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07124

Distr.
RESTRICTED
UNIDO/ICIS. 15
6 August 1976
ENGLISH

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

THE DEMOCRATIC REPUBLIC OF THE SUDAN .

A DESK STUDY
OF
THE INDUSTRIAL DEVELOPMENT ✓

BY
L.D. MATOVU
UNIDO OFFICIAL

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id.76-3923

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NOTE

The Desk Study is intended for providing some background information which may be of use to UNIDO's mission to Sudan, or to facilitate the work of staff members who may be dealing with that country. It does not provide a detailed discussion or analysis of all aspects relating to industrialization but it, in the main, attempts to put in one document, the most salient up-to-date information of the situation regarding industrial development, for the purpose of briefing those who may be engaged in UNIDO's technical assistance programming.

The Desk Study is based on the information contained in the IBRD Mission Report 1975, "A Survey of the Industrial Sector of Sudan"; the Report of the ILO/UNDP Employment Mission 1975 "Growth, Employment and Equity", Volumes I and II; the National Planning Commission "Economic Survey 1975"; the UNDP Country Programme for Sudan, 1972-76; the Five Year Development Plan, 1970/71 - 1974/75, etc. It should be appreciated that there might have been some developments which might have changed a number of aspects outlined in this paper. For example, the Five Year Development Plan came to an end last year and a new one is still under consideration. Before the publication of the plan, it is at present not easy to know the Government strategies and targets. Action might have been taken to secure some of the technical assistance proposed in this paper. These are some of the broad shortcomings of the paper which should be born in mind.

Units of Measurements

The monetary unit of Sudan is Sudanese pound, divided into 100 piastres. The rate of exchange in October 1975 was £S 1 = US\$ 2.87.

A "feddan" is 1.038 acres or 0.420 hectares.

A "Kantar" is about 45 kilogrammes.

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THE DEMOCRATIC REPUBLIC OF THE SUDAN

I. INTRODUCTION

Population and Area

1. With an area of 2.5 million square kilometers, the Sudan is the largest country in Africa. In 1973, it had an estimated population of 14.8 million, growing at a rate of 2.2% p.a. Most of the people live in rural areas, as indicated in the following table.

TABLE 1

	<u>1955/56</u>	<u>1973</u>	<u>Annual Growth Rate</u>
Urban- North	690,396	2,213,014	7.1
- South	46,737	274,716	10.9
Rural - North	6,789,004	9,520,418	2.0
- South	2,736,399	2,750,014	0.03
All Urban	737,133	2,487,130	7.4
All Rural	9,525,403	12,270,616	1.5

Source: 1955/56 Census of Population and Department of Statistics 1975 (The figures used are the provisional results of the 1973 census as estimated by the Department of Statistics in February 1975).

Transport ^{1/}

2. Inadequate transport facilities continue to be one of the major problems to the development of Sudan. Access between the country's only port and the rest of the country is insufficient, and the efficiency at which the railway system operates is very low. There is extremely poor or total lack of communications in the rest of the country and between and within its different regions. This state of affairs seriously hampers the expansion of agriculture, industry and commerce and adversely affects the efficiency of public administration. It also shows down efforts for national integration; hampers the implementation of projects; and introduces uncertainties in the daily planning of economic activity at all levels, which is detrimental to growth. In fact, many of the difficulties the Sudanese

^{1/} This is based on the ILO/UNDP Employment Mission Report 1975, Volume II, Technical Paper No. 6

economy is at present facing are, to a large extent, attributable to the inadequate transport facilities.

3. There is, for instance, a specific example relating to the need to balance the requirements of transport in the central and eastern parts of the country, where a part of the industrial and agricultural development programme will continue to be concentrated, and the desire to provide better links between these parts and the Western and Southern regions. Faster economic growth in the South and the West is contingent upon a rapid improvement in their internal system of transport. In the main such broad national objectives as improved administration, greater regional integration, reduction of regional disparities are all affected by the development of transport. Industrialization and its distribution among various provinces will continue to suffer in the absence of adequate transport.

The railway

4. The Sudan Railway, with a route network of 4,800 km, has a virtual monopoly of inland transportation, especially on the most important Port Sudan-Khartoum route. It has to contend with harsh desert conditions which give rise to many operational problems. The highly seasonal demand due to the predominance of agricultural commodities such as cotton and oilseeds in the country's exports, and the similarly seasonal nature of the input requirements for agriculture, such as fertilizers, in conjunction with inadequate upcountry storage facilities for farm produce and farm inputs, have aggravated the difficulties the railway has been facing. There are numerous accidents and failures of equipment in operation which, with the lack of communications facilities, results in considerable delays.

5. In terms of certain operating criteria, the Railway's performance is satisfactory - for example, in terms of average load per freight train, average load per wagon, freight ton-km per year per wagon - but considered in terms of other criteria, such as locomotive availability, locomotive utilization and wagon turn-around time, the performance is poor.

Roads

6. Given the country's size, road transport in Sudan is still at an early stage of development, with only about 10,000 km of roads and

tracks, of which less than 400 km is asphalt-paved and around 2,000 km is gravel; the rest are dry weather tracks. The number of road motor vehicles is only about 50,000, half of them cars and the remainder trucks and buses. Road transport has developed so little that a very large number of potentially productive areas can be reached only by foot or on animals.

7. The Roads and Bridges Corporation, given its existing staff structure, may not be able to handle any major road construction programme. It would be necessary for a major part to call upon outside consultants for carrying out feasibility studies, engineering designs, selection of contractors and supervision of construction. For construction, reliance will have to be placed on foreign contractors for all major projects, while feeder road programmes could be carried out by local labour. The Corporation will simultaneously have to build up its organization, staff and stock of equipment in order to be able to carry out routine maintenance on the expanding road system.

8. It is not enough to provide roads to encourage road transport. An important component of the programmes is the purchase of vehicles, especially trucks and buses. Trucking and busing operations by individual owners provide much needed transport services as well as employment opportunities. Facilities for maintenance do not appear to be sufficient even for the present fleet of vehicles. Such facilities as exist are concentrated in and around Khartoum and are very inadequate, if not virtually non-existent, over much of the country. The kind of fleet expansion which the expanding road network programme calls for will require a large number of new garages and repair which, in turn, will call for an increasing number of mechanics. The Government may consider providing credit to individual small businessmen for setting up garages and repair shops.

River Navigation

9. At present, river services operate on two stretches of the Nile: the 1,400 km long Kosti-Malakal-Juba section between the central and

southern parts and the 290 km long Karima-Dongola section in the northern region. Most of the river traffic is in the southern section, with nearly all freight on this section moving to the south. Due to navigational difficulties between Khartoum and Kosti, the latter place is used as the rail-to-river freight transfer point for traffic to and from the South. The present barge fleet is old and there is a shortage of capacity, but this ought to be quickly overcome now that new ones are becoming available. Considerable dredging work needs to be undertaken to enable larger barges to operate at full capacity: two dredgers have been obtained for this purpose.

10. The river port facilities at Kosti, Malakal and Juba are old and obsolete. Facilities for repair and maintenance of the fleet are located in North Khartoum. Since Khartoum is not regularly served by the river fleet, barges have to be brought empty for repair and maintenance, causing further low utilization of river craft.

11. The River Transport Corporation, which took over river services from the Railway Corporation in 1972, needs the services of management, operational and financial experts, as well as assistance in setting up new maintenance facilities in the South. Until river services are extended to Khartoum, the North Khartoum workshops can concentrate on major repairs and making spare parts for routine maintenance work to be done in the South.

Ports

12. Located on the Red Sea, Port Sudan is a good natural harbour and at present the country's only deep water port. Fewer ships have been calling since the closure of the Suez Canal, but average cargo loaded and unloaded per ship has increased. The reopening of the Suez Canal might have improved sailings. The port handles three million tons of dry cargo per year and is now operating close to what, considering the condition of its physical facilities and equipment, could be described as optimum capacity. With physical improvements, equipment purchases and operational technical assistance, the port may be able to increase its capacity marginally.

13. Scope for further expansion of physical facilities in the present location has almost been exhausted and, additional facilities may have to be provided at a new location, for instance, at Suakin. If this development comes about, Port Sudan could specialise in general cargo (and petroleum) with the new port concentrating on specialised facilities to handle bulk cargoes such as foodgrains, sugar, oilseeds, and vegetable oil for export and fertilizers for import.

Civil Aviation

14. Because of lack of other reliable means of surface communications over vast areas of the country, air transport has a crucial role to play in Sudan. Even when surface transport develops, air transport will continue to be important in view of the size of the country and the distances involved. The domestic air transport system connects 17 towns, with Khartoum the central point of the system through which most connections are made. Ground facilities and runway conditions at most airports are minimal. Only Khartoum has night landing facilities and only Khartoum, Port Sudan, Athara and Juba can handle jet aircraft. As a consequence, fleet utilization by the Sudan Airways Corporation is poor (about five hours a day for F-27's and three hours a day for twin otters). Operating costs are necessarily high. It is important to provide night-landing facilities at the principal airports such as Juba, Malakal, El Obeid, Port Sudan and possibly Nyala (and other places later as necessary) to improve aircraft utilization and provide more scheduled services at perhaps lower cost.

Pipelines

15. There are at present no pipelines in Sudan, but construction of an 8- inch white oil products pipeline from Port Sudan to Khartoum was planned to begin in 1975 and scheduled to be completed in 1977; it will be able to transport up to 1.5 - 1.8 million tons a year. Once completed, the pipeline will not only assure valuable fuel supplies for the area in, around and beyond Khartoum and the agricultural and industrial activities in the region; it will also release railway capacity to carry other traffic.

Agriculture^{1/}

16. Agriculture in Sudan is the dominant sector in the economy and is likely to remain so for several decades. At present agriculture contributes 38 per cent to GDP at factor costs, it constitutes over 95 per cent of exports, it contributes directly and indirectly over 50 per cent of Government revenues, and it provides income and employment to the majority of the population. Given the extraordinary size of unsettled arable land with access to potential irrigation water or adequate rain - one estimate puts the arable land acreage at about 200 million feddans compared to the 15 million feddans now under crops - and a favourable climate for plant growth, Sudan's comparative advantage clearly lies with agriculture. This comparative advantage, moreover, resides primarily in exportable products, both because of the costs of production relative to prospective world prices and because of the small size of the domestic market.

TABLE 2

<u>Crop/Year</u>	<u>Production of Major Crops</u> (thousand tons)			
	<u>Five-Year Average</u> 1960/61 - 1964/65	<u>Five Year Average</u> 1965/66 - 1969/70	<u>Growth</u> <u>Rate</u>	<u>1970/71</u> <u>(Tentative)</u> <u>('000 tons)</u>
<u>Cotton</u>	148	203	6.5	252
Extra long staple	131	172	5.6	212
Medium	5	22	34.0	35
Short	12	9	-6.0	5
<u>Cereals</u>				
Sorghum	1,247	1,258	0.2	1,529
Millet	290	305	1.0	460
Wheat	36	95	21.0	134
Maize	21	18	-3.1	23
<u>Oil Seed</u>				
Cottonseed black	250	329	5.6	405
Cottonseed white	34	55	10.1	67
Groundnuts	228	298	5.5	351
Sesame	172	162	-1.2	282
Castor seed	5	17	28.0	17
<u>Others</u>				
Sugar cane (stripped)	170	690	32.0	800
Gum	45	48	1.3	45

^{1/} Based on Chapter III.1 of Volume I of the ILO/UNDP Employment Mission Report, October 1975.

17. Agriculture development has been characterized by a marked dualism between high-income, irrigated and mechanised rainfed agriculture, on the one hand, and low-income, traditional agriculture and livestock on the other. About one-third of cropped land is in fact in the modern sub-sector, which makes Sudan unique in tropical Africa. However, this dualism has contributed to a pronounced unequal development between regions. Most of the irrigated and mechanised rainfed agriculture is in the former Blue Nile and Kassala Provinces in the central and eastern part of the country. This area is where transport, power, schools and industry are also concentrated; the regions in the West and South lag far behind.

18. How to redress the inequality between the areas of heavy investment along the Nile and the rest of the country has elicited considerable discussion in Sudan. The critical question is whether concentration of investments in selected favoured regions along the Nile, and the increased incomes which are generated there, will also benefit the people in the rest of the country, or whether the initial advantage in effect restricts opportunities for growth in the backward regions.

19. Several strategies have been suggested for reversing the existing dualism. Firstly, it is suggested that population from low income regions can be drawn into the high income region by allocating tenancies to them in the proposed new irrigation schemes on the Nile and its tributaries. But the number of people who could be absorbed in such schemes, however, would not even match the expected population increase in the other regions. Of course, the demand in the Nile Valley for seasonal labour from other regions will increase in years to come but this in itself does little to reduce the income gaps between the two areas: as long as population growth and lack of income-earning opportunities in the other regions leave a large supply of labour dependent upon migration for even limited access to higher productivity employment, wage rates for seasonal labour will fail to rise and, under some circumstances, they may even fall.

20. Secondly, it is suggested that modern production units be established in the backward regions. Mechanised crop production schemes are one example which could spread to the clay plains in Southern Kordofan, Southern Darfur, and the northern parts of Upper Nile and Bahr El Gezal. The problem with the mechanised crop production schemes is that the present system of leasing land in large units of 1,000 feddans or more favours primarily in-

vestors who are already well off, and only to a small degree the local population. Another variant is to introduce modern livestock production units, ranches, into the west and south. It is, however, quite unrealistic to assume that the population which at present exploits this area can be absorbed in ranches, since the main economic advantage of such ranches is precisely that of drastically reducing the labour-land ratio.^{1/}

21. A third method of reversing the trend towards a dual economy would be to make really substantial efforts to develop traditional agriculture and livestock in the low income regions while continuing to promote the growth potential of modern agriculture from which could come the savings to develop the traditional sector. Modern agricultural development has acquired a momentum of its own. Unutilised irrigation water needs to be exploited, large areas of rainfed land where the soil is too heavy to work by hand are waiting to be brought into use under mechanised farming schemes, foreign aid funds are already earmarked for important new projects in the modern subsector. Partly because most of the pressures will be to continue as before to promote this modern subsector, a considerable effort of political will is going to be needed to devote sufficient resources to the traditional subsector. In terms of money and manpower, investment in traditional farming is likely to grow rather slowly in the immediate future. It will be essential to press on, through intensified agricultural and sociological research, to the discovery of technologies that are relevant to the needs of traditional farmers, especially in the west and south, to identify opportunities for providing public services and for attracting foreign aid funds to the traditional subsector. The aim should be to accelerate investment through the next decade so that during the decade following, from 1985-95, really massive resources can be effectively invested in traditional agriculture on a scale commensurate with those currently being devoted to modern farming.

22. The strategy for agriculture will not only decisively influence the over-all growth of the economy but it will also have a marked effect on employment patterns and inter-personal, inter-sectoral and inter-regional distribution of incomes. Assuming increased investable resources

^{1/} There is, however, a possibility of modern ranching in the presently tsetse-infested areas of the south-west.

over the next decade, there is scope for developing all types of agriculture. Quick and comparatively reliable increases in production of food and exports will result from continued expansion of mechanised, rainfed agriculture. Although investment in increasing yields from existing irrigated lands will be more productive than expansion of irrigated acreage, there is also considerable scope for the latter. However, in the long term, development of traditional agriculture and livestock is even more important, both from the viewpoint of growth and from that of equity.

General economic and social considerations

23. Another point to bear in mind when examining the general situation in the country is that Sudan is one of the countries identified as least developed. Like other countries in this category, it has the following characteristics, which in fact constitute problems in themselves that impeded industrialization, general economic development and social progress.

- i) extremely low level of labour productivity;
- ii) scarcity of skilled manpower;
- iii) inadequate knowledge about the nature and extent of their natural resources;
- iv) low level of physical and institutional infrastructure;
- v) predominance of subsistence production;
- vi) dependence on a very narrow range of primary commodities in their production and export structure; and
- vii) lack of integrated and co-ordinated industrialization.

24. The criteria applied in putting the Sudan and other countries under the category of "least developed" were: (a) per capita income of US\$ 100 or less; contribution of manufacturing to the gross domestic product (GDP) of less than 10%; and (c) a literacy rate of less than 10% of the adult population.

25. Since the above-mentioned characteristics and criteria are in themselves the major problems that are hindering development, their removal is a pre-requisite to the industrialization of the Sudan. Thus it must be recognized that technical assistance should be directed towards the solution of these hinderances.

THE STRUCTURE AND RECENT PERFORMANCE OF MANUFACTURING IN THE ECONOMY

26. Industry contributes about 10% of the gross domestic product (GDP), while agriculture has the largest contribution of about 38%. In terms of employment, it is estimated that industry employed some 240,000 persons in 1969, or 5% of the total registered labour force, compared with 86% of the total labour force which was employed in such primary activities as: agriculture, fishing and forestry^{1/}. The following two tables depict GDP and employment by the main sectors. (Page 14).

27. Despite the fact that no reliable national accounts are available for the growth of real output, and the apparent underestimation in the existing information of the growth that has occurred, the figures show that the industrial sectors remained stagnant between 1969/70 and 1971/72. In fact the share of manufacturing and mining declined from 10.16% in 1969/70 to 8.32% in 1971/72.

28. Judged from its contribution to GDP of not more than 10%, and employment of less than 5%, manufacturing is at present playing a minor role in the economy. Agriculture is the main source of the livelihood of the population, and the principal foreign exchange earner for the country. In 1970/71, there was a drop in the share of the industrial sector in the GDP

^{1/} Source: Ministry of Labour Survey of Manpower in the Sudan, October, 1969, published in the "Report of the Democratic Republic of the Sudan Industrial and Investment Opportunities" by IDCAS, page 3

from about 10% to 8% in 1971/72 because of the decline in the production of some of the major factories as a result of the nationalization measures of 1970.^{1/} It is also not surprising that at present the contribution of manufacturing to the GDP is very humble because industrial development is relatively recent; most of the large industrial units started in the early 1960's and there are (as will be highlighted later in this paper) such serious problems as constitute obstacles to the industrialization process.

Growth Performance

29. In view of the fact that industrialization is recent in the Sudan, and because of the lack of relevant and reliable information, an examination of the performance and growth of the manufacturing sector will relate to the very recent years. As stated earlier, the main industrial units emerged in the early 1960's. Development has been concentrated on processing agricultural products and the manufacture of textiles. At this stage, industrialization is directed almost exclusively to import substitution. Thus, the domestic market is crucial for the absorption of the products of local industries.

30. Government policy has encouraged investment in order to increase output for the import substitution process. Manufacturing and handicraft output in the mid-fifties amounted to only about 5% of the total output, but by the end of the sixties it was approximately 10%. In the absence of reliable indices, it is not possible to estimate the rate at which the volume of output increased. Between 1960/61 and 1971/72, the value of output rose by about 10% per annum; price increases contributed to this, but the increase in volume was less. Investment in industry, however, increased sporadically, and in some years net investment was negative, and even at its best, it did not take even 10% of the total resources invested.

^{1/} This view is expressed in the Economic Survey of the Sudan, which was carried out by the National Planning Commission of the Government in 1973.

TABLE 3

Contribution of the Main Sectors to GDP (at Factor Cost Current Prices)
1969/70 - 1971/72

<u>Sector</u>	<u>1969/70</u> <u>£Smillion</u>	<u>%</u>	<u>1970/71</u> <u>£Smillion</u>	<u>%</u>	<u>1971/72</u> <u>£Smillion</u>	<u>%</u>
Agriculture	207.6	40.8	217.3	40.86	241.4	38.17
Mining and Manu- facturing	52.5	10.6	51.5	9.68	52.6	8.32
Electricity and Water	16.5	3.19	16.5	3.12	16.8	2.70
Construction	23.3	4.52	22.3	4.19	25.7	4.16
Commerce and Hotels	54.4	10.53	55.1	10.37	105.0	16.06
Transport and Communications	50.6	9.79	50.04	9.48	51.0	8.06
Finance and Real Estate	23.2	4.49	22.5	4.25	40.6	6.42
Government Services	77.1	14.24	84.5	15.89	91.8	14.62
Others	<u>11.4</u>	<u>2.20</u>	<u>11.4</u>	<u>2.16</u>	<u>7.5</u>	<u>1.49</u>
Total	<u>516.6</u>	<u>100</u>	<u>531.7</u>	<u>100</u>	<u>632.4</u>	<u>100</u>

Source: Department of Statistics

TABLE 4

Provisional Estimates of Employment by Sector 1973, in Percentages

Agriculture	72.7
Manufacturing	3.7
Electricity	1.0
Construction	1.9
Commerce, Trade and Finance	5.2
Transport	3.6
Services	<u>11.9</u>
	<u>100</u>

The absolute numbers on which these percentages are based do not sum to the total numbers of employed people; further, nomads and migrants are systematically excluded.

Source: Population Census 1973, provisional tabulations

TABLE 5

Manufacturing: Percentage Distribution of Units, Employment, value of output and investment, 1970/71

	<u>No. of units</u>	<u>Employment</u>	<u>Value of output</u>	<u>Investment</u>
Food, beverages and tobacco	39	35	49	40
Textile apparel and leather	15	37	23	24
Wood products and furniture	4	1	0	1
Paper, printing and publishing	6	5	4	4
Chemicals, plastics, petroleum and coal	17	9	12	10
Non-metallic minerals	6	4	3	8
Metal fabrication, machinery and equipment	12	8	8	3
Others	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>
	100	100	100	100
	-----	-----	-----	-----

Source: Industrial Survey 1970/71; Economic Survey 1973

31. The operation of the incentives, which were meant to encourage industrial development, was unsatisfactory to the extent of adversely affecting performance and growth in the manufacturing sector, as will be discussed later in this paper. Prices under the incentives system, for example, were not fixed in such a way as would relate to economic costs and benefits. Financial incentives were not allowed to operate freely, and in fact were subordinated to direct controls.

32. Information on industrial production covers mainly the public sector industrial activities. Private sector activities, however, accounts for a large part, though still at the initial stage of development. The most important data available for the private sector are those on handiwork. (See Table 6 below.)

TABLE 6

GDP of the Industrial Sector at Factor Cost
1967-1970/71 and 1971/72 (in £S million)

	<u>1967</u>		<u>1968</u>		<u>1969</u>		<u>1970</u>		<u>1970/71</u>		<u>1971/72</u>	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Manufacturing	25.740	63.7	25.660	61.8	27.278	63.5	35.588	69.5	34.163	68.5	23.126	58.37
Handicrafts	14.661	36.3	15.838	38.2	15.654	36.5	15.176	30.5	15.770	31.5	16.490	41.03
Total	40.401	100	41.498	100	42.932	100	50.764	100	49.933	100	49.616	100

33. The industrial sector contribution to the country's economy (value added factor cost) was £S 49.6 million in 1971/72, compared to £S 49.9 million in the previous year and £S 50.7 million in 1969/70. This decline in the value of industrial output was mainly due to the fairly unstable overall conditions of industrial operations associated with the confiscation and nationalization policies in 1970. This is clearly reflected in the manufacturing sector's contribution to GDP, which dipped from £S 35.6 million in 1970, to £S 23 by 1972, a drop of 35%.

34. The performance of the manufacturing sector can be gauged in relation to the utilization of capacity. The manufacturing industry in the Sudan is characterized by a high degree of idle capacity (to be highlighted further later). Thus, in so far as there is existing idle capacity, it can be safely concluded that the performance of the manufacturing sector is unsatisfactory. There are various reasons for the underutilization of the installed capacity. One of the contributory factors to excess capacity is that the establishment of some manufacturing units was not based on sound project formulation and evaluation. The problem is aggravated by inadequate infrastructure, lack of adequately qualified and skilled manpower and adverse effect of the industrial policies being pursued by the Government, as will be explained later. The problem of excess capacity appears to be one of the areas in which UNIDO should assist the government in removing the causes. Thus, it is necessary to take up this matter with the government authorities concerned.

Performance of industrial units^{1/}

Food Processing

35. In food processing as in other operations, experience has been mixed. The Government's sugar processing factories at Gunneid and Khasm El Girba are a case in point; the former operated at less than full capacity^{2/} and with high production costs lost money; the El Girba plant with the same nominal capacity has done much better; production has in fact exceeded capacity and this combined with control of supplies of cane has enabled a profit to be made. This is encouraging in showing that with good management the production of sugar can be economic and it is felt that there are good grounds for expanding the industry. Other factories are now in the course of establishment. Nevertheless, experience has shown that careful planning is needed to ensure efficiency. Until the recent rise in sugar prices, the ex-factory price at Gunneid was higher than the international price.

36. Advantage has been taken of Sudan's ability to grow oilseeds by establishing mills to extract the oil. In 1970-71 there were 31 oil mills employing about 4,000 workers and producing oil and cake valued at £S. 17 million. While the capacity of mills for processing oilseeds exceeds the amount of seeds made available, further investment is planned and is needed to process other types of seeds, increase the flexibility with which plants can be operated and, by improving machinery and methods, to increase the percentage of oil that is extracted.

37. The food industry has proved to be less efficient than was hoped. Marketing as well as supply difficulties have loomed large. Some of these are capable of being overcome; the milk factory at Babanousa which has remained underutilised because of procurement difficulties is planning to improve the position by opening additional collection centres and it may prove possible to increase milk yields by persuading cattle owners to use cattle feed as a supplement to grazing. It can also be noticed that supplies of fruit and vegetables have not been sufficiently well assured to keep plants running at full capacity.

^{1/} This information is based on the IBRD Mission Report 1974 "Survey of the Industrial Sector of Sudan".

Textiles

38. Cotton textile manufacturing is being undertaken at present as a means to replace imports. The Industrial Bank has advanced loans for 19 projects to establish textile units. In the private sector 53 units have been sanctioned involving an investment of £S. 89 million and units have also been established in the public sector. A factory to produce 16 million metres of cloth has been built with Chinese assistance at a cost of £S. 4 million at Hassa-Haissa and negotiations are proceeding with a Japanese firm for the establishment of a unit to produce 26 million metres of cloth. Financial arrangements are also being finalised for six weaving factories at Nyala, Kosti, Shandi, Kadogli, Mongali and El Dulem each costing £S. 3.8 million and having an annual capacity of 10 million metres. Spinning factories at Port Sudan and Hag Abdalla have also been approved at a cost of about £S. 14 million.

39. These developments are part of a plan designed to make Sudan independent of imports of textiles with processing capacity capable of manufacturing 27,000 tons of cotton (13 per cent of the local crop). There are further plans to extend capacity with a view to exporting yarn and subsequently cloth. In textile manufacturing three shifts may be worked and some units are operated at capacity.

40. Cotton is not the only home produced textile material that is intended to be used in manufacturing. A factory for the manufacture of Kenaf at Abu Na'am has been built and work has begun on another one at Tong.

Leather industries

41. Another example of the use of domestic materials in manufacturing is that of leather. There are estimated to be about 40 million animals in Sudan. The first modern establishment for processing hides was set up in World War II. This was followed by the establishment of a tannery by the Government in Khartoum which is to be supplemented by another in the locality and by others in Wad Medani and Port Sudan. It is noticeable

that the Khartoum tannery has been employed at capacity. The production of shoes seems very suitable for Sudan but raw material supplies including leather as well as synthetics have been inadequate and the production record at the Bata Nationalised Corporation has been poor. There are also a number of small tanneries in the private sector.

Other industries

42. By comparison with industries based on domestic materials, other types of manufacturing are of less numerical importance. Chemicals, plastics and petroleum are relatively lightly represented, the most important single unit being the refinery at Port Sudan. There are opportunities for extensions to other types of chemical processing but it seems that they are limited at the present time by availability of raw materials or markets.

43. This is much less true of the engineering industry although it is still in an embryonic state. A number of engineering products are manufactured and engineering service facilities could expand rapidly and be widely dispersed throughout the country as economic activity generally expands. Similar considerations apply to the building materials industry where there is both the need and the opportunity to increase the output of cement, bricks, etc., which will be needed in rapidly growing amounts as development proceeds. Although cement is much needed and has to be imported, it is noticeable that capacity is far from fully used.

Employment creation

44. In manufacturing, as opposed to handicraft production, there are about 3,000 industrial units; in the handicraft sector about 20,000 units are believed to exist. The number of people employed in these sectors is not known precisely but on the basis of data collected in industrial surveys and on assumptions about average employment per unit where data is not available, it appears industry and handicrafts between them give work for about 200,000 people, about 3 1/2 per cent of the economically active population.

45. Most units surveyed in 1974 and earlier years employ less than 25 workers. The larger units subjected to the industrial survey of 1970-71 included some offering employment for relatively large numbers; 35 per cent of the units surveyed employed 100 or more workers. The Employment Survey of 509 units conducted in 1974 showed a somewhat different picture, as might be expected from its wider coverage. 60 per cent of units surveyed in 1974 employed less than 30 employees; even so 26 per cent of units employed 30 to 100 employees. The main conclusions to be reached from these surveys are that while there are many small units and they predominate in numbers, there are also sufficient large concerns for experience to have been gained in comparing units employing 100 or more men. Most of such large establishments are in the private sector.

46. Of special interest is the amount of capital invested per person employed, as revealed in the Industrial Survey of 1970-71. At that date the amount of capital invested per man in Sudanese industry covered by the Survey averaged £S. 2,398. At present prices, the capital required per job would of course be substantially greater than this; nevertheless the figures demonstrate that the amount of capital per man in many of the industrial units set up is relatively modest for large scale modern industry. It could, of course, have been less had capacity been more intensively used as a result of better economic planning and more extended shift work.

Public and Private Sector Industries, Small-Scale Industry

47. Sudan has a mixed industrial sector. According to the 1974 Employment Survey, the privately-owned manufacturing industries accounted for 31% of the fixed assets, 82% of the workers and 76% of the wages paid in large scale industries. Government participation in the industrial field arose from lack of private entrepreneurs and financial resources in the private sector. Only strategic and defence industries are exclusively reserved for public ownership.

Public Sector Enterprises

48. Publicly-owned industrial enterprises control and manage a substantial number of productive units in the Sudanese economy. These are found mainly in such industries as cement, breweries and sugar refineries. Though several manufacturing and commercial enterprises nationalized in 1970 were returned to their former owners, more than 50 of such enterprises employing about 40,000 workers are owned by the state. On the whole, the management and operations of these enterprises has been unsatisfactory. Many of them are operating far below capacity and are incurring heavy losses calling for subsidies from the Government. Some industries have operated profitably but not at such level of profitability as was expected.

TABLE 7

Financial Performance of the Public Manufacturing Enterprises

£S Million

	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u> <u>Estimate</u>
Revenue	29.8	31.1	33.1	58.7
Expenditure	<u>28.3</u>	<u>30.8</u>	<u>34.4</u>	<u>56.7</u>
Surplus	<u>0.5</u>	<u>0.3</u>	<u>-1.3</u>	<u>2.0</u>

Source: Economic Survey 1974

49. Even when the surpluses (deficit in 1973-74) are expressed as a percentage of capital employed or of turnover, the financial results are disappointing. They illustrate that public manufacturing enterprises have not been making sufficient contribution to the accumulation of resources for development in the form of profits for reinvestment in expansions and new industrial projects.

50. In its report "Growth, Employment and Equity" the ILO/UNDP mission 1975 observed that there was too much government interference in the affairs of the public corporations. This is one of the problems which adversely affect their management and operations. Major policy decisions and guidance are the responsibilities of ministerial and political authority, but ministers go as far as interfering with the day to day operation, without respecting the principles of management autonomy.

51. The mission also draws attention to the lack of competent staff as one of the problems causing unsatisfactory results in the management and operations of publicly-owned industrial enterprises. It is observed that though many of the enterprises are staffed with competent technical staff, the management is often composed of untrained and inexperienced personnel in commercial and industrial operations. Many are drawn from the Civil Service background and tend to apply Civil Service procedures to commercial operations with unsatisfactory results.

52. It is recommended that UNIDO should examine with the Government ways and means of developing professional cadres for the management of modern industrial enterprises to staff the executive ranks of both the public and private industrial enterprises. Consideration be also given to posting technical assistance experts in various fields to the corporations to assist in the organization, management and provision of in-service training in order to strengthen the management through upgrading the capabilities of Sudanese staff members of the corporations. Fellowships in wanting skills should also be arranged by UNIDO and

the Government or individual industrial corporations; and local courses should be organized. In this connexion, discussions should be held with the Department of Business Administration at the University of Khartoum, which now produces some 60 graduates a year, to arrange courses and curricula most suited for meeting the needs of the industrial enterprises.

53. The Industrial Production Corporation, a holding corporation owned by the Government, controls the following industrial enterprises based on agriculture: Kareima Date, Fruit and Vegetable Canning Factories, Guneid and Khashm El Girba Sugar Factories, the Kassala Onion Dehydration Factory, The Wan Fruits and Vegetables Canning Factories, The Babanonsa's Milk Products Factory and the Khartoum Tannery. The following table shows production in the public industrial sector. With a few exceptions, all these were working below capacity due to unreliable supply of raw materials, shortage of skills, poor management. Consequently, the cost of production was too high, relatively limited and of a poor quality. There is a need for improvement in the management and technical operations of these establishments. It is proposed that this matter should be explored by the mission with a view to identifying the exact nature of technical assistance which UNIDO or other agencies can provide for improving the performance of these factories. The Fava Research Centre in collaboration with UNDP/FAO is giving some assistance. The mission should seek the Centre's opinion.

Small Scale Industries

54. In the handicraft sector it is estimated that there are about 20,000 units. Most of the handicraft industries employ less than 10 workers, and employment is shared roughly equally among Khartoum, Kassala and the Blue Nile Provinces. Production by these industries is based mainly on food processing and textiles. The Industrial Survey 1970/71 revealed that there were about 135 establishments employing 25 - 100 workers, and 74 units employing 100 or more. The total invested capital in the first group of establishments was 12% of the total, leaving 88% of

the investments to the 74 units which employed 100 and more workers.

55. The amount of capital invested per person employed as revealed by the Industrial Survey of 1970/71 averaged £ 2,398 (see table relating to the geographical distribution of industries by province). At present prices, the capital required per job would of course be substantially greater than this. The figures nevertheless demonstrate that the amount of capital invested per man was not large enough for the promoting of modern large scale industries.

56. It is pointed out in the ILO/UNDP Employment Mission Report 1975 that there is a number of factors which militate against the dispersion of large scale industries while there are opportunities for dispersion of industrial units and production through the promotion of small scale industries. This will, however, require variation of production techniques in some cases to suit small scale production. The report points out that it would be possible, for example, to use small-scale kilns for the production of cement which would be more than adequately strong for a variety of purposes.^{1/} It is also suggested that alternative scales of operation and associated techniques of extraction are available in the sugar production which could be considered for use by small-scale growers of sugar, oil extraction, preservation of fruits and vegetables, saw milling, paper manufacturing, shoe manufacturing, etc. To facilitate the promotion of small scale and medium industries, the report recommends the creation of a Small Scale Development Organization which, besides providing technical advice, would provide assistance in the formulation of project proposals, financing, establishment of administrative procedures, etc.

57. The same Report recommends^{2/} that the 200 rural development centres it suggests for the development of agricultural production should also be utilized for the promotion of handicraft and small scale industries. To this end, it proposes that one of the staff members of the centres should be trained in industrial matters for supporting the development of small-scale industries. This mission should take up this matter with the govern-

^{1/}In China according to Jon Sigurdson, in "The Role of Small Scale and Rural Industry and its Interaction with Agriculture and Large Scale Industry in China", (The Economic Research Institute at the Stockholm School of Economics), as much as half the output of cement may be produced in small plants. In India it is reported that small plants have been evolved which are capable of producing general-purpose cement in small amounts, with good fuel economy, low amounts of capital per ton of output and savings on transport and packaging costs.

^{2/} See page 8 of chapter III.2 and page 13 of III.9 of the Joint ILO/UNDP mission report, 1975, Volume I.

ment, and enquire whether technical assistance would be required from UNIDO for the implementation of the proposal. Consideration should also be given to the establishment of separate small-scale industries development centres. It is, however, felt that a combination of agricultural production and small scale industrial activities is a logical and effective way for the development of small-scale industries in the rural areas.

Inter-Sectoral Linkages and Trends

58. Industrial development is based mainly on the processing of agricultural products and the production of textiles from locally grown and ginned cotton. Shoe production from locally processed leather and various imported leather and plastic materials is the other important industry. Other industries of importance include: oil milling, which utilizes cotton seeds and groundnuts, sugar factories, flour mills, confectionaries, cement factories and soft drinks, leather tanning and a petroleum refinery located at Port Sudan.

59. It is evident that most of the industries are agro-based and as such, there are some linkages between the industrial and agricultural sectors. This is a natural and logical linkage in such countries as the Sudan, which are at their early stage of industrialization. There has also been some form of vertical integration of production such as the use in the tannery industry of local hides and skins for leather processing and the supply of locally tanned leather by the tannery industry to the shoe making factories. The same applies to local supply of raw cotton to the ginneries which in turn supply lint cotton to the spinning and weaving mills.

60. Apart from such few cases as the above-mentioned, the Sudan, like other least developed countries, still lacks sound integrated and co-ordinated industrial development. The agro-industrial approach does not at present involve a complete vertical integration of the whole production process of food, or other agriculture-based consumer goods, from the field to the final consumer. Most of the primary products are exported in a raw or semi-processed state. This in itself is an indication of the low level of integrated production and lack of sufficient inter-sectoral linkages. This calls for a comprehensive and coherent industrial plan, which will provide for the development of sectoral and sub-sectoral linkages.

TABLE 6

Manufacturing Industries by Size

1970/71

	<u>Number of establishments</u>	<u>Percent</u>	<u>Number of Workers (thousand)</u>	<u>Percent</u>	<u>Total Production £S million</u>	<u>Percent</u>	<u>Total Invested Capital £S million</u>	<u>Percent</u>
25-50	79	38	2.7	6	6.8	8	4.3	5
51-100	56	27	4.0	10	10.4	13	7.4	7
100+	74	35	36.1	84	64.7	73	90.4	88
Total	209	100	42.8	100	81.9	100	102.7	100

Source: The Industrial Survey, 1970/71.

Regional Distribution of Manufacturing Industries

61. The development of large scale industries has taken place mainly in the Khartoum area which accounts for about two thirds of employment but only half of the investment in the industrial sector. The Blue Nile and Kassala Provinces each account for 20% of the total invested capital. Investment in other regions has hardly gone beyond the establishment of handicraft industries (employing 10 workers or less). In the case of handicraft industries, employment is provided roughly in equal shares in Khartoum, the Blue Nile and Kassala Provinces. Like large scale industries, these industries are based mainly on food processing and textiles. According to the Industrial Survey of 1970/71, the output of such industries as were surveyed accounted for an estimated value of £S 20 million. It should be noted, however, that the manufacturing firms outside the Khartoum area that were thoroughly covered by the survey were those employing 100 or more workers.

62. As stated, the Khartoum Province has the largest share of large manufacturing industries. In view of the need for extending large manufacturing industries to other regions for providing employment and meet other social and economic needs, it is necessary for ways and means to be devised for this purpose. It is noted that there are already many small scale industries in other provinces. Studies should be carried out to show to what extent these can be amalgamated or integrated to form large manufacturing units, especially in view of the fact that there are already local skills in these provinces which can be upgraded through training. The establishment of entirely new large scale manufacturing units should also be studied, and the financial requirements estimated for the implementation of modernization or extensions to existing plants, or for the installation of new ones.

63. It is appreciated that there are problems regarding dispersion of manufacturing units because industries are located in certain areas because of economic advantages. It is estimated that only about 10% of industrial investment can at present be regarded as footloose in the sense that a number of alternative locations can be considered for them (according to the ILO/UNDP Employment Mission Report 1975). Another retardatory factor to the dispersion of industrial development is the inadequacy of transport and communication. This is a problem which has a grave adverse effect on the transportation of

TABLE 3

Manufacturing Industries in Khartoum Province

	Establishments	Total Output	Value Added	Number	Wages	Investments						
	%	'000'S	'000'S	of Employees	'000'S	'000'S						
		%	%	No.	%	%						
Food, Drinks and Tobacco Industry	51	62.2	24,395	62.4	5,393	61.5	7,236	48.0	2,387	53.9	12,991	31.8
Textiles	13	59.4	13,632	71.8	6,512	60.5	3,924	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	39.3	1,413	39.0	2,255	98.4	608	39.2	4,383	98.1
Chemical and Petroleum Industry	31	88.5	6,366	67.0	1,343	47.2	3,473	92.3	762	64.2	3,988	38.4
Non-Metallic Industry	3	75.0	634	27.5	343	23.6	882	50.0	222	38.3	952	11.7
Metallic Industry	1	100.0	723	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	328	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	8,633	67.2	48,451	47.2

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

TABLE II

Manufacturing Industries by Province

Province	Number of Establishments		Total Output		Value Added		Number of Employees		Wages		Investment	
	No.	%	Lsd	%	Lsd	%	No.	%	Lsd	%	Lsd	%
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 Gosal	1	0.5	362	0.4	127	0.5	263	0.6	122	0.9	924	0.9
Total for the	209	100.0	81,892	100.0	27,451	100.0	42,823	100.0	12,947	100.0	102,704	100.0
7 Provinces												

Source: 1970/71 Industrial Survey

raw materials to the factories and the distribution of finished goods from the factories to areas where they might be needed.

Employment

64. In the introductory section of this paper, it was indicated on page 12, table 4, that the manufacturing sector provided employment to an estimated 3.7% of the total labour force, while 72.7% were employed in agriculture. The following two tables show employment by sector, and by major groups of occupations (excluding the civil service).

Labour Force and Labour Force Participation^{1/}

65. The only complete count of the labour force undertaken so far is for 1955/56. It shows the following composition and size of the labour force.

TABLE 11

Employees in the Public and Private Sectors by Sectors of Economic Activity (excluding Government Ministries and Departments) 1973

Economic Activity	Males	Females	Total	Percentage of females to total
Mining and quarrying	468	-	468	0.0
Manufacturing	41,759	3,422	45,181	7.6
Construction	1,589	5	1,594	0.3
Electricity, gas and water	727	1	728	0.1
Wholesale/retail trade, restaurants and hotels	10,886	742	11,628	6.4
Transport, storage and communications	4,365	112	4,477	2.5
Financing, insurance, real estate and business services	2,065	302	2,367	12.6
Community, social and personal services	2,489	292	2,781	10.5
Total	64,348	4,876	69,224	7.0

Source: Survey of Employment Earnings and Hours of Work in Establishments Employing (5) Employees (and over). Ministry of Public Administration, Labour Market Information Unit, 1973

^{1/} See ILO/UNDP Employment Mission Report, Volume II, pages 2 - 4 of Technical Paper No. 8

TABLE 12

Employees by Major Groups of Occupations
(excluding Government Ministries and
Departments), 1973

Major Groups of Occupations	Males	Females	Total	Percentage of females to total
Professional, technical and related workers	1,394	28	1,422	2.0
Administrative and managerial workers	1,000	11	1,011	1.1
Clerical and related workers	7,097	1,048	8,145	12.9
Sales workers	1,366	56	1,422	3.9
Service workers	6,091	48	6,139	0.8
Agricultural workers	150	-	150	0.0
Production and related workers	45,989	3,584	49,573	7.2
Workers not classified by occupation	360	101	461	21.9
Total	64,348	4,876	69,224	7.0

Source: See Table 12

TABLE 13

Composition and Size of Labour Force by Age and Sex, 1955/56

	<u>Male</u>		<u>Female</u>		<u>Total</u>
	<u>5 to 11</u>	<u>Over 11</u>	<u>5 to 11</u>	<u>Over 11</u>	
Number	692,125	2,751,506	72,635	283,037	3,799,303
Participation rate	52.3	96.5	6.9	9.4	46.2

Source: 1955/56 Census of Population

56. The size of the labour force - 46.2 per cent of the total population aged five years and over, or 37 per cent of the total population - is small. However, the 1955/56 census included questions on both main and subsidiary occupations. The size of the labour force given in table 14 above represents only those reporting a main occupation. It excludes all unproductive main occupations such as housewives, students and unemployed. Some of these, in addition to their main "unproductive" occupations are reported to be engaged in subsidiary productive occupations. The addition of those so engaged raises the size of the labour force substantially.

TABLE 14

Revised Composition and Size of Labour Force by Age and Sex, 1955/56

	<u>Male</u>		<u>Female</u>		<u>Total</u>
	<u>5 to 11</u>	<u>Over 11</u>	<u>5 to 11</u>	<u>Over 11</u>	
Number	706,000	2,754,000	241,000	1,214,000	4,915,000
Participation rate	53.4	96.6	23.0	40.5	59.8

Source: Population Growth and Manpower in the Sudan, New York, United Nations Department of Economic and Social Affairs, Population Studies, No. 37, 1964, p. 59

Notes: The allocation of those reporting a subsidiary occupation to those also reporting a main occupation, so as to avoid double counting, was done on the basis of a sample drawn from the census returns. The figures exclude permanently unemployed persons but their number is in any case likely to be extremely small.

57. The labour force is hired in a market that is far from competitive. Large firms and government ministries dominate the patterns of remuneration in these markets. They recruit new labour at only one or two "ports of entry" in their occupational hierarchies and thus fill most vacancies from within. A "permanent" worker in these enterprises and ministries is almost certain to be promoted with age and seniority. The floor to entry wages is governed by statute and the entire structure of wages and salaries is typically governed by collective bargaining with officially accredited unions. Almost all workers with higher education are employed by the public sector; their employment, and even that of workers with completed secondary education, has been virtually guaranteed by the government in recent years. This no doubt helps to explain the relatively low rates of open unemployment (about 3 - 5 per cent) observed

in urban areas in recent years, despite a rate of urban population growth over the last decade of 6.5 per cent.^{1/}

68. No doubt these urban labour markets are more competitive at the lower than at the higher ends. But even the wages of unskilled workers in urban markets are less subject to competitive forces than wages in rural labour markets. All in all, these urban workers are privileged, not only because their standards and conditions have been raised by administrative action, but because they work for employers who - even outside the public sector - are themselves freed to some extent from competitive pressures by tariffs, tax holidays, subsidies on capital imports, and a favourable exchange rate.

The Wage Structure

69. Wages in the public sector in the Sudan have always been, and continue to be, regulated by periodic Pay Commissions. Wages paid to the lowest grade have in the past served as a de facto minimum wage. In the private sector, however, until a few months there was no identifiable minimum wage except for a few occupational categories of workers, (e.g. loaders and unloaders in Khartoum, and stevedores in Port Sudan), who have had wage orders made on their behalf from time to time under the Wages Tribunals Ordinance of 1952. The result was that wages in the private sector varied more widely and on average fell below wages in the public sector.^{2/}

70. With a view to correcting these imbalances, at least to the extent of providing a "safety net" for workers in low-paid jobs and occupations, a Minimum Standard of Wages Order (Presidential Order No. 21, 1974) was issued in late 1974. Under this Order, minimum wages in the private sector have been equated to the de facto minimum wage in the public sector, that is, £S 16.50 per month, with the proviso that workers whose wages are currently below the minimum will be given annual increases until the figure of £S 16.50 per month is reached over a maximum period of two years.

71. The law does not cover "seasonal agricultural workers", or workers outside stipulated urban areas, or workers in establishments which employ fewer than 10 persons, or workers who are below the age of 18 in all establishments. Together these categories of exceptions comprise about three quarters

^{1/} See Technical Paper 11, ILO/UNDP Employment Mission Report 1975, Volume II "Migration to Greater Khartoum".

^{2/} See Technical Paper 12, ILO/UNDP Employment Mission Report, 1975, Volume II "Urban Labour Markets".

of the wage earning labour force in Sudan. When it is remembered that workers in the public sector are in any case excluded from the statutory orders, it is clear that the proportion of the labour force which is in fact covered by the Order is relatively small.

72. Coverage is one thing however, and impact on wages paid is another. It is not difficult to show that the effect of the Minimum Standard of Wages Order on actual wages paid in the private sector is at most confined to 11,000 workers in medium-sized enterprises employing 30 or fewer workers, and this is on the assumption that these wages would not have risen at all over the next two years in the absence of the Order. In all probability it will not raise the wages of more than 6,000 workers in these establishments. But this is not to say that the Order is, therefore, insignificant. A major purpose of minimum wage legislation is to protect workers who are employed in certain "sweated trades" at wage rates at or below the poverty line.

73. In the wage gap between the private and public sector, it is noted that the public sector pays better than the private sector in respect of unskilled and semi-skilled labour. When it comes to skilled labour there is not much to choose between the two sectors. As regards professional and highly qualified manpower, however, the private sector tops the public sector. In other words, the range of wage differentials in the private sector is larger than in the public sector. In the private sector, the extreme ends of the range may be in the ratio of 1:25; in the public sector and even in the civil service, the range appears not to exceed 1:15.

74. The government appears to exercise a wage leadership role for unskilled and semi-skilled workers, inasmuch as average weekly earnings for manual workers are slightly higher in the public than in the private sector. However, the latter phenomenon may have less to do with wage leadership than with the fact that public enterprises are all large, whereas private sector establishments cover the range of sizes from five or more to 100 or more workers. Even when it comes to highly qualified manpower, the pace-setting effects of public sector hiring are at least slightly attenuated by private sector patterns.

Virtually all university graduates in Sudan are employed in the public sector, but technically trained professional manpower returning from foreign universities tend to reach salary levels in the private sector that are never attained either in public enterprises or in the civil service. There is a small drain of professional manpower from the public to the private sector, and in this sense the private sector continues to exert some upward pressure on salaries at the top ends of the wage and salary structure.

75. It is assumed that earnings from employment consists solely of the rate-for-the-job plus overtime pay plus cost-of-living allowances. But in fact cash earnings are supplemented by various attendance bonuses, which may amount to one month's wages per year, and by a variety of fringe benefits. There are no comparative evidence about these fringe benefits as they apply to private as compared to public sector enterprises. They may conceivably reverse the statements made above about wage differentials in the two sectors. In any case, data limitations warn against facile generalisation on this score.

Collective Bargaining and Industrial Relations

76. Workers in public sector enterprises are almost all members of unions. In the private sector, unions are found almost exclusively in the larger establishments employing 100 workers or more, although scattered unionisation is also found in 30 - 100 workers-per-establishment category. Since there are only some 130 establishments employing more than 100 workers (out of a total of 1,730), with a further 216 employing 30-100 workers, it may be stated that 25 per cent of the 30,000 private sector workers who are union members in the Sudan are employed in 345 factories. The 100 largest establishments among these 345 plants, however, would account for 60 -70 per cent of all union members.

77. But such figures give no indication of the impact of unions of wage determination. The organised labour movement in Sudan has secured an impressive armoury of legislation protecting its right to organise workers, while providing the machinery for the orderly settlement of labour disputes. From the Trade Dispute Act of 1969 to Employer and Employed Persons Ordinance of 1948 (amended in 1969), to the Workers' Trade Unions Act of 1971, it appears that Unions are regularly consulted by the government, not just in respect of collective bargaining questions, but on a wide array of social and economic issues. They have become an increasingly important instrument of public opinion formation, as well as spokesmen for general public interests.

Employment Exchanges^{1/}

78. Sudan is poorly equipped with employment exchanges. There are 25 Labour Offices in centres throughout the country, and their primary function is that of labour inspection. They are understaffed and generally lack transport to visit enterprises. Their establishment cards are not up-dated and, in most cases, they are incomplete and even inconsistent. Under the Manpower Act of 1974, no establishment with ten or more workers which falls within the jurisdiction of an Employment Exchange Area is permitted to employ any person who has not registered with the relevant Labour Office. Furthermore, no notice is permitted to be published in respect of an employment vacancy unless the relevant Labour Office has given permission. In fact, however, the common practice is for employers and prospective employees to reach agreement and only then does the employee proceed to register himself with the Labour Office.

79. During the last quarter of 1973, 12,000 workers in Sudan registered at a Labour Office as "looking for work"; of these, about 1,000 were placed. Even in Khartoum Province, the Labour Office only succeeded in placing 485 workers out of the 6,395 that registered themselves. In urban areas, about two-thirds of the registrants of Labour Offices are first-job seekers and yet these offices lack any facilities for the testing of skills and aptitudes. Contacts of Labour Offices with potential employers leave something to be desired and the Labour Offices have failed to link up with school and training institutions in their areas of jurisdiction.

Capacity Utilization

80. It was observed earlier that the manufacturing industry in the Sudan has been operating much below capacity. The World Bank Survey of the Industrial Sector of Sudan carried out in 1973 summarized its findings in tables 15 and 16 which are reproduced in the following two pages.

^{1/} This is based on the findings and opinion of the ILO/UNDP Employment Mission Report, 1975

TABLE 15

Efforts of Protection on Domestic Output

A. Products Totally Protected^{1/}

<u>No.</u>	<u>Items</u>	<u>Maximum Capacity</u>	<u>Actual Production</u>
1.	Perfumeries (not of high quality)	422,184 litres	207,340
2.	Sweets	18,250 ton	11,450
3.	Bisouits	5,342 ton	3,321
4.	Soap	51,160 ton	37,325
5.	Laundry blue	32,023 cartons	32,023
6.	Household utensils (from aluminium except coloured, heavy and from enamel ware)	6,150 tons	4,220
7.	Steel furniture	4,430 tons	4,100
8.	Batteries (for cars)	155,000 units	50,000
9.	Textiles (Dabalan, Damoria and Willaya)	1,106,300 thousand yards	102,700
10.	Towels	35,500 dozens	28,500
11.	Lanterns (from yarn)	12 million units	487,000 units
12.	Chairs (from bamboo)	6,500 dozen	3,260
13.	Air coolers	4,500 units	2,060
	Air conditioners	500 units	68
14.	Knitwear (underwear)	683,500 dozens	320,395
15.	Ready-made shirts	1,215,000 units	555,000
16.	Plastic sacks	10 million sacks	7 million
17.	Vegetable oils	654,000 tons	500,000 tons
18.	Stationeries (ink, chalk)	515 tons	175 tons
19.	Refrigerators	30,000 units	5,640
20.	Tanned leather:		
	a. Cow	360,700 kilos	300,000
	b. Sheep	250,000 sq. meters	187,250
	c. Goats	200,000 pieces	100,000
21.	Packing and Packaging materials	15,640 tons	7,500
22.	Zippers (for clothes and suitcases)	3,750,000 meters	1,704,135
23.	Paints	1,080,765 gallons	353,935
24.	Plastic products (different)	2,620 tons	570 tons
25.	Zinc sheets	25,000 tons	7,000 tons
26.	Ball-pens (ordinary)	380,000 dozen	160,000
27.	Shoes		
	a. Plastic	18,483,975 pairs	2,690,080
	b. Canvas	1,813,000 pairs	78,767
	c. Leather	n.a.	1,348,500
	d. Shippers	n.a.	3,935,000
28.	Cement	360,000 tons	270,000
29.	Beer	48,750 liters	32,500
30.	Sherry	4,000,000 liters	3,670,600
31.	Alcohols (for industry)	1,000,000 liters	800,000
32.	Men's socks	93,600 dozen	60,000
33.	Tomato paste (canned)	64,880,000 cans	47,557,526
34.	Matches	150,000 cartons (a carton contains 1,000 boxes)	115,700
35.	Elastic and cord	36 million yards	24.5 million yds.
36.	Macaroni and Vermicelli	40,000 tons	16,000

B. Products Protected by Quota

1. Particle-board	360,000 sheets	280,000
2. Sugar	120,000 tons	91,284
3. Cigarettes	720 million cigarettes	1.2 million
4. Glass products	8,880 tons	5,732
5. Juices (from fruits)	2,000,000 cartons (a carton contains 12 bottles)	1,519,200
6. Canned fruits and vegetables	650 tons	546

1/ It does not preclude periodic import licenses for these products if shortages emerge.

Source: Ministry of Industry and Mining.

TABLE 16

Capacity Utilization of Certain Manufacturing Firms in the Sudan

<u>Name of Firm</u>	<u>Line of Production</u>	<u>No. of Shifts</u>	<u>Rated Output Per unit of Time</u>	<u>Realized Output Per Unit of Time</u>	<u>Location</u>
1. Sudan Knitwear Factory Ltd.	Knitwear	1 1/2 ^a / 2 ^b / 1 1/2 ^c	300 doz. /day ^b	200 dozen/day ^b	Khartoum No. Khartoum
2. Khartoum Tannery	Semi and finished Leather	1 ^c	178 m ² /hour 142 pcs./hour	164 m ² /hour 54 pcs./hour	
<u>Beas House</u>					
<u>Cow Hides</u>					
<u>Sheep Skins</u>					
<u>Chrome Section</u>					
<u>Cow Hides</u>		1	178 m ² /hour	32 m ² /hour ^d	
<u>Finish Section</u>					
<u>Dox side Leather</u>		1	81 m ² /hour	46 m ² /hour ^d	
<u>Vegetable process</u>		2	36 kgs/hour	36 kgs/hour ^e	
<u>Pickles process</u>		1	142 pcs./hour	142 pcs/hour ^f	
3. July Commercial Corp.	Soap and Oil products ^g	-	-	-	Khartoum No.
4. Sookin Trading Corp.	Edible Oil products ^g	-	-	-	Port Sudan
5. Sudan Soap Factory	Oil and oil products-	3	-	-	Khartoum No.
Six expellers (first stage of processing)		1 or 2 ^h	21,600 tons/year of cotton seed	cotton seed	Khartoum No.
6. Blue Nile Plastic Co.	Plastic Products	n.s.			
Plastic Crates for Bottles		2 ⁱ	60 crates/hour	40 crates/hour	
Polyethylene Filters (various bags)		2 ^j	115 kgs/hour	5 ^j kgs/hour	
Printing		2 ^k	15 kgs/hour	10 kgs/hour	

<u>Name of Firm</u>	<u>Line of Production</u>	<u>No. of Shifts</u> 1973	<u>1971</u>	<u>Rated Output</u> <u>Per Unit of Time</u>	<u>Realized Output</u> <u>Per Unit of Time</u>	<u>Location</u>
7. Karima Canning Factory	Food canning	unavailable	2	k/	15% of rated k/	Karima
8. The Flour Mill Corp.	Flour	unavailable	3	16.66 tons of flour/hour	13.28 tons of flour/hour	Khartoum No.
9. Coldair Engineering Co.	Electric appliances		1			Khartoum No.
Refrigerators	8 and 10 f ³	1		10,000 units/yr. m/	5,398 units/year	
Water Coolers		1		500 units/yr.	31 units/year	
Air Conditioners	16,000 B.T.U.	1		500 units/yr.	82 units/year	
Commercial Refrigerators		1		50 units/yr.	4 units/year	
Air Coolers		1		500 units/yr.	38 units/year	
10. Bata Corporation	Shoes		3			Khartoum No.
Plastic (Verlon) shoes		3		2,250,000 pairs/year	1,813,730 pairs/yr.	
Thongs (Beach Sandals)		1 and 3 ² /		3,750,000-5,400,000 pairs/year	1,615,480 pairs/yr.	
Canvas Shoes		2 and 3 ² /		3,750,000 pairs/year	1,337,322 pairs/yr.	
Leather Shoes		2		4,050,000 pairs/year	1,702,946 pairs/yr.	
11. Blue Nile Brewery	Beer		3			Khartoum No.
Brew House		2 ² /		132,500 Hls/yr.	83,640 Hls/year	
Fermentation		2 ² /		60,000 Hls/yr.	87,250 Hls/year	
Lacquerling		2 ² /		63,000 Hls/yr.	86,388 Hls/year	
Filtration		2		120,000 Hls/yr.	83,332 Hls/year	
Brigh (light) Beer		2		120,000 Hls/yr.	83,332 Hls/year	
Bottling		1		33,000 Hls/yr.	87,782 Hls/year	
12. Guined Sugar Factory	Sugar	3 ² /	3	60,000 tons of refined sugar/yr. o/	42,000 tons of refined sugar/yr. o/	Guined
13. Girba Sugar Factory	Sugar	3 ² /	3	60,000 tons of refined sugar/yr. p/	70,580 tons of refined sugar/yr. p/	Girba

Footnotes

- a/ The number of shifts depends on the availability of imported synthetic yarn. According to the management the problem of uneven flow of synthetic yarn is caused by erratic transport facilities. Each shift is 8 hours. The firm operates approximately 250 days per year.
- b/ Rated output is based on 3 shifts per day while the realized one is on a 2 shifts per day.
- c/ The hours per shift for the entire Tannery is seven. On annual basis, therefore, the realized output is considerably less than the hourly figures indicate. Number of working days per year 300.
- d/ The firm sells leather at various stages of processing which explains the relatively less utilization of advanced processes. The main constraint for the firm in the past had been the procurement of hides and skins. Although domestic hides and skins have been exported, the Tannery could not compete with their f.o.b. prices. Government policies vis a vis hides and skin exports have changed recently and the firm now is adequately supplied. In addition, the firm faced severe technical problems which according to the management have been overcome.
- e/ The process includes both hides and skins.
- f/ Lower quality leather. The firm presently expands its facilities to double output in certain lines.
- g/ These two firms did not respond to that part of the mission's questionnaire.
- h/ The number of shifts depends on the availability of cotton seeds. Each shift operates for eight hours.
- i/ The rated capacity has been calculated on the basis of 300 days per year, 3 shifts per day. The realized output is constrained by the availability of cotton seeds which is rationed to the various oil mills by the government.
- j/ The firm operates 200 days per year. Each shift is 8 hours long. Problems are associated with foreign exchange availability for raw materials and strong competition from imports of higher quality and lower price (inclusive of import duties).
- k/ The firm did not provide the mission with relative data on capacity utilization. However, it was found from other sources that the plant's output is 15% of rated capacity. Problem, the short season for growing tomatoes.
- l/ The number of shifts depends on the availability of wheat which is mostly imported. Problem foreign exchange availability and transportation from Port Sudan. Rated output is according to specifications but realized output produced and the effects of lower actual yields per hour. In terms of annual yields the realized output ranges between 55 and 79% of rated output, on the basis of 300 days, 3 shifts per year.

FOOTNOTES CONTINUED

- m/ Estimates of actual and rated output have been calculated on the basis of 250 days per year. In addition, for rated output, 3 shifts 8 hours each have been assumed, while for the actual as indicated in the Table. For the beach sandale process one shift applies for the assembly line and three shifts for the production of the synthetic material while for the canvas shoes, the number of shifts vary according to demand variations.
- n/ The production line for this plant is presently unbalanced and the firm is at this time expanding certain sections of its line. As a result the Fermentation and Lagering sections are producing about 30% above rated capacity by shortening the required period for fermentation and lagering. The number of shifts in these two sections are technically specified. It is in these two sections that expansion is now undertaken. According to the management, upon completion of the expansion most of the other sections of the plant will increase their shifts.
His stands for Hectolitres.
- o/ The extraction process operates between 4 - 6 months annually while refining is an all year round process. The number of shifts refers to extraction process for the period it is active and for the refining process for the entire year. It is not known how rated capacity has been estimated.
- p/ Similar comments apply to the El Girba Sugar Factory. The available answer to explain the 15% excess of realized over rated output was that refining actually alone is inferior to that assumed in establishing rated output. Another possible guess is that rated output has been calculated on a different annual rate of capacity utilization than the actual.

The serious problem of underutilization of installed capacity was also examined by the ILO/UNDP Employment Mission 1975.

80. The ILO/UNDP Mission Report (page 7 of Technical Paper 5), Volume II shows that the food industry has proved inefficient, mainly because of difficulties relating to the supply of the required raw materials and the marketing of the finished products. The picture painted by the above tables is gloomy. The Mission Report refers to some of the problems in general terms and includes: lack of adequate infrastructure; weaknesses in management and the training of workers and the overall problem of arising from lack of devising the most effective types of policies and plans for future industrial development. In this connection, it is evident that technical assistance experts in industrial planning, policies and project formulation and evaluation may be required in addition to engineers and specialists in other fields of production. It is proposed that the UNIDO Mission should discuss with the Sudanese authorities concerned, all the problems causing underutilization of capacity in each one of the individual establishments affected and the nature and duration of technical assistance which may be required by each unit for improving the performance.

INSTITUTIONAL INFRASTRUCTURE FOR INDUSTRY

The Ministry of Industry and Mines

81. Although strictly a ministry cannot be regarded as an institutional infrastructure, it has been decided to mention it under this heading in view of the various functions it performs which have far reaching effects on industrial development.

82. The ministry is responsible for the formulation and implementation of industrial policies. Broadly it performs, among others, the following functions:

- a) to decide whether or not new industrial projects submitted by the private sector are desirable;
- b) to inspect all new (public and private) projects in terms of capital and operating costs - this is in effect evaluation;
- c) determination of the ex-factory prices for all firms;
- d) allocating foreign exchange to various competing industrial needs;
- e) granting various concessions under the powers conferred upon it by the Investment Act 1974;
- f) collection and analysis of information on manufacturing, necessary for the performance of its responsibilities.

83. Thus, the responsibilities of the Ministry can broadly be viewed as encompassing: industrial planning, project formulation and evaluation and investment promotional activities which includes the granting of incentives, allocation of foreign exchange to deserving applications. The extent to which these functions are efficiently performed will be examined later. The Ministry is assisted by the Technical Advisory Committee for Industrial Development.

Functions

84. The functions of the Committee include the assessment of applications for new projects and making recommendations to the Minister of Industry on the desirability of establishing a certain new project and the kind of concession to be granted to it. The Committee's work is based on the information on private sector projects which is processed and analysed for it by the competent department of the Ministry. In the main, the Act set seven broad criteria for the evaluation of industrial projects. They include: defense, utilization of local raw materials and the encouragement of their production; whole or partial self-sufficiency, exports: direct and indirect employment; and willingness to locate in rural areas. If some of these criteria are met, then the application qualifies for approval. In his report of December 1975, the SIDFA stated that the Ministry has now a Project Department which deals with: planning, investment and finance, engineering, development and research, project formulation, implementation, and training. The Deputy Minister indicated to the SIDFA that the Ministry would need an adviser from UNIDO for about one year to assist in the financing aspects of projects, transfer of technology and licensing agreements.

85. It is observed by the World Bank Mission that within the above-mentioned criteria, projects were not promoted in a systematic way. Secondly, the staff of the Ministry responsible for background material and project evaluation are very few; they depend upon the data provided by the applicants, and they lack training in the evaluation of the economic and financial aspects of projects. It is further observed in the Report that some of the problems associated with the manufacturing sector in the Sudan arise from bad initial project appraisals.

86. It is suggested that the UNIDO mission should discuss with the Ministry the training needs in such fields as project identification, formulation and evaluation (which will include financial and economic analyses), industrial planning, policies, the necessary feasibility studies of specific industrial projects; the staffing of the Ministry - the provision of technical assistance experts to the Ministry for its strengthening, etc.

87. In this connexion, the UNIDO Programme Review Mission undertaken by Mr. Blumeris between 26 - 31 October, 1974, observed that there was already a Planning Unit in the Ministry of Industry which was functioning very unsatisfactory. Accordingly, the Mission recommended long term assistance in the following fields for strengthening the Unit:

- (i) Macro Planning
- (ii) Project Planning
- (iii) Project Evaluation
- (iv) Project Implementation

88. These are broad recommendations which need discussions with the Ministry to spell out the exact technical assistance personnel, etc. for strengthening the management and operations of the unit. In the same report, it is recommended that assistance should be provided in the drawing up of an industrial plan for the Sudan. (It is understood that the IBRD has at present a mission in the Sudan which is making a review of the Development Plan). It will be necessary to enquire how far the review has gone and whether it has thoroughly covered planning for the industrial sector. In any case, there may be training needs in the field of industrial planning which the Sudan might wish to meet by seeking assistance from UNIDO. This aspect should be taken up with the Ministry.

The Industrial Bank of Sudan

89. The Industrial Bank of Sudan was established in 1961 as a statutory corporation to provide long term finance to industrial enterprises. IDA extended credit of US\$ 4 million to the Bank in November 1973. Due to lack of foreign exchange, the role of the Bank remained very modest.

It concentrated its activities on the financing of small and medium size enterprises which did not have easy access to supplier's credits or commercial bank credits. These credits, together with retained earnings, constituted the long-term industrial finance.

Capital

90. IBS' paid-in share capital, wholly owned by the Bank of Sudan, was increased from £s 2.8 million to £s 3 million during 1974; the Bank of Sudan has agreed to increase it by a further £s 1 million in two tranches of £s 500,000 each by June 1976.

Organization and Procedures

Board of Directors

91. The Bank is managed by a Board of Directors. The Board meets once a month to approve all investments above £s 2,000. Investments below £s 2,000 can be approved by the Managing Director. The qualitative evaluation of projects undertaken by the Board has been reasonable; projects have been rejected because the Board considered certain industries of low priority to the Sudanese economy and also on market and competition considerations. With an improvement in IBS' appraisal capability, the Board has recently been given better financial and economic data on which to base its decisions.

Staffing

92. The Bank is still lacking senior experienced staff. However, some of the middle and junior level staff have good potential and with further experience should prove valuable assets to the institution.

The Projects Department

93. is responsible for appraising projects and supervising IBS' investments until they have been fully disbursed. The department has three sections (i.e. economic, technical and financial).

Appraisal Procedures

94. The technical section evaluates the whole factory and production facilities, reviews the suitability of production machinery from cost,

located in the Khartoum/Omdurman area; Blue Nile province had approximately 13% of the loans accounting for 30% of the amount of loans. The remaining one-third accounting for 14% of the loan amount are spread across the country. Since inception IBS has issued guarantees on at least 20 projects involving a total guarantee amount of £s 1,549,000. The amount guaranteed outstanding at June 30, 1975 was £s 570,000.

Financial Position

97. IBS' resources, as of June 30, 1975, consisted mainly of its paid-in share capital of £s 3.5 million, less accumulated losses of £s 289,000, plus IDA credit 447-SI for US\$ 4 million. The Bank of Sudan has agreed to pay in a further sum £s 500,000 before the end of June 1976. The other resources consist of the outstanding balance amounting to £s 42,000 of a U.S. AID loan made to the Government in 1967 and on-lent to IBS at 4% per annum; the loan is repayable in semi-annual installments until April 1982. As of June 30, 1975, IBS had uncommitted resources of £s 1.07 million in local currency and £s 109,000 in foreign currency.

Operational Forecasts

98. In view of IBS' low level of operations until 1972 and limited appraisal capabilities, it was estimated that the credit would cover IBS' commitments up to the end of 1975. However, as a result of an aggressive stance developed by IBS' management in anticipation of the availability of the IDA credit. IBS' loan approvals in 1973 reached a high of £S 1.6 million (about \$ 4.5 million). This led to a commitment of 86% of the IDA credit by June 1974. However, the 1974 loan approvals amounted to £S 383,000 only; this was due to deferral by IBS' Board of two loan proposals for \$S 755,000 at their December 1974 meeting, for certain clarifications. Approvals picked up again during the first quarter of 1975 when IBS approved six loans for £S 1.265 million.

99. Approvals forecast for 1975 are based on the existing IBS' project pipeline; thereafter, it is assumed that approvals will increase by 10% per annum. Historically there have been wide fluctuations in the volume of IBS'

approvals due to political changes in the Sudan influencing investor confidence and demand for resources, and also due to the absence of a secure source of foreign exchange. The forecasts for future years are dependent on the availability of such resources. The pipeline, in addition to a large number of small projects, includes projects requiring loans in the £s 400,000 - £s 600,000 range and deferrals of such projects could also cause large fluctuations in the forecast level of approvals; however, IBS' management consider that the demand for financing is such that alternative projects could be introduced should deferrals occur. The pipeline consists of approximately 50 projects covering a wide range of industries involving processing or manufacture of edible oil, wheat flour, textiles, foodstuffs, shoes, chemicals, and engineering goods. The majority of the projects will be in the private sector and controlled by Sudanese investors. The UNIDO mission should discuss with the Bank any technical assistance requirements in project or loan appraisal and mobilization of external funds resources for financing some of the above-mentioned projects in its pipeline.

Resource Requirements

100. IBS' commitments are estimated to be £s 1.98 million in local currency and the equivalent of £s 4.9 million in foreign currency. As of June 30, 1975 IBS had uncommitted resources of £s 1.18 million of which £s 1.07 million were in local currency and £s 109,000 in foreign currency. IBS' internal cash generation, net of repayments, during this period is estimated to be £s 790,000. The Bank of Sudan has agreed to increase IBS' paid-in capital by £s 1 million by June 1976 of which £s 500,000 has already been paid in. IBS is expected to receive a payment of £s 438,360 from the Industrial Production Corporation before the end of 1976 representing the value of its equity investment in the Nile Cement Co. IBS would thus have a comfortable local resource position at least up to June 1977. IBS' foreign currency resource gap for the period 1975 to mid-1977 is estimated to be £s 4.8 million or about US\$ 14 million. As IDA was likely to meet only a part of the foreign currency requirements of IBS to mid-1977, it was recommended to IBS to attempt to diversify its sources of finance. IBS has done this

maintenance, spares and level of technology standpoints, as well as the implementation schedule of the project and its operational cost structure. The economic section undertakes market surveys to determine the size and level of competition in the market. The financial section advises on the amount of the loan, evaluates security, etc.

Past Operations

35. While, due to lack of data, it is not possible to determine IBS' share of industrial investment in the Sudan during the past two years, in absolute terms IBS' operations have expanded significantly. It has predominantly financed small - and medium-size industrial projects owned by Sudanese entrepreneurs. Some of IBS' financing has helped existing enterprises modernize operations or increase capacity; however, most of its loans have been for new enterprises. The important sectors financed by IBS are textiles, building materials, food processing and oil mills. It has all along financed economically sound projects, most of which are based on local raw materials. These projects have generally been labour intensive. The first IDA credit enabled IBS to directly finance purchases of equipment for seven projects as opposed to guaranteeing suppliers' credits as it had previously done. The three major projects financed under credit 447-SU had estimated economic rates of return ranging from 19% to 39%; two of these projects accounting for 82% of the US\$ 4.0 million credit will utilize local cotton in a textile mill and limestone in an asbestos pipe factory. The other smaller projects are also economically sound. In view of its limited appraisal capabilities, IBS' promotional activities and impact on the design of projects have not yet been significant.

36. In the past IBS has provided only loans and guarantees with the exception of two equity investments. Although IBS charter was changed in 1973 to allow investment in public enterprises, only one such investment has been made. The average size of IBS' loans has been £s 23,800. As of December 31, 1974, 85% of the number of loans made were for less than £s 40,000; these loans represented 37% of the total value of loans approved. The loans are diversified by industry with no more than 18% of the number of loans approved and 25% of the total value approved being for one particular sector. Over half the loans approved, representing 56% by amount, were for projects

in recent months and is likely to receive a credit of about \$ 5 million from the Kuwait Fund shortly; KfW is also likely to lend about \$ 2 million to IBS in FY76. These three sources should be able to cover IBS' foreign exchange requirements up to mid-1977. The terms and conditions of the proposed KfW and Kuwait Fund credits are not known. However, IBS has been informally advised that the Kuwait Fund will lend at 4% for a term of 17 years. IBS has agreed that it will protect itself from the foreign exchange risk in respect of all foreign borrowings and will pass on the risk to the ultimate borrower.

Sudan Development Corporation (SDC)

101. SDC was established in March 1974 under the Act of the Sudanese Government as an autonomous public sector corporation wholly owned by the Government. The authorized capital is the equivalent of US\$ 500 million, of which \$ 200 million has been subscribed and \$100 million paid-in. The resources to finance this equity base are from a 10-year Eurodollar loan obtained by the Sudanese Government, at 3/4% over the 6-month London inter-bank rate, from a consortium of international banks, with the guarantee of Saudi Arabian Monetary Agency. SDC is empowered to make loans and equity investments in any revenue earning enterprises, whether public or private. SDC plans to operate mainly in the public sector making investments in large projects of national scope; that is, its field of operations is unlikely to overlap with that of IBS. SDC's present pipeline of projects includes a few large textile mills in the public sector and two more new sugar mills. SDC's Board of Directors includes, besides its Managing Director and Deputy Managing Director, the Commissioner for Planning and Development, Governor of the Bank of Sudan, Managing Director of the Oil Seeds Corporation and the Managing Director of the Industrial Bank of Sudan.

102. The objectives of the corporation are summarized as follows:

- (a) To provide facilities for the promotion and acceleration of economic development through the support of revenue bearing projects in various fields, including agriculture, animal husbandry, industry and infrastructure;
- (b) to encourage the participation of capital and skills, domestic and foreign, in the economic development in order to contribute directly or indirectly to the increase in foreign exchange earnings and import substitution;
- (c) to conduct its operations on a self-sustaining and profitable basis;
- (d) to initiate, encourage and provide management and technical assistance in the identification, formulation, implementation and management of revenue bearing projects;
- (e) to facilitate the creation of a healthy atmosphere for investment for both domestic and foreign capital (public or private), by adopting conducive policies and practices.

103. For the attainment of its objectives, the Corporation performs functions which include:

- (i) Provision of finance by way of loans, guarantees and equity participation
- (ii) assistance in the "packaging" and co-ordination of project financing
- (iii) assistance in the selection of prospective and operating partners
- (iv) initiation of feasibility studies for new projects
- (v) evaluation and analysis of economic, financial, technical and legal documents pertaining to projects proposed for its financial or technical support.

104. The corporation has very wide powers and objectives. In the field of industry, its functions cover such matters as: project identification, formulation, evaluation and implementation; development of managerial and technical skills; mobilization of both domestic and foreign financial resources; industrial financing through loans, guarantees and direct equity,

participation; conducting feasibility studies, etc. These are some of the functions which are of interest to UNIDO. It is therefore suggested that the Mission should enquire as to how far the Corporation is successful in the performance of these functions, and identify any problems which are militating against the Corporation's organization, management and operations in the industrial field. In this connexion, the mission should take up the question of technical assistance which may be required from UNIDO and other sources for the removal of those problems. This assistance may include the provision of experts in the fields of: project formulation, evaluation and implementation, financial analysis: the experts may include: industrial and general economists, industrial and other engineers, specialists in technical fields, and others concerned with general and financial management and control, investment promotion, etc. Some of the experts may be attached to the corporation in executive or advisory capacities and may be requested to provide in-service training or organize special local training courses for members of staff of the corporation in various fields. Training of staff members overseas under fellowships may also be examined by the mission and the corporation.

Sudanese Investment Bank

105. The private shareholders of the Sudan Commercial Bank (SCB), which was nationalized in 1970, along with other banks, were recently awarded compensation, valued at about £s 1.6 million, by the Sudanese Government on the condition that this amount would be invested in the share capital of a development financing institution. SIB is expected to have a subscribed and paid-in capital of £s 3 million. SCB's ex-shareholders will subscribe £s 1.65 million (55%), and the Bank of Sudan £s 0.15 million (5%). Sudanese nationals will be offered £s 0.15 million (5%) and foreign financial institutions and business houses £s 1.05 million (35%). SIB is proposed to be a multi-sectoral operation embracing agriculture, industry, transport, financing of foreign trade, dealings in shares, etc. In the near future, however, it plans to concentrate on financing foreign trade and making equity investments in potentially profitable commercial enterprises. Some industrial financing is also envisaged but it would be complementary to IBS' activities. SIB would also

operate as a catalyst for investment funds from Kuwait and other Arab states. With Government plans fairly advanced for setting up a small floor in Khartoum for dealings in shares and securities, SIB may also engaged in underwriting and share dealing activities.

106. The activity concerning dealings in shares and securities, and the underwriting of shares appears to be the development of a stock exchange concept. This matter should be taken up with the Bank with a view to gauging such technical assistance as may be required in this field.

Sudanese Kuwaiti Investment Co. Ltd. (SKIC)

107. SKIC is a joint venture between a private Kuwaiti company (Kuwaiti Foreign Trade and Contracting Co.) and the Sudanese Government, having a paid-up capital of £s 1 million, owned equally by the two partners. It started operations in September 1973. The main object of the company is to promote joint venture companies (with the Sudanese Government and/or the Sudanese private sector) to utilize the existing Sudanese raw material resources. While so far SKIC has been active only in the real estate business, it has formed four subsidiary companies to operate in (i) road transportation, (ii) livestock, (iii) building and construction and (iv) fisheries sectors. The aggregate capitalization of the first three subsidiaries would initially be £s 6.75 million. SKIC is also examining the feasibility of setting up a chain of cold storage plants throughout the country for preserving vegetables and fruits. SKIC is planning to concentrate initially in these sectors, but it may also involve itself in financing a few industrial projects in collaboration with other financing institutions. Emphasis should be made regarding its future plans of operation and any assistance which the company may require.

The Industrial Production Corporation (IPC)

108. The Industrial Production Corporation is the managing agency for the eight state-owned enterprises set up before 1970 as well as for the 24 enterprises nationalized in 1970. Of the 38 firms originally nationalized, 14 with fixed assets of about £s. 8 million was returned to the private sector since June 1971; IPC has retained a token shareholding and a board seat on these companies. IPC has organized itself as a holding company having four subsidiaries responsible for specific sectors, namely, sugar, leather, food, and miscellaneous industries.^{1/} The net fixed assets of the IPC managed concerns were estimated at £s. 50 million. Although IPC does not publish a consolidated balance sheet or the financial statements of its subsidiaries, several projects are operating below installed capacity and are incurring losses. IPC has recently approached UNDP for a multi-disciplined team of experts, for a period of two years to assist streamline its procedures and to look into the operational problems of some of its on-going projects. The primary responsibility for planning, promoting and executing public sector industrial projects rests with the Ministry of Industry and IPC formally takes over only on completion. However, there is close cooperation and consultation between the Ministry and IPC throughout the planning and implementation stages.

109. In the UNIDO Programme Mission Report, it is observed that each of the industrial enterprises under the IPC is faced with management problems. The corporation has four subsidiaries which in turn control a number of subsidiaries. The expenses of the four major subsidiaries are charged against their subsidiaries, and the salary scales in the parent corporations and those of employees in their many subsidiaries differ widely to such an extent as reveals anomalies. The UNIDO Mission should study the organization, management and operations of the Industrial Production Corporation and its exact relationship with its four subsidiaries and their subsidiaries, with a view to identifying the needs in the general organization and management of the corporation and any technical and financial assistance required for improving its performance.

^{1/} In his report of December 1975, the Senior Industrial Development Field Adviser points out that consideration was being given to the proposal of breaking up the Corporation into seven separate corporations, each responsible directly to the Minister of Industry and Mines. These would consist of: Sugar Corporation, Leather Industries Corporation, Food Industries Corporation, Textiles Industries Corporation, Building Materials and Refractories Corporation, Edible Oils Corporation and Mining Corporation. The Mission should assess the exact position regarding the re-organization.

The Sudanese Savings Bank

110. This Bank was established as one of the institutional machineries for tapping funds from small savers and invest them in such areas as would, among other things, promote development in rural areas and minimize the influx of some of the rural population into towns. In this connexion, the bank is interested in the development of industrial activities in the rural areas, which would provide employment.

111. It is evident that at this stage industrial activities, which can be envisaged for rural areas, are those based on the development and expansion of handicraft and small-scale industries. During the first week of November 1975, Mr. Mansour Elsheik, General Manager and Chairman of the Board of Directors of the Bank and I.r. Mohammed Ahmed Khauward, Member of the Board of Directors, visited UNIDO Headquarters to discuss technical assistance requirements for their Bank. It was agreed that UNIDO would provide one expert in the mobilization of domestic financial resources for six months. Another proposal was the provision of an expert to assist in the domain of small-scale industries and rural development in the Elgazerrah region where the Bank was conducting pilot demonstration activities with a view to encouraging and creating incentives for savings among the various sections of the population. The expert would have to be made available for six months to assist, inter alia, in the identification of suitable small-scale industries for the region, identification of traditional industries suitable for modernization, advise on technology to be applied especially in the utilization of local raw materials, manpower and potential markets and the creation of new enterprises. These proposals were communicated to the UNDP Resident Representative and the General Manager of the Bank but so far no reply has been received.

112. It may be noted that the General Manager pointed out that though the Bank had succeeded in the mobilization of savings, the major problem was the identification of investment opportunities in rural areas in which the mobilized funds could be utilized. It is felt that, apart from the problems relating to the identification, formulation, evaluation and implementation of projects, the Bank is faced with organizational, managerial and other operational problems. One of the specific problems is likely to be shortage of adequately qualified and experienced staff. The mission should discuss these and other matters and identify technical assistance needs of the Bank.

Industrial Consultancy Corporation

113. This corporation was originally known as the Industrial Research Institute, which was established in 1965, through a UNDP project executed by UNIDO. The main task of the corporation is to conduct industrial research with a view to adapting industrial technology to the local conditions and resources. On the basis of this research, the corporation advises and supports industrial undertakings.

114. In his report covering his visit to Sudan between 26 November - 5 December 1975, the Senior Industrial Development Field Adviser points out on page 11 that the corporation is operating satisfactorily but that it might request further assistance in training within the framework of the next country programme. This, and any other possible technical assistance requirements, should be taken up with the Corporation.

115. No doubt, Sudan has created many institutions to assist industrial development. It has, however, been observed that many publicly-owned organizations are not operating satisfactorily. By and large, their problems arise from shortage of manpower, funds, constraints created by Government policies, etc. The mission should try to assess the performance of these various organizations in relation to their objectives and recommend such action as required for improving their organization, management and operations. In this connexion, there is a need for examining the ministerial powers and control over the institutions, their financial and manpower resources, training needs for upgrading the capabilities of staff members of the organizations, etc.

116. There appear to be overlappings in the objectives and functions of some of the institutions above-mentioned. These duplications can be found mainly in the field of industrial financing and industrial project appraisal. The World Bank Mission Report in paragraph 66, page 4), mentions in this connexion: units within the Ministry of Industry, the Industrial Bank of Sudan, the Industrial Consultancy Corporation and Units within the Ministry of Planning. The question of duplication of efforts is indicated by the fact that all these units and institutions requested the Mission for technical assistance in project evaluation. The common deficiencies to all are: (i) lack of knowledge of industrial engineering and production data, (ii) economics of project evaluation. In view of the limited human and financial resources, there is a need to examine the overall question of overlappings in the objectives of these institutions and duplication of

functions in their operational activities. Another example is the financing of industrial projects. There are many organizations which are involved in this field. Thus the mission should try to gauge the needs for rationalisation of the institutional infrastructure for industrial development (which might necessitate integration or disintegration (vertical and horizontal) of the existing institutions or agencies) and the creation of new ones. The exact form of rationalisation might require a comprehensive study of the situation before radical changes are made. An expert to carry out the study should be considered.

INDUSTRIAL DEVELOPMENT POLICY OBJECTIVES AND STRATEGIES

The Five Year Development Plan (1970/71-1974/75)^{1/}

117. The development plan can be taken as one of the documents enacting government policy objectives and strategies in broad terms. Thus, the objectives and strategies of the government for investments as outlined in the plan are summarized in the table below.

TABLE 17

Investment under the 1970/71-1974/75 Plan

(Ls million)

<u>Sector</u>	<u>Public Sector</u>	<u>£</u>	<u>Private Sector</u>	<u>£</u>	<u>Total</u>	<u>£</u>
Agriculture	99.5	38.8	26.5	15.6	126.0	29.5
Industry	36.5	14.2	24.0	14.1	60.5	14.2
Transport and Communications	47.0	18.3	-	-	47.0	11.0
Public Utilities	19.7	7.7	-	-	19.7	4.6
Education	15.0	5.8	7.2	4.2	22.2	5.2
Health	8.4	3.3	1.8	1.1	10.2	2.4
Housing	-	-	78.8	46.4	78.8	18.5
General Administration and Miscellaneous	30.6	11.2	31.7	18.6	62.3	14.6
	<u>256.7</u>	<u>100.0</u>	<u>170.0</u>	<u>100.0</u>	<u>426.7</u>	<u>100.0</u>

^{1/} The Plan period came to an end last year. A new plan is being considered. What is being stated here is therefore subject to changes in the policy objectives and strategies being considered for the new plan. It is, however, felt that the new plan will, as far as the industrial sector is concerned, broadly conform to the objectives and strategies of the 1970/71-1974/75 Plan.

118. The sectoral investment targets in the above table were intended for enabling the government to achieve the following objectives:

- (a) To secure a continuous increase in the Gross Domestic Product at an average annual rate of 7.6 per cent so as to realize a Gross Domestic Product of about US\$ 2342 million by 1974/75.
- (b) Increase the Central Government revenue to US\$ 2,448 million as compared to US\$ 1,524 million for the previous years.
- (c) Achieve an increase in the commodity production by 65% in 1974/75 (agricultural production increase by 60.8%, live stock production by 75.5% and industrial production by 57.4%).
- (d) Increase public capital investments in developing education and culture by 60%, health by 82% and public utilities by 58%, private sector participation in investments of US\$ 488 million in economic and social projects of vital national importance.
- (e) Increase the per capita Gross Domestic Product to US\$ 134 in 1974/75, or by 31% compared to that of 1969/70.
- (f) Develop urban and rural power network, rural and urban water supply, promote productive co-operative societies, promote the prosperity of the people through the growth of productivity, realization of full employment, enhancement of employees' skills and capabilities and the expansion of public services and related activities.

11). It is observed in the IBRD Report of June 9, 1972, that in order to achieve an annual growth rate of 7.6 per cent in the GDP, the planned investment of £s 4,267 million would imply an incremental capital/output ratio of 1.7: 1. The report further states that such a low ratio was based largely on the assumption that excess capacities existed in the economy and that those capacities could be fully utilized. It is observed furthermore that the capital/output ratio was projected to be low for investments aimed at bringing large areas of rainfall under cultivation. The ^{planned} share of the public sector in total investment was £s 256.7 million or 60% of the total, and the remaining £s 170 million was to be undertaken by the private sector.

12). There is no reliable information to show the extent to which the foregoing objectives have actually been achieved. It is, however, evident that the

performance has not reached the targets. In the case of the industrial sector, the planned public sector investment programme of £s 36 million in industry and mining (£s 60 million including the private sector investment in industry) emphasized the full utilization of the existing capacity as well as the creation of new industrial projects. Excess capacity still exists and some of the planned new industries are not operational. A number of problems have been mentioned as the constraints to the achievement of the objectives of the plan. It will be necessary to investigate the steps being taken to remove these constraints and any technical assistance that may be required for this purpose. Indeed, it will be necessary to know the present objectives and targets of the Sudan and the policy measures designed or contemplated for the achievement of those objects and targets in the industrial sectors.

121. In general, the plan and the industrial policy objectives are for establishing import substitution industries, export oriented industries, industries based on the utilization of local raw materials, labour intensive industries. Emphasis is also laid on the dispersal of industries in various regions. As mentioned earlier, one of the criteria set in the 1974 Act for the evaluation of new industrial projects by the Ministry of Industry for the purpose of granting certain concessions is the willingness of applicants to locate in rural areas.

POLICY MEASURES AND PROGRAMMING OF IMPLEMENTATION

The Development and Encouragement of Industrial Investment Act 1974

122. This Act is the most important instrument for the implementation of the industrial policy objectives and targets. The Ministry of Industry is responsible for the articulation and enforcement of industrial policies. Basically, the Ministry performs the following tasks: a) it makes recommendations on the desirability of new projects submitted by the private sector,^{1/} b) it inspects all new projects (public and private) in terms of capital and operating costs, c) it determines the ex-factory prices for all firms, d) it allocates foreign exchange to various competing demands, e) it grants various concessions emanating from the Investment Act and f) it collects and analyses manufacturing information to enable it to successfully perform its job.

123. One of the concessions is tax holidays for five years from the date of commencement of production. These tax exemptions are 100% for firms that are deemed important for national defence and those which utilise local raw materials. For the rest, a 50% reduction in business taxes is assessed. Other important concessions granted to the domestic firms are protection from competing imports and low duty rates for the importation of raw materials, capital equipment and spare parts. The policy is to increase the import duties and/or impose quotas and in some cases impose total ban on competing imports, while on imported raw materials, capital goods and spare parts, import duties are reduced. For the most part capital goods and spare parts are duty free, while raw materials are levied at duty rates of between 10 and 15%. Other concessions that could be granted to the firm are: a) concessionary rate for the use of transport and power facilities, b) land in an industrial area, c) increase in the depreciation rate to twice the prescribed rate if the firm operates in two shifts and three times it if it operates in three shifts, and d) restricting government's agencies to purchase from domestic firm if its price is found to be reasonable in comparison to imports.

^{1/} Public sector projects are approved by the Ministry of Planning.

124. The Investment Act provides no specific incentives for exports other than drawbacks on import duties paid for raw materials used in the production of exports. Since import duties for such items are low (10%) and production costs in general are very high, this incentive is not very important. The Investment Act also permits the repatriation of profits abroad and the transfer of capital in case the enterprises are liquidated. The last article of the Act prescribes the regulatory powers of the Ministry, the most important of which is the establishment of a Board for the determination of ex-factory prices and industrial costing. The Act finally empowers the Minister to make sure that foreign exchange is made available to enable local industry to function uninteruptedly.

Comments on the Investment Act^{1/}

125. Thus the major tools of industrial policy, as applied by the Ministry of Industry, are centered on the following issues: the discretionary power of the Minister to approve projects together with a range of concessions, or to disapprove them, the setting of the ex-factory prices, and the allocation of scarce foreign exchange funds.

126. There appears to be no systematic way by which the Technical Advisory Committee evaluates project applications other than the general requirement that the newly established firms produce for the domestic market thus "saving" foreign exchange, and also that they use domestic raw materials. The mission was given this impression after discussing the matter of criteria of project selection with the Ministry staff and through observing the actual performance of the existing manufacturing firms in the country. With the exception of some recent attempts to export limited quantities of leather at various stages of processing and edible oil and cakes, there has been no manufacturing export in the Sudan. In fact, the major public investments in manufacturing in the past were explicitly made for import substitution activities such as the sugar refinery plants. However, few new projects then under construction or consideration aimed towards exports;

^{1/} These are comments made by the IBRD Mission Report "Survey of Industrial Sector of Sudan" and the ILO/UNDP Employment Mission Report 1975.

the new tannery facilities which was being built by French interests would almost exclusively export the processed leather to France, while the 15 year textile plan envisages that its second and third phase of implementation will be for the export markets in cotton yarn and fabrics respectively. The rest of the projects presently undertaken are primarily to satisfy domestic market requirements.

127. This approach to industrial development has had some adverse effects on the soundness of the manufacturing sector of the country. It seems that within these broad criteria, projects were not promoted in a systematic way. The five year plan, which came to an end last year, made specific provisions for investments in manufacturing, but its actual implementation resulted in different projects. The Ministry staff responsible for background material and project evaluation are very few, depend entirely on data the applicant provides and not trained in economic and financial evaluation. Clearly some of the problems associated with the manufacturing sector in Sudan stem from bad initial project approvals.

128. Ex-factory pricing is another important aspect of industrial policy carried out by the Ministry. It is usually done in two stages, the first in advance of the first year of operation and the second subsequent to that. The first stage involves the issuance by the Ministry of the "Provisional Price Certificate" which sets the ex-factory price of the firm on the basis of the projected operating unit costs of the firm and on top of which a profit margin ranging from 5 to 15 % is added. The projected operating costs are calculated on the basis of data provided by the sponsors of the project.

12). At the end of the first complete year of operation the firm is required to submit to the Ministry its properly authorized balance sheet which becomes the sole grounds for the staff in the Ministry to calculate the actual unit costs of production. ^{1/} Once these costs have been assessed they are sent to the Technical Advisory Committee which in turn recommends to the Minister the mark-up for profits, usually ranging from 5% to 15%. The Minister and the firms' management will finally negotiate the entire ex-factory price level. Once the latter has been established periodic reviews of it are made, often at the request of the firm, to adjust the ex-factory prices to changes in the prices of raw material. As of November 1973, approximately 100 out of 500 firms have settled their ex-factory prices with the Ministry. The rest operate either under the "Provisional Price Certificate" or on the basis of ex-factory prices already established for similar products.

Fiscal Concessions

Business Profits Tax (B.P.T.)

130. Under the 1974 Act, profits are exempt from taxation for five years and only profits in excess of 10 per cent of capital are taxed for the next five years. In practice the value of such concessions comes to about £s 1/2 million which is small compared to the £s 5 million conceded under import duty exemptions. Industry also benefits from the supply of power at cheap rates but is affected in the other direction by the effects of price control. On balance the net assistance received is far less important than the cost of the disabilities suffered from inadequate transport facilities and power supplies.

Import and Excise Taxes

131. Under the 1974 Act, exemptions from payment of customs duties apply to machinery, equipment, spare parts and raw materials but the exemptions do not extend to the Exchange Tax/Subsidy scheme administered

^{1/} This analysis is carried out by the Costing Division of the Department of Industrial Control of the Ministry of Industry and Mining.

by the Bank of Sudan. There is provision for exemption from excise duties on locally produced raw materials used in production, and for reimbursement of any form of taxation paid by an establishment on production exported. It seems to have been past practice to grant exemptions largely in full.

Infrastructural Incentives

132. Under the Industrial Development Acts, land may be granted at concessionary prices and reductions made in electricity and freight charges and in rates.

Allocation of Foreign Exchange

133. One of the difficulties of the system of foreign exchange allocation operated by the Ministry of Industry for industrial licensing is that foreign exchange for capital imports for newly licensed establishments seems to be given first consideration and it is only after these have been met that allocations are made to existing units for imports of spares, fuel and raw materials. As a result the capacity of existing units may not be fully utilised for lack of imports. Another problem that arises is that the system does not seem to have proper regard to economic criteria in making allocations between firms. Firms making chronic losses may thus receive allocations at the expense of efficient firms which are prevented from expanding production.

Effective Protection as Measures of Intra-Sector Incentives

134. This section attempts to assess the cumulative effect of these policies on the allocation of resources within the industrial sector. A commonly used technique for aggregating the incentive effects of various industrial policies is to compute the effective rates of protection conferred on different lines of industrial activity by the totality of incentive policies in operation. Effective rate of protection (ERP) is defined as:

$$\text{ERP} = \frac{(\text{Value added at Domestic Prices}) - (\text{Value added at International Prices})}{(\text{Value added at International Prices})}$$

In effect, ERP's measure the degree of protection conferred on domestic factors of production by differences between domestic and international (border) prices for traded goods caused by economic policy measures. Information on value added at domestic prices is usually available. Some difficulty lies in identifying the departure of domestic from international prices by commodity, and using this information to deflate the domestic gross output and input values to arrive at an estimate of value added at international prices.

135. If import tariffs were the only policies creating differences between domestic and border prices, then the deflations could all be done using information from the Customs Tariff schedule. In Sudan to several other aspects of policy which influence the difference between domestic and international prices of traded goods exist. With this observation, review of two recent efforts at estimating ERP's for Sudanese industry is made in the following table.

136. The World Bank Mission observes shortcomings in the implementation of the provisions of the Act which are summarized as follows:

- (a) There appears to be no systematic way by which the Technical Advisory Committee evaluates project applications other than the general requirement that the newly established firms produce for the domestic market thus "saving" foreign exchange and also that they use domestic raw materials. Few new projects under consideration or construction aim at exporting. The Five Year Plan made specific provision for investments in manufacturing but its actual implementation resulted in different projects.
- (b) The staff in the ministry responsible for background information and project evaluation are very few and depend entirely on the data provided by the applicant and have not the necessary skills for the economic and financial appraisal of projects. So, some of the problems facing the manufacturing sector emanate from bad initial project evaluation.
- (c) Ex factory price regulation is based on unit costs provided by the applicant and this is usually accepted without any independent knowledge of the production costs involved. The ex factory price subsequently approved is inflated in favour of the manufacturer. There are many more criticisms of the fixing of ex-factory prices under the Act.

TABLE 18

Estimates of Protection, 1971

<u>SITC CODE</u>	<u>Commodity</u>	<u>Nominal Protection</u>		<u>Effective Protection</u>	
		A	B	A	B
3112	Milk Products	84.6	35.0	229.0	49.0
3113	Fruits and Vegetable Canning	84.6	60.0	229.0	*
3115	Oil Mills	84.6	23.3	229.0	*
3116	Flour Mills	84.6	28.0	229.0	*
3118	Sugar	84.6	0.0	229.0	0.0
3133	Beer	125.0	25.0	*	32.0
3140	Tobacco Products	353.9	354.0	*	*
3211	Spinning, Weaving and Finishing of Cotton Textiles	62.9	55.0	40.0	(355.0 265.0 204.0)
3213	Knitwear	62.9	70.0	40.0	*
3220	Ready Made Clothes	150.0	90.0	*	783.0
3231	Leather Tanning and Finishing	38.7	34.5	*	(167.0 112.0)
3233	Leather Products (except shoes)	38.7	43.0	74.0	67.0
3240	Shoe Industry	75.0	62.7	552.0	236.0
3412	Containers and Packing Material	39.9	37.0	86.0	77.0
3523	Soap Detergents and Perfumes	87.0	85.0	*	*
3560	Plastic Products	36.4	36.4	312.0	322.0
3620	Glass Products	35.9	36.0	96.0	100.0
3829	Refrigerators and Air Conditioners	39.9	40.0	253.0	358.0
3839	Car Batteries	25.0	25.0	71.0	38.0
3843	Truck Assembly Line	63.1	63.0	272.0	*

Note: * indicates negative value at international prices.

Source: A - Naseem (op. cit)

B - IHRD Industrial Sector Survey, 1974

(d) The Act is vague in specifying a worthwhile project, the indiscriminate granting of concessions and has failed to introduce economic considerations for the evaluation of investment proposals. These have resulted in an import substitution structure for final consumer products, and therefore made it difficult to make a move towards domestic production of intermediate products since it would mean higher prices for such products than those of similar imports.

137. The above-mentioned shortcomings are just a few of the many that exist in the implementation of the industrial policies laid down in the Act. They, however, clearly indicate that there is a need for reviewing the overall industrial policy objectives and instruments. In this connexion, it will be necessary to examine the provisions of the Act and its operations and effect in practical terms on the industrialization process in the Sudan. This will, no doubt, require the services of experts: one in industrial policies and the other in industrial planning. This matter should be taken up with the Sudanese authorities.

Policy Recommendations

138. The IBRD Mission which made a survey on the industrial sector in December 1973 made the following recommendations for the improvement of the situation.

An Overview

139. Three important elements, namely infrastructure and manpower, overall industrial policy and co-ordination of such policies substantially affect manufacturing in Sudan. Their effects have been demonstrated by critical shortages in transportation facilities, foreign exchange availability and appropriate manpower availability.

140. The industrial policy that has been pursued so far in Sudan has, to a large extent, underestimated the effectiveness of these constraints on manufacturing growth. This means that the true price of transport foreign exchange and skilled labour are higher than market prices indicate. Thus, when the Ministry of Industry grants reduction in transport rates to particular projects, the total cost of transport changes to these projects is not simply reflected by these lower rates. For Sudan, such costs are considerably higher if one is to include time, losses and

damages of goods in transit that result from overextending the transportation system. Similar arguments can be cited with respect to the price of foreign exchange (the official foreign exchange rate). Importers pay a higher exchange rate for foreign funds if items such as deposit margins on letters of credit, higher supplier's price and time involved to process a foreign exchange request are to be included.

141. It seems that economically, it will make sense for the Sudanese authorities to explicitly recognize the effective presence of these constraints on manufacturing growth in the process of implementing industrial policies. This implies that i) higher rates of growth in manufacturing in a meaningful way will have to follow substantial improvements in the transport and power infrastructure of the country, and ii) criteria for project screening and regulating the various incentives available will have to be compatible with the afore mentioned constraints.

142. At the same time, a more economically rational approach in industrial policies affecting new and established projects alike is required. The basic objective of such an approach in industrial policy should be to encourage economically and financially sound projects and limit the existence of overcapacity and other inefficiencies.

143. The mission's views are that three important issues are involved here, on which departures from present policies can be undertaken smoothly: i) better co-ordination between government units responsible for the implementation of industrial and other policies which affect manufacturing; ii) progressive reduction in the level of production granted to firms for import substitution and a greater emphasis on the possibilities for exports, and iii) strengthening the technical (economic) capabilities of the staff of the Ministry of Industry in evaluating the effects of the policy options available to them in the manufacturing sector.

Co-ordination of Industrial Policy

144. There is considerable overlapping and interdependence among the first two items. Co-ordination of policies is required with respect to the determination of the sources of public revenue as they relate to the manufacturing sector, and with respect to policies that affect IPC firms.

145. It is suggested that excise duty rates should be applied uniformly to all domestic firms at a rate lower than the present one. This will simplify the collection procedures and will eliminate the complaints that certain firms are treated preferentially. In addition, the lower rates could stimulate production increase for some firms which have been heavily taxed in this form. Moreover, a possible outcome, not to be discounted, of a low excise duty rate uniformly applied to all firms is that the absolute amount collected from this tax could be higher than that which is presently collected. This, of course, would depend, among other things, on the demand elasticities of the products involved, the tax rate to be used, and the possibility or lack of it that firms could be able to internalize some of that tax reduction for their own profit. In connexion with this, the Ministry of Industry should not attempt to compensate firms which will be for the first time subject to an excise duty with new concessions or extending those that ordinarily should expire. As will be discussed later, generally speaking concessions should be phased out gradually and most of the price controls at the ex-factory level should be maintained through imports.

146. IPC, the Ministry of Finance, the Planning Authorities, and the Ministry of Industry should co-operate closely to devise more simplified procedures for the management of the public sector's manufacturing firms. These procedures should permit the management at the firm level to have more discretion in the use of the firm's profit for reinvestment and reduce the

amount of multiple requirements to which the firms are subject in implementing routine operational decisions. This move to more decentralized decision-making will allow to expand their activities and hire or dismiss personnel subject to the procedures now in force for the private firms.

Industrial Policies^{1/}

147. The net effect of the industrial policies in Sudan has been the establishment of firms that produce final consumer goods for the domestic market, largely depending on local raw materials. These firms operate under a high protection and are characterized by an inordinate amount of idle capacity and inefficiency. The concession granted to them in combination with economic conditions, such as the excise duty and the overvalued domestic, are, to a large extent, responsible for it. The policy pursued to increase nominal protection on locally produced goods in association with the reduction of duties on imported capital goods and raw materials, has enhanced the effective protection levels which the domestic manufacturing presently enjoys. For some firms the effective protection rate due to trade policies is reduced by the excise duty rate on their production, but still remains substantial. It should be recognized that the situation in Sudan might have reached the point where the domestic resource cost of earning or saving a unit of exchange is much higher by continuing import substitution as compared to export promotion policies.^{2/} The low duties on capital goods as compared to very high duties on consumer goods tends to lower the relative price of capital to wages.^{3/} In addition, the mechanics of ex-factory pricing and of the tax holidays in association with the priority given to capital goods in the distribution of foreign exchange.

^{1/} The IBRD Mission Report makes the comments which are reproduced under this heading.

^{2/} Due to lack of appropriate data, the magnitude of the quantitative evidence of the cost of import substitution in terms of foreign exchange savings is not precise.

^{3/} Wages, however, tend to be, in an absolute sense, higher with the existence of high protection as compared to a situation of lower protection.

148. The management of a firm wishing to increase output is more likely to find it less costly at the margin to do it by expanding its capacity rather than by adding shifts to the plant. For one thing, he can get the tax holidays for five years, adjust his ex-factory price to absorb these new overheads, and his application for foreign exchange will be treated preferentially over other requests. The only incentive that the Investment Act offers for more intensive use of his capacity is the accelerated depreciation provision according to shifts employed at the plant site. The actual situation in Sudan suggests, however, that the majority of the non-textile plants opt for expansion through additional capacity - at least there is widespread evidence of over-capacity-rather than by adding shifts. Thus, these policies should be reassessed with the view in mind that capital costs should be made relatively more expensive than wages.

149. It is also suggested that the level of effective protection be reduced gradually, by a combination of higher import duties on capital and intermediate goods and lower ones on final import competing goods. It is important to note that these adjustments should be made over a period of time to avoid serious dislocations on the manufacturing sector and to permit a smooth transition. The attractiveness of this policy is that, in addition to its effects on employment, it will eliminate the need for price controls on the ex-factory level since that will be done by the price of imported goods. It will also permit some local manufacturing of intermediate goods because it will increase their competitiveness vis-a-vis similar imports.

150. As for tax-exemptions, it might be argued that all should be unified under one category with the same rate of exemption to avoid the possibility of some firms being treated more favourably than others on not so clear grounds of defense and strategic importance. However, there are two provisions of the Investment Act that should be maintained, namely, that of the progressive business income tax and the accelerated depreciation based on the number of shifts.

151. The industrial policies, moreover, should be geared towards export promotion schemes. The two available incentives for exports, drawbacks on duties paid on raw materials used for exports and the 10% premium (subsidy) on exports, should be maintained as they could prove to be significant stimulants for exports if the other suggested measures are implemented. Otherwise a higher level of direct subsidy on the f.o.b. level should be contemplated at a rate equal for all exports.^{1/}

152. Of particular importance to a successful export promotion scheme is the reconsideration of present policies with respect to the distribution of cotton seeds among the various Sudanese oil mills. The present practice of distributing the available quantity on historically established shares contributes to inefficiency of this sector. It is recommended that cotton seeds be marketed and if certain mills cannot meet the market price and their existence is considered by the authority important the Government should directly subsidize them.

153. The allocation of foreign exchange among manufacturing uses should be revised. In the absence of an overall foreign exchange rate adjustment, it seems reasonable to suggest that a better utilization of this scarce resource from an economic point of view will come about if it is more appropriately priced within the manufacturing sector. For that there are few policy options available to the Ministry of Industry which in our view result in an improvement over present practices in the allocation of these funds.

154. The most practical one, at least for the short run, seems to be the permission of those firms which receive foreign exchange quotas to be able to resell them at whatever price they can get in the market. Whether this market should be restricted to the manufacturing sector or not, is not as crucial a consideration. What is crucial is that foreign exchange

^{1/} The reason the existing export incentives are not utilized is primarily due to the high cost of domestic production. Incentives to export could aid to a better utilization of installed capacity.

is used where it is better utilized, namely, by those that can offer the highest prices. Eventually, the total approach of its distribution on either equity or capital equipment preferential treatment grounds should be eliminated and replaced by direct allocation to those that can afford its true price.

Industrial Project Appraisal

155. There are now four government or semi-government offices which more or less are involved with industrial project appraisal. These are units within the Ministry of Industry, the Industrial Bank of Sudan, the Industrial Consultancy Corporation and units within the Planning Ministry. They are all deficient with respect to i) knowledge of industrial engineering and production data, and ii) economics of project evaluation. The most common requests addressed to this mission by all the government quarters visited concerned the possibilities for technical assistance on the project evaluation level financed by the Bank Group. Encouraging steps towards strengthening the technical capabilities of the government appraisal units are under way; this involves the upgrading of the appraisal staff of the Industrial Bank of Sudan and the pending appointment with the Secretary of Planning of an Industrial Economist whose job, among other things, will be to instruct the appropriate staff of the Ministry of Industry in the methods of industrial project evaluation. The expected improvement in the appraisal capabilities of these governmental units will greatly contribute to a more sound economic selection of projects to be implemented.

Resource Allocation

156. The ILO/UNDP Employment Mission 1975 in Section C on Page 22 of Technical Paper 17 made a general statement on the resources allocation. These general observations are discussed in the following paragraphs.

Industrial Licensing and Resource Allocation

157. Divergences of effective protection for different lines of industrial activity constitutes prima facie evidence for the views that the structure of incentives in Sudanese industry does not encourage

resource allocation according to comparative advantage. In practice, however, the actual allocation of resources in industry has been subject to licensing. This seems to have partially checked the effects that otherwise would be expected from a defective incentive system. The IDCAS Survey, which covered about three-quarters of modern manufacturing, showed that two-thirds of fixed assets has been invested in sectors where Sudan had comparative advantage. The percentages in these industries is shown in the table below. Inclusion of beer and leather shoe manufacturing which are also viable industries would raise the total to 70 per cent.

Edible Oil Mills	6.7
Flour Mills	3.1
Sugar	16.8
Spinning and Weaving (Cotton)	19.6
Cotton Ginning	12.9
Cement	<u>7.3</u>
Sub-total	<u>66.4</u>

158. Although this is a good record, the fact remains that up to one-quarter of investment might have been made in the wrong sectors. Even more important it gives no justification whatever for maintaining an incentive system that pulls against a rational use of resources. Another matter for concern is that so much of the capacity created is underutilized, again stemming in part from the faulty system of incentives.

159. There is no information relating to detailed resources allocation by industry sub-sector. One other point to observe is that lack of systematic, continuous and sound project identification, formulation and evaluation have resulted in the allocation of economically unviable projects and hence the existence of excess capacity. Another contributory factor to bad allocation of resources is lack of proper industrial development plan, and the operation of the Development and Encouragement of the Industrial Investment Act 1974 (as explained in the foregoing paragraphs). The question of allocation of resources among industry sub-sectors reintroduces the necessity for a comprehensive industrial plan and the formulation of clear industrial policies for effecting, among other things, the programme for allocating resources to priority-projects or sub-sectors.

160. Turning to the development of inter-sectoral linkages, little or nothing has been done as a matter of policy. Whatever sectoral linkages there may be is the result of logical and natural industrial development which is not backed by specific policy measures. This lack of sectoral linkage arises to a great extent from absence of a comprehensive and coherent plan for industrial development, which would take into account sectoral linkages.

161. The 1974 Act emphasizes the importance of the establishment of industries based on the utilization of local raw materials, and provides for the granting of certain concessions to such industries. But in the establishment of industries of that kind there is no policy measure for developing sectoral linkages. It is true that in the cotton and leather industries there is some sectoral linkage. This linkage, as stated earlier, is not the result of specified government policy measures.

162. At its present level of industrialization, the Sudan aims at establishing import substitution industries. As observed earlier, the policy measures contained in the 1974 Act have been in support of import substitution industries producing final products for the consumer without due regard to those industries producing intermediate goods. This has had an adverse effect on the promotion of inter-sectoral linkages. There is a need for carrying out a comprehensive survey of the potentials and a detailed and coherent planning of industrial development, taking into account such matters as: promotion, full utilization of local raw materials and inter sectoral or sub-sectoral linkages.

163. The other point to highlight concerns investment follow up and promotion policy measures. Under investment follow up and promotion, we include all the phases or stages relating to the implementation of new industrial projects, namely: the identification, selection, formulation, evaluation and the actual financing of industrial projects. Sudan is lacking a machinery or institutions capable of identifying, formulating, and evaluating industrial projects on a systematic, continuous and fairly co-ordinated basis.

Other Policy Measures

164. This heading relates to such measures as relate to regional dispersal of industries, development of intersectoral linkages, project identification and formulation, investment promotion, the promotion of export industries and the selection and acquisition of technologies. These are discussed under one heading because in the majority of cases very little has been done.

165. Regarding localization of industries, most of the industries are in the Khartoum region. The government is trying to disperse industrial activities in as many areas as possible. The Development and Encouragement of Industrial Investment Act 1974 provides that one of the criteria for evaluating the desirability of a new industrial projects for the purpose of granting concessions is the willingness of its promoter to locate it in rural areas. There are, however, economic factors which militate against the location of large-scale industrial projects in areas other than Khartoum and some other large centres. These include: availability of raw materials, transport, market, etc. Industries tend to locate near existing industries in order to reap the benefits of external economies of scale. As far as large-scale industries are concerned, these economic considerations are against location in rural areas. Lack of transport facilities is one of the main constraints on the dispersion of large-scale industries, though Government policies are for it. Thus, the development of a fair distribution of industrial activities rests in the establishment of handicraft, small and medium-scale industries in rural areas.

166. One of the instruments for achieving this policy objective is the Sudanese Savings Bank. The functions of this Bank include the financing of handicraft and small scale industries in rural areas. The Industrial Development Bank of Sudan is also another agency which finances industrial projects in the rural and urban areas. It is, however, considered economic logic as opposed to liberary policy measures that the dispersal of handicraft, small and medium scale industries in the rural areas.

167. It was pointed out earlier in this paper that one of the contributory factors to the existence of excess capacity in Sudan is that many industries were started without prior adequate feasibility studies. Some industries listed in the Five Year Plan were never implemented because of lack of feasibility studies. It is true that there are some activities in the field of investment follow-up and promotion based on broad policy objectives. Those, however, have not been moving in step with the requirements of the situation. They are based on the objectives, functions and operations of a number of institutions or departments such as:

- (a) The Ministry of Industry, which is responsible for the enforcement of the Development and Encouragement of the Industrial Investment Act of 1974, with the assistance of the Technical Advisory Committee for Industrial Development. As has been noted, the Act is meant for encouraging investments in the industrial sector but because of lack of adequately qualified staff in the Ministry, proper evaluation of projects and shortcomings in the provisions of the Act itself or in the practical application of its provisions, investment promotion has not proceeded as efficiently as would be required. Apart from the need for strengthening the staff of the Ministry and improvements in the provisions of the Act for facilitating the expeditious ways and means for promoting investments, investigations should be made regarding assistance in the broad field of methods and techniques in investment promotion and any possibilities for the establishment of a separate institutional machinery for handling all matters relating to investment follow up and promotion.
- (b) Industrial Bank of Sudan - this is the other institutional tool for the promotion of investments. It grants loans and appraises projects and makes guarantees and participates in the mobilization of both domestic and foreign financial resources for financing industrial projects.

- (c) The Industrial Consultancy Corporation - (originally known as the Industrial Research Institute). This corporation elaborates feasibility studies for both public and private sectors and has established co-operation with firms of consultants in the UK and FRG to which it has subcontracted some of its studies. With a West German firm, for example, the Corporation is making detailed feasibility studies of cement factories to be set up in Southern Sudan and in the vicinity of Port Sudan, an Investment Guide for Sudan is under preparation, and a detailed study has been made for the development possibilities of the agro-industries. In addition, the corporation is working extensively in the field of consultancy/costing systems and management. The Senior Industrial Development Adviser indicates on page 11 of his report dated 26 November - 5 December 1975 that the corporation might need assistance in further training. This matter should be explored with a view to identifying technical assistance needs.

168. There are other institutions or departments engaged in investment follow up and promotion. It is recognized that all the institutions engaged in this field have common problems, namely, shortage of staff and funds. These and other problems relating to organization and management must be solved if the policy measures to be implemented through these agencies are to be carried out at all.

169. It has been noted that concentration has been on import substitution industries. Very little has been done in the establishment of export oriented industries. Regarding the selection and acquisition of technology, again the declared policies are in broad terms. For example it is declared that support will be given to industries based on the utilization of local raw materials and which are labour intensive. It is assumed from this general objective that such technologies as will permit large local value added will be selected and adopted. But there is no specific policy measure in this respect. Another example is to be found in the existence of excessive capacity, which in itself is an indication of selection and adaptation of wrong technologies. This can be attributed to insufficient examination and evaluation of the technical and engineering aspects of projects, which examination would otherwise lead to the selection and adaptation of technologies suitable to local production conditions.

170. As a measure, some institutions have been established in the leather and food sub-sectors to do research in the technical and economic aspects connected with those industries.

171. It is proposed that further co-operation between UNIDO and each of these agencies should be explored. Discussions should also be held with the Ministry of Industry and Mines and the University or other industrial research oriented institutions with a view to establishing a systematic and continuous basis for the selection and adaptation of technology suitable to local conditions of production.

Industrial Financing

172. Industrial development is financed by the public and private sector. Government financing of manufacturing industries is done by channelling funds through such publicly-owned institutions as the Industrial Bank of Sudan, the National Development Corporation, the Industrial Productions Corporation and others. Those publicly-owned corporations or financial institutions provide funds to the financing of specific industrial projects by granting loans or guaranteeing loans through direct equity participation, etc. In addition, public industrial enterprises finance industrial development by reinvesting a portion of their profits, if any.

173. The private sector relies on loans from public financial institutions and commercial banks for the financing of their industrial projects. In addition, private savings (both personal and savings by private businesses) is a major source of funds. The other source of funds for financing manufacturing industries is external financiers, public and private. These include private investors, national and multinational financial institutions or organizations. The main forms of foreign financing of industrial development in the Sudan are: equity participation, loans and lines of credit. Loans or lines of credit are granted mainly to public enterprises or financial institutions. Thus, public institutions or industrial corporations play a major role in the mobilization of both domestic and foreign financial resources for financing the manufacturing sector.

174. Long-term financing is effected through retained profits, suppliers credit and loans from such institutions as the Industrial Bank of Sudan. Short-term financing is provided by government controlled commercial banks and mainly for working capital. Supplier's credit is exclusively for imports and the contribution of the Industrial Bank of Sudan to total manufacturing investment is of relatively small amount.

175. Very little is known of the magnitude and sources of funds for manufacturing in Sudan. It is, however, evident that financing is a problem when foreign exchange is involved. The Bank of Sudan has formulated a number of measures which increase the cost of obtaining foreign exchange to a level higher than the official rate of exchange. For instance, when a letter of credit is issued, the Sudanese buyer is required to deposit with the Bank 60% of its value and a letter of guarantee, 40% of its value, until the goods are imported. This usually takes a year from the time the letter of credit is issued up to the time the goods are received. The deposit does not earn interest and indeed deprives the importer of working capital. Because of the long delay in approving foreign exchange, the foreign suppliers charge a premium to the Sudanese buyer. This has been adversely affecting industrial financing in Sudan, where shortage of foreign exchange is a chronic problem.

176. Industrial financing has also suffered through the failure of state-owned enterprises to make adequate profits for reinvestment in expansions, modernizations or in entirely new projects. Nationalisation was another factor which reduced the flow of foreign funds into the industrial sector. Now that this policy has been reversed, there are signs that increased foreign funds, other things being equal, will resume flowing into Sudan.

Mobilization of Financial Resources

177. The financing of manufacturing is dependent to a great degree on the ability to save, and the channelling of savings into industrial projects. It may, therefore, be worthwhile to have a broad view of the mobilisation of financial resources in general in the Sudan.

Training of Personnel

Manpower

178. Skilled manpower needed at all levels to meet the industrial requirements of the country are in short supply. A great deal of this shortage could be attributed on the one hand to the overall educational system that prevails in the country. Approximately 80 to 90 % of all university graduates are working for the government. This results in a short supply of accountants, skilled technicians, specialized engineers and so on. Once hired, the government employee is assured of a specific salary and annual increased based on costs of living considerations and job longevity.

179. The salary structures for similar positions in private firms is not fully known, but from scattered evidence collected from firms, it appears to be higher than that of the government. It should be noted that the government's wage and salary structure applies also to government owned firms, but it is not clear whether it affects high skilled blue and white collar employees. For the unskilled and low skilled labour force the wages paid by the government tend to be higher than those of the private sector. The fact that minimum wages are only applied to the public sector may in part explain that observed unemployment in Sudan is minimal, mainly appearing among secondary and high school graduates who have not acquired additional skills.

180. Some efforts is presently directed both by the public and private sector to create and upgrade skills appropriate for the manufacturing industry. Some private firms, for instance, train employees either through formal training courses within the firm's premises in which case the trainee is required to remain with the firm for a specified period of time upon completion of his training, or more commonly on the job with the promise of higher pay if the trainee successfully learns his job.

181. All the government's training programmes for manufacturing skills are administered by the Department of Labour. The vocational training of the Department of Labour is conducted in five regional centers of which the three most important are located in Khartoum, Wad Medani and Port Sudan. The applicants must have at least nine years of schooling

184. A third way in practice is the training of Sudanese workers for higher skills training abroad. Although a number of firms send some top level labour for training abroad, primarily "on the job", this is by far more costly to the firms, and presents them with a considerable amount of difficulty in obtaining the foreign exchange requirements. For the publicly owned firms additional problems exist related to certain bureaucratic approvals. UNIDO and other sources can offer training under their fellowship programme; specific needs in this area should be explored.

185. There is a number of training schemes and institutions in the Sudan for developing skills and upgrading capabilities at different levels and in various cadres. Many institutions complement the upper secondary and post-secondary levels of the educational system. However, those who fail in primary schools or fail to qualify for admission to secondary schools have opportunities to enrol in one of the nine vocational training centres run by the Department of Youth of the Ministry of Culture and Information. Those who fail to enter the upper secondary schools likewise can join one of the four vocational training centres run by the Department of Labour of the Ministry of Public Services and Administrative Reform, or one of the national crafts schools run by the Ministry of Education.

Training of Operators and Semi-skilled workers

186. One of the main sources for semi-skilled manpower in Sudan are the nine youth training and development centres in El Obeid, Nyala, Juba, Malakal, Atbara, Wad Medani, Roseirie and Omdurman, run by the Department of Youth of the Ministry of Culture and Information with UNDP/ILO assistance. These centres offer one-year vocational courses for young people, who have dropped out of the formal school system, in masonry, carpentry, leather work, plumbing, fisheries, metalwork, electricity, and handicrafts. Not all courses are organized in all of the centres, but this depends very much on the conditions and the requirements of the labour market in the area of each centre. So far the assessment of training needs has been rather a matter of guesswork and interviews with responsible people in the area; no real attempt has been made to identify shortages in certain skills or occupations.

187. Girls and young women have the opportunity to attend courses in sewing or home economics. These courses, like those for boys, are for a duration of one year. Cultural and sports activities have also been introduced in these centres, while in a few centres a kindergarten was organised.

188. Plans have been made to increase the number of such centres in Sudan by nine and to expand the programme in existing centres to include training in agricultural occupations, including livestock.

189. No accurate statistics on the number of trainees per occupation are available. However, crude estimates suggest that the maximum intake of the existing centres so far has been 500 young persons, while the number of drop outs from primary education has been estimated at 60,000 boys and girls. In other words, the role of these centres has so far been rather insignificant, but they seem to have a great potential in the future, in particular in rural areas, where the demand for such type of workers appears to be increasing.

190. These youth centres have in the past been the main source for organised training of semi-skilled workers in Sudan. In recent years, however, some firms have organised short, upgrading (off-the-job-but-in-plant) courses for their unskilled workers. In addition, the Tozi Farm Machinery Training Centre offers six months courses of training in tractor operation and maintenance. The need for such a centre, in a country where mechanised farming is practiced in large areas, needs not to be stressed. This has prompted the International Development Association (IDA) to make available US\$ 750,000 in form of a loan to expand the centre with a view to increasing the output from 120 to 250 per year.

Training of Craftsmen and Skilled Workers

Apprenticeship Training

191. The first Apprenticeship Ordinance was passed in 1908 and repealed in 1974 when the new Apprenticeship and Vocational Training Act was promulgated. The latter came only into effect as from January 1, 1975.

and their training programme lasts for three years. Until very recently, the trainee's entire three-year training period was spent in the center's workshops. Recently, however, a new approach has commenced according to which the third year of training for some of the trainees is spent on the premises of a factory for "on-the-job-training". The firm assumes no responsibility for retaining the trainee at the end of the year but often this has been the case. It is the hope of the responsible staff of the Department of Labour that "on-the-job-training" for the third year of the trainee will be fully generalized for all participants in the programme. This development is considered to be of utmost importance for the proper development of needed skills in Sudan. Thus, an effort should be made to adjust the training programme in these vocational centres to better suit the needs of the manufacturing firms. If the vocational centers succeed in their efforts to adjust their training programmes to the new demand of the manufacturing firms for skilled manpower, some of the critical shortages that cast serious doubts on any plan for rapid industrial growth might be eliminated.

182. The Department of Labour also provides courses for skill upgrading in Khartoum and Wad Medani. In the latter of these towns there is also a training center for teachers. These courses are offered twice a year for five months each. About two thousand workers apply for each course but only 500 are accepted. The workers can apply on their own but most often firms submit a list of their "qualified" workers to the appropriate authorities in the Department of Labour for consideration. The process of selection is not clear but it certainly involves rationing on the basis of a waiting list. During the 5 months training period, the firms continue to pay their participant workers their pre-training wages plus a fee for the programme. Upon completion of the programme the trainee can receive a wage increase and/or get a promotion to a higher group.

183. It is felt that training of this type has a very important role to play in the country's efforts to improve the efficiency of labour. It will be helpful if the appropriate government authorities and the managers of the manufacturing firms coordinate their efforts in establishing effective ways to improve training facilities in the country with a rational distribution of a) costs among users of these training facilities and b) the benefits between firms and workers.

While the new Act is now in force, de jure, there is no evidence that it is in force de facto. Officials of the Vocational Training Branch of the Department of Labour explain the delay by the fact that the "National Council for Apprenticeship and Vocational Training", established by the 1974 Act, has not yet met. At present there are no officially approved and recognised apprenticesable trade, although some attempts were made long ago to set national training standards. This too has been awaiting the approval of the Council which, according to the 1974 Act, is empowered to approve any and all apprenticesable trades.

1)2. The duration of apprenticeship training has been fixed by the Act at three years, two of which are institutional training followed by one year on-the-job training. Trainees admitted for apprenticeship training must have completed lower secondary education and in some cases they may have to pass an aptitude test. These admission standards have not been always observed by some of the training institutions, which do admit trainees with less than lower secondary schooling. Before the new Act, all the four apprenticeship training centres run by the Department of Labour, as well as the apprenticeship schemes at the Mechanical Transport Department (MTD), the Sudan Railways, and the Gezira Board, did in fact offer three-year courses. Some of them, such as the Sudan Railways, the Wad Medani Vocational Training Centre and the MTD centre, offered two years of institutional training and one year of practical on-the-job training exactly as stipulated in the new Act. On the other hand, the Vocational Training Centres in Khartoum, Kosti and Wau, all of which have been run by the Department of Labour, offer three years of institutional training.

1)3. The quality of instructors varies considerably from one centre to another. While the instructors in the Khartoum Vocational Training Centre, the May Vocational Training Institute and the Wad Medani Vocational Training Centre seem to have received sufficient training, either through fellowships to the Federal Republic of Germany or by ILO experts attached to the Wad Medani Centre, the quality of instructors in the other training institutes is unsatisfactory. Few of the latter, if any, have had any instructor training and the quality of teaching is, therefore, very unsatisfactory. With the exception of the Vocational Training Centre in Khartoum, the May Vocational Training Institute in Wau and the Wad Medani Centre, all of whom have modern equipment supplied by either the Federal

Republic of Germany or UNDP/ILO, the other institutions have old and badly maintained equipment. The use of audio-visual aids is mainly concentrated in the three former institutions. But all of them have been suffering from shortages in training materials which have been missing in the local market.

National Industrial Schools (Craft Schools)

194. The idea of national industrial schools was adopted in 1969 and was first implemented in 1970. The concept, purpose, scope and techniques of these schools are still under consideration. Generally speaking, these schools have been established to promote handicraft training by training drop outs from primary and lower secondary education. The criteria for selection of the location and crafts to be taught in those schools has been the availability of local materials and the crafts practiced in the area.

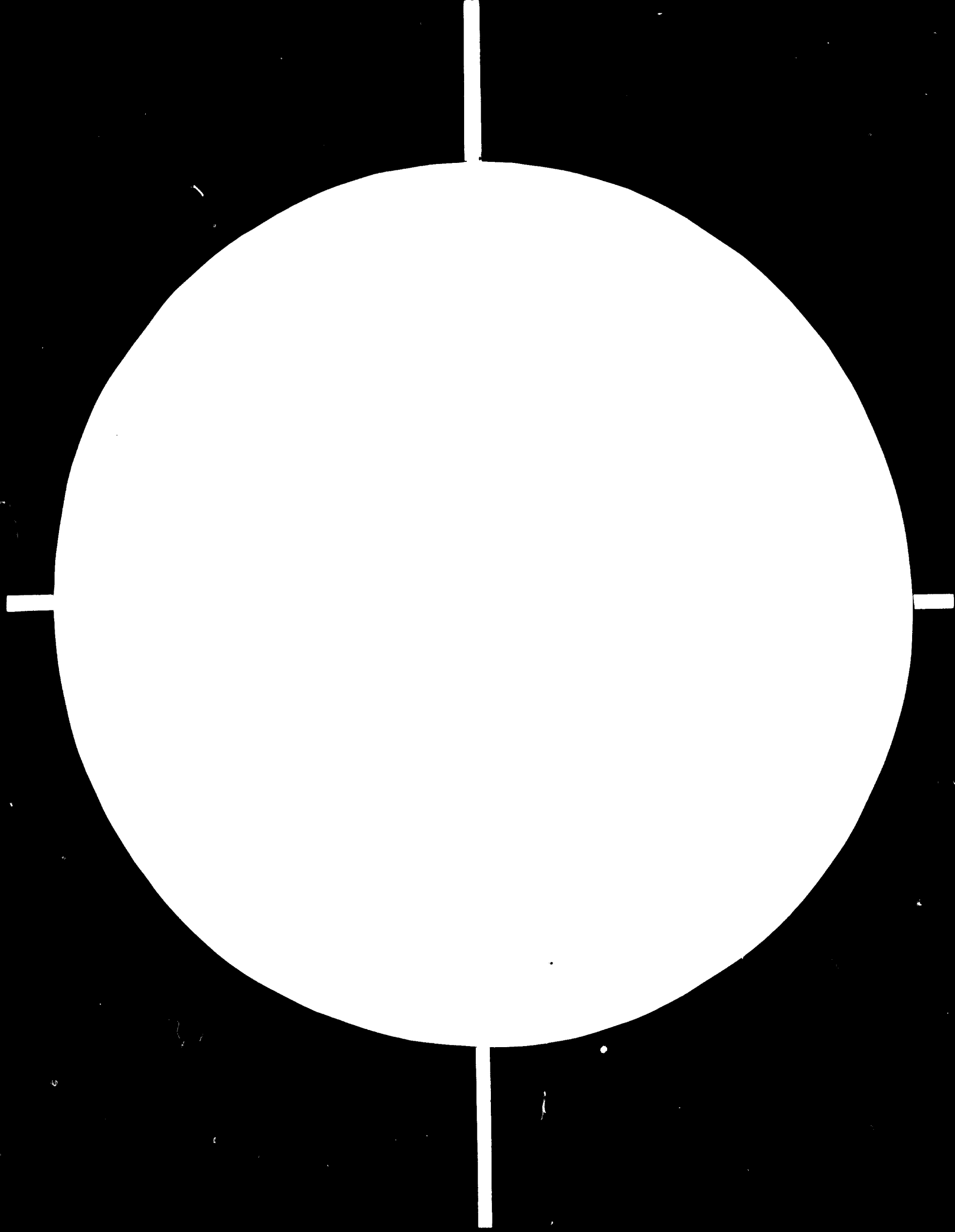
195. Six schools with two-year long courses have been established so far in Port Sudan (shell and ivory crafts), Merowe (date palm and dome and leather shoe-making), Nyala (leather bags, carpets and kelims), Omdurman (shoe-making, leather bags, shell work, wood carving and metal work), Mellit (carpets and kelims) and Wau (wood-based crafts).

196. It is rather difficult to assess the impact of those schools at the present time because of the lack of concepts and objectives. The curricular as well as teaching techniques seem to be ineffective because of the shortage or even non-existence of motivated and qualified teaching staff. Even the trainees in those schools lack motivation. Very few have found employment or had the means of a self-employment. Shortages or unavailabilities of credits, tools and the like have prevented many of the graduates from starting their own business. The drop out rate has, therefore, been quite high and has reached in some cases over 50 per cent of the total enrolment.

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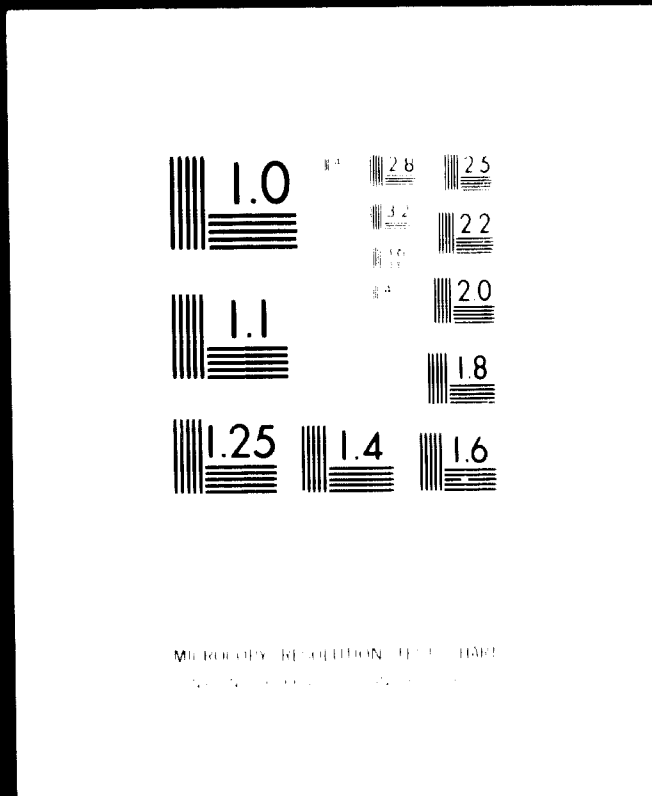


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Upgrading in the Public Sector

197. Promotion of workers in the public sector from one group to another has been conditioned by the completion of an upgrading course. Such courses have been organised either within the public enterprises in question or in the Khartoum Upgrading Centre. Upgrading courses have also been organized at the Wad Medani Vocational Training Centre.

198. The 12-weeks to 5-months courses are of a very poor quality and could at best be considered as refresher courses. In particular, the quality of training at the Khartoum Upgrading Centre suffers from having underqualified instructors, equipment is old and the greatest part of it is broken down. Lack of spare parts have rendered some machines idle for months, if not for years. Materials are also missing and are not available in the local market. Curriculum prepared by ILO experts in the period from 1957-1962 are not being used. Ironically, public sector workers who have completed their apprenticeship at the Khartoum Vocational Training Centre for example, have to attend these upgrading courses if they want to be promoted, although their standards are in many cases higher than those of their instructors.

Training of Supervisors

199. The training of supervisors has been completely neglected in Sudan. Skilled workers are usually appointed to supervisory and foremen posts by seniority and length of service. No courses have been conducted, although grievances have been increasing in recent years because of the lack of qualified supervisors, except for very short courses of a duration of 3 - 6 days at the Management Development and Productivity Centre in Khartoum.

Training of Technicians

Junior Technicians

200. Training of technicians, whether junior or senior, has been organised primarily in schools and institutes established by the Ministry of Education. Some other institutes established by other Ministries have also been providing technician training.

201. Since the reorganization of the school system, the upper secondary technical schools have been training junior technicians for a period of four years after completion of lower secondary education. Three types of schools exist: agricultural, industrial and commercial schools. Their certificates have been rates as equal to the Secondary School Certificate, which gives direct access to university education. At the same time, there seems to be very little scope for graduates of these upper secondary technical schools to continue their education in higher technical institutes which train senior technicians. As a result, probably a large number of those who graduate from these schools will continue their education at the tertiary level institutes. It is felt that junior technicians should be given full time training, but the period of years is too long.

202. Twenty-one of these upper secondary technical schools have been established so far, of which 11 are industrial schools located in Atbara, Gedaref, Wad Medani, Karima, Port Sudan, Hassaheissa, Nyala, Omdurman, Kosti, Kassala and El Obeid offering courses mainly in mechanical engineering. Seven other schools are higher commercial secondary schools, of which four are public schools, located in Khartoum, Juba, Port Sudan and Kosti, and three are private schools, located in Khartoum and Omdurman. Two upper secondary agricultural schools exist at the present time, one in Talha and the other in New Halfa, which train junior technicians in agriculture, husbandry and livestock, dairy, agricultural engineering, horticulture, and food processing. Finally, one upper secondary technical school has been established in Omdurman, which has been offering specialised courses in commerce, home economics, dressmaking, interior decoration and hotel occupations.

Senior Technicians

203. The training of senior technicians has been well established in Sudan. The forerunner in the industrial sector had been the Khartoum Technical Institute (Polytechnic) which was established in

in 1950. As from the school year 1971/1972, the institute was broken up into a number of colleges and institutes. The intention was to decentralise such type of training and to separate two and four year courses with the objective of making four-year colleges the nucleus of a technical university, to fill a felt gap in high level manpower training. The attempt to decentralise these institutes were recentralized in Khartoum, occupying the old campus of the Kuwait Technical Institute. The breaking up of the Khartoum Technical Institute, which previously had departments in civil engineering, land survey architecture, mechanised and electrical engineering, secretarial work, commerce and fine and applied art, has resulted in the establishment of eleven higher technical institutes.

204. Some of these institutes have been running three year courses such as the:

- (1) Institute of Textile and Weaving Technicians
- (2) Institute of Secretariat
- (3) Khartoum Institute for Mechanical and Electrical Engineering
- (4) Civil Engineering and Architectural Technicians Institute
- (5) Institute of Survey Technicians
- (6) Institute of Laboratory Technicians
- (7) Institute of Mechanical Engineering Technicians (Atbara).

205. Four year courses have been offered by the:

- (1) Higher Institute of Commercial and Financial Studies
- (2) Higher Institute of Surveying
- (3) College of Fine and Applied Art

206. The length of education in the latter group is equivalent to university education. It is not clear whether the level of education is the same. If this is the case, it would appear that there is some duplication between such institutes and Institute of Commercial and Financial Studies and the Faculty of Commerce of the Khartoum Branch, Cairo University. Other institutes, such as the Institute for Banking Studies of the Bank of Sudan and the Institute of Accountancy Studies established by the Ministry of Treasury, might also be producing the same kind of output. This should be carefully studied in the light of the employment possibilities of the graduates.

207. Training of agricultural technicians is being offered by the Shambat Institute of Agriculture. Two similar institutes in Abu Haraz and Abu Hagar will be established in the near future. So far the Shambat Institute has not been able to meet the increasing demand for agricultural technicians. With the establishment of the Abu Hagar and Abu Haraz institutes, the supply situation will improve considerably.

208. To qualify for entry into these institutes, applicants should have completed 12 years of general academic education and obtained 5 credits. Although graduates have not been admitted at the Khartoum University, some of them have continued their education abroad and have obtained B.Sc. degrees from foreign universities.

Training of Teachers and Instructors

Training of Teachers

209. Four year courses for the training of teachers for upper secondary technical schools (industrial) is now being carried out at the Higher Technical Teacher Training Institute (HTTTI), an off-spring of the Khartoum Technical Institute. The Institute is housed in the campus of the former Khartoum Technical Institute and is at the present time benefiting from UNDP/UNESCO assistance.

210. Some uneasiness has been expressed on a number of aspects regarding the value of this type of training must be challenged. In the first place, the HTTTI has adopted an irrelevant recruitment policy. Instead of admitting graduates from the former Khartoum Technical Institute with industrial experience, it is admitting young men and women who have completed 12 years of academic education straight from previous schooling. This explains the length of training which is now thought to be required for these students. Secondly, practical training is carried out exclusively within the Institute and has little relation to industrial practices. Thirdly, the equipment, which has been inherited from the Khartoum Technical Institute is old, obsolete, and lacking in spare parts. Training material is often missing. One must express the fear that if the graduates of HTTTI will become the future teachers of upper secondary technical institutes, the latter will produce poorly trained junior technicians.

211. In addition to the four year courses, the HTPI has been running a two year course for upgrading present teachers in upper secondary technical schools. The length of the courses suggest that the trainees, who have been already teaching, are not well qualified for their jobs.

212. As regards the training of teachers for the upper secondary agricultural and commercial schools, there has been no evidence that such training exists in Sudan. Teachers are usually recruited from university graduates (Faculty of Agriculture and the Faculty of Commerce of the Khartoum branch of Cairo University) or from the Higher Technical Institute, such as the Shambat Institute and the Higher Institute of Commercial and Financial Studies.

Training of Instructors

213. In spite of the shortage of qualified instructors in almost all training institutes, there has been no systematic training of instructors in Sudan except for the training of counterparts by ILO experts at the Wad Medani Vocational Training Centre, which has not been a continuous process.

214. However, the Vocational Training Centre in Khartoum, which has been assisted by the Federal Republic of Germany, has been training its instructors abroad; no instructors training courses have so far been organised at this Centre.

215. The rest of training institutions outside the school system have assigned the instruction task to skilled workers who lack teaching experience. It would be interesting to know whether the quality of training has suffered accordingly: on the whole, skilled workers who lack training in teaching are preferable to teachers who lack industrial experience, and the latter is much more typical of vocational and technical training in Sudan than the former.

Management Training

216. In view of the industrialisation policy adopted by the government in the 1960's, the need for better qualified managers both in the private and public sector was soon felt. In 1962 it was estimated^{1/} that the

^{1/} Ahmed H. El Jack, The Management Development and Productivity Centre: An Evaluation of its First Phase of Operation (1965-1970), Khartoum, Economic and Social Research Council, Bulletin No. 3, Sept. 1974, P. 13

numbers required to be trained at different managerial levels was

top management	200
middle management	400
supervisors	1400

217. This prompted the Government in 1962 to request UNDP/IL0 assistance for the establishing of a Management Development and Productivity Centre, which finally came into operation in 1968 with the general objective of improving and developing the standard of management in all aspects and at all levels. Courses were to be organised for public and private undertakings in general management, industrial engineering, management accounting, marketing and sales, and supervisory training.

218. The impact of this centre, which is the only centre of this kind in Sudan, appears to be very modest. Apart from difficulties relating to the construction and staffing of the Centre (both national and international staff), the programme developed at the Centre was not always relevant to the needs that led to its creation. Courses range from 3 to 6 days, which is too short to achieve anything. The methods and teaching techniques have been traditional, consisting mostly of lectures. These conditions have unfortunately not changed during the Second phase of the project.

219. No attempt was made by the Centre to reach small entrepreneurs, employing one to ten employees. Admittedly, this is a difficult task because such entrepreneurs are not easy to reach and are not always prepared to spare some of their time to undertake courses. Yet, the organisation of courses for small entrepreneurs seems to be of great importance, if one takes into consideration that, out of 3,157 units in the manufacturing sector in 1970, 2,766 units employed one to four workers, while 246 units employed five to nine workers.^{1/}

^{1/} Estimates of the Department of Statistics

220. Fortunately, a review of the activities of the Centre is now underway.

Relevance of the System

221. The question which one has to ask now is whether the present system of vocational and technical training can produce the quantity and quality of manpower required for the present and future development of Sudan.

222. So far, the wage and salary structure in Sudan has been closely related to the number of years spent in the educational system and the certificate acquired accordingly. Young people, therefore, prefer the academic to the technical streams of secondary education because the former give access to higher education and subsequently to higher earnings. In addition, the formal technical and vocational training system has been so structured as to allow graduates from upper secondary technical schools or higher technical institutes to proceed to still higher levels of formal education and training. Although, in principle, no limits should be placed on the possibilities for further education and training, it would appear that, in a country like Sudan, measures have to be devised to ensure that a proper balance between various levels of skill is maintained. One way of doing this is to require those who wish to continue their education or training to acquire practical experience for a number of years before proceeding to the next stage.

223. The danger of over-production of certain levels of skill and the under-production of others is one of the inevitable consequences of an uncoordinated approach to training. Various Ministries, corporations and public and private undertakings have their own schemes or pseudo-schemes. At present, the Ministry of Education has been made responsible for training offered in national industrial schools, upper secondary technical schools and higher technical institutes, while the Ministry of Public Service and Administrative Reform is responsible for the training of skilled workers and the upgrading of workers in vocational training centres. At the same time, the Ministries of Agriculture, Communication, Industry, Irrigation, Public Works, Culture and Information, have their own schemes. Corporations such as the Sudan Railways, River Transport Corporation, the Industrial

Production Corporation or the Gezira board have also their own schemes, or are planning to set-up such schemes. Similarly, private and public undertakings train their own people. At the same time, however, existing training facilities are frequently underutilised. Training has been conceived on the basis of breaking short-term bottlenecks but training courses have been designed to last as long as 2, 3, or 4 years - periods much longer than the duration of manpower bottlenecks. The rule of keeping training courses as short as possible, so as not to strain the limited capacity to forecast future skill requirements has been so consistently violated as to suggest that the very opposite rule seems to govern decision about the length of training cycles.

224. The first step towards a better coordination of training activities has been the promulgation of the 1974 Apprenticeship and Vocational Training Act, which set up a National Council for Apprenticeship and Vocational Training. The National Council was made responsible for recommendations to the Minister of Public Services and Administrative Reform on matters such as administering and developing vocational programmes and apprenticeship schemes, co-ordinating vocational training programmes conducted by the various Ministries, Government Departments, private institutions and other employers in the various economic sectors, determining apprenticeable trades, setting of training standards, preparing procedures and rules for conducting trade tests, preparing and approving syllabi and the duration of training, regulating and controlling in-plant training schemes, etc. The implementation of these recommendations has been entrusted by the Act to the Ministry of Public Service and Administrative Reform, and in particular to its Vocational Training Branch.

225. The Act does not specify the relationship between vocational education within and vocational training outside the school system. Secondly, one month after the promulgation of the Act, the Minister of Industry issued a Ministerial Order to establish The General Organisation for Industrial Training, which has almost the same functions as those of the National Council in respect of training activities in the industrial sector. The Organisation has a Trustee Council similar in its composition to the National Council. Moreover, the Ministerial Order has made no reference to the Apprenticeship and Vocational Training Act, nor to the relationship between the Organisation and the National Council.

Content of Training

226. The fact that responsibility for planning and implementation of training programmes has been scattered between government ministries and public corporations is reflected in the content of training. There are as many different curricula in the training courses for an occupation as there are ministries, corporations, and aid-giving agencies offering training for that occupation. Curricula are more or less identical to those prepared by Industrial Training Boards in the U.K., the City and Guilds of London Institute, the Arbeitsstelle für Betriebliche Berufsausbildung in the Federal Republic of Germany, the South East London Technical College, the Union of Lancashire, and the College of Education in Garnett, to give only a few examples. This diversity in curricula is in turn reflected in the diversity of training standards.

227. There are also substantial differences in the mix between theoretical and practical instruction. The theoretical part of the curricula for apprenticeship training at the Khartoum Centre constitutes 25 per cent of the curricular, while practical training constitutes 75 per cent. The same proportion is found at the Wad Medani Centre, the May Centre at Wau and the Kosti Centre. Training at the MFD Centre, on the other hand, is almost entirely practical with very little theoretical training. As regards practical training, this has been given almost entirely in the training centres, with the exception of the Wad Medani Centre, the Sudan Railways Centre and MFD who offer one year of practical on-the-job training.

228. The curricular of upper secondary technical schools have a more theoretical basis. Out of 1,260 hours in the first two years, 33 per cent have been allocated to workshop practices; in the last two years, 30 per cent of the time is allocated. While these percentages almost comply with the UNESCO proposals (65 per cent general and theoretical subjects and 35 per cent practical) in the case of Sudan much more emphasis needs to be put on practical training. In the higher technical secondary schools, the level of skill of the graduates is questionable, and some

revision of the curricular should be considered.

229. Looking at the curricular of the Higher Technical Institutes, they vary from 40 to 50 per cent practical to 60 to 50 per cent theoretical. Usually, junior technicians should receive more practical training than senior technicians.

230. The main reason for all this diversity and inconsistency in the training curricular has been the absence of training standards. Although an Industrial Standard Board was set up in 1952 to establish a system of trade tests and corresponding proficiency examination, and although a book of standards (popularly known as the "Red Book") was prepared, there has been no evidence that these standards have been followed. Moreover, the "Red Book" has not been revised since it was issued and is now out of date. Some of the occupations no longer exist and new ones have come into being since then.

231. One of the main functions of the National Council established under the 1974 Apprenticeship and Vocational Training Act will be to establish a board to prescribe national trade standards. The National Council will conduct nation-wide trade tests, this seems to be an urgent matter, which deserves a high priority.

POTENTIALS AND CONSTRAINTS

Potentials in General

232. At its present level of development, and the availability of unutilized arable land, Sudan's potentials rest in the expansion and modernization of the agricultural sector. The major development in the industrial sector which are foreseen in the next few years relate to the processing of agricultural products such as sugar and cotton. This view is shared by the ILO/UNDP Employment Mission 1/75. Indeed the Sudanese Government puts the development of sugar, oil and textiles industries in top priority industries.^{1/} The UNIDO Programme Review Mission points out that assistance will be required for the development of these three industries, and that much of the machinery in the oil industry is obsolete and should therefore be renovated. The exact technical and financial assistance requirements should be pursued.

233. The ILO/UNDP Employment Mission Report pointed out that the potential is dependent on a number of factors. The major developments foreseen in the next few years in industry are essentially related to the processing of agricultural output, particularly sugar and cotton. There will be other developments also, mainly in the nature of supporting operations, but it is clear that industry will in no way challenge agriculture as the real centre of growth over the coming decade. Employment growth in industry will be restricted because of the somewhat slow initial rate of output growth expected over the next few years (5 to 6 per cent), and also because some of the developments, notably sugar processing, are unavoidably capital-intensive. Other developments in the industrial sector, e.g. textile manufacture, are more labour-intensive, and ultimately it will be possible to introduce additional industries of this nature. Fortunately for Sudan, the immediate provision of jobs need not take precedence over a coherent strategy for industrial development.

^{1/} See page 6 of the UNIDO Programme Review Mission Report dated 5 November 1974.

234. The crucial role of the Government in implementing of this strategy is evident in terms of both institutions and policies of economic management. Equally, the pivotal role for public development expenditure is explicit in the strategy outlined above. The performance of public and private savings must be improved dramatically if the strategy is to enjoy reasonable chances of success; the system of public revenue generation must be overhauled both to remove existing disincentives to the basic strategy and to levy an elastic tax to capture the new income expansion, especially in modern agriculture. Factor price distortions must be reduced, import biases eliminated, and the concentration of incomes ameliorated through both tax and expenditure policies.

Perspective for Growth

235. In describing the potential of the strategy in terms of output, income, investment and other macro dimensions of the economy, attention is also directed to the financial effort needed to sustain the programmes of development included in the strategy. The nature of the exercise must be clearly understood. Attempting to summarise potential future developments by means of illustrative quantification is not the same as preparing a forecast. The purpose of the following table is only to illustrate what might be possible to do; if it provides a convenient framework for summary, no more.

236. Over the 10 years 1975 to 1985, a total of about £s 3,500 million will have to be invested to achieve the increase in output shown in the illustrative projections.^{1/} Transport (including commercial road operations) is estimated to require an investment of the order of £s. 800 million, second only to investment in agriculture, which could in favourable circumstances amount to as much as £s. 1,000 million. Manufacturing (including electricity and water) is likely to make smaller demands on investment resources, but even here about £s. 500 million is likely to be required and a similar sum will be required for housing. The remainder will be invested in construction and services. Examination of these investment programmes suggests that about one-third would be in the private sector of the economy and two-thirds in the public sector.

^{1/} See Technical Paper 21 ILO/UNDP Employment Mission Report, Volume II: "Macro Economic Framework for Strategy" for further analysis.

TABLE 19

Origin and Use of Resources

	Value in £S million in "1975" prices			Growth rates in per cent per annum	
	1975	1980	1985	1975/80	1980/85
<u>Gross Value Added</u>					
Agriculture	438	545	750	4.5	6.6
Manufacturing, etc.	108	144	232	6.0	10.0
Construction	45	66	105	8.0	9.7
Transport	82	107	150	5.5	7.1
Government services	179	240	320	6.0	6.0
Other services	293	363	533	4.4	8.0
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Gross Domestic Product at Factor Cost	1145	1465	2090	5.1	7.3
Gross Domestic Product at Market Prices	1340	1715	2440	5.1	7.3
Imports of Goods and Services	300	485	810	10.1	10.8
<hr/>					
Total Supply of Goods and Services	1640	2200	3250	6.0	8.2
Consumption (Public and Private)	1210	1495	2065	4.2	6.8
Gross Capital Formation	190	355	520	13.3	8.0
Exports of Goods and Services	240	350	665	7.9	13.7
Domestic Savings	130	220	375		
Gross Domestic Savings as per cent of GDP at Market Prices	9.7	12.8	15.4		
Gross Capital Formation as per cent of GDP at Market Prices	14.2	20.7	21.3		

237. Investments will build up gradually. They will take time to complete and only then will they provide the means to increase output. It will be two to three years before transport between Port Sudan and Khartoum is improved sufficiently to permit the development effort to accelerate rapidly. It will be even longer before the major transport links required for the South and the West will be completed. The construction of feeder roads to enable rural areas to have access to main lines of communication will yield results as soon as the programme gets under way, but it will be a very long time before all parts of the country are

adequately served. Other forms of infrastructure will also have to be expanded, often in advance of primary and secondary productive activities. The rate at which the whole development programme can be implemented will depend in large measure on improvements in the administrative structure of government and on better economic management of the economy.

238. As time goes on the effects of the investment programme will become increasingly apparent. Between 1975 and 1980 agricultural output will expand considerably, gross value added increasing on the average by about 4.5 per cent per annum; in the first half of the 1980's, this rate of agricultural growth may exceed 6.5 per cent. Industry's contribution to the gross domestic products (on the assumption that a liberal supply of inputs will enable capacity to be better utilised) may be expected to increase somewhat more rapidly, perhaps at the rate of 5 to 6 per cent per annum in the coming five years and then as much as 9 to 10 per cent in the early 1980's. Construction is expected to increase rapidly throughout the decade 1975 to 1985, at about 8 to 10 per cent per annum. The average rate of growth of the economy might exceed 5 per cent per annum over the next five years, and 7 to $7\frac{1}{2}$ per cent in the first half of the 1980's, starting at lower levels and gradually increasing to over 8 per cent in the mid-1980's. If these potentials of the strategy are realised, agriculture will continue to be the dominant sector for a long time, but industry, starting from a low level, will increasingly play a greater role in employment and growth. By 1985 the gross domestic product (factor cost) could surpass fs. 2,000 million, or 180 per cent of the level in 1975 (at constant prices).

239. If the rate of progression could be maintained beyond 1985, the gross domestic product in the year 2000 might amount to £s. 6,500 million, and per capita income could rise to over £s. 200, that is roughly two-and-a-half times the present level. This holds the prospect of ensuring, within the timespan of one generation, an acceptable standard of living for everyone in the country, with freedom from want, adequate health care, good educational opportunities, and the expectation of even further improvement in the future.

240. Although the development process will be stimulated and fed initially by an injection of capital from other countries, it is essential that domestic savings be expanded rapidly to provide for the needs of an increasing programme of investment. By the end of the century, investment might be ten times its present level and most, if not all, of this would have to be financed from domestic sources. A very real effort will have to be made to achieve the level of domestic savings needed to sustain the stipulated rates of growth. Both the private and the public sectors of the economy will have to save on a scale never before considered. Private savings will depend on the scope that is given to the private sector to invest as well as on the machinery that is devised to encourage savings and provide suitable savings mechanisms and institutions.

241. In total domestic savings need to be increased from less than 10 per cent of gross domestic product at present to about 13 per cent in 1980, and 15 per cent by 1985. By the end of the century, the economy should be able to generate savings amounting to about 20 per cent or more of the gross domestic product. Domestic savings must increase in line with the indications in the table if the balance of payments is to be kept manageable.

242. All the pregoing forecasts will be attained by effort, determination and dedication. A development programme many times greater than anything that has been accomplished in the past is envisaged, and a comparable effort to finance it. No less necessary is an import of capital from Arab and other friendly countries and international institutions on a massive scale in support of the strategy and its projects and to provide the additional impetus and resources needed to get development really moving; yet such capital imports will be of no avail unless on balance they come on concessionary terms. If these requirements can be met, the prospects for growth are good: the scenario emerging from the strategy shows gross domestic product increasing by over three-quarters in the ten years to 1985, permitting an increase in per capita consumption of one-quarter to one-third. By the standards of the past this is a total transformation and one with great potential for furthering employment and equity.

Manufacturing Potentials

243. Sudan is pursuing a policy of establishing import substitution industries, on the one hand, and export-oriented industries on the other. Emphasis is also being put on the establishment of such industries as will utilize local raw materials. The potentiality of Sudan in the industrial sector may legitimately be assessed in a wide context by relating it to its ability to achieve its policy objectives regarding the establishment of import substitution and export-oriented industries. This calls for the examination of its imports and exports, not for balance of trade purposes, but for the identification of such imported and exported products which might offer opportunities for the establishment of local plants for their production or processing. It is recognized that some products are exported in a raw or semi-processed form. There may be opportunities for expansion of local processing of products for export. To establish the feasibility of local processing plants, detailed studies of economic, financial and technical or engineering aspects are required. In the following tables a list of Sudan's imports and exports is given.

244. In the absence of a comprehensive and coherent industrial development plan, it is not possible to look at the industrial potentials in details. In the circumstances, there is an urgent need for a comprehensive industrial survey which, it is hoped, will reveal the exact potentials, possible inter-sectoral or sub-sectoral linkages and specific industrial projects which call for detailed feasibility studies as a matter of priority. In the meantime, a preliminary examination of import and export items should be made with a view to the identification of such specific industries as will be feasible for the local production of some imported goods, or for the processing of those goods which are at present being exported raw or in a semi-processed form. Furthermore, the potentials, as seen from the promotion of specific industrial projects, can be examined from the list of projects which was under various stages of formulation or implementation in 1973. This is given in Annex II. It is appreciated that since then the situation has changed and so has the status of these individual projects. Some might have been implemented, dropped or calling for further studies. It is any way necessary to enquire about their status, problems and assistance for their successful implementation. They are part of the IBRD report of December 1973.

TABLE 20

Selected Imported Items
1971-1972-1973

Selected Items	UNIT	1971-1972		1973	
		Qty.	Value LS.000	Qty.	Value LS.000
Machinery, non- Electric	M.T.	-	10,314	-	14,062
Cotton Piece Goods	"	-	26,462	-	10,162
Vehicles & Transport Equipment	"	-	9,209	-	10,095
Tea	"	14,415	4,004	-	6,138
Iron and Steel	"	-	4,794	-	3,814
Machinery, Electric	"	-	3,788	-	3,032
Sugar	"	199,469	9,247	-	9,684
Flour and Wheat	"	182,661	4,959	-	5,089
Base Metal Manufactures	"	-	3,639	-	3,878
Sacks and Jute	"	-	3,694	-	5,088
Medical and Pharm. Goods	"	-	2,760	-	4,603
Artificial Textiles	"	-	1,540	-	1,544
Coffee	"	12,052	1,635	-	1,698
Clothing-Ready Made	"	-	911	-	873
Paper Manufactures	"	-	2,015	-	775
Petroleum Products	"	-	8,918	-	877
Pneumatic Tyres and Tubes	NO	-	050	-	1,716
Timber	M.T.	-	2,525	-	1,368
Glass and Manufactures	"	-	1,007	-	1,034
Cigarettes	"	-	1,280	-	1,766
Milk and Cream	"	-	748	-	675
Essential Oil and Perfumes	"	-	752	-	695

Source: Department of Statistics.

TABLE 21

Exports by Main Commodities, 1961/62 - 1970/71^a

(fs million)

	<u>1961/62</u>	<u>1962/63</u>	<u>1963/64</u>	<u>1964/65</u>	<u>1965/66</u>	<u>1966/67</u>	<u>1967/68</u>	<u>1968/69</u>	<u>1969/70</u>	<u>1970/71</u>
Ginned Cotton	36.6	45.2	43.3	28.2	35.8	35.0	44.7	58.5	63.0	67.3
Cotton Seed	3.5	3.8	4.1	1.7	0.8	1.2	1.3	1.3	2.4	1.8
Gum Arabic	4.9	7.0	6.5	7.4	4.2	8.4	8.3	6.6	9.6	7.3
Groundnuts	5.1	7.0	8.3	7	7.5	6.1	6.2	5.4	4.8	8.0
Sesame	5.7	5.1	4.2	5.3	5.8	6.7	6.5	7.4	6.7	7.4
Livestock	1.1	0.9	2.2	1.4	2.6	1.1	3.3	1.6	2.8	2.3
Coca	1.3	1.4	1.8	1.5	2.8	0.6	0.6	0.5	-	0.6
Others	5.7	6.4	7.4	8.1	14.6	10.1	7.9	9.0	10.6	14.5
Total Exports (f.o.b.)	<u>63.9</u>	<u>76.8</u>	<u>77.8</u>	<u>63.2</u>	<u>74.1</u>	<u>69.2</u>	<u>78.8</u>	<u>90.3</u>	<u>99.9</u>	<u>109.2</u>

Figures are based on Customs returns and are not quite comparable to balance of payments data.

Source: Bank of Sudan

Constraints

245. It was pointed out at the outset that Sudan is one of the least developed countries. By this definition, it is evident that some of the major problems which are constraining industrialization are broadly lack of infrastructure, inadequacy of skilled or sufficiently qualified personnel, lack of financial resources, etc. There are many other problems some of which are products of the above-mentioned ones. For example lack of comprehensive industrial plans and policies, weaknesses in the organization, management and operations of national institutions or corporations and Ministries and departments of the Government all are caused by the critical shortage of qualified local personnel. Some actions which may be required for the removal or alleviation of these constraints are briefly suggested here below:

Industrial Planning

246. It is necessary to formulate a comprehensive and coherent industrial plan for Sudan. Because of lack of adequately qualified and experienced staff in the Ministry of Industry and Mines, it is suggested that the Planning Unit^{1/} of the Ministry should be strengthened by providing technical assistance experts in the field of industrial planning, project formulation and evaluation and financial analysis. One of them will deal with industrial planning and the remaining two will assist in the collection, analysis and evaluation of the data relating to new projects submitted to the Ministry for approval under the requirements^{2/} of the Development and Encouragement of Industrial Investments Act 1974.

Industrial Policies

247. It is observed by the IBRD Mission Report on the Survey of the Industrial Sector of Sudan that the industrial policy that has been pursued so far in Sudan has, to a large extent, under-estimated the effectiveness

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- 1/ Planning is now one of the functions of the newly established Project Department of the Ministry. The Ministry indicated its need for an adviser on project formulation, evaluation and study of industrial project proposals.
 - 2/ The Programme Review Mission Report, page 10, recommends the strengthening of the Planning Unit of the Ministry by providing long-term technical assistance experts in: macro planning, project planning, project evaluation, project implementation and assistance in drawing up industrial plans.

of the existing constraints on manufacturing growth. In some cases the policies have aggravated the situation. In short, there is an urgent need for reviewing the policies in order to establish a logical co-ordination of these policies for facilitating growth in manufacturing. An expert should be provided to assist the government. This will entail an examination of the 1974 Act with a view for identifying its adverse effects on industrial development and recommend the best approach. This matter should be pursued with the Ministry.

Feasibility Studies

248. The absence of well formulated and evaluated projects is one of the constraints on the industrialization in Sudan. It was pointed out that a number of projects were listed in the Five Year Development Plan and were never implemented. This is partly due to lack of feasibility studies. It is also felt that some of the studies which might have been carried out in the past have been rendered obsolete by the changes in the economic and financial situation and therefore call for review, updating or complete new feasibility studies. One other evidence to support the importance of carrying out feasibility studies is that most, if not all, national institutions which deal with industrial development are lacking qualified people to do the studies and indicated that they would like to consider technical assistance in the identification, formulation and evaluation of industrial projects. This observation may be reinforced by the argument to the effect that many industries were established in Sudan without prior adequate feasibility studies and hence the problem of excess capacity. In general, it is evident that industrial development and the attraction of foreign funds for its financing demands the establishment of a systematic and continuous basis for investment follow-up and promotion.

249. The Industrial Research Corporation is operating well in this field but there are indications that it will need assistance. Thus consideration should be given to expanding the functions and operations of this corporation by intensifying and expanding its feasibility studies actively. It is, therefore, proposed that this matter be explored with the Ministry of Industry and Mining, the Industrial Research Corporation, the Investment Bank of Sudan, the National Development Corporation, the Industrial Production Corporation and others which may be interested. There should be an assessment of technical,

financial and training assistance needs in each one of these institutions and the need for co-operation among themselves in mounting feasibility studies.

Excess capacity

250. Reference has been made several times to the problem of excess capacity which is adversely affecting manufacturing profitability especially in the public sector. One of the contributory factors to the existence of excess capacity is the fact that many industries were established without prior adequate studies. Allied to this is the fact that some of the technologies being applied in the Sudan are not suitable.

251. In paragraph 6 of page 6, chapter IV.2 of volume I of its Report, the ILO/UNDP Employment Mission points out that "many of the technologies available from the industrialized countries are not suitable to Sudan's climatic conditions, resource endowment and level of economic development especially in small scale manufacturing, etc. The Mission recommends the strengthening of the Sudanese applied research, development and experimenting agencies, orienting scientists, technologists and research engineers to apply their knowledge and talents to innovating better technologies for local producers, with emphasis on the use of local materials and labour.

252. The solution of the constraint of excess capacity calls for studies. It is felt that the technical or technological aspects will be of major importance. The causes of the excess capacity should be examined from the point of view of the technologies being used and the possibilities of adapting excess capacity to the production of closely related goods, or improvements in the technologies being used, etc. The Research agencies may not have the necessary experts to investigate this problem and propose solutions. This is an area where UNIDO or other sources may offer such assistance as may contribute to the alleviation of the constraint. This matter should be discussed with the Research agencies and the manufacturing enterprises concerned. The main purpose is to consider what should be done to lessen the burden of existing excess capacity and to co-operateⁱⁿ the study, selection and adaptation of such technologies as will be suitable to the conditions of manufacturing in Sudan.

Institutional Infrastructure

253. There are many institutions which perform various functions related to industrial development. The main constraint on their operations, by and large, is the shortage of both human and financial resources. The problem of shortage of adequately qualified and experienced Sudanese has led to unsound organization, management and operations. This is one of the major causes of the absence of properly identified, formulated and evaluated projects and, therefore, a restraint on industrial investments.

254. Institutions have also not gone very far in the mobilization of both domestic and foreign resources, partly due to shortage of staff to identify, formulate and evaluate such industrial projects as would attract investments. The problem of lack of staff has also adversely affected the profitability of some institutions or corporations to such an extent that there are not enough profits for reinvestment in new projects, expansions or modernization.

255. Some of the institutions have a number of objectives and functions which are identical. This is especially true in the case of the financing of projects, project identification, formulation and evaluation. Thus the scarce human and financial resources are over-stretched by dividing them among so many institutions which in some cases perform almost the same functions. There appears to be an urgent need for a study of the objectives, functions and operations of each existing institution with a view to demarcating areas where there are duplications, and the best way of carrying out rationalisation based on the available resources and the institutional requirements for industrial development. The rationalization may take the form of integration or distintegration (both horizontal and vertical) of the existing institutions, or the creation of new ones. Otherwise, duplication of functions and over-stretching of scarce human and financial resources among institutions may serve to perpetuate the very constraints which they were established to remove or alleviate.

Inadequate Training

256. Mention has already been made of the shortage of skilled and trained personnel in Government and all National Institutions. Training is being carried out to alleviate the scarcity. But whatever training is being offered is inadequate in relation to the enormity of the needs for skilled and sufficiently qualified personnel. The shortage will continue to constrain industrial development, and the minimization of its adverse effect rests in more and more training at various levels and in all cadres.

257. It is necessary to discuss with the Ministry of Industry and Mines, the Ministry of Planning, national institutions and agencies their training needs to meet the shortage of qualified personnel. This should be considered in the light of the present needs and future needs related to new industrial activities to be established in ^{the} future. The Ministry of Labour, the Department of Business Administration at the University of Khartoum and other interested agencies should be approached with a view to formulating training programmes which are relevant to the industrial personnel requirements of Sudan.

Transport

258. This is one of the major constraints on the development of the Sudanese economy. Regarding manufacturing, lack of adequate transport facilities has hindered the dispersal of industries and raised costs to manufacturers. It is not proposed to dwell at length on this matter, especially when it is not within UNIDO's domain of responsibilities. What is being done is to emphasize that it is a serious and formidable problem whose solution is essential to the growth of manufacturing industries in Sudan.

259. The foregoing are just some of the constraints calling for immediate attention. Such other constraints as worldwide inflation and instabilities in the world monetary system are too obvious to call for detailed treatment in a paper such as this. It is also felt that shortage of financial resources and foreign exchange are constraints which should be mentioned without being discussed.

POSSIBLE AREAS FOR UNIDO AND OTHER EXTERNAL SOURCES OF ASSISTANCE

260. In general, areas in which UNIDO and other sources can be of assistance to Sudan are in the introduction and implementation of such measures as will remove the constraints on the growth of manufacturing industries in Sudan. Briefly these are:

1. Industrial Planning

261. Strengthening the Planning Unit of the Ministry of Industry by providing technical assistance experts in: industrial planning, project formulation, evaluation and implementation, and financial analysis. The duration of assistance should be the subject for discussion but it is felt that it should be for at least two years. Training those fields should also be the other area in which UNIDO or other sources may be of assistance.

2. Industrial Policies

262. Mention was made of the serious shortcomings of the Development and Encouragement of the Industrial Investments Act 1974 on the promotion and growth of manufacturing industries. This and any other industrial policy measures require urgent reformulation. A technical assistance expert in industrial policies should be considered for advising the government (Ministry of Industry and Mines). It is estimated that this task will require about one year for its accomplishment.

3. Feasibility Studies

263. Most, if not all, institutions are experiencing a dearth of properly formulated projects due to lack of qualified personnel to conduct feasibility studies, etc. It is envisaged that each one of the institutions concerned will require such technical assistance experts as: Industrial Engineer, Industrial Economist or Financial Analyst, loans administrators and others.

Excess capacity and selection and acquisition of technology

264. The Industrial Research Corporation and other agencies may require various additional technicians, engineers, scientists and other specialists for expanding and intensifying industrial research and appropriate technologies for manufacturing in Sudan. There also appears to be specific needs for specialists to make investigations regarding the existing excess capacities to suggest such measures as will alleviate their adverse effects on the profitability of the enterprises concerned and on the general industrial

growth. UNIDO and other sources of technical assistance can provide the required experts. This matter should be taken up with the Government or with the industrial enterprises or research institutions concerned.

Investment Promotion

265. Sudan does not have a national machinery for the promotion of investments, nor is there a systematic and continuous method for attracting foreign investments by way of loans, equity participation or the formation of industrial joint ventures. Some feasibility studies may not be brought to the attention of potential foreign investors for a variety of reasons. In short, UNIDO can assist in the establishment and management of an institutional machinery for this purpose or by establishing an investment promotion unit within the existing institutions or the Ministry of Industry and Mines. All project study reports and feasibility studies can be sent to UNIDO headquarters where they would be brought to the attention of potential investors in the industrialized countries. For the purpose of establishing a machinery for investment promotion, an expert in this field should be considered.

Institutional Infrastructure

266. It was indicated that most of the existing financial institutions, industrial corporations, etc. are not making headway because of weaknesses in their organization, management and operations. Again, there appear to be duplications in some of the objectives and functions of a number of institutions. It is also not clear whether the existing institutional machinery is adequate for the industrial development needs of the country. It is felt that technical assistance experts will be required by individual existing institutions for strengthening their organization, management and operations. Experts will deal, among other things, with: Financial management and control, project formulation, evaluation and implementation, financial analysis, loan administration, training, etc. Engineers, financial analysts, economists and other specialists and technical people should be considered for each institution. Apart from those, there appears to be a need for an expert to study the existing institutions and their objectives and functions with a view to recommending

a rationalisation entailing the removal of duplications. The expert will also study and make recommendations regarding new institutions required, and the promotion of economy in the sharing and utilization of the scarce human and financial resources.

Training

267. The training needs are many and varied at each level and in all cadres. The type of training in which UNIDO can provide assistance is for the top management and executive personnel, engineering, accountants, scientists and other specialists or administrators who are high in the hierarchy of each institution or industrial enterprise. Enquiries should be made from each organization regarding its training needs, type of training required, its duration and, where possible, curriculum. This enquiry will enable UNIDO, other sources and the institutions or national enterprise or agency to plan: in-service training; special national training courses or seminars, fellowships in specific fields, etc. Then a specific-programme should be drawn based on the present and future training for meeting the needs of the industrial sector. It is emphasized that training should be properly planned and programmed if it is to serve the purpose of raising the capabilities of the personnel required for the efficient development of industries.

Small-Scale Industries and Industrial Estates

268. The extension of industrial development to rural areas lies in the promotion of small and medium-scale industries and handicrafts. Assistance is visualized in this area. In fact, there is a proposal for an expert to assist The Sudan Savings Bank in the identification of small-scale industries in rural areas. The ECL regional adviser was also requested to make proposals for the development of small scale industries. Consideration should be given to providing an expert to study and make recommendations including the possibility of establishing some institutional machinery. UNIDO suggested a mission of 2 experts.

Industrial Survey

269. For the future industrialization of Sudan, it is essential to know what exactly is available or lacking as far as resources are concerned. The industrial potentials of the country have not been fully

surveyed and it is therefore difficult to plan and programme future industrial activities. There is not sufficient information on the interaction between sectors or inter-sectoral trends of development in the manufacturing industry. UNIDO or other interested sources should carry out a comprehensive industrial survey of the Sudan, indicating possible inter-sectoral and sub-sectoral linkages, etc. A survey team should be considered as a special measure and should consist of: industrial planner, industrial engineer, industrial economist, financial expert, experts in small-scale industries and agro-industries expert. The survey should take at most two months.

270. . In addition to the above broad areas for possible UNIDO assistance, specific projects were proposed by the Operations Division. These are attached as Annex I. Furthermore, a number of projects were under various stages of consideration in Sudan in 1973. These were reproduced in the IBRD Mission Report of 1973. It will be appreciated that since then the status of some of these projects might have changed. It is, however, felt that they may be worthwhile looking into by the mission in order to establish whether any assistance is required on the promotion of any one of them. These are attached as Annex II.

ANNEX I

PROPOSALS MADE BY THE INDUSTRIAL OPERATIONS DIVISION

Expansion in the productive capacities of existing factories and establishment of new ones are proposed. More specifically, the following industrial projects were included in the 1970/75 Plan:

- a) Sugar: Expansion in the production of the Geneid and Hashim El Girba factories to reach 170,000 m.t. of sugar. A third factory at Bessar is under construction.
- b) Fruits and Vegetables: Triple the output to reach 22 m. conventional cans and attain self-sufficiency. A feasibility study is in preparation by the Food Research Centre on the addition of 2 tomato lines at Wau and Kareima.
- c) Increase total output of vegetable oils by 70 % to reach self-sufficiency levels of 160,000 m.t. by 1975. This will include the construction of a castor oil mill with a capacity of 15,000 tons and the processing of cotton seeds whereby 700,000 tons of oil cakes will become available as animal feed. The feasibility study for the mill will be undertaken with UNDP/UNIDO assistance.
- d) Milk and dairy products: Increase the capacity of the Babanousa Milk Factory for milk and cheese and initiate the operation of the El Obeid Plant.
- e) Glucose and starch: Establishment of a factory to produce 4,400 m.t. of glucose and 1,600 m.t. of starch by 1975 to meet internal demand. Dura will be used as basic raw material. A feasibility study is currently being prepared by a short-term UNIDO expert.
- f) Hides and Skins: Establishment of three tanneries to increase the total processing capacities of public tanneries to over 4 million pieces of various hides and skins. As intimated earlier UNDP/SP is assisting in the Demonstration and Market Research for Improved Hides, Skins and Leather Production at Nyala.

1. On-going/Approved projects in the Food Processing and Agro-Industries area.

Food Industries

The Government of Sudan requested assistance for the following projects among others, under its five year plan 1970/71 - 1974/75.

The Industrial Production Corporation of Sudan is requesting concrete assistance for the clearing-up of the situation in the Canning Factory in WAU and for its reconstruction respectively. Although the Canning Factory is in BAR EL GHAZAL, i.e. in the Southern Region, it does not belong to the Regional Ministry of Commerce, Industry and Supply of the Southern Region, but is controlled by the IPC; its yearly losses are very considerable. This is the main reason why the Southern Regional Government is not very keen on taking-over this plant.

The Canning Factory was planned for the processing of vegetables, tomatoes and fruits at the beginning of the sixties but it has turned out later that the agricultural background, i.e. continuous raw-material supply cannot be ensured for this production programme. This region is rather dry and soil conditions are not favourable for growing vegetables and tomatoes over the whole year. Besides the agricultural organization activities were also stopped by the disturbances of past times. According to original plans a farm would also belong to the Canning Factory. As tomatoes could not be grown, the tomato-condensing line is operated partly with tomato puree imported from Bulgaria, which means that practically the tomato puree is taken out of the original cans and put into other cans. The plant is naturally operating with huge losses, among other reasons also owing to the high import-price of the tinplates necessary for the cans. They also had problems with the high acid-contents of certain citrus-types. As a temporary experiment the factory has processed meat for the Army for a short time; they have carried out minor modifi-

manual ones where no suitable machinery had been at disposal. (Part of this information was given by Mr. Sabino Othow Saverio, Director of the Ministry of Commerce, Industry and Supply of the Southern Region. Mr. Saverio was director in the WAU-Canning Factory between 1968 and 1971).

Considering the future of this Canning Factory the first thing that must be kept in mind is that the BAR EL GHAZAL-area is mainly a cattle-area. It must also be kept in mind that there is a market for canned meat locally, as well as in Uganda, Zaire and in the Central African Republic. Consequently, the general manager of the IPC is requesting the delegation of a 3-men team for abt. 2-3 months on the account of the specialized consultancy-component of Project SUD/74/041. The team would work out suggestions for the reconstruction of the WAU Canning Factory and measures ensuring economical operation of the factory in the future. The FAO-experts working in this area could also participate in the work of the team. The proposal can only be elaborated upon detailed analysis of all agricultural features.

Composition of the team could be the following:

1. Agricultural expert for the analysis of the raw-material supply of the plant, and also possibly for the elaboration of proposals for continuous raw-material supply and operation.
2. Canning Factory technologist who could make proposals for the possibilities of application of existing machinery and equipment and could draw-up a list of complementary machinery and equipment necessary for the new suggested production programmes.
3. Economist with extended canning-factory experience (cost accounting and marketing).

It is felt that recruitment will be rather difficult as practice in the fruit, vegetable and meat canning factories is equally needed for the elaboration of the above project.

This issue was previously talked-over with Mr. La Maniere in detail. Agricultural UN-experts working in the region could also participate in the finalizing of the proposals.

The activity of the team could - at the same time - be extended to the canning factory that the Regional Ministry of Commerce, Industry and Supply of the Southern Region is intending to set-up in the Western Equatoria (probably MARIDI) because in the Region of Western Equatoria conditions for fruit and vegetable-growing are favourable (See later in my report).

Mr. Abu Samr has also mentioned the Canning Factory in Babacussa which could also be investigated by the team pending on the period of its stay.

Although the delegation of the 3-men Team came up in connexion with the IPC and at the expense of the SUD/74/041 Project "Specialized Consultants" Component, the question can only be solved satisfactorily by giving full consideration to the other aspects of the canning industry in the Southern Region. The true dimensions of agriculture and infrastructure of the area must also be recognised and investigated to achieve a dynamic and creative approach.

This issue was discussed in detail with Mr. Abu Samra in the presence of Mr. La Muniere after my arrival from the Southern Region, Juba, back to Khartoum. Mr. Abu Samra, the General Manager of the IPC, has agreed with a large-scale investigation.

Rehabilitation of production activities in the Southern Region (SUD/73/014). The long period of unrest in the Southern Region has resulted in the destruction or deterioration of many of the productive facilities or infrastructures. The reconstruction or rehabilitation of these facilities will require expertise and some equipment. Some rehabilitation is currently being undertaken by the Government of the Sudan and/or by various UN or voluntary agencies. However, much more needs to be done and the requirements are currently being assessed by an IBRD Mission, an FAO Mission (Forestry), a UNIDO Mission (Nzara industrial complex) and an FAO/ILO Mission (Wau cannery).

Installation of Demonstration Sawmill, Wau (SUD/69/014)
Whilst forest land covers more than 1/5 of the total area in the Country, timber production is at present limited and available timber tends to be used mostly as fuel. Sawn timber is in part imported. One of the serious difficulties involved in larger commercial production is the small size of the sawmills and the poor quality of the equipment used. In addition, part of the sawmills' equipment was destroyed during the recent political disturbances in the South. The establishment of new modern mills and an intensive training and demonstration programme in sawmilling are all therefore necessary.

The above Project originated from USSR assistance which made available a complete sawmill to be installed at Wau, Bar-el-Ghazal. The objective of the UNDP Project is to assist in the installation of the equipment and to provide replacements or new equipment, so that the Wau sawmill can be put into operation. Furthermore, the Project aimed at demonstrating sawmilling practices, and at training the local counterparts in these questions. According to the Country Programme Document (DP/GL/SUD/R1) this project is currently being assisted under WFP Project 542 "Scheme for sawmilling and forest operation in Bahr-el-Ghazal Province" with a WFP contribution worth \$941,000. Expansion of the WFP Project to include additional activities and to cover also Equatorial Province is under consideration.

The total UNDP contribution of \$132,000 for the Sawmill Project for the period 1972-76 includes:

- a) Sub-contract \$32,000; b) Experts \$90,000; c) Equipment \$10,000.

Food Processing Research Centre, Phase II (SUD/70/543).
Within the context of the rapid changes from mono-culture and the expansion in the production of fruits and vegetables, agro-industrial developments are taking place at an accelerated pace. Food processing aims at alleviating existing marketing and transportation shortcomings and extending the markets both over time and space, particularly for perishable products. It also provides better opportunities and an increased income to the farming community. However, many local industries

and enterprises are still working below their optimum and economic productive capacities, principally because of the inadequate flow of raw products and, also, because of shortages in skills and managerial talent. The UNDP Project aims at assisting the Food Research Centre to give increased attention to the industrialization of food production. More specifically the Project assists the Centre in:

- a) rendering advisory services to the present factories on measures to increase their operating efficiency, to diversify their lines of products, and to improve their processing techniques.
- b) identifying and promoting, when required, new projects through feasibility studies.

Present Status and UNIDO Assistance.

b. Textiles.

The Sudan is planning to increase its domestic processing of cotton from the present 7% to 20% by 1986. At present 93% of the annual crop of 200,000 bales is exported and accounts for 60% of the country's total export earnings. The import of textiles, about 15% of all imports, is higher than in any other industry sector.

There are at present about 25 textile factories of which only two, the Sudan Textile Industries Ltd. (a subsidiary of the Gulf International Co. of Kuwait) and the Khartoum Spinning and Weaving Co. (Japanese capital) are of any significance.

As a first phase in the industrialization programme, six cotton spinning and weaving factories will be built in Dueim, Sohendi, Kosti, Yaringan, Nyala and Kadugli. The contracts for building these plants have been awarded to a Belgian consortium of firms.

UNIDO has assisted the Government in working out the overall industrialization plan and in preparing tenders for the contracts. At the moment there are no UNIDO textile experts in the field.

c. Leather Industry.

PROPOSAL FOR UNIDO ASSISTANCE TO THE LEATHER INDUSTRY SECTOR

Background Information

The Sudanese leather industry has developed considerably during the last few years. In the public sector industry three large tanneries have been established: one is operating since 1962, the second started production in 1974 (both these tanneries are located in Khartoum) and the third started operation this year (at Wad Medani). In addition to these mechanized tanneries there exist a considerable number of rural tanneries, estimated at some 300 units.

The footwear industry in the Sudan consists of the public sector industry, which includes the Bata nationalized shoe factory and the Omdurman leather and footwear industry, as well as the privately owned footwear industry, to which approximately eighteen footwear factories belong.

It is considered most essential to take an integrated approach in the further development of the leather and leather products industries in the Sudan which has a considerable export potential, in order to ensure that optimum utilization of the locally available raw materials hides and skins can be obtained.

Investment Potential

The successful execution of the proposed project is expected to stimulate further substantial and widespread investment in the local manufacture of finished leather, footwear and leather products, especially to increase further the contribution of these industries to Sudan's export earnings. However, the extent of the investment likely to result cannot be assessed at this stage.

<u>UNDP Contribution</u>	<u>US dollars</u>
Experts - four, total 36 m/m	144,000
Fellowships - three, total 22 m/m	23,100
Equipment	15,000
Miscellaneous	<u>11,000</u>
Total	<u>193,100</u>

Related Activities

Various experts both UNIDO and FAO have in the past few years assisted in various aspects of the proper utilization of the raw materials hides and skins, in developing the leather products industry as well as to a lesser extent in the further development of the footwear industry in Sudan. At present assistance is being given by a leather industry expert in developing the leather industries to international standards, aiming at quality productions for internal and external markets.

d. Wood Industries

Wood Processing

In the opinion of UNIDO a first requirement would be to carry out a forest survey in order to determine the actual resources, such as species, quantities, annual increment, terrain accessibility, etc. for the feasibility study for the proposed plywood mill, financed from Voluntary Contributions to UNIDO. It could be expected that an undertaking of this nature would cost something in the order of US\$ 450,000. Details are contained in the draft report of the feasibility study for the plywood mill prepared by Polytechna (CSSR).

The primary wood processing industry of the country is located in the two southern provinces; there are several small sawmills already established there. The majority of the products are marketed in and around Khartoum.

UNIDO could assist in developing the secondary wood processing industry by establishing joinery and furniture plants to be integrated to the sawmills, thus assuring a fuller utilization of the raw materials and increasing the sawmills' profitability. This assistance could be carried out in several phases: a) feasibility study for such a plant; b) evaluation of bids; and c) assistance - for about one year - in operating the plant. The total cost would be of the order of US\$ 100,000.

Another area where UNIDO could become involved is that of introducing low cost prefabricated institutional building designs, such as schools, dispensaries, etc., similar to the assistance currently being implemented in Laos (project DP/LAO/74/010). A sum of US\$ 70,000 should be sufficient to carry out this work, which would comprise the

..... design of a system suitable for local conditions - and assistance in the production of the first prototypes. Attached (Appendix A) are the terms of reference used in the Laos project.

..... UNIDO has provided assistance in the development of a modular wooden low cost bridge system in Kenya. The UNDP-financed project in southern Sudan entitled "Strengthening of Road Improvement Programme" has shown interest in the bridges designed for use in southern Sudan. Attached is a press release describing this particular bridge system. We feel this is an area where UNIDO could further involve itself through the adaptation of this design to local loading characteristics and locally available species and the erection of a prototype. The cost of this assistance would be in the order of US\$ 10,000, i.e. 2 1/2 m/m of expert services, since all the basic work has already been done in Kenya.

..... Appendix B contains a Forest Inventory Recommendation by UNIDO.

e. Pulp and Paper

Sudan is planning a major extension programme for the sugar industry in early 1978. Should this be actualized, then it can be envisaged that a surplus of bagasse will develop and this is an excellent potential raw material for pulp and paper manufacture. In this connection, UNIDO could offer advice, financed from the UNDP Country Programme funds, on the merits of establishing a pulp mill based exclusively on the use of bagasse. Similar services have been provided by UNIDO in the past to such countries as Cote d'Ivoire, Peru and Bolivia.

f. Chemical Industries.

UNIDO would also be interested in carrying out a survey of potentialities in the fields of essential oils, pharmaceuticals, solar salt production, and other industries concerned with the extraction of industrial chemicals from local sources, including plants and animal wastes.

..... During April 1975, a discussion was held at UNIDO with the Sudanese Delegate to the UNIDO Board meeting on the possibility of improving their salt production. A draft project data sheet and job description, as per the attached copy, to undertake a survey and to draw up a modernization plan was handed to the said delegate. Sudan has at present a production of about 60,000 tons of salt, per year and has a potential of its development for which UNIDO would be quite willing to assist.

g. Packaging Industry.

This industry is listed under agro-industries because of its particular relevance in the Sudan to the products of agriculture, forestry and fisheries.

UNIDO is suggesting the following items to be introduced to the programming mission in the field of packaging:

1. Techno-economic analysis on the needs of packaging in relation to the general industrialization of the country (2 m/m mission);
2. Expert in packaging of glassware;
3. Expert in production of tin plate cans for the food processing industry.

Based on the report of the Senior Industrial Development Field

Adviser, Mr. O. Czivis, job descriptions for paras. 2 and 3 were elaborated and sent in August 1972 to TGD for submission to Government. To date no reaction has been received from the authorities concerned.

2. Engineering Industries.

For purposes of this review, the engineering industries concerned are primarily those involved in the manufacture of agro-implements and tools and equipment for rural development, as well as machine tools. However, as pointed out below, a large amount of engineering equipment of other kinds must at present be imported, and therefore a programme in the engineering industries field would include projects for local manufacture in many different areas. Not least among these would be the manufacture of spare parts. This aspect is included in the proposals outlined below.

A Short Analysis of Engineering Industries and Possible Areas for Development

a) Annual import of selected engineering products by Sudan:

An analysis of the past three years (1971-73) of the import figures indicate the annual import of the selected engineering products (1973) in million US dollars as follows:

Total engineering products	\$ 99.1 million
out of which machinery non electric:	\$ 43.1 million
electrical machinery	\$ 11.6 million
transport equipment	\$ 42.5 million

The annual import figures of major product groups which may have local assembly/manufacturing potential are as follows:

1) Machinery non-electric

Inter-combustion engines	\$ 5.8 million
agricultural machinery	\$ 4.4 million (tractors 3.0 million; implements 1.4 million)
metalworking machinery	\$ 2.7 million
textile and leather machinery	\$ 7.4 million
construction machinery	\$ 1.7 million
centrifugal pumps	\$ 4.2 million
mechanical handling equipment	\$ 0.9 million

2) Electrical machinery

radios	\$ 0.2 million
batteries, etc.	\$ 0.4 million

3) Transport equipment

passenger cars	\$ 2.1 million
busses, lorries, tractors	\$ 14.1 million

b. Possible Products with Potential for Local Assembly and/or Manufacture

Based on the analysis of local demand and existing level of production potential and technological infrastructure, it is our opinion that the following products have potential for local assembly and/or manufacture:

- 1) assembly of tractors with 15 - 20 % local content
- 2) assembly of engines (3 - 5 Hp and 5 - 12 Hp diesel) with 40% local content
- 3) manufacture of agricultural implements and machinery
- 4) manufacture of pumps (irrigation)
- 5) manufacture of selected metal products, household metal items, simple machine tools and selected material handling equipment
- 6) manufacture of spare parts for metalworking machinery, construction machinery, automotive components and foundry products.

c. Government policies on industrial development

1) The Government has given priority for local development and manufacture of industrial inputs for agriculture and development of rural industrialization. In this connection promotion and development of local engineering design capabilities is also given importance.

2) The Government has given a continued priority to the development of agriculture. The two million acre Gezira Cooperative project is the world's largest farm under one management. In addition to traditional cotton, Gezira is now putting more of the land under wheat and sugar cane. The Gezira cooperative project has all the necessary potential to be the nucleus for initiating and implementing a number of integrated industrial projects; similarly the "Jonglet" agricultural project area has the same potential in the near future.

3) In addition, the Government is interested in development of rural industrialization, especially in South Sudan area and provide mechanical engineering workshop and foundry facilities. This concept is to be extended to include training, entrepreneurship development and extension of rural employment potential. For example, the Sudanese Savings Bank which has its headquarters at Wad Medani is not only engaged in mobilization of rural savings, but also in investment in local development programmes. Mr. Mansour Ahmed Elsheik, the General Manager of the Bank held discussions with UNIDO in November 1975 on UNIDO assistance for promoting rural industrialization.

dd. Specific areas for local manufacture and other activities within the framework of Government priorities

1) Assembly of tractors, engines and power tillers

This may require establishment of an assembly unit, with selected component production by Khartoum Central Foundry and Workshop and by steamers workshop and by other ancillary industries.

2) Local manufacture of agricultural implements (hand tools, animal drawn implements, hand operated machines, tractor implements, crop protection equipment, irrigation pumps and other post harvest equipment).

This may be accomplished in the following alternative ways:

- (i) Establishment of a new pilot demonstration manufacturing unit;
- (ii) Expansion of the existing Khartoum Mechanical Engineering Workshop and Foundry with sub-branches at proposed workshops and foundry in South Sudan;
- (iii) Expanding the existing "Steamers Department Workshop" which has unutilized production capacity.

- 3) Specific product manufacture such as pipe fittings and allied items
- 4) A rural industry engineering design and development centre with prototype fabrication, testing, extension and repair and maintenance facilities

This integrated project may have common technical facilities, industrial engineering services as well as financial support for rural entrepreneurship development. This activity should concentrate on agricultural implements, bio-gas plants, rural household items, simple animal husbandry equipment, post harvest technology items, silos, etc. This may be initiated by Gezira Co-operative project in co-operation with Ministries of Agriculture and Industry as well as Sudan Savings Bank.

cc. UNIDO past activities and justification for the above analysis

1) The UNIDO/IDCAS/Past Finding Mission on Agricultural Machinery which visited Sudan has recommended an integrated programme on agricultural machinery design, development and testing and local manufacture of selected items (assembly of tractors and engines, manufacture of pumps, implements, tools, etc.).

2) One of the technical reports produced by Economic Commission for Africa (ECA) has projected the demand for agricultural machinery and allied items in Sudan during 1970 - 75 and 1975 - 80, and has recommended following manufacturing possibilities in Sudan:

- agricultural implement factory (both tractor and animal drawn) 700 tons/year
- centrifugal irrigation light pump factory (3000 tons/year)
- agricultural hand tools factory 1000 tons/year

3) Government of Sudan participated in UNIDO expert group meeting as well as in UNIDO/Government of India agricultural machinery manufacturing development clinic (October 1974, New Delhi). Based on the discussions at the above manufacturing development clinic, the Government Representative (Mr. H. Osman Ahmed, Ministry of Industry and Mining) identified the following implements as those with local demand and manufacturing potential: spades, shovels, axes, rakes, pickax, and other hand tools and animal drawn implements. It was the opinion of the Sudan Government participant that there is a need to provide UNDP/UNIDO assistance for "expansion of existing mechanical engineering workshop and foundry (a UNIDO/UNDP assisted project) in manufacture of hand tools, crop protection equipment, introduction of design development and prototype fabrication; testing and agricultural machinery repair and maintenance service". An appropriate project concept was sent to the Government through the Resident Representative in May 1975, by UNIDO and the Government reaction is being awaited.

4) The UNIDO Agricultural Machinery Manufacturing Feasibility Study Mission (SIS/70/1128) SUD-19: Experts Mr. Pratap Narain and Mr. Horst Gohlich: Total 5.5 m/m, has recommended the following activities for Sudan:

(i) Assembly of Tractors

The experts have recommended a tractor assembly plant with an initial capacity of 1,500 tractors/year (1,350 units, 55 - 60 hp and 150 units 35 Hp) and with an installed capacity of 2,500 units/year. The experts have estimated a foreign exchange savings of L.S. 100 per tractor. They recommend a total investment of L.S. 100,000 for this assembly unit with selected local component manufacture. They have recommended that certain components may be also manufactured at the "mechanical engineering workshop and foundry".

(ii) Production of Agricultural Tools and Implements together with Product Design, Development and Testing

A number of hand tools and implements are recommended by the experts to be manufactured. The experts have detailed the product range, specification, demand and production volume. (Disc plow 100 units, disc harrow 50 units, tool bar 200 units, ridging blade 500 units, ground nut planter 100 units, fertilizer distributor 110 units, shovels 1,000 units, spades 1,000 units, other hand tools 10,000 units/year as the initial step and also take up manufacture of cotton picker, digger, shaker, wind rower, threshers, haulers, land levellers, trailers, pumps etc.). The experts have recommended that existing production facilities at Steamers Department Workshop may be utilized and expanded into an agricultural implements production factory. It is also the experts' opinion that this pilot demonstration manufacturing plant should have a separate unit for product research, development, adaptation and prototype fabrication. In addition, this set up should include technical service activities in repair and maintenance.

5) In this connexion, we may add that UNIDO under project VC/RAP/096: Techno-Economic Evaluation of Walking Tractors and Implements (UNIDO/China co-operative project CVC) has made available to the Government of Sudan two walking tractors (power tillers), two sets of six implements and experts to Sudan in early 1975. Based on the findings of this project there may be possibilities of local manufacture of walking tractors and implements in Sudan.

6) Mechanical Workshop with Foundry (Khartoum Central Foundry)

The above mentioned project was established with UNIDO assistance. The equipment was provided by the Government of Yugoslavia and financed through the Voluntary Contribution of Yugoslavia to UNIDO. Training was undertaken through bilateral arrangements. The project is self-supporting. The product quality, however, needs to be upgraded. The flow of production within the project has to be streamlined. Proper production planning methods and costing procedures have to be introduced.

In order to overcome the above mentioned shortcomings, UNIDO proposed additional assistance. A draft has been prepared and submitted. The above assistance is planned for a period of approximately three years and should start as soon as possible. The total amount of the proposed assistance is US\$ 360,000 and should be charged against the I.P.F.

7) Study of Local Manufacture of Pipe Fittings

The K.C.F. together with the C.E.W. (Central Electricity and

Waterworks) are at present studying the possibility of local manufacture of pipe fittings both steel and malleable.

UNIDO assisted the Government of Sudan in their endeavours by providing three Sudanese fellowships to visit a pipe fitting plant in Austria and also in the Arab Republic of Egypt.

It is anticipated that the study is readily available latest at the beginning of the second quarter of 1977.

UNIDO assistance might be required in case the outcome of the study is positive. The magnitude of the UNIDO assistance should be known in mid 1977.

8) Establishment of a Small Mechanical Workshop with a Forgehop and a Foundry in the South of Sudan

It is felt that there is a need for a small workshop in the South. UNIDO proposed to set up this unit with substantial assistance of the K.C.F. A proposal was submitted to the Resident Representative on 18 April 1975. The total UNIDO inputs would amount to US\$ 100,000. The time to implement the project is in the order of approximately 24 months.

The project is planned to start latest in January 1977. The project cost is planned to be charged against the I.P.F.

3. Metallurgical Industries.

Although the economy of Sudan is still largely based on agriculture the Government's policy is to accelerate the economic growth by developing the industrial sector as well as promoting agricultural expansion. The industrial sector is at present relatively small and contributes about 10% to the GNP. Underutilization of installed capacity, inadequate capability for the preparation of industrial products and shortage of trained industrial manpower are some of the industrial sectors main development constraints.

Early in 1970 the Government of the Republic of Sudan decided to establish the Central Khartoum Foundry, comprising of one foundry shop and one mechanical workshop. UNIDO's assistance in this project was requested. The Centre has been created as an industrial pilot and demonstration plant and has the following main objectives:

- to supply castings and machine parts and maintenance and repair of industrial and other equipment;
- to produce a variety of castings and machine parts needed for the local production and consumption of capital goods;
- to act as a centre for training of local personnel at all levels (skilled workers, technicians and engineers) and to provide technical information and services to the local foundry and engineering industries.

UNIDO prepared the technical project report for the foundry part of the Centre and arranged for US\$ 400,000 of equipment from the Voluntary Contributions of Yugoslavia. In addition, some 15 man months

expertise (3 experts) has been financed from SIS funds.

The foundry started operation in 1973 and has operated successfully for the past two years. Recently, however, attention has been focused on the possible further expansion of the plant and equipment to enable more sophisticated and a wider range of products to be cast. The Resident Representative has suggested (his letter to Mr. Maneck dated 20 September 1975) that studies should be made to achieve this expansion.

4. Petrochemical, Fertilizers and Pesticides Industries.

In view of the agricultural needs of the Sudan, especially for irrigation, UNIDO is proposing that consideration be given to the manufacture of plastic pipe and film for transportation and conservation of water. Particularly in the Southern region, such support for agriculture would be of benefit. Such projects would be based on the fact that the Southern Region will require increasing amounts of piping to support every aspect of its development programmes (irrigation, rural and urban drinking water schemes, communal sanitary projects, etc.). Pipe by definition is a means of enclosing the maximum amount of space with the least amount of materials. This, in turn, means that when shipping pre-formed pipes, the shipper must pay for shipping the volume that the pipe is occupying rather than the weight of the materials the pipes are made of. The shipper must pay for shipping so about 85% for unutilized air space.

It is therefore reasonable to ship the material for plastic pipes in bulk - with a considerable saving in freight costs - to be formed into pipes at an extruder located in the centre of the area.

To recognize the true dimensions of the problems connected with the industrialization of the Southern Region, the following aspects must be taken care of, in view of the accumulated economic, agricultural and industrial problems and constraints:

A special emphasis must be placed on the possibility that the Sudan and within the Sudan especially the Southern Region, could be developed to a vast food producing area with long-term growth prospects of international consequence.

To achieve these developmental objectives measures should be taken to create appropriate agricultural implements, transportation facilities and means for continuous and effective maintenance.

The strategy to be proposed cannot be limited to UN-assistance for this would only be a "drop in the Ocean". By using of studies completed and under preparation of IBRD, the Arab Fund, bilateral aid, etc., a general strategy should be adopted, on basis of which the Government, UNDP, UNIDO, IBRD, the different donor Governments and the Arab Fund could identify their own role pending of the possible means and resources.

A team could also be sent to survey the potentialities of fertilizer production, both phosphate and ammonia-based.

In view of the great potentialities of Sudan as a food producer, the plastics and fertilizer projects should be integrated in a plan

which includes the agro-industrial complexes, engineering industries and other UNIDO assistance proposed.

These are by no means exhaustive of all the areas of possible UNIDO assistance. Efforts should be spent on the identification of more technical assistance possibilities.

ANNEX II

INDUSTRIAL PROJECTS WHICH WERE AT VARIOUS STAGES OF IMPLEMENTATION IN 1973^{1/}

I. Public Sections Projects Under Construction

1. Northwest Sennar Sugar Factory

Capacity - 110,000 tons

Plantation Area - 30,000 feddans

Construction Period 1973-74 to 1975-76

Expected Employment 8,200, of which 5,200 on the farm, 3,000 in the factory

Total Cost - Lsd 22.7 million - 20% is financed from Kuwait Development fund and the rest from the U.K. at an interest rate of 6 1/2% .

Fletcher and Stewart Company is executing the project.

2. Kennaf Bag Factory in Abu Nama

Production - 10,000,000 bags annually and 900 tons of material

Cost - Lsd 2.3 million

Farm Area - 30,000 feddans

Cost - Lsd 4 million

Adoyano Fadellia (ph.), an Italian corporation, is the executing company.

Special Problem on this project - CEWC will not supply power before October 1974 even though production requires the operation of the pumping station in April 1974.

3. Textile Factory at Hasa Heysa (ph.)

Investment - Lsd 4 million, Chinese loan

Production - 16 million from gray and white sheeting

Employment - 1,950

Labor/Production starts in October 1975.

^{1/} This list of projects is extracted from the World Bank Mission Report 1974. Since 1973, the status of these projects might have changed. The UNIDO proposed mission should try to identify technical assistance requirements for the successful implementation of some of these projects.

4. White Wad-Medini Tannery

Investment - Lsd 2.8 million

Production starts March 1975

Employment - 368

Production - 9.5 million square meters of tanned and semi-tanned leather

Special Problem - no telephone lines are available and also no cars

5. Worthwhile Investments

White Nile Brewery

Now Investment - Lsd 900,000

Credit - The Arab-French Bank for \$8 million at 9 1/2%

II. Completed Projects

1. Khartoum New Tannery

Capacity - 756,850 square meters of leather & 720,000 manufactured pieces a year

Date of Production - December 1973

Employment - 500

Investment - Lsd 1.3 million

Special Problem - the tannery was constructed and the machinery was installed. It was expected that the factory would operate last month; however, some complementary machinery was delayed in Port Sudan and, therefore, production will be delayed until the end of this year.

2. Central Khartoum Foundry

Capital - Lsd 300,000

Capacity - 1,500 tons of ingots

Employment - 100 in the first stage

Total Investments - Into projects which are completed and which are still under consortium, Lsd 32.6 million

III. Public Sector and Joint Sector Projects in the Process of Preparation and Execution.

1. The Kinnah Sugar Project (the LONRON Project)
Production Capacity - 1976-77 - 25,000 tons
1977-78 - would increase to 175,000 tons
Total Production capacity - 300,000 tons
Cost - Lsd 55 million
2. Hager Asallayah Sugar Project
Capacity - 110,000 tons
Construction Periods - 1974-75 to 1976-77
Cost - Lsd 22.7 million
Plantation area - 30,000 feddans
Employment - 5,200
Problems - seeking financing for the project
Executing Company - Fletcher and Scewart
3. Textile sub-sector bidding has been offered for the construction of six textile factories in Kadugli, Nyalia, Eldoyom, El Haj Abdullah, Shindi and Port Sudan

Total Production capacity of all these factories - 60 million meters of clothes

Total employment - 4,500 to 5,000
Capital - Lsd 30 million
Starting date of execution - beginning of 1974
Production starting date - 1975-76

A committee has been appointed to open the bidding documents and the committee has submitted its report.

4. Fertilizer Factory in Port Sudan

Capital - LSd 19 million

Capacity - 220,000 tons of urea

Employment - Approximately 350

It will fill the domestic requirements of fertilizer up to the year 1980. A preliminary contract has been signed with Petro-Chemie for the execution of the project. The company has agreed to finance the project with some European and Japanese consortium. A British Company in the consortium has withdrawn because of a disagreement between itself and Petro-Chemie, and this led to a temporary delay in the project. The Ministry has dispatched a delegation from Paris to investigate.

IV. Oil Pipeline - Port Sudan/Khartoum

Length - 1,000 kilometers

Approximate cost - LSd 11 million

Starting date of execution - early 1974

Start pumping - end of 1975

Agreement has been reached with Kuwait for the financing. The final feasibility study is underway to determine locations of the forcing and pumping stations.

V. Petroleum and Mining

Petroleum

1. Four international companies have been granted rights to search for petroleum in the Red Sea. These are :

- (1) Ball and Collins
- (2) Oceanic Exploration
- (3) American Pacific
- (4) Adobe Corporation

All these companies have delegated their lawyers to the Sudan to register branches for them in the country and to obtain licenses to start work.

2. Romanian Sudanese Company for Petroleum Exploration has been formed and have located certain areas in which to work. This company will oversee all exploration work in the Sudan.

Mining

An agreement with Brosach, a German company, for the exploration of the Red Sea deposits of minerals has been made. The group sub-corporation of the IPC is conducting discussions with the German company to start execution.

VI. Public Sector Projects Under Study

1. Malut and Mangla Sugar Projects

Capacity - 75,000 tons per factory

Employment - 5,000 laborers per factory

Farm area - 24,000 feddans each

2. Malakal Tannery

Investment - Lsd 828,000

Expected Output - 150,000 pieces of snake, crocodile and buffalo

Employment - 200 to 300

The Yugoslavs have submitted an offer for the construction of the factory and the committee has been sent to study it.

3. Tung Bag Factory

Production - 10 million bags, 900 tons jute

Investment - Lsd 6,500,000 divided - farm 4,000,000, factory 2,500,000

4. Wow Plywood Factory

Cost - Lsd 336,000

Capacity - 5,000 cubic feet of plywood

5. Fruit and Begetable Canneries in Shindi and Sennar

Cost - Lsd 750,000

Capacity - 1,000 tons

Status - Studies have been completed.

6. The committee has been studying the possibility of car and tractor manufacturing, considering the huge sums of money which Sudan spends every year to import cars, tractors and spare parts. A committee has been established from the various ministries & public sector organizations to study the possibility of the creation of establishing car/tractor manufacturing in the Sudan in light of the potential growth in the agricultural sector.

The committee has received several offers from international companies and some clarifications of these offers have been sought. A preliminary agreement has been reached with Dwtizer (ph.), a German manufacturer, to establish an assembly plant to produce annually: 500 trucks, capacity 20 to 40 tons, 150 buses, 650 diesel engines. Production will start two years from the signing of the final agreement.

Vertical Development of IPC

1. At the establishment of IPC, several factories were added to it following the nationalization and confiscation measures of 1970 and 1971. Several of these factories, however, had old machinery, some of which was 20 years old (without any new replacements). This led to a reduction of production capacity and in turn it became a burden on the IPC.
2. Attention has been focused in recent years on the vertical development of the existing factories to remedy their continuous losses after it was proven by some studies that vertical development is less costly and yields quick returns. Consequently the IPC has budgetted the 5 year plan - Lsd 5 million for vertical development projects.
3. The financial authorization for vertical development in 1972-73 was Lsd 1.5 million, but actual disbursements would not exceed 30% of the budgetted amount for the following reasons :
 - (a) Non-availability of funds to be centralized in a routine bureaucracy.
 - (b) Fluctuations of world prices following currency fluctuations.
 - (c) Shortcomings in some units in planning and executing their programs.
4. The development projects, amounting to Lsd 2.7 million, is distributed as follows :
 - Food industries - Lsd 1.5 million
 - Sugar industries- Lsd .5 million
 - Leather industries - Lsd.2 million
 - Group industries -Lsd .5 million

The 1973/74 plan attempts to ease the bottlenecks of the production units to increase their productive capacity. It is noticed that the units are making an effort this year to utilize their budgetted amounts.

Private Sector Factories under Execution

The Ministry of Industry and Mining has approved in the period July 1972 to 1973 the establishment of 245 factories in the various branches of industry, most of them to start operations in 1975-76.

Spinning and weaving and ready-made clothes - 73 establishments will be constructed with a total cost of Lsd 93.4 million to produce the following :

147,753,600 yards annually of damoria
17,333,950 yards of printed material
56,200,000 yards of poplin
1,178,595 pieces of fardah wa krub (ph.)
2,400,000 blankets
38,086 tons of thread
3,800 tons of rope and twine
63,000 dozen stockings
289,685 pieces of sheets
83,866 dozen towels (small and large)
5,500,000 pieces elastic and sashes
151,200 sweaters
7,080,000 meters of fawalat
153,000 dozen of ready-made clothes

Some of the most important textile projects in the private sector are :

- (1) Blue Nile Spinning and Weaving - this factory is under construction at Wad Medini to produce white and gray sheeting. Machinery consists of 25,000 spinners and 500 looms in addition to an integrated unit for finishing and dyeing. Capacity - 50 million meters annually, starting early 1974.
- (2) Om Durman Spinning and Weaving - Investment in this project is about 5.4 or less million. Capacity - 10.7 million meters of gray clothing.
Status - the owners received the necessary site and they agreed with

IFC on the financing as follows - 65% Sudanese partners, 25% IFC, 10% by the technical partner who executes the project. On the 5th of November the detailed study of the project starts. On the 22nd of November the study is completed. On the 25th of November the studies are submitted. On the 26th of November an agreement is signed with IFC and the technical partner.

- 3) The United Spinning Company - It was agreed with IFC on the financing on the same principles as the above-mentioned project. A study would be submitted to IFC at the same date as the above-mentioned and signing would take place the same day as above.
- 4) The Sudanese-Japanese Joint Project - the factory will have 26,000 spinners in the first phase and will add 25,000 spinners as the second phase. Cost - LSD 12 million. Final agreement will be reached on the project in January 1974, and the factory will start production of spinning in November 1975 and weaving in March 1976. The second stage will be executed at the end of 1976.
- 5) Leather and Plastic Industries - the Ministry has approved 32 factories for the production of leather shoes and plastic and suitcases. Investment in this factory is about LSD 3.8 million.
- 6) Engineering and Mining Industries - 30 factories were approved since July, 1971 to produce metal furniture and construction tools and cans. Among them is a factory to produce spare parts for textile factories financed from Kuwait and another to produce steel pipes which is executed by a Japanese firm.
- 7) Electrical Industries - Six factories were approved in this field. Investment amounts to LSD 637,682. Among these factories two are for the assembling of radios and TV sets under license from international companies. There are also factories for electrical wiring.
- 8) Chemical Industries - the Ministry has approved 33 factories to produce perfumes, dry batteries, soap, wax, toothpaste, matches and pesticides. Investments in this branch will amount to LSD 5.5 million and among the important licenses given is the license to Union Carbide and Berek (British) to produce dry batteries.
- 9) 54 licenses were issued since October 1970 to establish plants for oils, mints, ground nuts and sesame oil. Total investment is about LSD 11.3 million. The Ministry also approved 37 licenses for ground nut shelling establishments.

- (10) Food industries authorized 33 factories for ice, mineral water and soda water as well as 5 projects including one for meat canning and the rest for fishing. In respect to animal feed, the Ministry approved 3 factories costing Lsd 381,130 in addition to two salt flats with a capacity of 82,500 tons and an investment of Lsd 688,896.
- (11) Construction material - the Ministry has approved several factories in this branch to produce bricks, gypsum and asbestos. Among these factories are two for asbestos with a capacity of 22,000 tons of asbestos pipe and 5,000 tons of asbestos sheets with a total investment of over Lsd 2 million.

Expansion Plans of Existing Private Sector Firms

Textiles

1. Sudan Textiles Limited

Expansion Plan - \$6 million

Capacity Increase - 50,000 spinners to produce 32 meters of bleached clothes annually. Expansion is conducted in two stages: stage I was completed in October 1972 with 25,000 spinners and 582 looms to produce 16 million meters. The second stage has started. It will include 25,000 spinners, 582 looms, using raw cotton of 3,300 tons.

Total capacity - 16 million meters a year

The Ministry has also approved a request by the factory last September to increase its capacity for poplin production by 95,000 yards and 25,000 additional yards of folat at a cost of LSD 11.4 million. Machinery will be imported from Switzerland and Japan at a cost of LSD 4.5 million, and production will start in July 1976.

2. Khartoum Spinning and Weaving Factory.

The company is undertaking an expansion project at this time to increase its production of damoria and wallia by 6.7 million yards annually. Work has started to install 3,500 spinners and 300 looms. Production will start early in 1974.

Flour Mills

At present there are six flour mills with a production capacity of 3,000 or 4,000 looms a year. Three of them will have plans to increase their capacity by adding a new line to the capacity of 160 tons daily. Work will start in 1974.

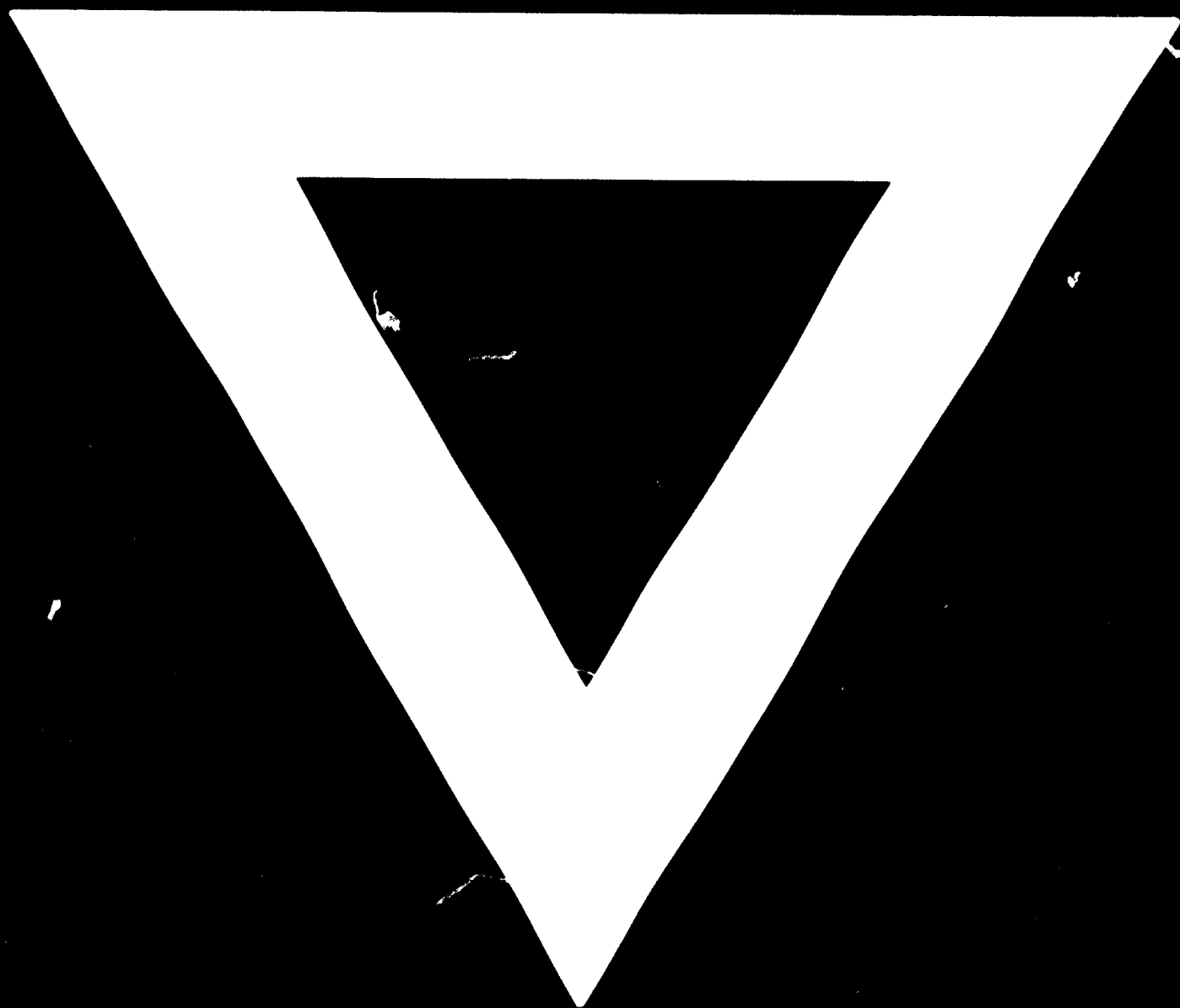
Training in the Industrial Sector

General Organization for Training in the Industrial Sector - This organization was established in November 1972. It has conducted an investigation with the Ministry and Public Sector Industrial Units to assess the manpower needs and training in order to develop an integrated plan for industrial training in the Sudan. This organization attempts a two-stage approach to the problem of training:

- (a) In the short term to conduct training courses for labor.
- (b) Long term - a policy based on the apprenticeship and the continuous development of their abilities afterwards.

In addition the organization will conduct the necessary statistics concerning the organization force and the evaluation of their effectiveness in the training programs.

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