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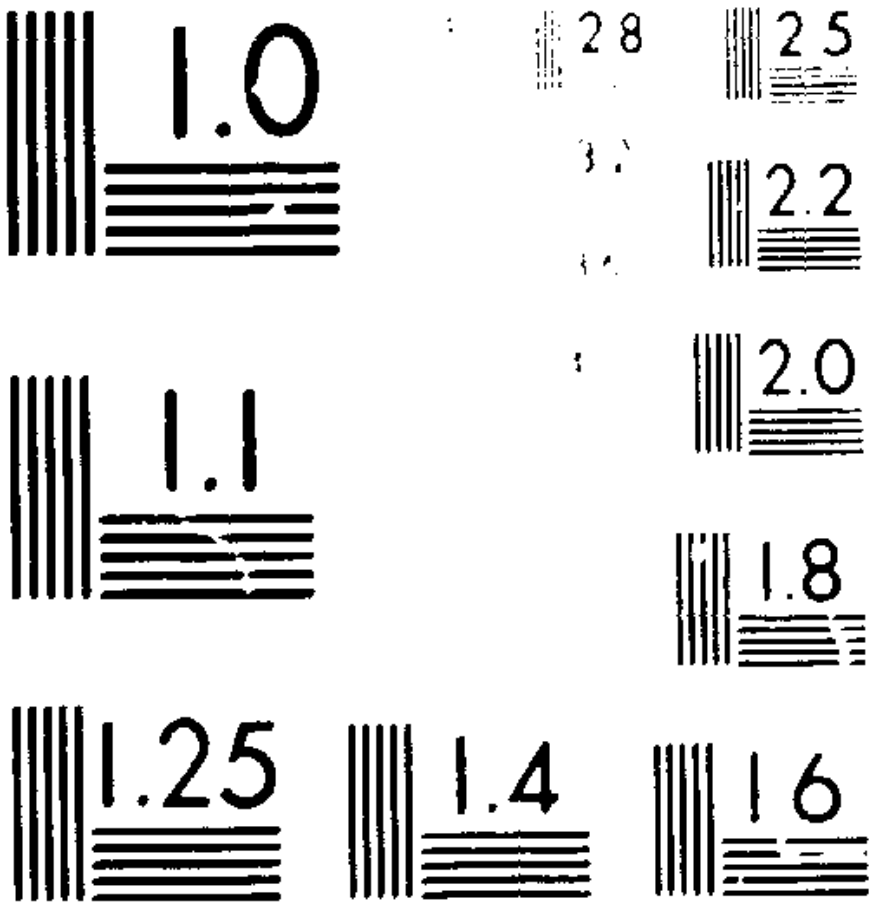
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UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

COUNTRY INDUSTRIAL DEVELOPMENT PROFILE

OF THE DEMOCRATIC REPUBLIC OF THE SUDAN*

Prepared by the

Division for Industrial Studies
Regional and Country Studies Branch

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PREFACE

The Division for Industrial Studies, Regional and Country Studies Branch, has undertaken under its 1980-1981 Work Programme the preparation of a series of Country Industrial Development Profiles. These profiles are desk studies, providing statistical and economic analyses of the industry sector, its growth, present status and future prospects. It is hoped that this profile will provide information of use to programming technical assistance, industrial redeployment and investment co-operation activities.

The profile on the Democratic Republic of the Sudan is based on documents, reports and studies available at UNIDO Headquarters. No field survey has been undertaken and some of the data on industry are either incomplete or not up-to-date.

The views and comments contained in this document do not reflect those of the Government of the Democratic Republic of the Sudan, nor do they officially commit the United Nations Industrial Development Organization to any particular course of action.

CONTENTS

EXPLANATORY NOTE

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

The monetary unit in the Sudan is the Sudanese Pound (£S).

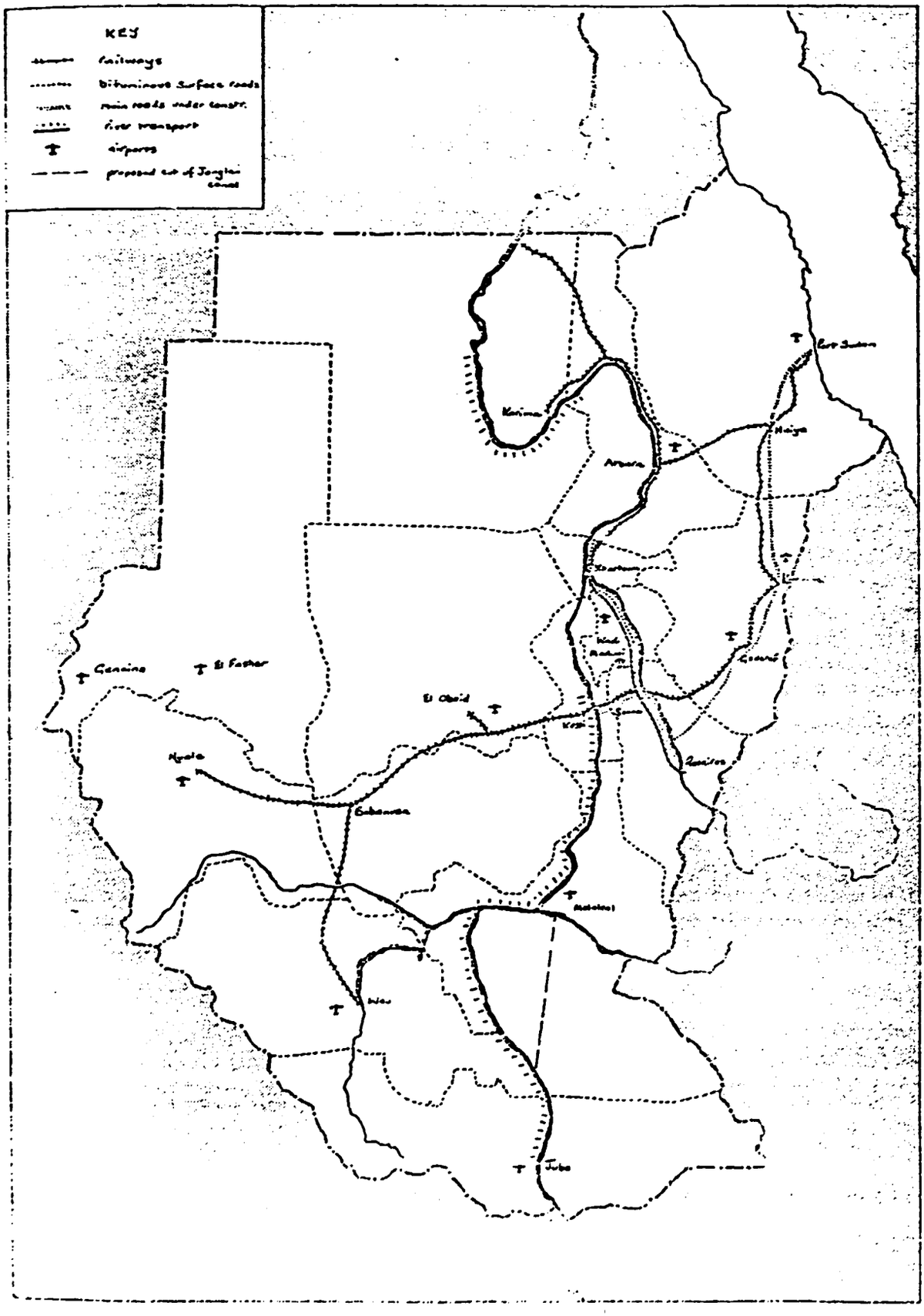
£S1 = US $2.872 in 1977 (annual average)
£S1 = US $2.622 in 1978 (annual average)
£S1 = US $2.000 September 1979

US $1 = £S0.50 June 1980

1 diraa = 58 centimetres
1 feddan = 0.42 hectare

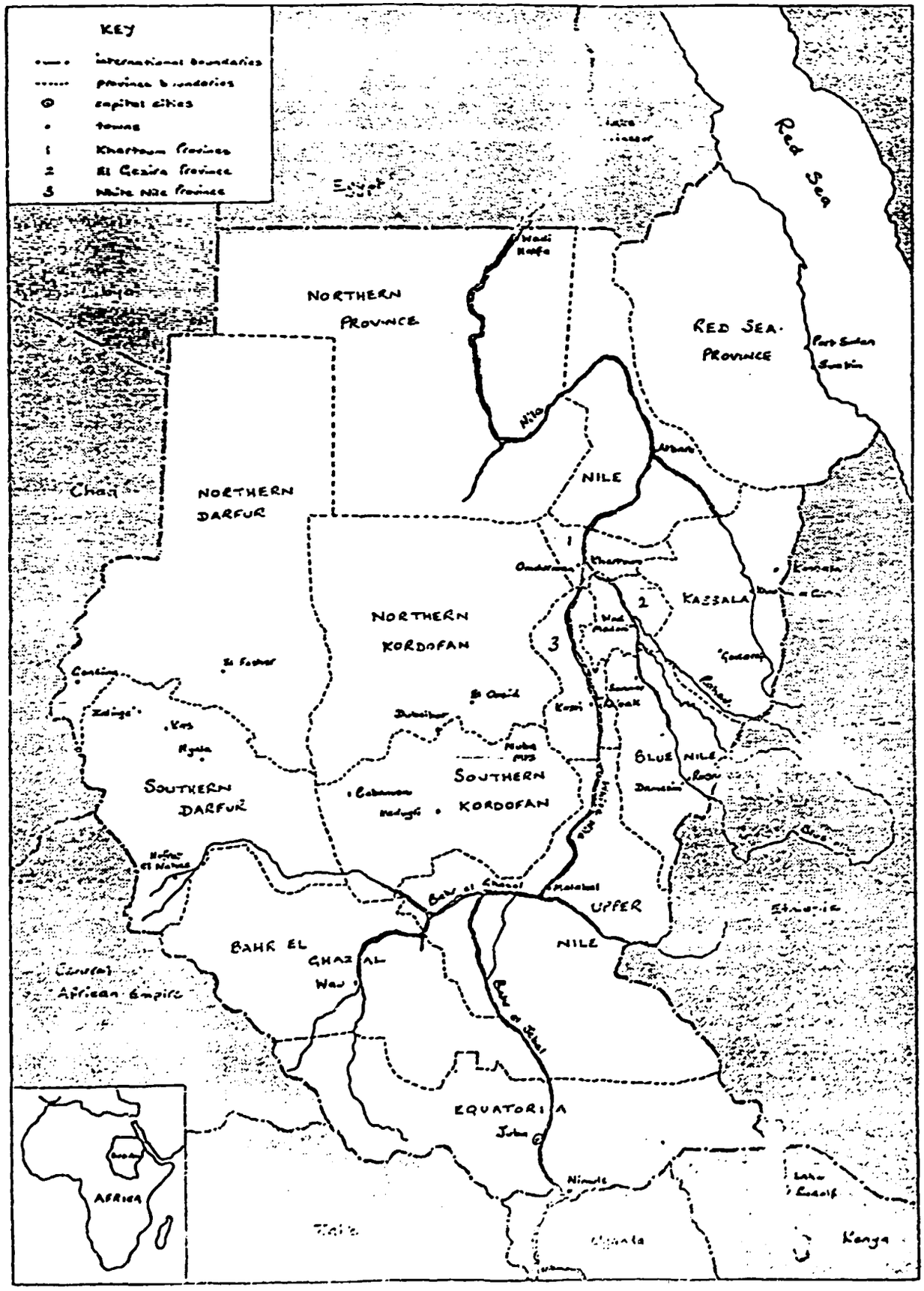
In the absence of adequate information, resort has been had to different sources. This may make comparison between tables difficult.

Sudan—Transport



Source: CBI Market Study, The Sudan, May 1977, p.8.

Sudan — Administration



Source: CBI Market Study, The Sudan, May 1977, p.7.

Chapter I

GENERAL BACKGROUND

Area and population

With an area of 2.5 million square kilometres, Sudan is the largest country in Africa. It had an estimated population of 19.46 million in 1977, with a growth rate of 3.2 per cent and an average density of 7 persons per square metre. It is estimated that half of the population live in 14 per cent of the area of the country. Table 1 below gives the estimated distribution of the population by provinces in 1973.

Table 1. Estimated population by province, 1973

Province	Population (in thousands)	Percentage of total
Bahr-el-Ghazal	1,397	9.5
Blue Nile	3,740	25.3
Darfur	2,140	14.5
Equatoria	792	5.4
Kassala	1,548	10.5
Khartoum	1,146	7.8
Kordofan	2,202	14.9
Northern	958	6.5
Upper Nile	836	5.7
All North	11,733	79.5
All South	3,025	20.5
Total	14,758	100.0

Source: Department of Statistics, 1973 Population Census.

In 1976, about 29.4 per cent of the total population were urban dwellers. (An urban area being defined as an area with a population of at least 5,000 persons, and of an industrial, commercial and administrative importance.) Khartoum, the capital, is the city with the largest population, with an estimated 30 per cent of the total urban population. Nomads accounted for about 10.2 per cent of total population in 1976.

Employment and manpower

The total labour force was 5,015,000 persons, or 31.1 per cent of the total population of 16,127,000 during 1976/77, compared with 30.8 per cent during 1969/70. The number of male employees was 3,935,000 and females totalled 1,080,000 persons. The total labour force increased by 931,000 persons, from 13,233,000 in 1969/70 to 16,127,000 persons in 1976/77, or at an average number of 133,000 per annum. Table 2 below shows employment by main sectors for 1969/70 and 1976/77.

Table 2. Employment by main sectors for 1969/70 and 1976/77

Sector	1969/70	Per cent	1976/77	Per cent
Agriculture, forestry and hunting	2,837,083	69.52	3,435,275	68.50
Industry and mining	136,275	3.34	185,054	4.46
Electricity and water supply	36,668	0.90	45,636	0.91
Construction and building	72,131	1.77	92,276	1.84
Trade and finance	193,239	4.74	245,750	4.94
Transport and communications	134,384	3.30	169,006	3.37
Services	399,144	9.78	521,560	10.40
Other	275,076	6.74	320,458	5.62
Total	4,081,000	100.0	5,015,000	100.00

Source: The Six-Year Plan of Economic and Social Development, 1977/78 - 1982/83.

According to the foregoing Table, about 69 per cent of the employees were engaged in agriculture in 1976/77; industry and mining employed only about 5 per cent. It is noticed in Table 2 above that, while employment increased in number from 2,837,083 in 1969/70 to 3,435,275 in 1976/77, the percentage of those employed in the sector declined from 69.52 per cent to 68.50 per cent. This is partly attributed to the construction of modern capital-intensive agricultural schemes, and partly to the transfer of agricultural workers to other sectors.

The current development plan aims at creating new jobs totalling 1,369,000. This will mean an increase of the total employees from 5,015,000 persons in 1976/77 to 6,384,000 by 1982/83, or an average annual increase of 13,000. The plan envisages structural changes in the demand for labour; while agricultural employment will increase by an absolute number of about 683,000 by the end of the plan, the percentage contribution of agriculture to employment will drop from 68.5 per cent in 1976/77 to 64.5 per cent in 1982/83. The ratio of employment in other sectors will rise.

Table 3. Demand projections for labour during the Six-Year-Plan 1977/78-1982/83 by main sectors

	Base year							Total
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	
Agriculture, forestry	3,435.3	72.5	89.2	102.0	125.0	145.0	149.3	683.0
Industry and mining	185.0	15.0	18.0	30.5	33.0	35.0	34.5	166.0
Electricity and water supply	45.6	2.0	3.0	4.5	7.0	7.0	7.5	31.0
Construction and building	62.3	5.0	8.5	13.8	15.0	20.0	24.1	86.4
Trade and finance	245.7	13.0	15.0	20.0	26.0	28.9	34.1	137.0
Transport, communications and storage	169.0	10.0	12.0	14.0	16.0	16.5	17.6	86.4
Services	521.6	25.0	28.0	35.0	47.0	53.0	56.4	244.4
Other	320.5	4.0	6.0	10.0	20.0	15.0	10.0	65.2
Total[a/]	5,015.5	138.5	167.7	209.8	249.0	290.2	313.8	1,369.0

Source: The Six-Year Plan of Economic and Social Development, 1977/78-1982/83, Vol.I.

a/ Totals do not add up.

The current development plan forecasts an increase in the demand for qualified labour by 36.9 per cent from 2,280,000 persons in 1976/77 to 3,121,000 persons in 1982/83. It is also estimated that the demand for managers, professionals, technicians and assistant technicians will increase by 45.4, 54.7, 42.9, 57.1 and 75.9 per cent respectively, over the levels of 1976/77. On the other hand, the plan forecasts a labour shortage of qualified persons, made up as follows: 8,500 managers, 10,300 technicians, 6,500 assistant technicians and 23,200 skilled labour.

Value added

Table 4 shows value added by economic sectors, total GDP and population for the period 1968-1977. It is noticeable that the contribution of agriculture to value added has been declining, while that of services has been almost constant since 1975. By 1977, the share of agriculture was about 36 per cent while that of services stood at about 50 per cent. Manufacturing has not shown spectacular growth in its contribution to value added. It was 5.97 per cent in 1968, compared with 6.68 per cent in 1977.

In Table 5 growth rates are shown for 10 years up to 1977. The years 1967-1968 show positive and high growth rates for all economic sectors and GDP, with mining and quarrying, construction and services showing the highest growth rates. Manufacturing registered a growth rate of 18.9 per cent. Since then all sectors registered declines and negative growth rates. During the years 1971-1972, all sectors registered high growth rates. At 35.8 per cent, manufacturing achieved the highest rate of growth in 1972-73. Since then, most of the sectors had negative growth rates with the exception of 1975-76. There were negative growth rates for all sectors and for GDP in 1976-1977. Population has on the other hand been growing at a steady rate from 3 per cent during the period 1967-72, 3.1 per cent during 1972-75, and at 3.2 per cent from 1975-1977.

Table 4. Value added by economic sector

(Millions of US dollars, at constant 1975 prices, and percentage)

Year	Agriculture		Mining and quarrying		Manufacturing		Utilities		Construction		Services		GDP	Population
	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent	Value	Per cent		
1968	1968.9	42.10	21.4	0.46	279.3	5.97	120.2	2.57	203.0	4.37	2085.4	44.59	4677.1	15.23
1969	1851.8	44.72	14.3	0.35	303.5	7.33	107.5	2.60	175.4	4.24	1688.4	40.77	4141.0	15.23
1970	1820.4	43.81	13.0	0.31	260.0	6.26	91.9	2.21	143.5	3.45	1826.5	43.96	4155.3	15.70
1971	2032.2	44.85	21.5	0.47	246.3	5.43	87.4	1.93	158.2	3.49	1985.7	43.82	4531.2	16.17
1972	1745.3	40.74	33.4	0.78	250.3	5.84	115.9	2.71	161.4	3.77	1977.9	46.17	4284.3	16.67
1973	2133.9	40.48	41.5	0.79	339.8	6.45	141.3	2.68	191.2	3.63	2423.8	45.98	5271.4	17.18
1974	2200.5	42.45	36.6	0.71	310.7	5.99	131.2	2.53	161.2	3.11	2343.1	45.20	5183.3	17.71
1975	1954.1	38.30	36.2	0.71	332.6	6.52	131.2	2.57	168.9	3.31	2479.6	48.60	5102.5	18.27
1976	2039.1	36.15	40.1	0.71	377.3	6.69	146.9	2.60	209.7	3.72	2827.9	50.13	5641.0	18.85
1977	1878.6	36.47	35.7	0.69	344.0	6.68	131.8	2.56	200.9	3.90	2559.8	49.70	5150.8	19.46

Source: Industrial Data System, Regional and Country Studies Branch, UNIDO.

Table 5. Growth rates of economic sectors and GDP

(Percentage)

Year	Agriculture	Mining and quarrying	Manufacturing	Utilities	Construction	Services	GDP	Population
1967-68	20.4	31.8	18.9	17.4	28.3	26.5	23.2	3.0
1968-69	-5.9	-33.1	8.7	-10.5	-13.2	-19.0	-11.5	3.0
1969-70	-1.7	-9.5	-14.3	-14.5	-18.2	8.2	0.3	3.0
1970-71	11.6	65.5	-5.3	-4.9	10.2	8.7	9.0	3.0
1971-72	-14.1	55.6	1.6	32.6	2.0	-0.4	-5.5	3.0
1972-73	22.3	24.0	35.8	21.9	18.5	22.5	23.0	3.1
1973-74	3.1	-11.7	-8.5	-7.2	-15.7	-3.3	-1.7	3.1
1974-75	-11.2	-1.2	7.0	0.0	4.8	5.8	-1.6	3.1
1975-76	4.4	10.8	13.4	12.0	24.2	14.0	10.6	3.2
1976-77	-7.9	-11.1	-8.8	-10.3	-4.2	-9.5	-8.7	3.2

Source: Industrial Data System, Regional and Country Studies Branch, UNIDO.

Foreign trade

Exports are almost entirely raw and semi processed materials, and imports are manufactures. The biggest single export is long staple cotton. About a third of all imports are on Government account. Since September 1979 a two-tier exchange rate has been in operation, affecting trade in certain goods. Wheat, sugar, tea, coffee, rice, lentils, oil and agricultural chemicals are among goods imported at the official rate of $1 = £S0.50. Goods for export at this rate include cotton, groundnuts, sesame, gum arabic and meat. Other transactions are carried out at the parallel market rate of $1 = £S0.80.

Table 6. Foreign trade

(Millions of Sudanese pounds)

	1974	1975	1976	1977	1978	1979[a/]
Exports and re-exports	122.01	152.47	193.01	230.18	202.30	145.19
Imports[b/]	223.58	308.91	341.39	368.99	449.43	324.90
Balance	-101.57	-156.44	-148.38	-138.81	-247.13	-179.71

Source: IMF International Financial Statistics.

a/ End of October.

b/ Cif.

Table 7. Main exports

(Millions of Sudanese pounds)

	1974	1975	1976	1977	1978
Cotton	43.3	70.2	97.8	131.5	104.9
Groundnuts	18.2	34.4	39.0	28.8	20.7
Sesame	16.5	11.9	17.3	18.2	19.2
Gum arabic	14.1	7.4	11.0	13.0	14.0
Groundnut oils	1.7	0.7	0.4	3.1	7.5
Sheep and lambs	3.1	0.9	0.4	3.0	6.9
Hides and skins	3.8	3.2	3.7	4.4	3.9
Groundnuts, cake and meal	0.6	1.2	1.0	2.9	3.8
Dura	4.4	2.2	3.2	4.8	2.7
Cotton seeds, cake and meal	1.4	1.0	2.6	2.7	1.6
Total exports	122.0	152.5	193.0	230.1	202.3

Source: Bank of Sudan.

Table 8. Main imports

(Millions of Sudanese pounds)

	1974	1975	1976	1977	1978
Tea	6.2	4.3	3.9	6.5	17.4
Wheat	8.1	8.3	11.7	6.5	5.9
Sugar	33.4	-	21.9	13.4	18.9
Other foodstuffs	8.8	8.1	7.7	9.3	12.6
Machinery and equipment	30.1	60.7	110.6	125.6	112.0
Transport equipment	43.4	64.5	42.7	39.6	57.5
Medicines and chemicals	27.2	40.2	33.4	32.7	41.6
Textiles	24.1	43.0	21.9	28.2	43.0
Petroleum and other raw materials	34.0	28.[illegible]	31.9	45.6	50.8
Manufactured goods	38.7	60.1	50.0	63.2	88.3
Drinks and tobacco	3.2	4.2	4.3	6.0	7.0
Total imports	247.5	360.0	341.4	376.5	449.5

Source: Bank of Sudan.

Table 9. Balance of payments

(Millions of dollars)

	1974	1975	1976	1977	1978
Goods, services and transfers					
Exports, fob	384.4	411.8	588.8	658.1	562.9
Imports, fob	-541.7	-743.2	-625.7	-643.9	-624.1
Exports of services	64.0	102.4	119.8	166.0	244.9
Imports of services	-200.7	-243.0	-268.3	-274.1	-294.5
Transfers	23.3	45.5	19.9	19.6	15.3
Direct investment	-	-	-	-	-
Other long-term capital	253.6	33.0	44.4	32.1	-3.5
Other short-term capital	-12.6	53.2	-41.0	32.4	38.7
Errors and omissions	10.0	-1.3	2.4	-1.4	17.2
Monetisation of gold	-	-	-	-10.3	-
Counterpart of valuation change	15.7	-9.2	-1.0	-	-12.2
Subsidy account grants	-	-	0.5	1.2	1.1
Loans to finance BOP	14.1	218.5	141.8	37.5	-17.1
Trust Fund loans	-	-	-	-	37.8
Total change in reserves	-10.3	139.9	18.4	-17.2	31.5

Source: IMF International Financial Statistics.

Table 10. Foreign exchange reserves
(Millions of dollars; end of period)

	1974	1975	1976	1977	1978	1979
SDRs	26.4	8.6	-	0.1	7.9	13.2
Foreign exchange	97.9	27.8	23.6	23.1	20.5	54.2
Total	124.3	36.4	23.6	23.2	28.4	67.4

Source: IMF International Financial Statistics.

Government development expenditure

With respect to development expenditures, the Government has completed the restructuring of the development programme for 1979/80 and 1980/81. The revised programme for both years was endorsed by the Council of Ministers in June 1979. The programme concentrates on the completion of ongoing projects and on investments that contribute fastest to the growth of exports. New projects are limited to those that rehabilitate existing schemes and help alleviate infrastructural bottlenecks. A summary of the new development expenditure programme is presented in Table 11.

Table 11. Summary of the Government Development Programme
(Millions of Sudanese pounds)

	1979/80			1980/81		
	local	foreign	total	local	foreign	total
Agricultural sector	45.0	49.3	94.3	52.5	51.1	103.6
Industrial sector	28.9	35.2	64.1	42.0	44.5	86.5
Transport sector	17.3	30.2	47.5	20.0	37.8	57.8
Services sector	22.6	10.1	32.7	26.5	15.0	41.5
Regional and local development	27.0	-	27.0	32.0	-	32.0
General reserve	15.0	-	15.0	18.0	-	18.0
Total	155.8	124.8	280.6	191.0	148.4	339.4

Source: Ministry of National Planning.

Public debt

The public debt servicing burden is so severe a constraint on industrialization and general economic development of Sudan that future prospects depend upon mobilization of both domestic and foreign resources on favourable terms and marked increases in export earnings. Table 12 shows estimates of the debt service burden as a percentage of export earnings.

Table 12. Debt service burden as a percentage of export earnings, 1979-1990

Year	Annual export growth 7 per cent		Annual export growth 4 per cent	
	Excluding payment of arrears	Including payment of arrears	Excluding payment of arrears	Including payment of arrears
1979	33	33	33	33
1980	28	36	29	37
1981	34	40	35	42
1984	33	44	37	51
1987	24	32	30	40
1990	22	22	30	30

Source: IBRD Mission Estimates, IBRD Report no.2652-SUD.

The estimates assume relatively favourable terms of new borrowing, the large amount of debt outstanding at the end of 1978 ($3.4 billion including undisbursed) the large amounts of new borrowing, and the need to repay the arrears, which make the debt service burden very precarious over the next decade. The burden, which was already high in 1979 (33 per cent of export earnings), is projected to increase to 44 per cent of export earnings in 1984, mainly as a result of payment of arrears. Thereafter it is projected to decrease to 22 per cent in 1990, in which year the arrears are assumed to be repaid. Future debt service ratios are very sensitive to export performance. The projections are based on an export growth of 7 per cent a year in real terms. If exports were to grow by only 4 per cent a year, the debt service ratio would increase to 51 per cent in 1984, and would still be 30 per cent in 1990.

The projections clearly show a highly severe acceleration of debt service obligations. There is a sharp increase from $290 million in 1979 to more than $800 million in 1984 (Table 13), which the Government might not be able to cope with. This would necessitate making arrangements to pay the arrears and to seek agreement with major creditors on the rescheduling of at least part of future debt service obligations.

Table 13 gives estimates of Sudan's future debt service obligations, broken down by interest and repayment obligations, as well as by those on debt outstanding at the end of 1978, new debt, and arrears. In the five-year period 1980-1984, a total amount of debt service of almost $3,000 million would fall due, and during that period the debt burden would increase from 36 per cent of export earnings to 44 per cent.

Table 13. Debt service obligations, 1979-1985 and 1990

(Millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1990
Interest	101	184	216	235	245	251	263	338
of which on:								
Debt outstanding end Dec.78	101	94	106	107	96	80	62	20
New debt, incl. gap financing	-	6	26	44	65	99	140	318
Arrears	-	84	84	84	84	72	61	-
Repayments	189	197	290	305	477	571	592	509
of which of:								
Debt outstanding end Dec.78	189	197	264	251	256	302	268	97
New debt, incl. gap financing	-	-	26	54	85	121	165	412
Arrears	-	-	-	-	136	148	159	-
Total debt service	290	381	506	540	722	822	855	847
of which:								
Debt outstanding end Dec.78	290	291	370	358	352	382	330	117
New debt, incl. gap financing	-	6	52	98	150	220	305	730
Arrears	-	84	84	84	220	220	220	-
Breakdown of total debt service on debt outstanding end Dec.78 by creditor categories·								
Suppliers credits	59	61	67	63	56	50	36	6
Financial institutions	99	93	111	109	106	113	96	-
Multilateral loans	31	30	33	27	32	43	47	30
Bilateral loans	101	107	159	159	158	176	151	81

Source: External Debt Division for Debt Outstanding End December 1978; IBRD Mission Estimates for New Debt and Arrears.

Chapter II

THE MANUFACTURING SECTOR - OVERVIEW

Endowment for industrialization

Transport and communications

There is a railway system made up of some 4,800 kilometres of a narrow gauge single track. The main link between Khartoum and Port Sudan, on the Red Sea, is 1,000 km and carries about 2.5 million tons of freight. The remaining 3,800 km carry about only 0.5 million tons of freight. The service is very inefficient because of long delays caused by poor maintenance of automotive and rolling stock, bad track conditions, shortage of locomotives and goods wagons, and management deficiencies. At the beginning of 1978, US $146 million were pledged towards the three year programme for the improvement of the system. There is an oil pipeline between Khartoom and Port Sudan. The World Bank, the European Development Fund and the Arab aid institutions are contributing to a modernization programme expected to create a rail capacity to transport 6.6 million tons of freight and 4 million passengers a year by 1983.

Road transport is inadequate, about 85 per cent of the roads are impassable during the rain seasons. In 1973, there were 490 km of asphalted roads, 1,694 km of gravel tracks, and 13,080 km of mainly unpaved tracks. The Government has embarked upon a road construction programme, which will absorb about half the total planned expenditure on communications. The new 1,200 km Khartoum-Port Sudan road is nearing completion. It will go through Wad Medani, Gedaref, Kassala and Haiya. Additional 2,000 km of roads are included in the 1977/78 - 1982/83 Six-Year Development Plan. This will cover the roads from Kosti to Wad Medani Khartoum, Bank, Malakal and Obeid; Juba and Wau and the Kenyan border, Sennar to Damazin, Nyala to Kas and Zalingi, Suakin to Takar, and Kadugli to Dulodi. Atbara and other bridges are also proposed in the plan.

Ports and rivers

Port Sudan, the only port, handles 97 per cent and 95 per cent of all exports and imports, respectively. The port's capacity is 3.8 million tons a year (1.5 million for export and 2.3 million for imports). Some improvements have been made to remove the problem of periodic congestions. The congestion has been partly due to lack of trucks and rolling stock to get goods out of the docks. A second port is being constructed at Suakin, south of Port Sudan, to help cope with increasing traffic.

Rivers provide important facilities for internal transport. Because of cataracts, the Nile is navigable only on three sections, namely: Kosti to Juba in the south, Merowe to Dongola, and Wadi Halfa into Egypt. The Nile tributaries are navigable only during flood seasons. Egypt and Sudan established a jointly-owned navigation company to supervise river transport between Wadi Halfa and the High Dam.

Telecommunications

At the beginning of 1975, telecommunications were estimated to consist of 86,970 telephones in use, over 70,000 television sets and 47,370 radios. There is an earth satellite station at Umm Haraz, which provides intercontinental links; a network of 14 satellite ground stations is under construction. There is a 500 link automatic telex exchange in Khartoum, and the installation of a micro-wave network link with that of the Middle East has been almost completed.

Air transport

Air transport is available from Sudan Airways and a number of foreign airlines. There are air services to nearly all major provincial capitals. Lack of funds and loss of qualified staff to organizations abroad have been constituting constraints on the operations of the national airline. Since 1976/77, there has been an increase in the national fleet. Juba and Malakal airports are being upgraded, and new ones are being built at Wau and Port Sudan as part of a $86 million programme finance by the EEC, Saudi Arabia and the World Bank.

Energy

The total installed electric power capacity is 240 megawatt nearly half of which is provided by the Blue Nile Grid hydro-electric installations on the Rosieres and Sennar Dams. In the rest of the country, electricity is generated by small diesel plants. The current plan envisages an expenditure of £S 70 million on new projects. At present, about 8 - 9 per cent of the population have access to electricity, and rural supplies are limited mainly to areas in the Khartoum and the Blue Nile Provinces.

Potentials for hydro-electric power development are high. It is planned to raise output from the major irrigation dams from 50 to 75 per cent of the total power generated in the country by 1980. Plans also exist for additional generation units, power lines and dams. Wind or solar energy for small-scale power production are under active consideration.

Concerning oil and gas, in August 1980 oil was discovered in commercially exploitable quantities, with a flow rate of 2,900 b/d from a depth of 7,800 feet. More explorations are being undertaken. Solar energy is promising. Feasibility studies for the country's first solar-powered desalination plant near El-Obeid started in 1979.

Natural resources, agricultural and other raw materials

Sudan is endowed with vast areas of good soil and water resources. It has a total estimated arable area of 200 million feddans. Of these, only about 8 per cent is currently utilized. There is plenty of grazing land and vast areas of water resources in the White and Blue Niles which could be exploited. Only about 4 million feddans are at present under irrigation. Two major irrigation schemes are under way, with two more to follow in the near future. The area of very promising agricultural potential lies in the rain bed stretching from Kassala to Darfur.

There are about 60 million feddans of forest resources containing various species of wood which provide opportunities for the development of wood and wood product industries. Industrial activities in this field include: production of sawn timber, extraction of poles and round wood. Some 480 kilometres of the Red Sea coastal line, rivers ans swamps constitute fishery resources. A study is being undertaken for the promotion of a shrimp exporting industry, based mainly on the Tokar Delta, south of Port Sudan.

Agriculture[1/]

The Gezira scheme came into being when the Sennar dam was completed in 1925, transforming 1.8 million feddans between the Blue and White Niles south of Khartoum into good arable land, suitable for cotton, cereals and fodder. The scheme accommodates 100,000 or more tenant farmers who operate in partnership with the Government and the Sudan Gezira Board, a public corporation which looks after administration, credit and marketing. Cotton was traditionally the Gezira's main crop but, in a shortlived experiment starting in 1975/76, large areas of the scheme were given over to wheat as part of a diversification programme. That year cotton and wheat on the Gezira occupied 500,000 feddans each, the remaining area being sown with groundnuts, durra, rice and vegetables. In 1979/80, however, as part of an IMF-sponsored economic reform programme aimed at promoting cotton exports, wheat cultivation on the Gezira was cut.

The second of Sudan's key irrigation projects relies on the waters of the Roseires dam. This is the $346 million Rahad scheme, inaugurated in December 1977, which is being planted with an assortment of cotton, groundnuts, fruit, vegetables and timber. Under Stage I of the scheme 300,000 feddans were to be brought under irrigation in 1978/79, using the long furrow method of irrigation for the first time on a large scale in Sudan. Stage II will add another 500,000 feddans. A third project is planned for Setait, exploiting the waters of the Atbara to irrigate 600,000 feddans. A fourth, and eventually much bigger, scheme is the Jonglei canal, first conceived in 1904. This project was finally made possible in 1974 by a co-operation agreement between Egypt and Sudan. About 300,000 feddans will be reclaimed on thewest bank of the canal in the first phase of the development expanding to perhaps as much as 3.7 million feddans in the very long term. Work on the canal started in 1978 but in 1979 the route was lengthened from 280 km to 360 km and the excavation contract revalued at $156 million.

1/ E.I.U., Annual Supplement 1980.

Crops

There are tremendous potentials for the diversification and expansion of production in the agricultural sector, particularly in the south. The Six-Year Development Plan envisages a total investment of £S715 million in agriculture. Of this £S425, or 32 per cent, of total public sector expenditure, will be contributed by the State, and £S290 will emanate from private sources of funds. The funds will be spent on: crops and forest development, livestock, irrigation and services; and they represent increases in investment of 10 per cent, 45.4 per cent, 21.7 per cent and 22.9 per cent for services, crops, irrigation and livestock, respectively. The following tables give the production targets set by the current development plan.

Table 14. Production targets for forest products

Product	Unit	Actual 1974/75	Base year 1976/77 (estimates)	Targets 1982/83	Annual rate of increase (per cent)
Sawn timber	Thousands of cubic metres	19.6	16.5	38.2	15.0
Round wood	Thousands of cubic metres	1,207.5	1,241.2	1,422.0	2.3
Bamboo	Thousands of cubic metres	3.9	4.0	7.4	10.8
Poles	Thousands of cubic metres	6.3	6.6	9.5	5.5
Firewood	Thousands of cubic metres	16,802.0	18,639.0	22,953.0	3.5
Charwal	Thousands of tons	592.0	657.0	805.0	3.5
Gum Arabic	Thousands of tons	43.0	49.2	62.0	4.0

Source: Six-Year Plan of Economic and Social Development, 1977/78 - 1982/83.

Table 15. Crop production targets

(Area in thousands of feddans, yield in kilometres per feddan, output in thousands of metric tons, annual increase in per cent)

Crop	1974/75 Actual			Base year 1976/77 provisional			Target 1982/83			Annual increase
	Area	Yield	Output	Area	Yield	Output	Area	Yield	Output	
Cotton:										
Long staple	856	617	529	760	635	483	790	707	559	2.5
Medium staple	222	459	102	210	500	105	350	849	297	18.9
Short staple	141	116	16	155	122	19	350	200	70	24.3
Torot cotton	1,219	531	647	1,125	540	607	1,490	621	926	7.3
Sorghum (Dura)	5,577	306	1,702	6,000	316	1,900	9,100	411	3,740	12.0
Wheat	591	461	269	622	500	311	890	750	668	12.6
Millet (Dukhn)	2,576	156	402	2,500	160	400	2,800	185	518	4.4
Rice (Paddy)	15	492	7	24	500	12	100	570	57	29.7
Maize	197	231	46	210	250	53	315	380	120	14.6
Cassava	80	1,144	92	110	1,500	165	180	2,000	360	13.9
Sesame	2,173	107	233	2,200	110	242	2,700	140	378	7.7
Groundnuts	1,792	519	930	1,840	456	839	2,900	541	1,568	11.0
Coffee	1	500	05	3	500	1.5	15	670	10	37.2
Tobacco	1	200	0.2	1	200	0.2	8	200	1.6	41.4
Sugar cane	40	32,250	1,290	40	30,230	1,200	288	30,210	8,700	39.1
Horsebeans	38	763	39	36	800	29	55	850	47	8.4

Source: Six-Year Plan of Economic and Social Development, 1977/78 - 1982/83, Vol.2.

Livestock and fisheries

Animal husbandry is carried out on a large scale and hides and skins are a significant source of income, with about 5,000 tons exported annually, although the prolonged drought of the early 1970s took its toll in this sector. Several projects are now under way with expectations of speedy returns on investment. These include a $42 million fodder farm and meat processing plant at Setait and a $50 million project at Damazin. Disease control techniques are being stepped up and the entire livestock marketing network improved in order to minimise weight loss, which is a major problem because of the huge distances between the country's main centres of production and consumption. At present livestock numbers are hard to estimate, as roughly 60 per cent of the cattle production and 80 per cent of sheep and goats are owned by nomads. For the nomads animals are often of more value to keep than to sell and this has meant that traditionally the offtake from the national herd has been very low. Government estimates of livestock numbers for 1973/74 stood at 14.15 million head of cattle, 13.37 million sheep, 10.5 million goats and 2.7 million camels. Poultry farming is mainly carried out on a small scale, although Kuwaiti and UAE interests are investing in large commercial poultry projects.

Table 16. Targets for animal products

(Thousands of metric tons)

Product	Actual 1974/75	Base year 1976/77 (estimates)	Targets 1982/83	Annual rate of increase (per cent)
Beef	151	180	305	9.2
Mutton	92	116	169	6.5
Goat	21	25	36	6.3
Camel meat	21	23	30	4.5
Poultry meat	12	15	25	8.9
Fish	24	32	60	11.0
Total meat	321	391	625	8.1
Milk	1,081	1,272	1,730	5.2
Eggs	19	27	52	11.5

Source: Six-Year Plan of Economic and Social Development, 1977/78 - 1982/83, Vol.2.

With some 480 kilometres of Red Sea coastline and with its many rivers and swamps, Sudan has extensive access to fish resources. The potential for a shrimp exporting business, based mainly on the Tokar Delta south of Port Sudan, is under study.

Minerals

Known mineral resources include: iron ore, manganese, chromite, copper, gold, lead, asbestos, mica and talca. The iron ore in the Red Sea Province and South Kordofan is estimated at 300 million tons. There are deposits of silver, copper and zinc in the Red Sea itself, but further work is yet to be done for the establishment of their commercial viability. Prospecting is continuing for uranium, oil and gas. Chrome mining is being developed with Japanese assistance and production was 23,680 tons; asbestos is being exploited in the Angetana area; gold mining is under way in the Red Sea Province. Huge deposits of copper and zinc were discovered in the same area, so were 9,000 tons of silver. Zinc production is estimated at 80,000 tons per annum and commercial production is tentatively set for 1985. There are high hopes for uranium in central Kordofan.

Regional distribution of manufacturing

Information on the distribution of manufacturing among various towns and regions is very scanty and out of date.[1/] The Khartoum Province has, no doubt, the largest share of the relatively large-scale industries. According to the Industrial Survey of 1970/71, the Khartoum area accounted for about two-thirds of industrial employment and half of total investment in the industrial sector. The Blue Nile and Kassala Provinces each accounted for about 20 per cent of the total invested capital. Investment in other regions was confined to handicraft and manufacturing units employing not more than ten workers. Tables 17 and 18 provide some information, albeit old and narrow in coverage, on the extent of emergence and concentration of manufacturing in Khartoum and the seven provinces.

1/ The following Tables 17 and 18 show the distribution of industrial establishments in Khartoum and in each of all the provinces.

Table 17. Manufacturing industries in Khartoum Province[a/]

(Value in thousands of Sudanese pounds)

	Establishments		Total output		Value added		Number of employees		Wages		Investments	
	Number	Per cent	Value	Per cent	Value	Per cent	Number	Per cent	Value	Per cent	Value	Per cent
Food, drinks and tobacco industry	51	62.2	24,995	62.4	5,993	61.5	7,296	48.0	2,387	53.9	12,991	31.8
Textiles	19	59.4	13,632	71.8	6,512	60.5	9,924	62.9	3,597	73.9	22,484	65.4
Wood and wood products industry	8	100.0	322	100.0	77	100.0	604	100.0	121	100.0	718	100.0
Paper and printing industry	11	91.7	2,860	99.3	1,419	99.0	2,255	98.4	608	99.2	4,383	98.1
Chemical and petroleum industry	31	88.5	6,366	67.0	1,343	47.2	3,479	92.3	762	64.2	3,988	38.4
Non-metallic industry	9	75.0	694	27.5	343	29.6	882	50.0	222	38.9	952	11.7
Metallic industry	1	100.0	729	100.0	232	100.0	78	100.0	60	100.0	392	100.0
Machine and equipment industry	22	84.6	4,482	65.0	1,458	73.0	3,100	93.9	928	78.8	2,508	76.5
Other industry	1	100.0	64	100.0	8	100.0	35	100.0	8	100.0	35	100.0
Total	153	73.2	54,144	66.1	16,885	61.5	27,653	64.6	8,693	67.2	48,451	47.2

Source: 1970/71 Industrial Survey

a/ Total output at factor cost. Percentage of branch in province related to total branches of the seven provinces.

Table 18. Manufacturing industries by province

(Value in thousands of Sudanese pounds)

Province	Establishments		Total output		Value added		Number of employees		Wages		Investment	
	Number	Per cent	Value	Per cent	Value	Per cent	Number	Per cent	Value	Per cent	Value	Per cent
Khartoum	153	73.2	54,144	66.1	16,885	61.5	27,653	64.1	8,693	67.2	48,451	47.2
Blue Nile	18	8.6	13,319	16.3	5,232	19.1	8,541	19.9	1,850	14.3	24,935	24.3
Kordofan	16	7.7	1,366	1.7	545	2.0	928	2.2	202	1.6	2,661	2.6
Darfur	3	1.4	157	0.2	31	0.1	134	0.3	10	0.1	170	0.2
Northern	5	2.4	2,146	2.6	859	3.1	1,140	2.7	379	2.9	4,575	4.4
Kanala	13	6.2	10,398	12.7	3,772	13.7	4,164	9.7	1,691	13.0	20,786	20.4
Bahr El Gazal	1	0.5	362	0.4	127	0.5	263	0.6	122	0.9	924	0.9
Total for the 7 provinces	209	100.0	81,892	100.0	27,451	100.0	42,823	100.0	12,947	100.0	102,704	100.0

Source: 1970/71 Industrial Survey

Efforts were spent on regional and local development schemes during the period 1970-1977. The Local Government Law of 1971 established local Government institutions for investments in commercially viable projects in order to promote increased utilization of local resources and generation of income. Little or no success was achieved due to shortage of funds, lack of personnel with adequate capabilities for planning, identification and formulation of projects, undertaking research and collection of data. Study groups, however, drew attention to, among other things, the need for undertaking pre-feasibility and feasibility studies, research and collecting data, establishment of regional development bodies to supervise these activities, including the promotion and/or modernization of traditional industries and handicrafts.[1/] In 1975/76 the Sudanese Development Corporation approved 120 schemes in various sectors with an estimated cost of £S 12 million.

The dispersion of manufacturing establishments and rural development have become closely related issues. It is appreciated that success would depend on the formulation of intersectoral, interdisciplinary and integrated regional development programmes. To this end, the current Six-Year Development Plan provides for the establishment of planning departments at the central, regional and provincial levels. These organs would undertake research, surveys, project identification, formulation and evaluation, collection and analysis of data, etc. The Plan also proposes the establishment of a national planning institute for training personnel required in industrial planning, project preparation and evaluation, financial matters, etc. In addition, the Plan suggests the establishment of a regional development fund from which viable projects could be financed.

Public manufacturing enterprises

Sudan has a mixed economy, and it is the policy of the Government to encourage both private and public sector manufacturing enterprises. Government participation in manufacturing arose, by and large, from lack

1/ In 1974/75, the total cost of projects submitted amounted to £S 6,367,000 of which £S 2,336,000 was approved, but only just more than £S 1 million was actually spent.

of private entrepreneurs and financial resources. There are also joint industrial ventures between private foreign or local entrepreneurs on the one hand and publicly-owned companies or corporations on the other.

Public ownership and management are found mainly in: Sugar refineries, cement, breweries, textiles and leather. A total of 13 textile projects are being carried out by the public sector. There are five sugar projects at various stages of implementation. Kenana is the largest sugar estate in the world and is owned by the Kenana Sugar Company (a joint venture of pan-Arab, Sudanese, Kuwaiti, Japanese and Britons). The total project is estimated to cost over US $600 million and was expected to be ready early in 1979. The cement plants at Rabaka and Atbara are being expanded to installed capacities of 120,000 tons and 450,000 tons per annum, respectively. Four more small plants are under active consideration or are being built.

Public enterprises now dominate all non-traditional activities in the Sudan, and contribute more than half of industrial GDP. But these enterprises have not generated anticipated profits or contributed to economic development as expected. Instead of yielding surpluses, they have relied on the Central Government and domestic borrowing to cover their deficits. Public enterprises' deficits are estimated to have averaged more than £S25 million a year over the last five years.

A study carried out during 1977 by a joint team composed of Government officials, officials of public enterprises, faculty members of the University of Khartoum, and World Bank staff and consultants concluded that the poor performance of public enterprises was due to poor management, inadequate internal organization and control, contradictory and unclear objectives and often changing relations with ministries and departments. The many constraints that affect the economy as a whole have in general led to a very low level of capacity utilization. A recent report on industrial production drafted by a special parliamentary commission revealed that the capacity utilization of most industries ranged around 30 per cent, which increases the cost of production considerably and threatens a number of industries with bankruptcy.

The recommendations for action contained in the public enterprises report may be summarized as follows:

(a) Rationalization

The scope of the public sector should be reconsidered. A rationale needs to be developed as to what is essential to keep into the public sector and what should be returned to, or left to, the private sector. Where the public sector is to remain involved, a choice should be made between wholly owned corporations, joint ventures and public concession companies, with the objectives in each case clearly defined.

(b) Organization and management

A secretariat should be set up to develop recommendations for necessary changes, including legislation. The functions of public corporations should be clearly defined, delineating objectives in terms of output, financial returns, etc., and specifying the nature of the relationships with Government. The individual public corporation should be an entity engaged in a specific area of economic activity, whereby there should be no need for sector-wide controlling corporations. Individual corporations should be given full authority and responsibility to carry out their functions.

(c) Economic measures

Selective liberalization of imports to provide a sufficient flow of materials and spare parts would make an important contribution to expanding output. Adequate working capital should be made available to take full advantage of import liberalization. Where prices are controlled they should be reviewed to enable the undertaking to make a reasonable profit. Where the Government decides that prices should remain unprofitable, it would then decide on subsidies. To improve capacity utilization, the development budget should provide enough funds for balancing and modernizing equipment of corporations. Lastly, the production relationships in agricultural tenant schemes should be replaced by a system of land and water rates.

(d) Financial administration

The unclear financial structure of many public corporations calls for a major review to evolve a suitable capital structure. Obligations relating to interest payments on loans, business profit tax, and the share of profits to be transferred to Government should

be spelled out clearly. The corporations' budgets should be prepared on a commercial basis. Actual expenditures should be checked periodically against the budgets.

(e) Accounting

Suitable systems of financial, cost and budgetary accounting should be introduced. Accounting manuals should be prepared, and staff trained for their proper use. Audit procedures should be strengthened by establishing internal audit functions in each public corporation.

(f) Staffing and personnel policies

Personnel policy should be the responsibility of the Sector Ministry and the corporation, subject to the guidelines of the Supreme Council for Public Corporations. Subject to overall income policies of the Government and general guidelines of the Supreme Council, corporations should be run as businesses. Management should have the power to select and dismiss staff. Appropriate incentives should be devised to improve labour efficiency.

(g) Training

Training in professions (e.g. accountants, managers) and common skills (craftsmen) should be the responsibility of central training institutions. Government training institutions at all levels should be rationalized and strengthened.

(h) Legislation

The objectives of individual public corporations should be specified in their establishing acts. New legislation should be drafted to apply to all corporations, which should reflect the recommendations made in the foregoing with respect to the reallocation of functions and the redefinition of organizational relationships. It should also regularize the position of corporations whose legal status is now uncertain.

The Government attaches great importance to the role of state participation in the ownership and management of some manufacturing enterprises. Accordingly, £S 31 million was provided for consolidating industrial public corporations, to cater for their development and improvement of their efficiency. The beneficiary corporations from a total sum of £S 31 million for improvement of capacity utilization are:

(i)	Sudanese Oil Corporation establishment of a tin factory at Tabah, oil mill and modern seed stores, and improvements in different factories;	£S 3 million
(ii)	Leather Industry Corporation for increasing efficiency of the Bata, the White Nile Tannery, the Khartoum Tannery, and for the completion of the leather board project;	£S 5 million
(iii)	Spinning and Weaving Corporation for working capital and new projects;	£S 5 million
(iv)	Petroleum Corporation	£S 7 million
(v)	Building Material Corporation	£S 1.5 million
(vi)	Food Industries Corporation	£S 1.5 million
(vii)	Sudanese Mining Corporation for iron ore factory, mica, gypsum, etc.	£S 1.0 million
(viii)	Sugar Corporation	£S 7 million

Private industrial sector

According to the 1971 Industrial Survey, the share of the private sector accounted for 73 per cent of the total number of industrial establishments; 42 per cent of the total industrial employment; 47 per cent of total industrial wage bill; 45 per cent of the aggregate value of industrial production; and 46 per cent of industrial value added. The private sector is dominated by small-scale establishments.

The Six-Year Development Plan 1977/78 - 1982/83 envisages £S 1.1 billion (or 41.3 per cent) private investment out of a total investment of £S 2.66 billion in the whole economy. Investments are expected in the following areas:

- Cotton ginning and tea processing;
- Wheat and rice milling;
- Food industries (edible oils), and animal feed;
- Cigarette manufacturing;

- Textile and cloth (cotton, wool, silk, stockings and ready-made clothes);
- Paper and printing (printing and writing paper, cards, press printing paper and hard paper);
- Leather and leather products (tanning and shoes);
- Bicycle and motor tyres and tubes;
- Chemical industries (sulphuric soda and acid, fertilizers, dying, matches, soap, D.D.T., artificial milk and advanced chemicals and pharmaceuticals);
- Non-metallic products (pottery from clay, glass cement and ceramics);
- Engineering industries (iron and steel, steel sheets, intermediary and light engineering industries, non-iron products, truck assembly and manufacture of agricultural equipment);
- Electronics industries (generators, cables, batteries, electrical equipment, radios).

Joint ventures

A number of investment opportunities are outlined in the Six-Year Plan for promotion into industrial joint ventures. These include:

- Three modern rice mills to be established in the Khartoum, Blue Nile and Bahr-el-Ghazal Provinces, with an annual capacity of 8,000 tons each at a total cost of £S 2 million, to be completed between 1981-82;
- Two factories for the manufacture of starch and glucose (based on sorghum processing), with a capacity of 100,000 tons per annum, at a total investment of £S 2 million of which £S 1 million will require foreign currency. These investments are to be located in the Kassala and Blue Nile Provinces;
- Edible vegetable-oil-processing facilities, using solvent extraction, at a total investment of £S 36 million, of which £S 27 million will be in foreign currency. The locations will be in the the provinces of Khartoum, Red Sea, Kordofan, Kassala, Blue Nile, White Nile, Darfur, Upper Nile, Bahr-el-Ghazal and Equatoria;

- Four fruit juice processing plants (100,000 ton/year) to produce 2,500 tons a year from mango, pineapple and citrus. The plants will be located in Equatoria and other provinces to be chosen and will cost about £S 3 million;
- Cotton spinning, weaving and finishing industries to be established in various provinces at an estimated total investment of £S 220 million, of which £S 135 million will be in foreign currency. The industries will process 155,000 tons of cotton a year into yarn and textiles for the domestic market, and 79,000 tons of yarn for export;
- Tanneries to process 50,000 hides and skins and 50,000 reptile skins a year. The tanneries to be established at Wau and Malakal during 1981-1983 will cost about £S 1 million;
- A cement factory, with an annual capacity of 1 million tons will be established in the Red Sea Province at a total cost of £S 52 million;
- An integrated milk production, processing and marketing project to be established in the Gezira irrigation scheme, to produce milk for the production of pasturized, sterilized and powder milk, butter ghee cheese and ice cream. Estimated total investment is £S 7 million;
- Ten animal feed producing factories with an annual capacity of 100,000 tons each, to beestablished during 1978-84 at an estimated cost of £S 12 million, of which £S 9 will be in foreign currency.

The foregoing projects were identified for possible financing under the Arab Fund for Social and Economic Development during the period up to 1990. No doubt the estimated costs have escalated and the raw-material-supply conditions have changed. Thus it will be necessary to undertake feasibility studies to establish their economic viability, as a basis for mobilizing foreign and local funds to finance them.

The policies and measures aimed at stimulating and sustaining growth in the private sector include:

- Removal of hindrances to industrial performance such as lack of machinery and equipment, raw materials, spare parts, etc.;
- Mobilization of local and foreign financial resources, by expanding the services of local financial services, etc.;
- Undertake detailed studies of existing industries with a view to promoting the full utilization of existing capacities;

- Revision of the Industrial Investment Act to ensure that incentives and concessions lead to diversification of investments and optimum allocation of resources;
- Training to meet the demand for qualified personnel in the private sector.

Main constraints on industrial development

The main constraints include:

Overall economic weakness

All the other constraints to be mentioned later are either contributory to, or resultant of, the poor performance of the economy as a whole. This is the fundamental vicious circle in which attempts are being made to industrialize the country. Lack of balanced intersectoral growth has created so many bottlenecks that no mutually reinforcing agencies have been released to generate activity and economic progress. Improvement of the general economic performance is made more difficult because of the fact that some of the major problems emanate from external forces over which the government has no control. These include: world-wide inflation, increase in the price of energy and general recession in the world economy.

Balance of payments and lack of foreign exchange

The chronic adverse balance of payments coupled with failure to to earn enough foreign exchange or mobilize external capital has left the Sudan with little funds for added investment in new or existing industrial projects; nor in the expansion and modernization of existing industrial enterprises. Indeed some existing industries are making no headway because of the critical shortage of foreign exchange for purchasing spare parts, imported raw materials and other inputs. The gravity of the situation manifests itself in the increase of the deficit on current account from $ 65 million in 1973 to $ 640 million in 1975, with no improvement since then. The debt servicing obligation has been accumulating and the external payments arrears climbed to about $ 1,200 million in September 1979.

Inadequate physical infrastructure

The inadequate surface transport within the country is a chronic hindrance to imports and exports, as well as constitutes a major obstacle to the internal distribution of finished goods, raw materials and other inputs. Dispersal of industries and industrialization in rural areas have not made any significant progress partly due to lack of power and water supplies in what would otherwise be promising industrial locations.

Critical shortage of qualified manpower

The shortage of manpower is an enormous problem which will continue to have severe adverse effects on industrialization. Much of this manifests itself in weaknesses and inefficiencies in: industrial planning and plan implementation in a co-ordinated and coherent manner; inability to formulate and execute industrial policies on a continuous and systematic basis; absence of effective system for the collection and compilation of statistical data; failure to identify, formulate, appraise and execute industrial projects, using such comprehensive methods and techniques as would ensure inter-industry or intersectoral linkages and interactions; etc. The shortage of qualified personnel is being aggravated by the emigration of Sudanese to the rich oil countries of the Middle East where earnings are far higher. The availability of the necessary manpower will demand extensive and intensive training, and the introduction of attractive terms and conditions so as to arrest the brain drain.

Lack of an effective institutional infrastructure

The Sudan has established a large number of institutions in every sector of the economy; but at least those directly concerned with industrial development are experiencing so many serious hindrances that they are not able to accomplish effectively the functions for which they were established. The contributory factors to inefficiency and weaknesses in the organization, management and operations of industrial institutions are: shortage of funds, critical lack of qualified manpower and absence of strong co-ordination to ensure that the operational activities of all institutions reinforce one another so as to constitute a unified service. The Government is aware of this situation and consideration is being given to the proposals made with a view to enhancing the efficiency of public sector enterprises.

Poor performance of the agricultural sector

Industrialization will continue to be constrained by underdevelopment of the agricultural sector because money which would otherwise be available for financing industrial development is being used for purchasing imported food and raw materials; industries based on processing agricultural products are working under capacity because of lack of local raw materials; limited progress in the primary sector creates no or little opportunities for the establishment of agro-based or agro-allied industries and reduces the opportunities of earning more foreign exchange from exports of primary products to pay for imports of consumer and capital goods. In particular, lack of significant progress in the primary sector is a major hindrance to the establishment of industries in rural areas based on locally available raw materials.

Excess capacity

Excess capacity has been mentioned or alluded to in the discussion of some of the foregoing constraints because it is either a result or a cause, to a certain extent, of some of them. Here it is specifically singled out as one of the constraints on account of the fact that excess capacity is continuing to reduce the efficiency and profitability of industrial enterprises, especially in the public sector, so much that funds are being diverted to merely subsidizing their existence. Some of the main causes of underutilization of the installed capacity are establishment of industrial projects without prior detailed feasibility studies, shortage of raw materials, funds and other inputs; and introduction and application of technologies which are not suited to Sudanese conditions.

Chapter III

STRUCTURE, PERFORMANCE AND POTENTIALS OF THE MANUFACTURING SECTOR

The manufacturing sector is still relatively small in terms of employment, contribution to GDP and export earnings. Production is confined to manufacture of simple consumer goods and primary processing of locally available raw materials. Forward and backward linkages in industrial production are very minimal. The manufacture of textiles from locally grown and ginned cotton and leather and leather goods from local hides and skins are some of the subsectors where some progress has been achieved in increased processing and utilization of local raw materials. Otherwise, there is no complete vertical integration of the whole production process of food or other agriculture-based consumer goods from the field to the final producer.

Manufacturing value added

Table 19 shows manufacturing value added by main industrial subsectors for the period 1974-1978. Food products (41.7 per cent), textiles (31.5 per cent), and beverages (18.0 per cent) were the largest contributors to manufacturing value added in 1978. It is noticed that the shares of these three subsectors have been increasing since 1974.

Compound interest growth rates of manufacturing value added are shown in Table 20 for the period 1968/69 - 1977/78. The years 1972/73, 1975/76 and 1977/78 show total negative compound interest growth rates of -5.5 per cent, -29.0 per cent and -15.5 per cent, respectively. In 1975/76, textiles registered a negative compound interest rate of growth of -53.9 per cent while those of food products and beverages were each -11.9 per cent. These three sectors recovered and attained positive compound interest growth rates in 1977/78 of 15.5 per cent, 4.7 per cent and 4.7 per cent, respectively.

Table 19. Value added, 1974-1978

(Thousands of US dollars, at constant 1975 prices, and percentage)

	1974		1975		1976		1977		1978	
	Value	Share	Value	Share	Value	Share	Value	Share	Value	Share
Food products	72,912	27.1	78,400	27.7	68,992	34.4	83,888	33.6	87,808	41.7
Beverages	31,527	11.7	33,900	12.0	29,832	14.9	36,273	14.5	37,968	18.0
Tobacco	9,156	3.4	10,900	3.8	11,009	5.5	11,118	4.5	-	
Textiles	82,620	30.7	81,000	28.6	37,260	18.6	57,510	23.0	66,420	31.5
Wearing apparel	6,732	2.5	6,600	2.3	3,036	1.5	4,686	1.9	5,412	2.6
Leather and fur products	3,071	1.1	3,700	1.3	3,959	2.0	3,404	1.4	-	
Footwear	10,292	3.8	12,400	4.4	13,268	6.6	11,408	4.6	-	
Wood products, furniture and fixtures	330	0.1	300	0.1	258	0.1	273	0.1	-	
Paper	2,116	0.8	2,300	0.8	-		-		-	
Printing and publishing	3,128	1.2	3,400	1.2	-		-		-	
Industrial chemicals	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Other chemical products	5,225	1.9	5,500	1.9	7,205	3.6	8,470	3.4	-	
Petroleum refineries	18,518	6.9	19,700	7.0	15,957	7.9	20,882	8.4	-	
Miscellaneous products of petroleum and coal	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Rubber products	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Plastic products	0.	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Pottery, china and earthenware	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Glass	2,886	1.1	2,600	0.9	3,276	1.6	4,108	1.6	4,810	2.3
Other non-metallic mineral products	9,408	3.5	9,800	3.5	6,762	3.4	7,546	3.0	8,330	4.0
Iron and steel	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-ferrous metals	1,012	0.4	1,100	0.4	-		-		-	
Metal products, excluding machinery	7,254	2.7	7,800	2.8	-		-		-	
Non-electric machinery	816	0.3	1,700	0.6	-		-		-	
Electric machinery	765	0.3	900	0.3	-		-		-	
Transport equipment	1,012	0.4	1,100	0.4	-		-		-	
Professional and scientific equipment, photographic and optical tools	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Other manufactures	276	0.1	300	0.1	-		-		-	
Total	269,056	100.0	283,400	100.0	200,814	100.0	249,566	100.0	210,748	100.0

Source: Industrial Data System, Regional and Country Studies Branch, UNIDO.

Table 20. Compound interest growth rates of value added, 1968/69 - 1977/78

(Percentage, based on 1975 prices)

	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78
Food products	5.6	2.7	10.4	9.4	-6.4	6.9	7.5	-11.9	21.6	4.7
Beverages	5.6	2.7	10.4	9.4	-6.4	6.9	7.5	-11.9	21.6	4.7
Tobacco	9.3	1.9	-19.3	-16.0	37.0	-15.9	19.0	1.0	1.0	(0)
Textiles	-4.3	17.2	6.9	3.7	-14.1	5.2	-1.9	-53.9	54.3	15.5
Wearing apparel	-4.3	17.2	6.9	3.7	-14.1	5.2	-1.9	-53.9	54.3	15.5
Leather and fur products	-4.4	17.9	5.1	5.8	-3.5	-21.6	20.5	7.0	-13.9	(0)
Footwear	-4.4	17.9	5.1	5.8	-3.5	-21.6	20.5	7.0	-13.9	(0)
Wood products, furniture and fixtures	65.1	-33.7	21.3	22.8	-10.6	-11.9	-9.0	-13.9	5.8	(0)
Paper	-1.3	2.7	6.7	7.5	4.7	2.2	8.7	(0)	(0)	(0)
Printing and publishing	-2.6	5.6	6.7	7.5	4.7	2.2	8.7	(0)	(0)	(0)
Industrial chemicals	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Other chemical products	18.5	32.8	-7.0	8.9	2.3	8.0	5.3	31.0	17.6	(0)
Petroleum refineries	-3.0	11.1	2.9	13.9	25.6	-8.6	6.4	-18.9	30.9	(0)
Miscellaneous products of petroleum and coal	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Rubber products	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Plastic products	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Pottery, china and earthenware	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Glass	11.0	19.8	-0.8	22.2	-35.5	30.6	-9.8	26.0	25.4	17.1
Other non-metallic mineral products	11.5	13.2	10.4	9.4	-1.0	4.3	4.2	-30.9	11.6	10.4
Iron and steel	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Non-ferrous metals	54.3	5.6	6.7	7.5	4.7	2.2	8.7	(0)	(0)	(0)
Metal products, excluding machinery	8.3	9.6	50.9	8.1	7.5	-6.9	7.5	(0)	(0)	(0)
Non-electric machinery	8.8	9.7	14.7	37.2	-55.0	0.0	108.3	(0)	(0)	(0)
Electric machinery	9.6	8.8	24.2	11.7	8.1	-8.5	17.6	(0)	(0)	(0)
Transport equipment	7.9	10.3	6.7	7.5	4.7	2.2	8.7	(0)	(0)	(0)
Professional and scientific equipment, photographic and optical tools	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Other manufactures	13.2	-2.5	6.7	7.5	4.7	2.2	8.7	(0)	(0)	(0)
Total	1.5	10.2	7.1	6.6	-5.5	1.8	5.3	-29.0	24.3	-15.5

Source: Industrial Data System, Regional and Country Studies Branch, UNIDO.

Industrialization potentials

By and large, the extent and rate of industrial development in the Sudan will be determined by success in the formulation and implementation of measures for the removal or alleviation of the constraints. Thus, given the present level of indebtedness and the heavy debt servicing burden, the prospects for industrialization will greatly depend upon success in restoring financial equilibrium in the near future. Therefore, bold and effective measures will have to be introduced to bring about economic structural changes which are essential to stabilization and rehabilitation of existing production schemes and capital stock. It is against this background that the potentials are highlighted herebelow.

a) Agro-based industries

The Government policy and strategy of expanding and diversifying the agricultural sector is natural and logical in relation to the Sudanese level of economic development, natural resources and export earnings. Therefore, much emphasis should be put on the establishment of industries for exports in a finished or semifinished form, as well as import substitution industries. Some of the most important industries on which the Six-Year Plan of Economic and Social Development puts emphasis are:

(i) The sugar industry - There are already many public and private sugar plantations and factories established or planned, with foreign participation, aiming at achieving self-sufficiency and exports. Allied to sugar production are plans for the establishment of such industries related to sugar production as: alcohol, paper and pulp from bagasse and animal food. UNIDO should offer assistance in studying the feasibility of establishing these and other industries, exploit sugar and sugar by-products, as well as finding potential investors, should they be economically viable propositions.

(ii) Food processing and canning industries - This subsector covers a wide range and with plans for the expansion and diversification of the agricultural sector, there are large opportunities for establishing processing and canning facilities. This would include: fruit and vegetables, oils and fats industry, alcoholic and non-alcoholic drinks and flour milling, glucose and starch and bakeries. Progress in this field will depend upon solving the problem of shortage of raw materials and managerial and technical skills which are some of the main causes of excess capacity. The Food Processing Research Centre (an UNDP assisted project SU/70/543) has been assisting in rendering advisory services to factories for the promotion of efficiency, identifying and promoting new projects. It is noteworthy that the Sudan, in co-operation with FAO, is already experimenting on the utilization of composite flours in bread making and Resolution 3 (V) of the Fifth Conference of African Ministers of Industry requests ECA, FAO and UNIDO to prepare a compendium of technological processes for the production of composite flours.

(iii) Textile industry - Cotton production in the Sudan offers great opportunities for the expansion of textile industries. Textile imports accounted for 7.5 per cent of the total import bill (or some £S28 million) in 1977. Expansion in this subsector would no doubt promote the badly needed savings in foreign exchange as well as create jobs. About 13 textile projects are been undertaken by the public sector at a cost of £S145 million; and another 20 private sector projects are being carried out at a cost of £S95 million, with collaboration from foreign firms in some cases.

It should be appreciated that development in the textile subsector will depend upon success in promoting domestic and export sales of cloth and yarn. Underlying this will be the need to increase managerial and technological efficiency and therefore quality and the price of the finished products. To this end, there are already proposals for the establishment of a Quality Control Centre for Textile Products for Export, a Textile Mill Laboratory

and a Textile Training Centre. There appear to be already many projects and as such, great care should be exercised in order to steer clear of creating excess capacity and economically un- unjustifiable allocation of resources. It would be advisable to undertake a comprehensive review of the textile subsector to establish existing and potential demand, financial and manpower requirements, opportunities for further interlinkages, diversification, types and methods of training for improving managerial and technical capabilities, etc.

b) Agro-allied industries

The expansion and diversification of the agricultural sector is bound to demand supportive industries such as insecticide and pesticide industries, manufacture of agricultural tools and implements, fertilizers, including those based on waste agricultural products and city garbage and sewage, etc. Some of these industries may be of a small-scale dimension to be located in rural areas. The Plan mentions the establishment of a plant for manufacturing and assembling tractors and harvesters at a total cost of US$84 million in which the Government will hold 51 per cent of the shares. This project calls for very careful study to ensure that the local value added and the expected profit make it worth undertaking.

c) Animal resources-based industries

(i) Leather and leather products - There are three state-owned large tanneries and about 300 privately-owned units in rural areas, and three fairly large footwear factories one of which is a private enterprise. The abundance of hides and skins offers opportunities for the establishment of medium- and small-scale industries using locally-tanned leather. Future developments should take into account vertical and horizontal integration of production and the diversification of leather goods products. Account should be taken of existing production capacity, present and future demand in the domestic and export markets. Competitiveness in foreign markets will necessitate improvement in technology

and quality control in production, etc. A study was made in 1978 by UNIDO's expert of an integrated development of the leather industry sector. Consideration should be given to the implementation of the conclusion and recommendations of the expert. It is also noted that UNIDO is assisting the Leather Industries Co-operation with equipment for the laboratory. Further efforts should be made for the identification of leather and leather products to be produced economically in the Sudan as well as formulate training programmes and courses with a view to upgrading technological and managerial capabilities of Sudanese nationals.

(ii) Meat, meat and dairy products - The planned improvement in the number and quality of livestock will require various inputs and lead to diversified production for domestic and export markets. Meat, meat and dairy products plants and other allied industries are envisaged. For the realization of industrial development in this subsector, it is suggested that UNIDO, FAO and the Sudanese Government should explore ways and means of co-operating in the planning and implementation of the production of the necessary raw materials and the establishment of processing plants, production of the necessary packaging materials and tins, preservatory facilities, etc. There are already plans for the establishment of modern abattoirs.

This area should be thoroughly studied with a view to identifying new industrial possibilities, the problems and state of estisting production units and the measures necessary to exploit the opportunities.

d) Fisheries-based industries

Depending upon the success achieved in the expansion of fishing and fisheries, industrial opportunities could be envisaged. They might include: fishnet factories, boatbuilding, fish canning and preservatory facilities, etc. This field calls for further investigations with a view to identifying specific industrial investment possibilities.

e) Forestry-based industries

There are various opportunities for establishing industries for the production of wood and wood products, based on local forestry resources. The Plan provided for an increase in the production of sawn timber by renovation and expansion of sawmills, undertaking research leading to the utilization of forestry raw materials for the manufacture of paper and pulpboard, etc. Considering the wide range of use to which wood and wood products could be put, it would be advisable to undertake studies to identify specific wood-based industries and their estimated investment costs. The use of wood as a substitute for iron may in some cases be feasible.

Development of small-scale industries

Many small-scale industries, cottage-type of industries and handicrafts are scattered all over Sudan. The Development Plan provides for the promotion of more, as well as increasing extension services. One of the proposed ways for accomplishing this task is through industrial co-operatives. In the absence of reliable information it is not possible to analyse the progress and achievements in this field. It is estimated that in the past small-scale industries contributed about 20 per cent of total industrial production. Given sufficient increase in the supply and quality of local raw materials, there are opportunities for the establishment of small production units in urban and rural areas for import substitution and export-oriented industries. A comprehensive programme for the development of small-scale industries should be formulated, based on prior detailed study of existing and potential opportunities, the problems and recommendations on the remedial measures. Of great importance will be the establishment of a strong supportive infrastructure, the types of entrepreneurs to participate in the development of small-scale industrial production (sole industrialists, industrial co-operative partnerships, private companies and industrial estates), choice of the line of products, raw materials, finance and credit, marketing, training of entrepreneurs and other extension services.

In this connection, the establishment of a Central Authority to co-ordinate all matters concerning the promotion of small-scale industrial production is long overdue.

Basic metals and engineering industries

It is the policy of the Government to provide mechanical engineering workshops and foundry facilities with a view, inter alia, to promote rural industrialization, local manufacture of inputs for agriculture, and the development of local engineering design capabilities. A glance at the quantity and value of a variety of imports in this category suggests that there are potentialities in local manufacturing for import substitution. Great care should, however, be taken to ensure that investments in the local production of any product is economically justifiable. It is imparative that a thorough survey of this sector be carried out to establish the local and foreign supply of raw materials and other inputs, present and future demand, availability of managerial, engineering, and technical capabilities and finance. There is already a Central Foundry in Khartoum, and a proposal for the establishment of a central workshop for repair, maintenance and production of spare parts and accessories for textile factories is under active consideration. At present, there is not a single iron and steel mill; all the local requirements are imported. For long-term development, it would be advisable to study the possibilities of utilizing the local iron ore deposits around the Red Sea; the establishment of a steel mill using scrap should also be investigated in the immediate future. The strategic importance of engineering and basic metal industries in the industrialization of any country present broad possibilities which should be reduced to specific industries. There are many establishments in this sector most of which are privately owned. Some are working about 30 per cent below capacity and are manufacturing poor quality products. For a sound development of this subsector, a detailed survey should be undertaken to identify specific projects, possible ways and ways of utilizing existing excess capacity, improvement of the quantity and quality of products through the introduction of better technologies and mangerial capabilities, etc.

Building material industries

The Six-Year Plan lays stress on the establishment of production facilities in this sub-sector to meet local demand. Some of the materials would be produced by the basic metal and engineering industries, but others could be developed from other local raw materials. There is a proposal for the establishment of a plant for the production of clay bricks. The IRCI is providing technical consulting service to private investors for this purpose. There is a planned expansion of cement production. Existing plants at Rabak and Atbara are to be expanded to 120,000 and 450,000 tons per annum respectively, and there are plans for four more new factories of different capacities. It is hoped to raise output to 1.95 million tons per annum by 1980. Asbestos deposits are being exploited, there are also possibilities for expanding the existing capacity for the production of gypsum from local deposits. Much of what could be achieved in this subsector would require a detailed survey for the the identification of raw materials and specific projects, to be followed by detailed feasibility studies of each one of them.

Chemical industries

Some industries falling within this category have been mentioned. Those envisaged in the Plan include plastic and rubber products, fertilizers, insecticides, pulp and paper and pharmaceuticals. The financial stringency dictates that a thorough study be undertaken to ensure that investment decisions in this sector are based on the most economic factors.

Chapter IV

PLANS, OBJECTIVES, INDUSTRIAL POLICIES, STRATEGIES AND INSTITUTIONS

General objectives

The Six-Year Plan of Economic and Social Development 1977/78-1982/83 aims at the:

- development of agro-industries based on local agricultural products;
- production of agro-allied products, such as insecticides, agricultural implements and spare parts;
- promotion of small-scale industries utilizing local raw materials;
- establishment of export-oriented industries;
- development of mineral-based industries and basic industries such as steel;
- establishment of import substitution industries (achievement of self-sufficiency in basic consumer goods);
- promotion of a high level of efficiency in production;
- encouragement and promotion of both local and foreign private investors in the industrial sector.

The Plan establishes production targets for individual industries, and envisages an increase of contribution by manufacturing and mining to GDP from 9.0 per cent in 1976/77 to 10.0 per cent in 1982/83.

Industrial policies

The policies planned for achieving the industrial objectives are:

- priority to be given to agro-industries and industries in which the Sudan enjoys comparative advantages;
- full utilization of existing industrial capacity;
- horizontal and vertical linkages in production, and utilization of resources;

- fostering and expanding building material industries to supply all the domestic needs;
- increase electric-power-generating capacity;
- establish agro-allied industries, such as fertilizers, insecticides, animal feed, manufacture of implements and agricultural machinery;
- development of traditional and handicraft industries (with a view to increasing incomes in the rural areas), as well as encourage industrial development in rural areas;
- encourage private investment in the industrial sector.

Measures for the execution of the industrial policies

The following are the measures proposed for extending the industrial policies:

(i) To undertake an industrial survey as well as continuously to assess the performance of the industrial sector. The survey will provide a basis for a detailed study of productivity problems, and projections of long-term industrial potential, marketing prospects for industrial goods, future industrial manpower requirements and training, as well as an identification of specific projects;

(ii) Establishment of quality control system throughout the country;

(iii) Setting up project formulation machineries or strengthening existing ones;

(iv) Strengthening the collection, compilation and dissemination of industrial information and statistical data;

(v) Improvement of physical and institutional infrastructure;

(vi) Undertake training of intermediate skills, as well as review wages to attract qualified personnel.

Planned industrial projects

In the paragraphs dealing with public and private industrial sector a number of planned industries is indicated. The following sub-sectors are specified:

- Sugar industry	production to reach 780,000 tons of refined sugar by 1982/83 of which 470,000 tons will be for export;
- Textile industry	cloth 308.5 million meters and yarn 29.7 million tons;
- Cement	production to reach 1.0 million tons;
- Leather	1.95 million goat and sheep skins and 0.55 million hides to be processed;
- Edible oil	production of 250,000 tons;
- Fruits and vegetables	600,000 tons to be processed;
- Fertilizers	production of 200,000 tons.

Table 21. Planned financing of industrial projects

(Thousands of Sudanese pounds)

	Total cost in plan period	Local currency	Foreign currency
Six weaving factories	3,700	2,400	1,300
Gadow spinning + weaving	18,000	7,000	11,000
El Hag Abdalla spinning factory	17,500	4,500	13,000
Port Sudan spinning factory	7,100	2,000	5,000
Khartoum North spinning	9,700	4,000	5,700
El Tonj Kenaf	12,000	4,000	8,000
Assalaya sugar project	9,500	2,000	7,500
Mellut sugar project	49,048	13,219	35,829
Expansion of Atbara Cement factory	14,750	4,000	10,750
Expansion of Rabak cement factory	500	250	250
Chipboard factory	2,200	700	1,500
Lime	1,100	600	500
Mongalla sugar	26,100	11,100	15,000
Mongalla sugar farm	8,000	3,200	4,800
Molasses project	4,000	1,000	3,000
Industrial estates	1,750	1,500	250
Projects under study[a/]	9,050	2,250	6,000
Corporations	31,000	11,000	20,000
Industrial Research Institute	750	450	300
Geological Department	10,550	5,977	4,578
Survey Department	3,000	3,000	-
Tourism	3,915	3,915	-
Water	13,527	10,880	2,647
Electricity	70,000	28,000	42,000
Hotels	7,860	3,989	3,871
Total	334,800	130,925	203,875

Source: Six-Year Plan of Economic and Social Development, 1977/78-1982/83, vol.2.

a/ These projects include: Canning projects, building materials, leather board industries, assembly and manufacture of trucks and tractors, prefabricated houses, starch and glucose settait and Rank Gelhak sugar projects. The amount allocated is for financial feasibility studies.

Incentives and concessions

Some of the existing incentives include:

- tax holidays for five years from the date of commencement of production, with exemptions of 100 per cent to firms considered important to national defence and utilization of local raw materials, and 50 per cent to the others;
- tariff and non-tariff protection of local manufacturers against imports and similar goods;
- duty free importation of machinery, equipment and spare parts, and very low duty (10 to 15 per cent) on imports of raw materials;
- increase in the depreciation rate to twice the prescribed rate if a firm operates two shifts, and thrice if it operates three times;
- availability of land at concessionary prices or rents;
- requiring Government agencies to purchase from local producers if their prices are reasonable in comparison to those of similar imported goods.

Institutional infrastructure for industry

The Sudan has various institutions; only those which have a direct bearing on industrial development are referred to in the following paragraphs. They are categorized according to the functions they are intended to perform.

Industrial planning and regulation

The Ministry of National Planning

The Ministry is inevitably involved in industrial planning and industrial policy formulation.

(a) Project Preparation Unit (PPU): This is a unit of the Ministry of National Planning responsible for undertaking priority feasibility studies within the public sector and concerning all economic sectors. It participates in the Annual Monitoring and Planning Committee.

The Six-Year Development Plan provides for the following planning machinery under the Ministry:

(b) Regional Planning Offices: These offices are expected to supply information and statistical data at macro and sectoral levels, needed for proper regional planning. They formulate and evaluate regional plans and local schemes as well as identify obstacles;

(c) The National Institute for Planning: This Institute is assigned the following functions:
- training and supplying all the needed specialized personnel to ministries, departments and institutions;
- undertaking research and collection of data required for planning;

(d) Development research and studies: This encompasses general development research; preparation, evaluation and implementation of projects.

The Ministry of Industry and Mines

The Ministry is responsible for formulating industrial policies and strategies in consonance with the overall national objectives. In this connexion, it performs promotional and regulatory functions which include:
- granting concessions and incentives;
- price control;
- control of public industrial enterprises;
- industrial planning; etc.

The Ministry is assisted by the Technical Advisory Committee for Industrial Development. In particular, the Committee's advice on the establishment of new industries must conform to the criteria set down in the Investment Act of 1974, namely:
- defence;
- utilization of local raw materials;
- whole or partial self-sufficiency;

- export potentials;
- employemnt;
- rural industrializati on.

The Ministry exercises the following powers under the Development and Encouragement of Industrial Investment Act 1974 for the implementation of the industrial policies and strategies:

- make recommendations on the desirability of new industrial projects submitted by the private sector;
- inspect both private and public new projects to assess their capital and operating costs;
- determine the ex-factory prices of products of all manufacturing establishments;
- allocate foreign exchange requirements to various competing demands;
- grant various concessions emanating from the Act;
- collect and analyze manufacturing information.
  local raw materials, whole or partial self-sufficiency, export potentials, employment, and rural industrialization.

Industrial financing

The main institutions engaged in the financing of industrial development are:

(a) The Industrial Development Bank of Sudan (IDS)
The Bank provides long-term finance to industrial enterprises. It has for some time concentrated on financing medium-and small-size enterprises which could not have easy access to suppliers' credits or commercial bank credits;

(b) The Sudanese Investment Bank (SIB)
This is a financial joint venture, with shareholding by the public and private sectors and foreign subscribers. The oprations of the Bank cover agriculture, industry, transport, financing foreign trade, and equity participation in viable projects. In addition, the Bank operates as a catalyst for investment funds from Kuwait and other Arab states, as well as underwriting shares and securities,

(c) The Sudan Development Corporation (SDC)

The Corporation was established in March 1974 as an autonomous, wholly Government-owned enterprise. The authorized capital is US$ 500 million (1974 rate of exchange). The resources to finance the equity base were procured through a 10-year Eurodollar loan obtained by the Government, at 3/4 per cent over the 6-month London Interbank rate, from a consortium of international banks, with a guarantee by the Saudi Arabian Monetary Agency. SDC provides funds in the form of equity participation, loans and guarantees to large, public and private viable enterprises.

The objectives and functions of the Corporation cover such fields as: project identification, formulation, evaluation and implementation; development and utilization of capital, managerial and technical skills; mobilization of both domestic and foreign financial resources; direct industrial financing through loan, equity participation and guarantees; conducting feasibility studies, etc.

(d) The Sudanese Savings Bank

This institution was established to tap funds from small savers with a view to utilizing them for financing, inter alia, development projects in rural areas. The main practical problem in its operations has been related to the identification of viable traditional and small-scale industries for the rural areas;

(e) The Sudanese/Kuwaiti Investment Co. Ltd. (SKIC)

This is a joint venture between the Kuwaiti Foreign Trade and Contracting Company (a private enterprise) and the Sudanese Government, with equal shareholdings. Its main objective is to promote joint ventures with the Sudanese Government and/or the Sudanese private investors, aimed at utilizing local resources. The Company is so far mainly concerned with financing: real estate; livestock; construction; fisheries. The Company plans to involve itself in financing some industrial projects.

(f) The Bank of Sudan and Commercial Banks.

Institutions dealing with direct industrial production and management

There are public and private industrial corporations or companies engaged in manufacturing and processing. The notable publicly-owned corporations in the manufacturing sector include:

(a) The Sugar Corporation: The Corporation has subsidiaries in a number of provinces engaged in the management of sugar plantations and sugar processing factories. The planned expansion of sugar production offers opportunities for the establishment of such related industries as: alcohol; animal feed; and the production of paper from bagasse;

(b) Leather Industries Corporation: The Corporation owns tanneries and the Bata Shoe Corporation. It has also a laboratory for which UNIDO recently approved the provision of equipment worth US$ 37,400. The Six-Year-Development Plan provides for the expansion of the leather and leather products industry;

(c) Spinning and Weaving Corporation: This is a publicly-owned holding corporation which has plans for expansion of spinning and weaving. This enterprise, together with those in the private sector, aims at achieving self-sufficiency in and exports of cotton textiles and yarn;

There is an urgent need for training. There is already a Textile Training Centre and some bilateral donors of technical assistance are already considering training programmes.

(d) Building Materials and Refractories Corporation: The Corporation is concerned with the establishment of enterprises to produce locally building materials to meet domestic demand. The plan provides for the expansion of existing cement factories, a chipboard factory and promotion of a lime project. Assistance has been sought from UNIDO for 2 cement enterprises;

(e) Food Industries Corporation: The Corporation has factories or canneries for: fruits and vegetables; milk processing; date factory; onion dehydration; sweets factory; oil and fats mills; alcoholic and non-alcoholic drinks factories; grain mills factories and packing industry.

The food industries sector as a whole, and the Corporation, need assistance to increase the utilization of by-products and efficiency in production.

Institutions dealing with industrial training and manpower development

Among institutions dealing with the training and development of industrial manpower are:

- The faculties of engineering, economics and business administration at universities;
- Colleges of technology and technological studies;
- Technical and commercial schools;
- National industries schools and handicraft centres: concerned mainly with the promotion and development of industries based on local resources, manufacture of carpets and furniture, general woodwork and mining;
- Management Training and Advisory Centre;
- Khartoum Centre for Vocational Training and other centres and the Khartoum Industrial Safety Laboratory;
- Training programmes or courses organized and run by individual industrial enterprises, e.g. the Textile Industry Training Centre, training facilities of the Leather Industries Corporation, etc.

Institutions for industrial, technological and economic research

(a) The National Council for Research (NCR)

The Council was established by Act in 1973, with powers to regulate research activities undertaken by various specialized national research agencies or institutions;

(b) The Scientific and Technological Research Council (STRC)

This is one of the specialized councils of the National Council for Research (NRC). It supervises all research units affiliated to it and co-operates with other specialized research institutes,

and disseminates its findings to other organizations in need of them. The activities of the Council have included research in industries connected with agricultural products; chemical and mineral research for application by various industries; inventions and discoveries and the organization of their use, adoption and application of imported technology;

(c) Industrial Research and Consultancy Institute (IRCI)

This is one of the many units of the STRC. It provides technical advice to manufacturing firms for the solution of their production problems, and undertakes feasibility studies and research. For example, the Institute together with UNIDO, is considering embarking on studies on the establishment of mechanized clay brick manufacturing facilities, and the setting up of a plastic industry unit.

(d) There are specialized units attached to other Ministries, departments, universities which undertake research activities of importance to industry. Among these are: the Food Research Centre, the Tanning Institute, etc. It is noteworthy that Sudan, in co-operation with FAO, has made progress in research and experiments in the making of bread from non-wheat grains and tubers such as sorghum, millet and cassava;

(e) Standardization and Quality Control Centres

The Industrial Research and Consultancy Institute (IRCI) has a department for quality control. There are laboratories in the textiles and leather sectors concerned with quality control. A Quality Control Centre for Textile Products (for export) and a Textile Mill Laboratory are under active consideration. The Development Plan recognizes the need for establishing quality control systems throughout the country. It is assumed that these will call for institutional machineries.

Institutions for the promotion of small-scale industries, and industrial co-operatives

There has been a ministry responsible for co-operatives since 1975. Industrial co-operatives exist mainly in textiles and food processing. Among the strategies of the Six-Year-Development Plan are: the creation

of a specialized body to look after co-operative savings and financing; establishment of co-operative training centres and the provision of extension services. The notable Industrial Production Co-operative Schemes included in the Plan are: The White Nile and Nuba Lake Co-operative Schemes for Fishing and Marketing of Fish Products; the Northern Kordofan Carpets and Mats Co-operative Industry; the Khartoum/North Kordofan/Blue Nile Co-operative Scheme for Handicrafts and Hand-made Products; and the fund for supporting co-operatives, especially in building materials and housing.

Regarding institutional machinery for the promotion of small-scale industries as a whole, the need for the establishment of a national body (a Small-scale Industries Development Organization) has long been recognized. This body would, it is envisaged, formulate policies and strategies for small-scale industrial development, as well as assist industrial co-operatives and small-scale industrial operators to obtain funds, raw materials, machinery and equipment, as well as secure appropriate incentives to ensure their success. Assistance in finding markets for their product would be of great importance too.

Chapter V

SOME OF THE FIELDS REQUIRING FUTURE ASSISTANCE AND CO-OPERATION

In formulating technical and financial assistance programmes for indudstrial development, attention should be closely focussed on the major elements of the overall economic disequilibrium. They include: the chronic and grave balance of payments deficits, critical shortage of foreign exchange, excessive indebtedness and crippling debt servicing burden, under-utilized industrial capacity, and critical shortage of adequately qualified personnel. It is against this background that proposals, albeit broad, for assistance and industrial co-operation are outlined in the following paragraphs.

Industrial planning and studies

The critical shortage of resources and the existence of under-utilized industrial capacity call for careful planning and detailed studies of industrial projects to ensure the best allocation and most economical use of resources in order to maximize benefits. Therefore, it is necessary to assess technical and financial assistance requirements for expanding or reinforcing the existing industrial planning facilities.

Training and manpower development

The critical shortage of managerial, scientific and technical personnel is a deepseated, perpetual and formidable problem calling for the formulation of long-range programmes and strategies of manpower training and development to meet the present and future needs. Attempts were made in the current plan to project manpower requirements. The exodus of qualified people and the increasing demand accompanying new developments or projects demand a fresh review of industrial manpower requirements

and training. The enormity of the need no doubt calls for a long-term strategy and programmes at all levels of manpower development and training. Some of the levels or fields where technical and financial assistance is envisaged are:

(i) University level

Technical and financial assistance projects and programmes, with a duration of at least five years, should be drawn up taking into account the existing facilities, present and future needs. The projects should aim at the expansion or establishment of scientific, engineering and other highly specialized faculties or departments, in order to meet industrial and other demands for specialists. Multilateral and bilateral financial and technical assistance would be required in the form of lecturers, technicians, buildings, equipment, etc. It is hoped that by the end of the programme, the Sudanese would be able to take over the running of the new or expanded faculties.

(ii) Industrial technology and research

This is an arbitrary category, encompassing university graduates and graduates from other institutions such as colleges of technology, industrial research and scientific institut , etc. Training in this field has very many aspects and facets; it also involves very many institutions and industrial enterprises. To reinforce the already existing general training programmes relating to the development of technology, it is suggested that more detailed and specific approaches should be started, based on long-range strategies of each important industrial sector, sub-sector or enterprise. Technical and financial assistance is envisaged in the formulation and implementation of training and research long-term programmes and policies for the promotion of a variety of technologies. This would call for consultation with appropriate Sudanese institutions, industrial sectors and individual enterprises.

(iii) Other levels or kinds of industrial training and manpower development

Included in this broad group are training schemes by individual firms or institutions, both in-service and

specially organized courses, seminars and fellowships, vocational training; technical and commercial college training, management training and advisory centres; etc.

(iv) Co-operation in industrial training and manpower development

The cost of establishing adequate training facilities and the length of time involved necessitate the establishment of well conceived training and manpower programmes. There are already some co-operative arrangements covering fellowships, visits, etc. Bilateral and multilateral assistance in envisaged for the expasion and consolidation of fellowship, in-plant training, joint research and training programmes between the Sudan or Sudanese institutions or industrial enterprises and those in other countries. This will require consultation with the appropriate Sudanese authorities for the identification of the needs of each institution or enterprise, designation of courses, selection of candidates and their placement in carefully selected institutions and enterprises in other countries. Joint financing of training and research programmes or on an ad hoc basis is also a matter which should be explored more vigorously by bilateral and multilateral donors and the Sudanese authorities.

Mobilization of funds for financing industrial development

To extricate the industrialization of the Sudan from the severe constraints of excessive indebtedness and grave debt servicing burden, it is imperative that long-term programmes and measures for the mobilization of both domestic and foreign capital for financing industrial projects should be introduced. The ability to attract investments is largely dependent upon the existence of efficient financial institutions to handle local savings and attract foreign funds; industrial enterprises which could borrow or establish joint ventures by way of equity participation with local and foreign investors; sound industrial investment opportunities and incentives. To avoid repetitions, these matters are eleborated upon in the following paragraphs. It is here emphasized that each one of them is a central prerequisite to the mobilization of funds for industry.

Industrial survey[1/]

The Six-Year Development calls for an industrial survey covering such major aspects as projection of the long-term industrial potentials, marketing potentials, future industrial manpower requirements, detailed study of productivity problems, and a definition of the types of projects to be pursued for achieving the planned growth rates in terms of labour and capital intensity. In short this is an industrial planning and programming exercise. A survey team of 4 months duration should be assembled consisting of industrial planning expert, industrial engineer, industrial economist, financial expert and agronomist. This proposal should be considered in association with the sectoral surveys proposed here below.

Sectoral survey

The Government has already identified the main industrial sectors or subsectors to which high priority is attached. These include sugar, leather, textiles[2/], and food industries. Other important subsectors may include chemical industries, basic metals and engineering industries, and building material industries. There are already many operational and approved enterprises in each one of these sectors, both public and private. Sectoral surveys would not only provide inputs or supplementary information to the general industrial survey, but should also identify individual projects and produce pre-feasibility studies on each one of them. In this connexion, the surveys should examine the raw materials supply, existing industries and the excess capacity situation, market potentials, rationalization of development within each sector which may entail amalgamation, integrated production, inter-linkages within

1/ A general industrial survey was recommended in document UNIDO/ICIS.15 of 6 August 1976. The Six-Year Plan of Economic and Social Development 1977/78 - 1982/83 provides for an industrial survey to, among other things, identify bottlenecks and productivity problems, definition of the projects needed and a projection of long-term industrial potential. It is understood that arrangements for the survey are under active consideration.

2/ There is a 15 year plan for the textile industries which requires updating. The ECA/UNIDO Joint Industry Division has produced a report on Basic Metal and Engineering Industries in Sudan, which provides good background information.

the sector and between the sector and other sectors, technologies to be applied in production, estimated cost of each identified project, training and manpower development to meet the needs of the sector and an estimate of the cost, etc. It is hoped that the results of the surveys will constitute a basis for the planning of an orderly and economical development of each sector and industrialization as a whole. It is suggested that a proposal should be put to the Sudanese authorities with a view to agreeing on the surveys, the constitution of the survey teams, their terms of reference, the dates for the commencement and completion of the surveys, and any possible follow-up action.

Industrial census, statistical data and information[1/]

The formulation and implementation of industrial plans, policies and strategies are inhibited by the absence of reliable statistical data and vital industrial information. It is proposed that a comprehensive industrial census be carried out to back up the proposed general industrial survey and sectoral surveys. A collection, compilation and up-dating of industrial statistical data and vital information should be concomitant with the census. This task might be undertaken by the Ministry of Planning and the Ministry of Industry in co-operation with local universities and institutions. It is, however, felt that because of the shortage of staff, the Ministries may wish to assign this task to technical assistance experts, in co-operation with local personnel. An expert on industrial information and a statistician appear to be required for a period of at least one year, to organize the census and update industrial information and statistical data.

1/ The dearth of comprehensive up-to-date industrial statistical data and information has been raised on a number of occasions. The Six-Year-Development Plan recognizes this and, therefore, aims at strengthening the Project Preparation Unit and Industrial Statistics Department within the Ministry of Planning, with experts from UNIDO, IDCAS and other organizations. The experts requested so far have been in connexion with preparations of feasibility studies.

Promotion of small-scale industries

The Government is committed to the development of small-scale industries in rural and urban areas. So far very little has been done in the formulation and implementation of well conceived long-term programmes, institutional machineries and services. This is a field where special care must be exercised in order to avoid grave mistakes. To ensure reasonable success, a detailed study of all important aspects should be undertaken before decisions with far-reaching effects are made. The study should cover, inter alia, existing small-scale industries and government support; training and extension services, finance and credit, supply of raw materials, marketing and institutional support. It is hoped that the study would make specific recommendations on the establishment of a central autonomous or semi-autonomous organization (say corporation) to co-ordinate all matters relating to the development of small-scale industries; future plans and policies relating to the establishment and management of industrial estates, industrial co-operatives, partnerships and other forms of business organizations in the small-scale industry sector, financial, training and marketing institutions for small industrialists, etc.[1/]

Feasibility studies and investment promotion

It is appreciated that the Project Preparation Unit of the Ministry of Planning, the Ministry of Industry and some individual national institutions are already engaged in feasibility studies. These are mainly for public sector development; it is suggested that this service be made available to potential private investors. The number of already identified industrial projects, the necessity of up-dating and redesigning already completed studies

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1/ UNIDO's expert undertook a survey and produced a report on "Small-scale Industry Potentials in the Gezira" in February 1978. The report suggests a wide range of small-scale industries for the area.

and new projects which, it is hoped, will emerge from the proposed sectoral surveys and the small-scale industries development programmes, all point to the inevitability of expanding and consolidating facilities for feasibility studies aiming at assembling a large number of projects capable of attracting both domestic and foreign investments. Consideration should, therefore, be given to working out detailed technical assistance proposals for strengthening the existing national feasibility studies facilities for a period of at least three years. No doubt this would form one of the bases for investment promotion, mobilization of domestic and foreign resources for financing industrial development, and investments in small-scale industrial projects and other private-sector enterprises.

Assistance to public industrial enterprises and various agencies dealing with industrial matters

Shortage of funds, qualified staff, existence of excess capacity, inefficiencies manifesting themselves in yearly losses and dependence on government subsidies, are some of the problems calling for financial and technical assistance on ad hoc or long-programmed bases. Assistance under this category could be envisaged under these broad categories:

(i) Rationalization of the whole institutional infrastructure for industry

There are very many institutions with some overlapping, competitive or contradictory functions and activities. Some institutions or enterprises are performing closely related services. Since, however, the institutions are controlled and directed by different parent ministries, there is no adequate co-ordination. There are duplications, overlappings, rivalries, which entail waste of meagre resources. Duplications are also evident, ministerial functions, e.g. in matters concerning granting incentives and concessions, promotion of industrial projects (where certain ministries responsible for the production of raw materials assume responsibilities), etc. The division of responsibilities, determination of functional relationships, their co-ordination and harmonization are matters calling for

high-level decision. To facilitate that decision, a study of the existing structure, functional relationship, co-ordination and control and direction of various institutions so as to constitute one unified institutional service to industrial development would be highly advisable. A technical assistance expert should be considered for undertaking the study, including the formulation of industrial policies and their execution.[1/]

(ii) Assistance to individual institutions or enterprises

Individual institutions and industrial enterprises will continue to require technical and financial assistance for the removal of their managerial, financial, technical and engineering problems which are manifesting themselves in low productivity, excess industrial capacity and continuous financial losses. The proposals, contained in Phase II of the project for "Improvement of the Efficiency of Public Sector Industries", details areas in which technical assistance would be provided, on a systematic and continuous basis to institutions and enterprises. The Monitoring Unit/Technical Bureau, which proposed for the Ministry of Industry, will provide a sound institutional machinery for identifying specific technical assistance needs of individual enterprises. Promotion of efficiency in public industrial enterprises will have a favourable multiplier effect on, inter alia, their technical assistance absorptive capacity, their ability to mobilize domestic and foreign financial resources in the form of loans, credits and equity participation, their ability to promote industrial projects through sound, systematic and continuous identification and formulation of bankable projects, the reduction of under-utilized industrial capacity, the development and application of appropriate technology, etc.

1/ Under project no. SUD/79/010/A/01/37, "Improvement of the Efficiency of Public Sector Industries (Phase II)", commendable programmes and activities are proposed, for providing various consultancy services to individual institutions and enterprises. Consideration should be given to making a short-term expert available for undertaking a study and make recommendations on the rationalization of the institutional infrastructure.

Co-operation with other developing countries in the field of industry

The promotion of large-scale industrial production, or the process of progress from import substitution to export-oriented industrialization requires co-operation for which foundations, policies and strategies must be evolved and established. This depends upon the initiative and support of the Government and its economic and political relationship with potential partners. Assistance should be considered in the identification and formulation of projects, programmes, methods and modalities of co-operation in the fields of, inter alia, identification and formulation of specific industrial projects or programmes calling for co-operation with other developing countries, establishment of industrial joint ventures and joint mobilization of funds for financing specific projects or industrial programmes, establishment of machineries to facilitate co-operation on ad hoc or long-term and continuous bases in such fields as industrial training and manpower development, adaptation and development of technology, marketing and market research, etc., establishment of institutions or machineries to facilitate co-ordination and harmonization of consultations and negotiations in the formulation and implementation of industrial plans, policies and strategies, undertaking studies, surveys and research as well as organization of meetings for consultation on matters concerning industrial co-operation, etc.

SUMMARY AND CONCLUSIONS

With an area of 2.5 millions square kilometres, a total population of (1977) 19.46 million persons (a density of 7 persons per square kilometre), the Sudan is a very large sparsely populated country. It is estimated that half the population live in only 14 per cent of the total area. There is therefore a concentration of inhabitants in a few areas, thereby leaving the rest of the country either thinly inhabited, or uninhabited. As a consequence, it is difficult to establish and maintain an efficient physical and social infrastructure which is necessary for supporting industrial development.

The Sudanese economy has had sluggish and fluctuating growth rates since 1968. The contribution of agriculture to value added has been declining while that of services has been almost constant since 1975. Manufacturing has not shown any spectacular growth in its contribution to the value added; it was 5.97 per cent in 1968, compared with 6.68 per cent in 1977. The years 1967-1968 show positive and high growth rates for all major economic sectors. Since then, up to 1976-1977 all sectors registered declines and negative growth rates, except in 1975-1976 when there were improvements. Population has been increasing at a rate of 3 - 3.2 per cent per annum.

The Sudan has been going through a long period of balance-of-payments crises and overall financial disequilibrium. The main causes are: inadequate export earnings, sharp rise in imports, insufficient financial resource inflow from external sources, and the excessive debt servicing burden. Because of the critical shortage of foreign exchange, some industries cannot purchase machinery, equipment, spare parts, raw materials and other inputs. Hence, the abandonment, shelving or postponement of the implementation of some projects and the existence of idle capacity in some industrial enterprises. This situation has compelled the Government to review its development plan in such a way that resources are to be concentrated on completion of on-going projects and on only new ones that rehabilitate existing productive schemes and capital stock and ameliorate the infrastructure.

To promote a self-sustaining rate of industrial growth in the Sudan, the restoration of the overall financial equilibrium is a central prerequisite, the accomplishment of which will take a very long time. This will entail the introduction of measures based on long-term (at least five years) technical and financial assistance programmes aimed at removing such severe constraints as critical shortage of financial and manpower resources, inadequate physical and institutional infrastructures, and shortage of foreign exchange.

An overview of the manufacturing sector reveals that the country's potentials are severely constrained by inadequate road, rail and river transportation facilities. In the absence of a fairly reliable transport network, it is not possible to promote a fair distribution of industrialization in the country. Other constraints on industrial development are found in the inadequate energy and water supply facilities. This has had an adverse effect on the industrialization efforts in rural areas. There are potentials for hydro-electric power and water resources development.

At present agriculture, animal and forest resources are the main sources of raw materials for the manufacturing sector. Any industrialization prospects will continue to be largely dependent upon success in the development of the primary sectors, with particular emphasis on the agriculture in which the country has enormous endowments. Efforts to expand and diversify food and cash crops production have, however, not led to a satisfaction of domestic demand, nor have there been any increases in export earnings. Consequently, food imports are still constituting a large proportion of the import bill, and some industries are operating far below their installed capacity because of shortages of agricultural raw materials.

The Sudanese Government has formulated sound plans, policies and strategies for the removal or alleviation of the retardatory problems to its industrialization efforts. The implementation, however, has proved difficult, if not impossible, due to acute shortages of human and financial resources, among other things. Thus the constraints continue almost unabated and they consist of overall economic weakness, balance of payments deficit and lack of foreign exchange, inadequate physical and institutional infrastructure, critical shortage of qualified manpower, poor performance of the agricultural sector, excess installed industrial capacity, etc.

Serious consideration should, therefore, be given to long- and short-term programming of technical and financial assistance in: mobilization of domestic and foreign financial resources; extension and intensification of training and manpower development; adaptation and development of technology; general and sectoral surveys aimed at identifying specific projects as well as promoting integrated industrialization; establishment of or strengthening individual institutions, or management of the institutional infrastructure as one co-ordinated and unified service; undertaking feasibility studies; fostering and promoting industrial co-operation in marketing, joint financing of programmes or specific projects; development of small-scale industries, etc.

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