 25,000 persons at full production. Nor would the rehabilitation of production place a heavy burden on the balance of payments. The foreign exchange requirements for operating at full capacity are a modest \$10 million, basically for packaging supplies and caustic soda. As there is overcapacity, and as the export potential is probably small, a number of

plants would have to be shut down while resources are concentrated on the viable enterprises. This process of selective rehabilitation would cost considerably less than US\$10 million. The initiatives would have to come from the private sector since none of the mills are publicly owned. The public sector is only represented through a joint venture - a mill with a rated capacity of 75,000 tons - but even here the private sector owns a 49 per cent interest.

Soap production is generally integrated with oil milling since most of the large oil mills are also soap producers. This activity is characterised by its low labour-intensity and dependence on imported inputs: in 1985, no more than 4,000 persons were employed in soap production and most of its raw materials, particularly perfumes, caustic soda and fats, were imported. Soap remains an important product of the manufacturing sector with total production of soap valued at SL 200 million in 1985.

3.3 Textiles

A textiles industry, along with oil milling, was an obvious path for industrial development given the rapid expansion of cotton cultivation after 1925 but the Sudanese textile industry only emerged after Independence in 1956. Plants were wholly owned by the private sector. Public sector involvement in textile production did not materialise until 1976, after the formulation of a 1972 master plan for the textile branch which was to reduce drastically the volume of raw cotton exports and create 35,000 new jobs. Private interests continue to predominate, holding 58.3 per cent of the spinning capacity and 67.3 per cent of the weaving capacity.

Weaving and spinning capacities are around 253 million yards per year and 25,000 tons per year, respectively, on 8,804 looms and 508,929 spindles. Installed capacity for bleaching, printing and dyeing is about 150 million yards per year (Table 3.2). Actual production is far below capacity. Spinning capacity utilisation is no more than 28 per cent, whereas that of weaving is around 25 per cent. Capacity utilisation rates are higher in the private sector than in public sector enterprises - in spinning the public sector capacity rate is 15 per cent; whereas that of the private sector is over 30 per cent, in weaving the public sector has a rate of 20 per cent, whereas that of the private sector is 38 per cent - but these are still below acceptable levels.

On the basis of a per capita demand for textiles of 15 yards per year, total demand is estimated at 250 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 and is directed towards the upper echelons of the society.

The large capacity in the branch is partly the result of earlier plans to export part of the production. Unfortunately the 1972 plan was based on a number of premises that ultimately proved untrue - a domestic selling price of cotton 30 per cent higher than border prices, expansion of the power generating capacity and transport infrastructure - and has proved a miserable failure. Both spinning and weaving capacity has remained constant since 1983 and between 1981 and 1986 output of spun yarn fell by 19.8 per cent and woven

fabrics by 41.3 per cent. In 1985, the textiles branch generated revenues of approximately SL400 million on total fixed assets of SL2,500 million, not even enough to cover replacement costs. The government has responded to this poor state of profitability by setting prices for raw cotton inputs at below their export price. The estimated subsidy implicit in charging below opportunity cost is around SL57 million.

Table 3.2: Production and installed capacity in the textiles branch, 1981-1986

	1981	1982	1983	1984	1985	1986
Weaving capacity (MT)	17,000	20,500	24,000	24,000	24,000	24,000
Production (MT)	10,250	10,100	10,700	10,100	7,856	6,012
Capacity utilization rate (per cent)	60	49	45	42	33	25
Spinning capacity (million yards)	253	253	253	253	253	253
Production (million yards)	89	71	67	71	72	71
Capacity utilization rate (per cent)	35	28	27	28	27	28

Source: Sectoral Technical Committees Reports, Ministry of Industry.

Low profitability rates on equity in most enterprises have discouraged new investment. Existing plants have suffered from power interruptions which account for over 10 per cent of the output losses. In 1985 the power generating capacity improved significantly, but it is still doubtful whether the National Electricity Company will be capable of meeting the demands of the textile industry. To circumvent this problem several of the large producers in this sector have installed their own power generating equipment but this has added considerably to their cost of production.

Moreover, the uneconomic location of some of the public enterprises has made them unviable from the start. The dispersal of economic activity has increased transport costs and has led to difficulties in securing power and skilled workers. On the other hand many enterprises are suffering from overmanning which has contributed to low productivity. While planned staffing was premised on 32 spindles and 0.9 looms per person, realised staffing levels were 16 spindles and 0.45 looms per person. Absenteeism and turnover among workers is exceptionally high reaching the level of 50 per cent in some cases. The migration of skilled and professional workers to the Gulf denied the industry of badly needed and irreplaceable personnel.

Nor has the macro-economic situation favoured the textile branch since shortages of foreign exchange prevented enterprises from purchasing essential spare parts and new capital. This made it difficult for enterprises to pursue efficient maintenance programmes leading to frequent stoppages and reduced their ability to rehabilitate and modernise old equipment.

The stoppages in the early 1980s were largely due to lack of competitiveness in the face of imports from lower priced but higher quality South East Asia. 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.

Given the poor performance and low profitability of the textile mills since the early 1980s the funds needed for a substantial rehabilitation programme are unlikely to be mobilised by the private sector. Nevertheless, Sudan's role as major cotton 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.

3.4 Tanning and leather products

At present 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 is 1.2 million and 7.5 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 (Table 3.3). 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, processed 88,000 heavy pieces and 888,000 light pieces in 1985/86. The other two - the Salem and Ahmad Khalifa tanneries - work at capacity utilisation rates of between 10 and 25 per cent. In addition to these modern tanneries there are numerous small-scale, artisanal 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.

Table 3.3: Production in public and mixed sector tanneries, 1982-1986
(thousand pieces)

	1982	1983	1984	1985	1986
Khartoum					
- light	116	41	20	116	24
- heavy	63	58	40	37	34
Blue Nile					
- light	53	18	17	4	25
- heavy	41	33	32	52	46
Gezira					
- light	108	69	44	108	25
- heavy	57	46	44	52	62
Red Sea					
- light	25	46	37	119	64
- heavy	-	-	-	-	-
Total					
- light	302	174	118	347	138
- heavy	161	137	116	141	142

Source: Rehabilitation of Tanneries Study, 1987.

The footwear and related products branch comprised 35 factories in the mid-1980s. These had the capacity to produce, among others, 15 million pairs of leather shoes, 44 million pairs of plastic footwear and 30 million pairs of sports shoes. Capacity utilization, however, was only 20 per cent. In spite of this, the Government has issued another 70 licenses for enterprises in the branch. Even though capacity utilization rates could be increased by improvements in energy supply and in the supply of imported materials, total installed capacity would seem too large for a country with 22 million inhabitants and very low living standards. The possibility of exports to the African and Arab regions should be explored; this, however, should go hand in hand with measures to improve the quality of the products.

3.5 Cement

There are two cement manufacturing plants in Sudan: Maspio Cement and Rabak. The former is jointly owned by the public and private sector, whereas the latter is wholly owned by the public sector. The output of the Maspio factory dropped sharply in 1983/84 and 1984/85 and in 1987/88 was still some 10 per cent lower than the 1982/83 level. Production levels at the Rabak factory have remained fairly constant during the 1980s. In 1987/88 Maspio produced about 135,000 tons and Rabak 85,000 tons (Table 3.4). Even though the per capita demand for cement is less than half the average for developing countries, output has consistently fallen short of demand. In 1987/88 the two factories supplied only 19 per cent of total consumption. The remainder of

the domestic demand was met by imports which have increased from 116,700 tons in 1982/83 to 845,600 tons in 1987/88 and peaked at 927,900 tons in 1986/87. In order to reduce the costly import bill for cement both the Rabak and Maspio factories have launched ambitious expansion programmes which should increase total capacity to about 800,000 tons.

Table 3.4: Cement production, imports and consumption,
1982/83-1987/88
(thousand tons)

	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
Production						
- Maspio	150.5	147.8	75.3	107.6	128.0	135.0
- Rabak	81.1	85.6	75.0	45.0	80.7	85.0
Total production	231.6	233.4	151.3	152.5	208.7	225.0
Imports	116.7	85.9	850.7	924.6	927.9	845.6
Total consumption	348.3	319.1	1,002.1	1,077.1	1,136.6	1,188.6

Source: Cement Survey, 1987.

Sudan's weak infrastructure is a major constraint on the expansion of the cement plants. Transport costs for materials are high and the production cycle is frequently interrupted by power cuts moreover in this energy-intensive industry the high cost of electricity is a financial burden. Equally important are the shortages in foreign currency which have led to shortages of spare parts and inadequate supplies of cement bags and other packaging materials. The long gestation period in completing expansion projects will act as a further constraint on the development programme, not least because of its impact on capital costs and, ultimately, production costs.

3.6 Chemicals, plastics and pharmaceuticals

The chemicals, plastics and pharmaceuticals branch includes a wide range of products: plastics, matches, perfumes and cosmetics, tyres, fertilisers, paraffins, pesticides and pharmaceuticals. According to the 1981/82 Industrial Survey there were 118 enterprises engaged in these activities of which 49 were enterprises employing more than 25 people, only one of these was a public sector enterprise. Recent key data on the branch are scarce. At that date the branch generated 9 per cent of the gross output of the manufacturing sector and 6.1 per cent of MVA. The ratio between value added and gross output was relatively low at 24 per cent, indicating the limited degree of processing undertaken. Most of the enterprises were heavily dependent on imported chemicals and intermediate goods. This had a detrimental effect on profitability during the period of high oil prices in

the later 1970s and early 1980s. Such enterprises have often been established by importers under licence from their suppliers and they remain more commercially than industrially oriented.

Another characteristic of the chemicals branch is the high level of capital investment. The 1981/82 Industrial Survey reveals the capital per employee was SL21,380 as compared with SL7,443 for the industrial sector as a whole. This disparity is even more apparent where only large-scale enterprises are considered: in the chemicals branch the investment per employee is SL25,670 but only SL8,611 for the industrial sector as a whole. This is reflected in the level of productivity which, in terms of gross output per employee, amounted to SL26,050 for the chemicals branch and LS10,600 for the industrial sector and LS6,415 in terms of value added per employee for the chemicals branch and LS3,855 for the industrial sector as a whole. Even so efficiency in terms of capacity utilisation rates is poor. According to a 1987 Survey capacity utilisation rates range from as low 17 per cent to 67 per cent (Table 3.5). In spite of low utilization for the industry as such, some of the most profitable enterprises are those engaged in the manufacture of cosmetics.

Table 3.5: Capacity, production and capacity utilisation rates in the chemicals branch, 1987

Industry	Capacity	Production	Capacity utilization rate (per cent)
Plastics (tons	45,785	12,195	26.6
Matches (carton)	270,000	100,000	37.0
Glycerin (tons)	54,000	9,000	16.7
Perfumes and cosmetics (tons)	9,500	2,500	26.3
Tyres (number)	450,000	300,000	67.7

Source: Technical Committees of the Ministry of Industry Reports, 1987.

There are substantial savings in the cost of domestically produced pharmaceutical products compared with imports, both in consumer price and in foreign exchange. In some cases these savings exceed 70 per cent. Such savings are possible because enormous profits are made by importing agents. This offers considerable potential for local producers to penetrate the market which has, traditionally, been dominated by imported brands. However, local producers have been unable to take advantage of the price differential to expand partly because the shortages of foreign exchange have curtailed the importation of chemicals and packaging materials. Moreover, consumers have proved reluctant to purchase local brands even where there is a wide price differential. This may reflect fears that local products are of inferior quality. Such fears are unfounded. The Ministry of Health closely controls the quality of pharmaceutical products to ensure that they meet international standards. One of the major constraints on the growth of the pharmaceuticals

industry will, however, be the capacity of the local market. The current level of per capita consumption of pharmaceutical products is about \$1.6, which is well below the world average. Consequently, the level of demand could be too low to support large enterprises in this field, where economies of scale are important.

3.7 Engineering products

The weakness of the engineering branch constitutes a gap in the structure of Sudanese manufacturing industry. Although 854 enterprises engaged in engineering and the manufacture of metal products were recorded by the 1981/82 Industrial Survey, most of these were small workshops engaged in the production of simple tools, spare parts and blacksmithing using simple, often traditional, techniques. Only 34 of the enterprises recorded employed more than 25 people. The branch as a whole generated only 6.6 per cent of MVA. Few data on the branch are available for later years.

The modern, large-scale sector enterprises' activities are largely restricted to assembly operations using imported kits. Typical enterprises are producing batteries, coolers, refrigerators and air conditioners. These production lines are all working well under capacity. The rated capacity for liquid batteries, for instance, is 396,000 units, but current production amounts to only 86,832 units. Dry cell battery production is around 14.4 million units, whereas installed capacity permits the production of 120 million units. The estimated current demand for these products is 235,260 and 100 million units respectively. The air conditioner assembly plant is similarly working a fraction of its full capacity, producing 3,840 units as opposed to the target 28,000 units. If this excess capacity was fully utilised it could satisfy local demand. The performance in terms of production of refrigerators is better: production in 1987 amounted to 14,000 units while the estimated local demand was 17,000 units. The poor performance of most enterprises in terms of capacity utilisation and meeting local demand may be explained, to a large degree, by the shortage of foreign exchange to purchase kits and components, virtually all of which are imported.

There is considerable potential to expand the production of the engineering industry. At present engineering products account for approximately 35 per cent of total imports. However, in the absence of a tool and specialised spare parts manufacturing plant the development of new engineering industries beyond the low value added generating assembly operations seems impracticable. A demonstration tool and die factory which could provide basic training in engineering skills would be an essential first step in the development of the sector. Such a workshop could also have a beneficial effect on increasing capacity utilisation rates in other branches where production has been halted by shortages of necessary spare parts.

3.8 Handicrafts

Handicrafts are the traditional industrial activity of Sudan. They have long been important as a source of employment, supplementary income for both the rural and urban poor, tools for agriculture and domestic consumer goods. Most of the enterprises producing handicrafts are very small with an average size of 5 workers. They utilise few machines and simple tools - often the products of local craftsmen themselves - and generally process local raw materials. Consequently, the degree of processing is generally relatively high though labour productivity may be low.

Table 3.6: Growth in the number of enterprises producing handicrafts, 1970/71-1987

Region	1970/71	1987	Per cent change
Khartoum	2,736	8,400	207
Central	4,928	12,320	150
Eastern	2,347	5,580	125
Northern	12,106	18,090	50
Kordofan	5,980	8,970	50
Darfur	1,825	2,737	50

Sources: Ministry of Industry, Survey of Handicrafts in Khartoum Region, 1987, Ministry of Industry estimates 1987; IDCAS, Industrial Survey, 1970/71.

The 1970/71 Survey enumerated around 19,000 establishments in this activity employing 36,000 workers and contributing SL22 million to GDP. When a survey was undertaken in 1987, using the same methods as the 1970/71 survey, the number of enterprises engaged in the manufacture of handicrafts had risen to 56,000, excluding the performance of Equatoria. The total investment in the manufacture of handicrafts is thought to exceed SL 470 million and these enterprises may employ as many as 200,000 workers. According to a 1987 Survey, 42,000 persons are employed in the production of handicrafts in Khartoum alone.

Increasingly, enterprises in the handicrafts sector are moving away from the production of traditional artefacts towards tools, spare parts and consumer products that are used by or manufactured by the modern, large-scale industrial sector. Production techniques remain simple, the tools are often primitive and raw materials are often still of local origin or recycled, but the products are well-established within the urban economy.

Clearly, the handicrafts sector offers considerable potential both as a source of employment and as an informal training ground for entrepreneurs and technicians. However, the sector has largely been ignored by the Administration. Institutional developments could greatly enhance productivity in and the development of this type of manufacturing activity. First and foremost, is the need to provide access to credit. This could be achieved by the Industrial Bank of Sudan reducing the threshold of participation and relaxing rules on guarantees so that these enterprises can become eligible for loans. Secondly, these small-scale enterprises could be assisted by the extension of privileges and protection such as "modern" sector enterprises already enjoy. Furthermore, exhibition centres could assist in the marketing of handicrafts and establish standards of production and quality control specifications.

3.9 Trade in manufactures

In 1987 manufactured and processed exports amounted to only 9.6 per cent of total exports. Most of this revenue was earned from exports of the residues of cotton oil milling (cotton oil cake and meal) and sugar refining (molasses). Given the low level of capacity utilisation in these industries there is considerable potential to increase the volume of exports. However, the expansion of production in these fields may not be economically justifiable because of the low world price of cotton and sugar.

Other potential exports, such as cotton yarn and processed leather, do not generate significant export revenues. This may be explained by both the high price and low quality of these products. Due to the level of protection from imports and scarcity rents, prices in Sudan are generally considerably higher than border prices. This discourages entrepreneurs from exporting their products. Besides, many of the products that can be sold on the domestic market do not reach international standards in terms of quality control, design and packaging. Sudan also lacks the skilled manpower needed to identify and penetrate export markets. Nor does the tariff regime provide encouragements for exporters. The multiple exchange rate system, by which exporters import components at one exchange rate and exported their products at another - less advantageous rate - inevitably depresses interest in export markets (see Section 4.2).

The government, faced with chronic balance of trade deficit, is eager to promote exports of manufactured goods in order to increase foreign exchange earnings. This would also benefit the industrial sector by increasing capacity utilisation rates. However, a concerted effort is needed if the manufacturing and processing sector is to increase exports. Potential markets have to be identified and links with importers established. This may be beyond the means of individual enterprises and this service could best be provided by a specialist organisation. Manufacturers must then be prepared to modify their products in order to meet the standards and tastes of their clients. At the same time the government must ensure that the tariff regime and foreign exchange controls do not penalise exporters. In particular, exporters must be able to recover the customs duty paid on imported components and raw materials.

Manufacturing industry's poor export performance in Sudan reflects its development along the lines of import substitution. Many enterprises have been established by importers under licence from their supplier; others have modified or copied imported products. This was a successful method of establishing an industrial base. However, the persistence of high levels of tariff protection have allowed economically marginal enterprises to survive. At the same time, high tariffs and, consequently, high rents have fostered smuggling. Many enterprises find their market share eroded by illegal imports. This has been cited as a cause of low capacity utilisation rates in the shoe manufacturing industry.

There is considerable potential for further development along the lines of import substitution. In 1987 imports of manufactured goods (excluding petroleum products and processed foods) amounted to SL1,687.9 million, 68.9 per cent of total imports. Of these imports, 74.3 per cent were capital or intermediate goods (machinery and transport equipment and chemicals) that

could not readily be manufactured in Sudan given the country's limited industrial base and, in part, because it would not be uneconomical to do so. However, 28.7 per cent of imported manufactures were consumer goods and 5 per cent were textiles, a proportion of which could be manufactured locally.

3.10 Capacity utilization and production constraints

One of the features of manufacturing industry in Sudan is the low rates of capacity utilisation. According to a recent survey of selected industries (see Table 3.7) capacity utilisation rates are as low as 5 per cent in the manufacture of sweets, 27 per cent in spinning, 12 per cent in printing and 38 per cent in dry-cell battery making. In some cases this under-utilisation of productive capacity is a result of over-capacities, where the minimum viable plant size has a capacity greater than the size of the domestic market, and enterprises have been unable to modify their production lines. More often, however, under-utilisation of productive capacity results from deficiencies in the supply side. Most enterprises have suffered from shortages of raw materials, spare parts and packaging materials, particularly where these have to be imported, leading to interruptions in production. Frequent power cuts have a similar effect. Enterprises in the food processing and textiles branches have also faced irregular supplies of raw materials from local agriculture, largely because of drought and falling agricultural output, inadequate transport facilities and the tendency of farmers to switch production from cash to food crops in the face of changing market prices.

Low capacity utilisation rates and low productivity inflate the cost of capital, which is already high because most capital goods - machinery and construction material - have to be imported. Even when operating at full capacity capital costs represent a substantial proportion of costs of the major manufacturing activities in Sudan. Any reduction in capacity utilisation rates would increase the per unit cost of capital and other fixed factors and impair profitability.

In the previous sections, reasons for weak performance in individual industries have been mentioned at several points. A 1986 document prepared by the Government and UNIDO/UNDP^{1/} summarizes the constraints for the manufacturing sector as a whole as follows:

- lack of foreign exchange required for the procurement of raw materials and spare parts;
- weak infrastructure, manifested in power supply and fuel shortages, poor transport facilities and deficiency in the provision of basic services;
- lack of capital due to reluctance of banks to finance industry and high interest rates which increased the indebtedness of the industrial enterprises;

^{1/} Government of The Sudan and UNIDO/UNDP, Crash Programme Report - Restoration of Industrial Sector, Vol. I, 1986.

- migration of skilled and trained workers to oil-producing countries and uneven distribution of manpower over industrial enterprises;
- inefficient entrepreneurship and difficulties in filling management posts;
- poor administrative and logistical support;
- complicated tax, foreign exchange, trade and licensing policies.

The next chapter will, among others, outline a number of measures formulated by the Sudanese Government to remove these obstacles to industrial development.

Table 3.7: Capacity utilization, selected industries, 1985/86

Subsector	Capacity utili- zation per cent	Subsector	Capacity utili- zation per cent
<u>A. Food & sugar industries</u>		<u>D. Engineering industries</u>	
Sugar	49	Acetylene	29
Canning	30	Batteries	21
Edible oil	6	Dry-cell batteries	8
Biscuits	20	aluminium equipment and	
Sweets	5	materials	25
Mineral drinks	40	Air coolers	13
Cigarettes	55	Zinc sheets	50
		Metallic pipes	12
<u>B. Spinning and weaving</u>		<u>E. Leather and shoes industries</u>	
Spinning	25	Tanneries	30
Weaving	28	Shoes	17
Traditional cloth	33		
Blankets	57	<u>F. Packing, printing & wood products</u>	
Knitwear	15	Packing	25
Ready-made clothes	12	Printing	12
Absorbent cotton	60	Wood products	15
<u>C. Chemicals and drugs</u>			
Drugs	21		
Plastic materials	20		
Perfumes & cosmetics	25		
Matches	22		
Tyres	85		
Soap	12		

Source: Government of the Sudan, Industrial Task Force Report, 1988.

4. POLICIES, PLANS AND INSTITUTIONS FOR INDUSTRIAL DEVELOPMENT

4.1 Development policies and planning

Sudan has a chequered history of development planning characterised by reversals of macro-economic policy and interrupted development plans. The frequent changes of direction are the basis of some of the problems of the manufacturing sector, and a short overview of policy-making during the past three decades is therefore useful.

During the period immediately following Independence, from 1956 to 1960, the government sought to encourage private investment in manufacturing industry, particularly in activities that might generate exports. Industrial policy was codified in the Approved Enterprises Act of 1956 which provided a wide range of incentives for investors and exporters. During this period a clear-cut separation existed between private and public sectors. The public sector concentrated on the provision of infrastructure and large-scale agricultural schemes. A partial transformation of the colonial industrial structure was initiated during this period, but the limited size of the market and the regional concentration of economic activity around Khartoum hampered the development of the manufacturing sector.

With the formulation and implementation of the First Development Plan covering the period 1961/62 to 1970/71, government participation in the industrial sector increased. Public factories were constructed primarily in the agro-industrial sphere, where the scale of the projects was beyond the means and competence of the private entrepreneurs, but the emphasis remained on local and foreign private sector investment. Import substitution projects, mainly consumer goods, predominated. An Industrial Bank was established to provide support services and guarantees for the acquisition of goods and services necessary for industrial establishments. The 1956 Act was replaced in 1968 by the Organization and Promotion of Industrial Investment Act which expanded the incentives for private domestic and foreign investors. It included a stipulation that government purchases would be restricted to local manufacturers.

Actual investment exceeded the targets up to the mid-1960s due to the rush of donors in the early years of Sudan's Independence. However, levels of investment soon tailed off and in 1967 the Plan was shelved. A Five-Year Development Plan covering the period 1970/71 to 1974/75 was prepared but in 1970 there was a major shift in government policy towards central planning and the plan had to be revised. Both local and foreign private enterprises were nationalised or confiscated and the share of the public sector in manufacturing increased almost overnight to 60 per cent of the total assets.

In less than two years, however, the government reverted towards a more liberal regime necessitating a further revision of the Five-Year Plan. A new act covering industrial policy and investment was promulgated in 1972, the Development and Encouragement of Industrial Investment Act, offering still more generous incentives and giving assurances against nationalization. At the same time the government began to restore nationalised enterprises to their owners. The 1972 Act also defined the regulatory powers of the Ministry of Industry and Mining particularly in the fields of pricing and the allocation of foreign exchange.

Since targets had not been met by the end of the Five-Year Plan period and foreign capital had begun to flow into Sudan from the Arab oil states in the face of the 1974 oil price rises the government extended the Plan up to 1977. By that date the government, with the assistance of its Arab donors, had conceived a new direction for Sudan's development. The aim was to make Sudan the "breadbasket of the Arab world". A \$5 billion investment programme covering a twenty five year period was prepared by the Arab Fund for Economic and Social Development (AFESD) to expand the production of wheat, sugar, vegetable oils and meat. On the industrial front the government invested in large-scale manufacturing plants in sugar and textiles. There was built-in bias towards large and capital-intensive projects. Funds needed to support such ambitious projects were not available. The Kenana sugar project was virtually the only concrete result of the investment programme. The efficiency of this project has, moreover, been impaired by poor co-ordination of raw material supplies and the limited technical and physical infrastructure of the country.

An ambitious Six-Year Plan was launched in 1978 but this soon faced financial difficulties as many Arab donors withdrew their support leaving the government to finance many projects at a time of high oil prices, interest rates and inflation. The onset of a drought exacerbated the governments financial difficulties. In March 1981 the Six-Year Plan was replaced by an IMF inspired stabilisation programme and a series of three year rolling austerity plans that sought to balance the economic structure and promote exports. While the austerity measures had a beneficial impact on the balance of payments, the shortage of foreign exchange was felt by most enterprises which went without essential raw materials, spare parts and new equipment. Industrial output was inevitably affected.

In 1984, the government announced yet another shift in policy towards the Islamisation of the economy which was to be accompanied by investment expenditures totalling SL204 million. In turn, the Islamisation policy was shelved in 1985. A new government formulated a major rehabilitation programme, the Four-Year Salvation, Recovery and Development Programme (1988/89 - 1991/92 - to be referred to as the Four Year Programme). The programme is thought to be based on the prescriptions of the IMF and the World Bank which envisage a radical overhaul of government macro-economic policies. These prescriptions include:

- austerity measures to curb the increase in current expenditures at all levels of government;
- rationalization of the financial relations between central and local government so as to limit local government's reliance on budgetary transfers;
- raising the level of taxes and certain prices charged by the public sector enterprises;
- keeping the development budget expenditures at a level that can be financed from non-inflationary domestic sources and external loans on favourable and sustainable terms;
- depreciating the value of the Sudanese pound against the dollar and taking effective measures to liberalize the economy.

Central to the IMF's policy is the liberalisation of the exchange rate and trade regime. They argue that the Sudanese Pound is overvalued due to higher rates of inflation in Sudan than in her trading partners' economies and that devaluation alone could provide sufficient incentives for agricultural producers to increase production and efficiency. Liberalization of trade and simplification of the exchange regime would allow a free flow of imports to agriculture and manufacturing to promote their growth and export potential. Inflation in Sudan, they contend, is the direct outcome of monetary disequilibrium triggered by lack of fiscal discipline. Government expenditures are rising faster than revenues and sustainable foreign borrowing. The government has increasingly resorted to borrowing from the Central Bank, and consequently increased inflationary pressures and they argue that a further devaluation will be necessary if the rate of inflation is not slowed.

Sudanese critics of these policies argue that they are inappropriate for the Sudanese economy given the low import demand elasticities and almost zero supply elasticities in the country's production structure. Furthermore, they believe that the IMF diagnosis of the Sudanese economic malaise is wrong. Inflation in their view is imported rather than domestically generated. Furthermore, the important role of the public sector is dictated by the special circumstances of the economy rather than the outcome of an inapplicable ideology. In their view there is no realistic alternative to an active public sector. The private sector's role is at best complementary to that of the public sector but cannot replace it.

The policies and measures for the industrial sector outlined in the Four-Year Plan are dealt with in section 4.3. The next section discusses the major general policy issues that determine the environment in which the sector operates.

4.2 Current general policy issues

The exchange rate

Over-valuation of the Sudanese Pound is blamed for the low international competitiveness of domestic activities. It has spawned a large underground economy with negative effects on government revenues and engendered market distortions that provide excessive rents to traders that ultimately direct capital and skills away from production into commerce. Liberalisation and unification of the exchange rate would allow it to reflect the true scarcity of foreign exchange in the economy and so encourage the reallocation of resources in the economy towards the most efficient users and uses. It would also encourage exports and increase government revenues because of the higher value of imports in local currency and if combined with trade reform, it would encourage the integration of the parallel economy into the official economy.

On the other hand, arguments can be raised against the liberalisation and unification of the exchange rate. Firstly, there is the concern that the price elasticities of import and export demands are too low to permit Sudan to reap any advantage by liberalising the exchange rate. The export demand elasticity is particularly low for agricultural products which generate most of Sudan's export earnings. Due to, among others, primitive technologies the supply response is almost nil. The adverse effects on consumer prices would

be immediate. Price increases could also be felt in the manufacturing sector as import prices are passed on to producers and consumers alike. The economy is also likely to suffer from a self-generated deterioration in its terms of trade since it will have to surrender a larger volume of exports to obtain a given volume of imports.

IMF economists counter these arguments by suggesting that the impact of adjusting to the free market rate has already taken place as importers price their products at the cost of the parallel market exchange rate and not at the official rate. Prices of these products could be moderated by reductions in tariffs that should accompany the liberalisation of exchange rates.

While this may be true, it may be stated that the beneficial effects of the liberalisation of the exchange rate will only be felt when the supply response in the economy improves. This again depends on infrastructural improvements, agricultural developments, changes in the pricing system, and so forth.

Price controls

Price controls were first introduced in 1955. The rationale is to protect the real incomes of consumers by reducing upward pressure on prices which is a consequence of the import controls and limited competition and to have a tool in the fight against inflation. Four categories of goods are distinguished: imports, domestic manufactures, agricultural commodities and strategic commodities which include sugar, wheat and petroleum products. The Central Pricing Office (CPO) of the Ministry of Commerce administers the system which works on a cost-plus principle. In the case of domestic manufactures, the setting of ex-factory prices is relegated to the Joint Price Committee which includes representatives of the Ministries of Commerce and Industry.

Allowable costs for price control purposes comprise labour costs, raw materials, water and fuel, electricity, depreciation, rent, and insurance costs. The Quality Control and Costing Office of the Ministry of Industry allows also a profit margin which is discretionary in the range of 7.5 to 15 percent. Prices may be adjusted upwards based on supporting evidence of cost increases. The system suffers from long delays of about four to six months in processing applications and from the use of commercial bank exchange rates when most imports are financed through black market foreign exchange.

The World Bank has studied the conformance of market prices with controlled prices in 1986.^{1/} They also compared actual with import prices in order to assess the magnitude of the scarcity rents arising from protection and foreign exchange scarcity. The results show a major breach of price control directives across a broad range of commodities. (The impact of the large amounts of consumer goods that enter the country illegally should also be taken into account.) For a few consumer goods such as tomato-paste and matches, the excess of actual prices over controlled prices is equal to more than double the c.i.f. import price. Typically, the excesses are between 20 and 80 per cent of the c.i.f. import prices. Only in the case of bread and soap are prices equal to the controlled prices.

^{1/} World Bank, Sudan - The Manufacturing Sector: Setting the State for Restructuring, 1987.

The results also indicate that in many cases consumers are paying a multiple of the retail prices of imports under a free trade regime; on average consumers are paying 80 per cent more than the retail cost of comparable imports.

The present document does not argue for the complete removal of price controls. They can be used selectively in areas of high priority and proven effectiveness. But price control is a temporary measure at best and in the context of shortages of administrative personnel, the opportunity cost of the price control system is high. The real issue is how to deal with scarcity, the balancing of supply and demand. Allowing the producer to increase his profits may provide him with sufficient incentives to increase production and reduce scarcity.

Protection

Domestic manufacturing activity in the Sudan is currently protected by restrictions on imports and by licensing new ventures. However, the tariff structure has been used as a means of generating revenues for the government rather than as a means of protecting industry and the negative impact of the near collapse of imports in the early 1980s has called into question the wisdom of strict import restrictions.

Nevertheless, the tariff structure provides considerable degree of protection for domestic industry. In 1986, the Ministry of Industry carried a survey of both the nominal and effective rates of protection in Sudan for the period between 1984 and 1985. The results discussed here are based on the responses of 15 large enterprises that cover the entire spectrum of manufacturing activity. They demonstrate that the level of nominal level of protection at regulated prices is 124 per cent (see Table 4.1). When the regulated prices are adjusted to take account of the rent premium the average level of protection rises to 189 per cent.

The level of protection is higher still if effective rates of protection - comparing the domestic value added with the hypothetical value added of industry if all traded goods were valued at world prices and so accommodating both output and input prices - are considered. The average level of protection at regulated prices is 240 per cent and 416 per cent at adjusted prices. In the spinning and weaving industry the effective rate of protection at adjusted prices is 1,003 per cent and 508 per cent in the vegetable oil industry.

The high level of protection afforded to many industries is far beyond the level necessary for the protection of domestic industry. It encourages inefficiency and it also has an adverse effect in discouraging investment in basic and intermediate goods industries, as the system is biased towards final consumer goods. Indeed, the tariff rate structure does not appear to be linked to any defined policy of providing incentives to particular sectors and the wide disparities between the different sectors are likely to have undesirable effects on the distribution of economic activity.

This is particularly true if one compares levels of protection in the industrial and agricultural sectors. While most industrial goods enjoy an often inordinately high level of protection, nominal rates of protection in

the agricultural sector were mostly negative when a survey was undertaken in 1981. The average for cotton, sorghum, groundnuts and sesame was -23 per cent, varying from -48 per cent for short staple cotton to zero for sorghum. Effective protection rates are also markedly lower than those for industry, averaging 1 per cent and ranging from -43 per cent for short staple cotton to 45 per cent for sorghum. This has helped to discourage a number of agricultural activities in which Sudan probably has a greater comparative advantage than some of the manufacturing activities.

Table 4.1: Nominal and effective rates of protection for industry, 1984/85
(per cent)

Industry	Nominal protection rate		Effective protection rate	
	I ^{a/}	II ^{b/}	I ^{a/}	II ^{b/}
Vegetable oil	120	208	195	508
Grain milling	104	113	106	130
Sugar	35	170	57	290
Spinning and weaving	187	286	690	1,003
Tanneries	4	4	123	123
Soap and cleaners	138	138	103	103
Cement	167	270	232	370
Weighted average ^{c/}	124	189	240	416

a/ Based on regulated prices.

b/ Based on adjusted prices.

c/ Weighted average by output at world prices.

Source: World Bank, Sudan - The Manufacturing Sector: Setting the Stage for Restructuring, 1987, pp. 35 and 36.

Industrial legislation and incentives

An entrepreneur wishing to establish a factor or to diversify into new products must acquire a license from the Ministry of Finance. These licenses have in the past been given without vetting the application, which has resulted in considerable overcapacity in some manufacturing branches. The license entitles the entrepreneur to a wide range of incentives.

There is a long history of government incentives for approved investments in the manufacturing sector. The Investment Act of 1980 identifies approved investment within a broad range of criteria and the Minister of Industry, the Secretary General for Investment and the various ministerial committees supervising the implementation of the act have broad discretionary powers. The incentives available under the legislation may be summarised as:

- Exemptions from profit taxes for a period of five years and a limitation on profit taxes for another five years;
- subsidised rent on serviced land;
- remission of custom duties on machinery, spare parts and raw materials;
- exemption from local taxes;
- reduced electricity, water and transportation charges;
- higher tariffs on competitive imports and in some cases quantitative restrictions on these imports;
- preferential buying by the public sector from local industries as long as their prices are not significantly above import prices (the cut-off point is 15 per cent).

This system of incentives has, along with price controls and tariff structure, has led to distortions in the structure of the manufacturing sector. The most obvious of these is the effective subsidy on capital investment through the remission of customs duty on equipment. This may account, to some extent, for the predominance of large-scale industrial enterprises and the low levels of employment generated by investments in the industrial sector. In addition the incentives provide subsidies on recurrent as well as startup costs through reduced utility charges. To some extent this is justifiable since infrastructure is deficient in Sudan and industries are often forced to pay for what is generally granted as a government service in other countries. On the other hand there does not appear to be any assessment of the returns generated by these subsidies at either a plant level, such as in terms of profitability, or by macro-economic criteria, such as value added generation, exports, foreign exchange savings, employment generation. Consequently, the subsidies effectively support marginal investments that provide few cost-effective benefits to the economy. It is noteworthy that several industrial enterprises have ceased operations as soon as the incentives were removed.

This has happened when customs duties exemptions were cancelled in 1985. Although exemptions were reinstated in several cases, many enterprises now have to pay high customs duties, ranging from 15 per cent for chemicals to 125 per cent for semi-manufactured items. Spare parts would pay 40 per cent or 70 per cent depending on their nature. Packaging materials would pay 70 per cent, as well as plastic raw material. Flavour or essences would pay 100 per cent. Moreover, the acquisition of import licenses is time consuming, and the manufacturer also has to open a letter of credit. The requests for opening a letter of credit for instance, have to be submitted to a special committee which distributes the foreign exchange available according to priorities set by the same committee. This cumbersome system could achieve its target of bringing the price of the US\$ down without affecting the industries if enough foreign exchange were available. This, however, is not the case. A time-consuming procedure is also needed to acquire an export license.

A thorough review of policies, especially of the incentive structure, is needed to simplify the structure of incentives. Targetting incentives towards clearly defined objectives which could be assessed, ideally in quantitative rather than qualitative terms, on a regular basis. A good case could, for instance, be made for providing additional incentives for industries engaged in the engineering sector. From the point of view of the economy this would help to increase returns. From the point of view of the government this would reduce the cost of implementing the incentive scheme and the opportunity cost of providing incentives to unprofitable investments or enterprises that can support themselves. What is needed, moreover, is an incentive structure that is stable in the long term. Repeated policy changes are a serious hindrance to the functioning of enterprises.

4.3 Manufacturing and the Four-Year Plan

A major restructuring of macro-economic and sectoral policy is needed to rehabilitate the industrial sector and set it on a path towards balanced development. This requires an integrated set of policy reforms and action programs. The basic themes of this reform are:

(a) Improvement of the infrastructure on a priority basis. Further investment in manufacturing activity will not pay unless the operating environment is improved;

(b) Improving and simplifying the administration of development and industrial promotion;

(c) Bringing the underground economy should be brought to the surface and integrating it with the official economy through increased reliance on the market. This is not to advocate the total dismantling of controls and guidance exercised by the public sector over the economy. But disregard of market signals and the suppression of market values will not solve the problems of scarcity;

(d) A taxation-tariff policy must be formulated that can reduce undesirable imports and promote exports while strengthening the role of domestic enterprise. Multiple exchange rates may have to be used to take advantage of differential supply and demand elasticities. A true scarcity value of the weighted exchange rate should guide policy-makers in choosing the direction of change in adjusting the rates. A review of the system of import licenses, taxes and subsidies might achieve some of the objectives of devaluation without its negative consequences.

(e) The incentive structure should be changed. If they need to be used then they should be targetted and simplified.

(g) Parastatals should be investigated as to their efficiency and effectiveness in implementing government policy. Nonviable establishments with low social priorities and where the causes of non-viability are internal to their operations should be liquidated; if viability can be restored by private entrepreneurs, such parastatals should be privatized. Increasing the participation of the private sector is desirable as it relieves the government of financing these entities and can engender productive and cooperative

relations between the two sectors. Essential here is the delineation of the institutional and operational framework governing the relationship of the central government with the parastatals and with the private sector in manufacturing.

(g) The bias against manufactured exports needs to be modified. Unifying the exchange rate at which imports and exports are transacted would be helpful. Exporters cannot be expected to pay for their imports at one exchange rate and receive their export proceeds at a lower rate. The current incentives in the raw materials market moreover are such as to divert resources away from manufacturing and into the direct exportation of hides and skins, for example.

(h) Rehabilitation of existing industry should precede any plans to expand further. It is necessary to review the structure and performance of the manufacturing sector in the past twenty years of development. There is also a need for reviewing policies and strategies that obviously did not work.

The Four-Year Programme addresses a number of these issues. Its objectives for the industrial sector are:

- (i) Provision of basic needs for the population and attainment of self-sufficiency in food, clothing, shelter, medicine and other essential goods.
- (ii) Concentration on industries which depend on domestic raw materials (this implies better integration of industry and primary sector activities), industries which produce intermediate goods and export-oriented industries.
- (iii) Rehabilitation of basic and strategic industries of the public and private sectors (foodstuffs, sugar, textiles, tanneries and cement).
- (iv) Improvement of productive capacities in existing industries through provision of inputs, spare parts, machinery and equipment.
- (v) Commissioning recently completed industrial public sector establishments and completion of those under implementation.
- (vi) Promotion of national research and training institutions, improvement of production techniques, support of quality control units and promotion of locally developed technology.
- (vii) Accomplishment of regional and geographic balanced development in the field of industry and restructuring of the small-scale and rural industries subsector.

Other, related, objectives mentioned are:

- protection of infant industries;
- environmental protection;
- inducing skilled emigrants to return; and

- review of the investment legislation and incentives structure, and stricter application of the rules.

The following policies and measures are to be implemented to attain these objectives:

1. Formulation of industrial investment plan which sets out priorities for industrial investment for both private and public sectors. The plan shall identify type, volume and area of investment, giving priority to the improvement of infrastructure in the industrial sector.

2. The government shall ensure complementarity between the different Government agencies involved in the industrial sector and pursue ways and means to find sound solutions for the obstacles, facing and influencing the sector in close collaboration between both the private and public sectors.

3. Provision of inputs and finance on easy terms.

4. Measures shall be taken to encourage investment in export and also in import substitution industries to match the deficit in supply of drugs, paper and plastic materials (sacks) etc.

5. Introduction of an incentive and organizational policy to attract investment in small-scale and rural industries all over the country through appropriate legislation under the supervision of the Ministry of Industry.

6. Support of the activities of research institutions involved in the development of the industrial sector.

The investment programme of the Four-Year Plan mainly focuses on rehabilitation and improved capacity utilization. Annex Table 8 shows the public investment programme for the manufacturing sector.

Two-thirds of total investment is to be spent on rehabilitation; new investment is concentrated in sugar and textile projects. Foreign financing is to provide LSl,181 million of the grand total of LSl,629 million. It must be questioned whether it is realistic to assume that - given the overall state of the economy and the political instability - foreign sources will be found to supply this large amount. If all the programmes are successful, the coverage of domestic demand for textiles is expected to increase from 70 to 83 per cent; the figures for cement would be 19 and 31 per cent, respectively. Full coverage is to be reached for shoes by 1990. Surplus production of the following years is to be exported. The same would be the case for edible oils. Again, the realism of these optimistic assumptions must be questioned.

4.4 The institutional framework

The institutional framework within which industrial policies are articulated and implemented is generally deficient, cumbersome, and poorly endowed with the requisite skills. Although there are a limited number of institutions dealing directly with the manufacturing sector there is little co-ordination between them. A particular handicap is the dearth of institutions dealing with the needs of and seeking to co-ordinate and direct the private sector investment along the lines of the government's macro-economic objectives.

Three Ministries deal with the manufacturing sector directly. Of these the Ministry of Industry is the most important. It is primarily responsible for the articulation of industrial policies and strategies in consonance with national priorities. It also discharges regulatory and monitoring functions such as granting concessions, supervising public enterprises, controlling prices, drafting foreign exchange budgets for industry, and participating in the issuing of licenses for new ventures.

The Ministry of Finance and Economy is also involved in industrial planning and policy formulation and implementation. Within the Ministry there is a Bureau of Investment and a Unit responsible for feasibility studies and project studies. The Ministry determines taxation policies and the foreign exchange rate which have an important impact on the operation of the industrial sector. It also co-operates with the Ministry of Industry in regulating the granting of concessions and in supervising price controls. The Ministry of Trade handles most issues involving imports and exports. Export promotion is particularly important for industry given its poor performance in this respect.

Other institutions involved in the promotion and finance of manufacturing industry include:

- Industrial Development Bank of Sudan which extends long term credit to industrial establishments;
- Sudanese Investment Bank which is a jointly owned by the private and public sector and finances investment projects in all sectors of the economy;
- Sudan Development Corporation (SDC) which specialises in project identification, formulation and implementation of projects and the mobilisation of both domestic and foreign capital to finance industrial and other projects particularly large-scale projects. SDC's project portfolio comprised 25 projects in the manufacturing sector in late 1985;
- Sudanese Saving Bank which taps funds from small savers for financing industrial and development projects;
- Sudanese-Kuwaiti Investment Co. which promotes joint-venture projects between the Sudan and Kuwait;
- Arab Authority for Agricultural Investment and Development (AAAID) which had envisaged very ambitious plans to wed Arab capital, western technology and Sudanese resources to transform Sudan into a breadbasket for the whole region.

In the mid-1980s, there were 27 banks operating in Sudan with over 200 branches. However, 147 branches are concentrated in the capital and there are only 14 in the whole of Southern region. This handicaps the mobilisation of domestic savings. In the past decade there has been a significant growth in the number of Islamic banks which neither pay nor charge interest. This has encouraged many small savers to deposit their money in the banking system, some of them for the first time. On the other hand, the gradual Islamisation of the banking system has encouraged capital flight.

In order to mobilise the banking system's financial resources for development the Bank of Sudan has mandated a credit allocation system whereby financial systems are directed to allocate between 10 and 25 per cent of their credit ceilings to agricultural and industrial projects. Compliance with this scheme has, however, been disappointing to date. Industrial credit is only expanding slowly; profitable industries find it difficult to acquire credit.

There is a National Council for Research which co-ordinates research activities in various research institutions such as the Scientific and Technological Research Council and the Industrial Research and Consultancy Centre. These research institutions could form a nucleus for the development of a productive research activity. At present these institutions are barely operational. The pool of skilled and professional staff, particularly in the Universities, has been drained by emigration to the Gulf. Now that some of these talents are filtering back there is an opportunity to revive and promote the research institutions activities.

5. RESOURCES FOR INDUSTRIAL DEVELOPMENT

5.1 Human Resources

Sudan's population is estimated at about 23 million. Before the drought the population growth rate was thought to be 2.8 per cent. At this rate the population will increase to 37.3 million by the year 2000. Although the population density for the country as a whole is extremely low at about 9 persons per sq km, large areas of desert are unpopulated and about half the population lives on less than 15 per cent of the land. Since Independence there has been a steady drift of rural inhabitants to the urban areas, with levels of urbanisation rising from 8.3 per cent in 1956 to 17.6 per cent in 1972 and now thought to be about 30 per cent. Over 10 per cent of the population live in the capital city's three towns: Khartoum, Omdurman and Khartoum North. The pace of urbanisation has been accelerated by the droughts and famines of recent years since the food distribution system is better in the cities. Approximately 1 million refugees have arrived in the capital alone, adding a heavy burden to the city's over-stretched infrastructure and swelling the ranks of the urban unemployed.

According to International Labour Office estimates the labour force totalled 5.7 million in 1980, which represents 30 per cent of the population. This included about 300,000 unemployed workers - 5.3 per cent of the labour force - and about 250,000 Sudanese working abroad, mostly in other Arab countries. The number of emigrant workers increased during the early 1980s and at one time represented over 60 per cent of the stock of professional and technically trained manpower in Sudan. Inevitably this haemorrhage of skilled workers adversely affected the country's development prospects, particularly in the industrial sector. On the other hand the flow of migrants' remittances has been an important source of foreign exchange and the loss of up to 5 per cent of the labour force may have helped keep the unemployment rate below 6 per cent during the early 1980s. With the downturn in economic activity in the Gulf States, emigrants (especially those with lower skills) are returning home. Together with the rapid pace of urbanisation, this is thought to have increased levels of unemployment significantly.

Agriculture remains the most important source of employment, accounting for 66 per cent of the work-force in 1979/80 (see Table 5.1). Most of these were small-scale farmers, many of whom operate at a subsistence level. Industry's contribution to employment was insignificant at 3.5 per cent. Services on the other hand provide 13 per cent of employment, with the government accounting for approximately 5 per cent of total employment. This proportion is thought to be growing rapidly: between 1976/77 and 1979/80 employment in the services sector increased by 58 per cent. Recent data on employment are not available.

Levels of educational achievement are very low in Sudan. Illiteracy rates are estimated at 82 per cent for females and 55 per cent for males. What is more education enrolment has not kept pace with population growth. In 1982 there were 8,105 primary, intermediate and secondary schools with a total enrolment of 1.93 million pupils, of whom 36 per cent were girls. There are also six major universities of which two are technically oriented (one at Gezira and the second at Juba). In addition, there are nine colleges of further education. The total post secondary enrolment was less than 30,000 students in the early 1980s of whom 20 per cent were female.

There is an acute shortage of technicians and vocationally trained manpower at every level. Training is provided by only a few institutions such as the handicrafts centre, the Khartoum centre for vocational training and several training centres that have been set up with UNIDO assistance such as the Sennar training centre, at the Sennar sugar factory. The various Universities also provide training in the fields of management and engineering. However, the number of graduates, particularly from the vocational training institutes, is insufficient to meet the needs of the industrial sector. In an attempt to address this problem the government sought to restructure the education system during the early 1980s so that the skills of graduates at every levels would be more appropriate to the country's economic development needs.

Table 5.1: Sectoral distribution of employment, 1979/80

Sector	(In thousands) Per cent	
Agriculture	3,432.6	65.8
Industry and mining	183.3	3.5
Utilities	59.2	1.1
Construction	107.6	2.1
Commerce and finance	220.8	4.2
Transport & communications	198.8	3.8
Services	679.8	13.0
Unallocated	340.5	6.5
Total	5,222.6	100.0

Source: World Bank, Sudan: Pricing Policies and Sectoral Balances, 1983.

5.2 Agricultural resources

About a third of Sudan's total area of 2.5 million sq km is considered suitable for some form of agricultural use but only a fraction of this land is currently under cultivation. Of this total about 86 million feddans (35.1 million hectares) are arable land but there are wide variations in the cropping pattern, yields and degree of commercialisation between the agricultural regions and the traditional rainfed, mechanised rainfed and irrigated sub-sectors.

The traditional rainfed sub-sector covers an area of over 9 million feddans spread throughout the country and supports perhaps two thirds of the rural population. It is thought to produce much of the dukhn (bulrush millet) and dura (sorghum) grown in Sudan, and some sesame, groundnuts and gum arabic, though production is, for the most part, at a subsistence level. Few inputs are used and most farmers practice shifting cultivation on account of the unreliability of the rainfall and poor quality of the soils. Although all unregistered land belongs to the state under the Land Act of 1970 customary

rights of land usage have evolved. Land generally reverts to the community when left fallow. Under these circumstances there appears to be little opportunity to increase output or develop this sector as a source of raw materials for industry.

The mechanised rainfed sector covers about 10 million feddans and is geographically confined to the western and eastern regions of the country extending along the savanna belt - Sudan's granary. Sorghum and sesame are the main crops and production is market-oriented. Unfortunately, the sector expanded more rapidly than was consistent with good farming practices during the 1980s. Over-cultivation, short and bare fallows and heavy machinery all took their toll on the soil and when the drought came in 1984/85 wind erosion became environmental problem.

Approximately 4 million feddans are irrigated, mostly along the banks of the two Niles. The main crops are cotton, sugar and groundnuts, much of which is destined for export, and sorghum and wheat. There are four important irrigation projects. The largest and oldest is the Gezira Project covering an area of over 2 million feddans south of Khartoum between the Blue and White Niles. Over 100,000 farmers and their families operate the scheme in partnership with the Gezira Board - a parastatal organisation. The 1977 irrigation project at Rahad near the Ethiopian border brought more than 300,000 feddans under cultivation. The Rahad project produces primarily cotton, groundnuts, fruits and vegetables. So far it has achieved the highest yield per hectare thanks to a new incentive scheme that allocates the farmer more than half the harvest. The other large-scale projects are at Wadi Halfa and on Kasim el-Girba, Jongeli Canal in the Southern region. The latter project would bring another 300,000 feddans into cultivation on the west bank of the river Nile. The project has been shelved pending a review of environmental impact. The area under irrigation could probably be expanded considerably: it is estimated that only 50 per cent of the country's water resources are being used.

Notwithstanding the considerable investment in irrigation the agricultural sector is characterised by low productivity. The average yield of sorghum in Sudan is only 16 per cent of the highest yield norms achieved on an international basis, while wheat achieves only 30 per cent of the international norm, groundnuts 33 per cent and cotton lint 67 per cent. This reflects the wide variations in crop yields in the rainfed sector due to climatic conditions, the limited use of fertilisers, herbicides and pesticides and the fact that the methods of cultivation chosen, particularly in the "modern" sector, are often ill-adapted to the environment.

The most important food crop cultivated is dura (sorghum), which is also the second most important export commodity in normal rainfall years. Over 90 per cent of the sorghum is cultivated on rainfed sites and so production varies widely from year to year. Wheat is also an important food crop though Sudan currently produces less than half of its domestic consumption. Imports of wheat have increased under pressure of an increasing urban demand: where bread has been adopted by many as a staple. Wheat production in Sudan is costly and inefficient, but the government feels the need to balance security of supply and the need to diversify away from cotton under the pretext of efficiency arguments.

Table 5.2: Area and output of selected crops, 1981/82 - 1986/87
('000 feddans and '000 tons)

Crop/Year	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
Cotton						
- area	863	933	954	857	788	883
- output ^{a/}	823	1,167	1,006	860	720	693
Dura (sorghum)						
- area	9,254	8,665	8,932	7,987	12,875	11,813
- output	3,345	1,965	1,828	1,097	3,542	3,277
Groundnuts						
- area	2,346	1,862	1,834	1,708	951	1,289
- output	721	497	413	378	274	378
Sesame						
- area	1,971	1,599	2,177	1,828	2,474	2,612
- output	242	163	206	130	131	264
Wheat						
- area	354	233	349	115	360	282
- output	163	141	169	79	199	157

Source: Ministry of Agriculture and Irrigation.

a/ '000 bales.

Cotton is the most important product cash crop. The country is the world's largest producer of long staple cotton. However, production and exports have fluctuated widely (see Table 5.2). Production peaked at 1.17 million bales in 1982/83 but declined during the drought years and as world prices of cotton tumbled. A plant disease also infected the crops in 1984 and contributed to the decline. Production is currently on the rise again following an intensive rehabilitation program and favourable climatic conditions. Higher world prices have encouraged improved and this caused more land to be put under cultivation.

Exports of Gum arabic, the resin of Acacia senegal which is widely used in the chemical and food products industries, earned \$142 million in 1986 and \$267 million in 1987 making it the second most important export commodity. Sudan is also the world's largest producer of edible gum accounting for 92 per cent of world production of this commodity. In recent years, however, the market for both products has been eroded by the production of artificial substitutes. Much of the output comes from "wild" trees. There may be scope for increasing production and reducing costs by increasing the area under commercial plantations.

Sesame is also an important export crop that has increased in importance steadily since the early 1970s. In 1985/86 exports earned almost \$100 million, making it the third most important export commodity. Locally it is used as a source of vegetable oil.

Sudan is also the second largest African producer of groundnuts after Senegal. The 1980s witnessed a drastic decline in the area under groundnuts cultivation as irrigated land was shifted towards cotton production following dramatic declines in world groundnut prices and the spread of the aflatoxin disease which inflicted large losses in crops, particularly in the west of the country. Between 1979/80 and 1986/87 the area under groundnuts cultivation fell from 2.35 million feddans to 1.22 million and production fell from 852,000 tons to 454,000 tons. Groundnut exports earned only \$2.5 million in 1986 compared with \$57.4 million in 1981.

Besides the established cash crops in Sudan, the potential to produce rice, coffee, and tea is considerable in the South. Unfortunately, political troubles have hindered the government's efforts to increase the production of these crops.

About forty per cent of the total area of the country is classified as grazing land: much of this is semi-arid scrub in the north of the country and seasonal swamp in the south. These grazing lands support a livestock population of 20.5 million heads of cattle, 19.3 million sheep, 13 million goats and 2.7 million camels. Productivity and herd take-offs are, however, low. Most of the herds are owned by nomads and livestock herding is still a largely subsistence activity. Besides herdowners regard their herds as a mark of wealth and are reluctant to sell animals. Consequently, the number of animals brought to market is far below the potential and the quality is generally poor. The predominantly social - rather than economic - motivation for herd ownership must be seen as a major constraint in the development of livestock products processing industries. It also has environmental implications since it has encouraged overstocking and led to desertification in large areas of the country.

5.3 Energy

In most of the rural communities and amongst the poor of the urban areas wood remains the most important source of fuel. This has precipitated an environmental crisis on the outskirts of the urban centres and around many villages where much of the vegetation has been removed paving the way for desertification. The further diffusion of new sources of energy, such as electricity and petroleum products, is a matter of urgency. The potential for solar energy has apparently not been tapped yet.

Electricity generating capacity in Sudan is divided equally between thermal generation (520 MW) and hydro-power (515 MW). This high degree of dependence on hydro-electric generating capacity power is a major problem because the Blue Nile grid is dependent on the seasonal flow of the Blue Nile. During the rainy season, when the demand for electricity peaks, water is passed through the Roseires dam without generating electricity for fear that the rapid flow of water during this season, full of debris and silt, could damage the turbines. Power interruptions during this season are common and cause interruptions in production in industrial plants. This has led many enterprises to install their own generators: private generating capacity has increased at the rate of 70 per cent per year since 1978. But the cost of this private generation is at least 50 per cent more than that of public utilities.

Increased generating capacity has been planned. The Blue Nile grid is expected to increase by 250 MW. A 20 MW extension to the Burri thermal power station is now on stream and another 40 MW was commissioned later in 1988. An extension of 90 MW of the Khartoum North power station is under preparation. These investments have improved the situation but further generating capacity is needed. The concentration of the electricity network in the main urban centres is an important constraint on the locational flexibility of manufacturing industry. Extension of the grid will, however, take second place to increasing capacity for some time to come.

Oil exploration in Sudan began in 1973 and by 1983 a number of international oil companies were active, among them: Standard Oil, Chevron, Phillips, Total, Texas Eastern, Union Texas and Sun Oil. Only Chevron is known to have discovered oil in commercially exploitable quantities in the Unity field in the Southern region with confirmed flows of 50,000 barrels per day. In May 1987, the Ministry of Energy and Mining reported that Sudan's confirmed oil reserves are two billion barrels out of which 500 million are recoverable commercially. Given a domestic consumption level of 100,000 barrels a day this would meet local demand for only a decade.

The government initially planned to build a refinery at Kosti but shelved the plan as finance was difficult to arrange and opted instead to build a 1400 km pipeline to Port Sudan. Then, in February 1984, Chevron withdrew from the Unity field following an attack on their installation. There appears to be little prospect that exploration and drilling for production will resume in the immediate future.

5.4 Mineral resources

Until very recently the chromite deposits in the Ingessana Hills close to the Ethiopian border were the only commercial mining activity in the country. Reserves are believed to be around one million tons of high quality chromite. A feasibility study in the 1970s by a Japanese concern had recommended the mining of 150,000 tons per year but production is currently only 10,000 to 15,000 tons/year, all of which is exported. The Sudanese Mining Company attempted to expand its mining activity but had failed to raise the requisite finance.

Gold is now mined at the Gebeit gold mine in the Red Sea Hills. The mine, reopened and developed by a joint venture between Greenwich Resources and the Sudanese Mining Company, has proven reserves of 928,000 tons of ore with an average gold content of 15.3 grammes per tonne. This includes 363,000 tons of ore averaging 32.2 grammes per tonne which is considered reasonably high by world standards. Other gold mines include the mine in the Ariab area which is scheduled to produce 5 tons of gold per year in 1992 and the Hassai mine where a pilot plant has been operating since 1987. The reserves at Hassai are estimated to exceed 1.8 million tons of ore containing 13,000 kg of gold. The success of the Gebeit project has encouraged other mining companies to enter into joint venture agreements with the Sudanese government to exploit the newly discovered gold wealth. The Dublin based Kenmore Resources has entered into a joint venture agreement with SMC to develop the Aberketeib mine in the Red Sea.

Gold and chromite are the only two minerals currently mined in Sudan. Other minerals are known to exist including silver, iron, copper, lead, mica, asbestos, talc, tungsten, zinc, diamonds and even uranium. As yet, however, there has been no systematic study of the country's mineral wealth. The French government Bureau des Recherches Geologique et Minieres (BGRM), working with the government of Sudan has found several other minerals in the Red Sea Hills. They identified a rich polymetallic deposit of silver, gold, copper, and zinc but no economic evaluation has yet been undertaken. A geological survey followed up by economic feasibility studies might prove a remunerative investment in the long term.

5.5 The role of technical co-operation in industrial development

The 1988-1991 UNDP Country Programme with a US\$ 33.9 million budget, concentrates its resources on village-based development and regional planning. The role of manufacturing in the successive country programmes has diminished progressively. Under the present programme, cottage industries are to be strengthened as part of overall local or regional development schemes. Only some US\$360,000 is to be spent on new, specifically industrial projects. The execution of a US\$2 million small-scale industry project, formulated by UNIDO, is envisaged, but no spending for this project is indicated in the current country programme budget.

Annex B presents a list of the approved and/or operational technical projects of UNIDO. The largest category of projects deals with skill/management improvement. Other projects focus on planning, improving the industrial information base, and investment advisory and marketing services. Two projects deal directly with production. One of these is part of an East African regional project to strengthen the leather industry. The potential of the industry has been neglected in Sudan. Multilateral and bilateral technical assistance inputs could play a significant role in revitalizing the Sudanese manufacturing sector.

ANNEX A

STATISTICAL TABLES

Table A-1: Public sector financial operations, 1982/83-1986/87
(SL million)

	1982/83	1983/84	1984/85	1985/86	1986/87
Current revenue of which:	1,251.7	1,469.0	1,485.5	1,790.4	2,741.8
- Direct taxes	171.2	404.5	300.5	351.6	407.2
- Indirect taxes	742.4	839.3	969.6	1,222.6	1,357.5
- Other	338.1	224.6	215.4	216.2	977.1
Current expenditure of which:	-1,118.3	-1,642.7	-2,512.2	-3,378.3	-4,287.0
- Economic services	50.3	74.3	196.0	208.0	313.0
- Social services	45.9	69.9	160.8	182.0	274.4
- Loan repayments	152.3	212.0	118.0	465.4	474.4
- Defence and security	181.8	260.6	462.0	473.1	650.0
- Local government	178.9	270.3	360.5	557.0	1,003.3
- Other	509.1	755.6	1,214.6	1,492.8	1,571.9
Current balance	133.4	-173.7	-1,026.7	-1,587.9	-1,545.2
Development expenditure	-329.0	-483.0	-453.0	-369.1	-1,179.9
- Agricultural sector	112.0	135.4	139.1	96.3	274.8
- Industrial sector	74.0	119.2	110.1	74.6	285.5
- Transport & communications	80.5	67.6	52.1	57.9	224.2
- Services	37.0	59.4	54.3	32.5	111.0
- Other	25.5	101.4	97.4	107.8	284.4
Public entities position in the banking system of which:	418.2	892.6	412.0	887.1	1,655.6
- Sudan Gezira Board	115.8	144.4	127.1	287.9	478.4
- PAPC & ARC	140.6	142.0	-	-	-
- Central electricity & water corporation	2.6	10.2	4.2	23.5	17.5
- Sudan Railways	44.9	51.9	19.9	19.2	34.0
- Other	114.3	544.1	260.8	556.5	1,124.7
Public sector overall position	-453.9	-753.9	-1,543.5	-2,026.5	-2,747.1
Financing of deficit	453.3	753.9	1,543.5	2,026.5	2,747.1
- External loans	142.0	571.2	869.7	1,213.2	1,222.0
- Bank lending	311.3	182.7	673.8	813.3	1,525.1

Source: Bank of Sudan.

Table A-2: Balance of payments, 1983-1986
(US\$ million)

	1983	1984	1985	1986	
Merchandise exports f.o.b.	514.2	519.0	444.2	326.8	
Merchandise imports f.o.b.	-703.2	-599.8	-579.0	-633.7	
Trade balance	-188.9	-80.8	-134.8	-306.9	
Exports of services & IPD	295.1	268.2	386.3	228.8	
Imports of services & IPD	-571.5	-459.1	-457.1	-273.1	
Net private transfers	245.8	276.8	248.6	89.3	
Net official transfers	-	20.3	108.6	244.2	
Balance on current account	-219.5	25.4	151.7	-17.8	
Direct investment	-	9.1	-3.0	-	
Other long-term capital	1.1	-76.3	-106.9	-111.0	
Short-term capital	-140.3	-77.7	-336.0	16.0	
Balance on capital account	-139.2	-154.0	-445.9	-95.0	
Errors & omissions	175.8	-1.5	-116.3	-89.3	
Counterpart items	29.7	40.9	-81.9	-74.7	
Exceptional financing	12.1	107.1	420.8	247.6	
Liabilities constituting foreign authorities' reserves	14.0	-	-	-	
Change in reserves		127.1	-26.8	71.7	29.2

Source: IMF, International Financial Statistics, 1987.

Table A-3: Composition of exports, 1982-1987
(SL million)

Main commodities	1982	1983	1984	1985	1986	1987
Cotton	121.1	396.0	405.0	374.3	366.7	455.2
Gum arabic	40.1	76.2	66.4	66.0	141.7	267.1
Groundnuts	33.2	17.5	26.8	23.1	2.5	10.0
Sesame	38.1	70.2	96.1	97.8	58.9	134.8
Sheep and lamb	59.0	72.6	80.9	145.0	66.8	38.9
Cake and meal	12.3	22.4	23.1	1.8	8.1	15.5
Total	483.1	810.7	817.7	844.7	833.2	1,497.0

Source: Bank of Sudan.

Table A-4: Composition of imports, 1982-1987
(SL million)

Main commodities	1982	1983	1984	1985	1986	1987
Tea	17.0	40.2	30.0	94.7	71.9	39.8
Wheat	22.3	52.2	38.2	78.6	57.0	199.5
Sugar	66.0	31.5	18.7	1.0	0.02	52.6
Other foodstuffs	96.1	128.5	109.1	214.0	236.2	121.6
Machinery & equipment	186.4	266.8	217.2	354.0	405.7	484.9
Vehicles & equipment	160.5	173.5	148.8	241.6	434.1	369.0
Medicines & chemicals	99.1	213.9	182.2	261.8	341.2	248.1
Textiles	30.1	30.7	23.9	34.2	71.1	84.9
Petroleum products	328.8	448.0	409.1	298.7	257.6	483.4
Manufactured goods	180.9	344.3	279.0	514.6	481.4	501.0
Drinks and tobacco	17.4	20.7	28.5	15.8	14.3	13.7
Total	1,213.8	1,760.9	1,490.8	2,128.8	2,402.2	2,612.9

Source: Bank of Sudan.

Table A-5: Sudan's main trading partners, 1985-1986
(percentage)

Country	Exports to			Imports from		
	1985	1986	1987	1985	1986	1987
Saudi Arabia	20.1	13.5	9.5	14.0	14.9	21.0
United Kingdom	2.7	4.1	8.2	11.3	11.8	10.4
FDR Germany	5.7	5.7	7.3	8.7	8.5	7.3
USA	3.3	5.4	4.7	7.6	7.7	10.4
Netherlands	0.3	1.6	10.4	5.2	7.1	4.5
Japan	7.2	6.7	6.3	8.9	5.0	7.4
Belgium	1.6	1.6	5.1	4.0	4.4	4.8
Egypt	10.0	8.1	3.5	1.8	4.2	6.5
France	2.5	5.7	4.0	5.0	3.6	3.5
Italy	5.5	7.1	10.8	3.7	3.3	3.4

Source: Bank of Sudan.

Table A-6: Sudan's gross official development assistance, 1982-1986
(SL million)

Source	1982	1983	1984	1985	1986
Bilateral of which:	537.0	1,010.0	545.7	952.4	715.0
- USA	131.0	158.0	145.0	379.0	149.0
- FDR Germany	56.8	110.7	53.2	79.0	60.9
- Italy	15.4	96.7	11.3	99.3	93.3
- United Kingdom	68.7	48.8	36.7	54.8	33.5
- Japan	9.9	25.5	28.8	25.8	32.7
- Netherlands	26.3	34.4	28.0	27.8	52.5
- OPEC countries	16.4	450.2	128.0	218.2	233.4
Multilateral of which:	224.5	169.8	199.0	270.7	328.4
- UNHCR	24.9	29.9	47.3	99.1	58.1
- EEC	41.3	36.7	28.0	62.1	86.2
- IDA	88.5	55.0	79.3	36.1	64.3
- WFP	9.9	10.5	17.1	40.3	19.9
- UNICEF	8.5	6.6	6.2	7.6	12.9
Total of which:	761.6	1,179.8	744.7	1,223.0	1,043.4
- Grants	531.7	573.3	485.2	978.9	829.0

Source: OECD, Development Assistance Committee.

Table A-7: Sudan's external debt, 1982-1987
(US\$ million)

	1982	1983	1984	1985	1986	1987
Total, including undischursed	6,070	6,535	6,900	7,385	7,984	9,906
Disbursed only	5,165	5,728	6,151	6,519	6,954	7,876
of which:						
- official	4,008	4,867	5,156	5,426	5,683	6,119
- multilateral	863	907	974	1,060	1,188	1,359
- bilateral	3,145	3,960	4,182	4,365	4,497	4,841
- private	1,157	861	995	1,093	1,217	1,677
- suppliers	93	11	10	9	4	4
- financial markets	1,063	850	985	1,084	1,267	1,677
Debt service	115	98	84	112	207	48
- principal	99	60	61	39	161	30
- interest	17	38	23	73	46	18
Debt service ratio (%)	11.2	7.9	6.3	9.0	24.7	6.8
Disbursed debt/GNP (%)	71.1	81.6	95.4	97.4	101.8	97.3
Concessional loans/ disbursed debt (%)	47.7	50.5	52.8	50.7	49.1	46.6
Variable interest rate loans/debt (%)	13.9	15.2	15.4	14.2	13.4	-

Source: World Bank, World Debt Tables, 1988.

Table A-8: The Four Year Programme for Salvation, Recovery and Development, 1988/89-1991/92

Name of Project	1988/89			1989/90			1990/91			1991/92			Total		
	L	F	T	L	F	T	L	F	T	L	F	T	L	F	T
1. <u>Spinning & weaving projects</u>															
A. <u>Ongoing projects</u>															
Spinning & weaving and mills	10.1	36.4	46.5	15.8	25.6	41.4	20.0	27.4	47.4	29.8	65.9	95.7	75.2	156.6	232.0
Gadw Spinning Mill	3.0	4.5	7.5	4.0	8.0	12.0	1.5	9.0	10.5	1.5	10.0	11.5	10.0	31.5	41.5
Gadw Weaving Mill	3.0	4.5	7.5	5.0	7.0	12.0	2.0	12.0	14.0	2.0	8.0	10.0	12.0	31.5	43.5
Total (A)	16.1	45.4	61.5	24.8	40.0	65.4	23.5	48.4	71.9	33.3	83.9	117.2	97.2	219.8	317.0
B. <u>New projects</u>															
Central Workshop Training Centre	5.0	-	5.0	3.0	10.0	13.0	3.0	10.0	13.0	2.5	11.5	14.0	13.5	31.5	45.0
quality control	1.0	-	1.0	3.0	9.0	12.0	3.0	9.0	12.0	3.0	10.0	13.0	10.0	28.0	38.0
Arab weaving project	1.0	-	1.0	14.0	21.0	35.0	5.0	31.0	36.0	5.0	28.0	33.0	25.0	80.0	105.0
Total (B)	7.0	-	7.0	20.0	40.0	60.0	11.0	50.0	61.0	10.5	49.5	60.0	48.5	13.5	188.0
2. <u>Sugar projects</u>															
A. <u>Ongoing projects</u>															
Guneid sugar project	5.1	23.1	28.2	4.5	20.6	25.1	4.3	19.8	24.1	6.0	24.1	30.1	19.9	87.6	107.5
New Halfa project	5.1	23.1	28.2	4.5	19.7	24.2	4.3	19.0	23.3	4.1	21.4	25.5	18.0	83.2	101.2
Sennar sugar project	6.9	27.4	34.3	6.3	26.9	33.2	6.0	25.8	31.8	5.3	21.1	26.4	24.5	102.2	125.7
Assalays sugar project	6.9	27.4	34.3	6.2	25.1	31.3	6.0	24.3	30.3	6.3	15.3	21.6	25.4	92.1	117.5
Sennar sugar training centre	0.9	6.0	6.9	0.9	5.3	6.2	0.9	5.2	6.1	3.7	6.1	9.8	6.4	22.6	29.0
Sugar research station	0.8	0.9	1.7	0.9	0.9	1.8	0.9	0.8	1.7	1.0	2.8	3.8	3.6	5.4	9.0
Sugar project implementation committee	0.9	3.4	4.3	0.9	2.7	3.6	0.9	2.6	3.5	4.6	4.8	9.4	7.3	13.5	20.8
Total (A)	26.6	111.3	137.9	24.2	101.2	125.4	23.3	97.5	120.8	31.0	95.6	126.6	105.1	405.6	510.7

Table A-8 (continued)

Name of Project	1988/89			1989/90			1990/91			1991/92			Total		
	L	F	T	L	F	T	L	F	T	L	F	T	L	F	T
B. New projects															
Melut sugar project	2.6	-	2.6	7.7	8.7	16.4	8.7	8.6	17.3	10.0	27.8	37.8	29.0	45.1	74.1
Ethanol manufacturing	0.8	-	0.8	11.9	24.4	36.3	-	-	-	-	-	-	12.7	24.4	37.1
Paper manufacturing	-	-	-	1.0	-	1.0	11.2	23.3	34.5	14.1	39.0	53.1	26.3	62.3	88.6
Total (B)	3.4	-	3.4	20.6	33.1	53.7	19.9	31.9	51.8	24.1	66.8	90.9	68.0	131.8	199.8
Total sugar projects															
Total (A) + (B)	30.0	111.3	141.3	44.8	134.3	179.1	43.2	129.4	172.6	55.1	162.4	217.5	173.1	537.4	710.5
3. Rehabilitation of industrial corporations															
Food industries															
A. Ongoing projects															
Karlma canning factory	2.0	8.0	10.0	3.0	7.0	10.0	2.0	9.0	11.0	3.0	11.0	14.0	10.0	35.0	45.0
Kassala onion dehy- dration	2.0	8.0	10.0	2.0	6.0	8.0	1.0	4.0	5.0	5.0	6.0	11.0	10.0	24.0	34.0
Babanyso milk factory	2.5	6.5	9.0	2.0	6.0	8.0	1.0	5.0	6.0	-	4.5	4.5	55.0	22.0	27.5
Wau canning factory	1.5	6.5	8.0	2.0	5.0	7.0	1.5	4.0	5.5	1.6	8.5	10.1	6.6	24.0	30.6
Nzara Agro. industrial complex	2.1	5.4	7.5	1.8	3.8	5.6	1.1	2.3	3.4	1.0	4.0	5.0	6.0	15.5	21.5
Total (A)	10.1	34.4	44.5	10.8	27.8	38.6	6.6	24.3	30.9	10.6	34.0	44.6	38.1	120.5	158.6
B. New projects															
Syrup concentrates project	3.0	7.0	10.0	3.0	8.0	11.0	1.0	12.0	13.0	8.0	8.0	16.0	15.0	35.0	50.0
Atbara cement factory	3.0	9.0	12.0	4.0	12.0	16.0	4.0	8.0	12.0	-	-	-	11.0	29.0	40.0
Tanneries rehabi- litation	4.0	7.0	11.0	4.0	8.0	12.0	5.0	10.0	15.0	5.0	10.0	15.0	18.0	35.0	53.0
Khartoum central foundry	3.0	-	3.0	-	-	-	-	-	-	-	-	-	3.0	-	3.0
New projects	-	-	-	5.0	7.0	12.0	5.0	7.0	12.0	5.0	8.0	13.0	15.0	22.0	37.0
Total of corporations	23.1	57.4	80.5	26.8	62.8	89.6	21.6	61.3	82.9	28.6	60.0	88.6	100.1	241.5	341.6

Table A-8 (continued)

Name of Project	1988/89			1989/90			1990/91			1991/92			Total		
	L	F	T	L	F	T	L	F	T	L	F	T	L	F	T
4. <u>Studies and research</u>															
A. <u>Ongoing projects</u>															
Industrial and Research Consultancy Centre	2.1	1.7	3.8	1.1	1.7	2.8	1.3	1.7	3.0	1.0	1.9	2.0	4.6	7.0	11.6
B. <u>New projects</u>															
Promotion of research National Centre of Quality and Control	0.5	-	0.5	0.5	1.0	1.5	1.0	-	1.0	1.5	0.5	2.0	3.5	1.5	5.0
The National Maintenance Training Centre	-	-	-	0.3	-	0.3	0.5	-	0.5	0.7	1.0	1.7	1.5	1.0	2.5
Sectoral research and other studies	-	-	-	0.3	-	0.3	1.0	-	1.0	0.2	0.5	0.7	1.5	0.5	2.0
Total of research and studies	2.6	1.7	4.3	2.7	2.7	5.4	4.3	1.7	6.0	3.0	3.9	6.9	12.6	10.0	22.6
5. <u>Regional Development Projects</u>															
Grand total (1 + 2 + 3 + 4 + 5)	82.2	219.2	301.2	122.7	285.7	408.4	107.9	300.3	408.2	134.9	376.0	510.9	447.7	1181.4	1628.9

Source: Government of the Sudan, The Four-Year Salvation, Recovery and Development Programme, 1988/89 - 1991/92.

Note: L = local finance, F = foreign finance, T = total.

ANNEX B

THE LIST OF ON-GOING AND/OR APPROVED TECHNICAL
CO-OPERATION PROJECTS OF UNIDO

Republic of the SUDAN

<u>Project Number</u>	<u>Backstopping Responsibility</u>	<u>All.Acc.Code</u>	<u>Project Title</u>
XP/SUD/88/067	IO/IIS/INFR	J12101	Sudanese Industries Association data unit
XA/SUD/89/606	IO/IIS/IMR	J12207	Improvement of management in the textile industry
US/SUD/87/142	IO/IIS/PLAN	J12413	Master plan for engineering industries
DP/SUD/80/006	IO/IIS/PLAN	J12414	Industrial survey of the Sudan
US/SUD/88/100*	IO/T/AGRO	J13104	National hides and skins, leather and leather products improvement scheme - East Africa (related to US/RAF/88/100)
UC/SUD/86/026	IO/T/CHEM	J13424	Field test programme for the production of charcoal fuel from cotton stalks using small-scale, decentralized techniques (multifund to XP/SUD/87/050)
XA/SUD/89/607	IO/T/CHEM	J13424	Marketing study for charcoal fuel from cotton stalks waste
DP/SUD/85/011*	IO/SD/FEAS	J14102	Investor advisory assistance service
TF/SUD/86/001	IO/SD/FEAS	J14102	Associate expert
TF/SUD/86/002	IO/SD/FEAS	J 4102	Associate expert
SF/SUD/86/003*	IO/IIP	J19200	Training component of the Sudan Sugar Rehabilitation Project (phase I - 1988) (see also XP/SUD/88/100 and XP/SUD/88/122)
XP/SUD/88/122	IO/IIP	J19200	Training component of the Sudan Sugar Rehabilitation Project (support to SF/SUD/86/003, related to XP/SUD/88/100)
XP/SUD/89/055	PPD/AREA/LDC	E02600	Visit to UNIDO of Minister of Industry of the Sudan

* Large-scale project (= total allotment \$150,000 or above)

** Total allotment \$1 million or above

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